The Visual World Atlas

[FACTS AND MAPS OF THE CURRENT WORLD]

QA INTERNATIONAL

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Facts and maps of the current world

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Subject

Each subject covers two to eight pages and offers a complete comprehension of the theme addressed.

Introduction

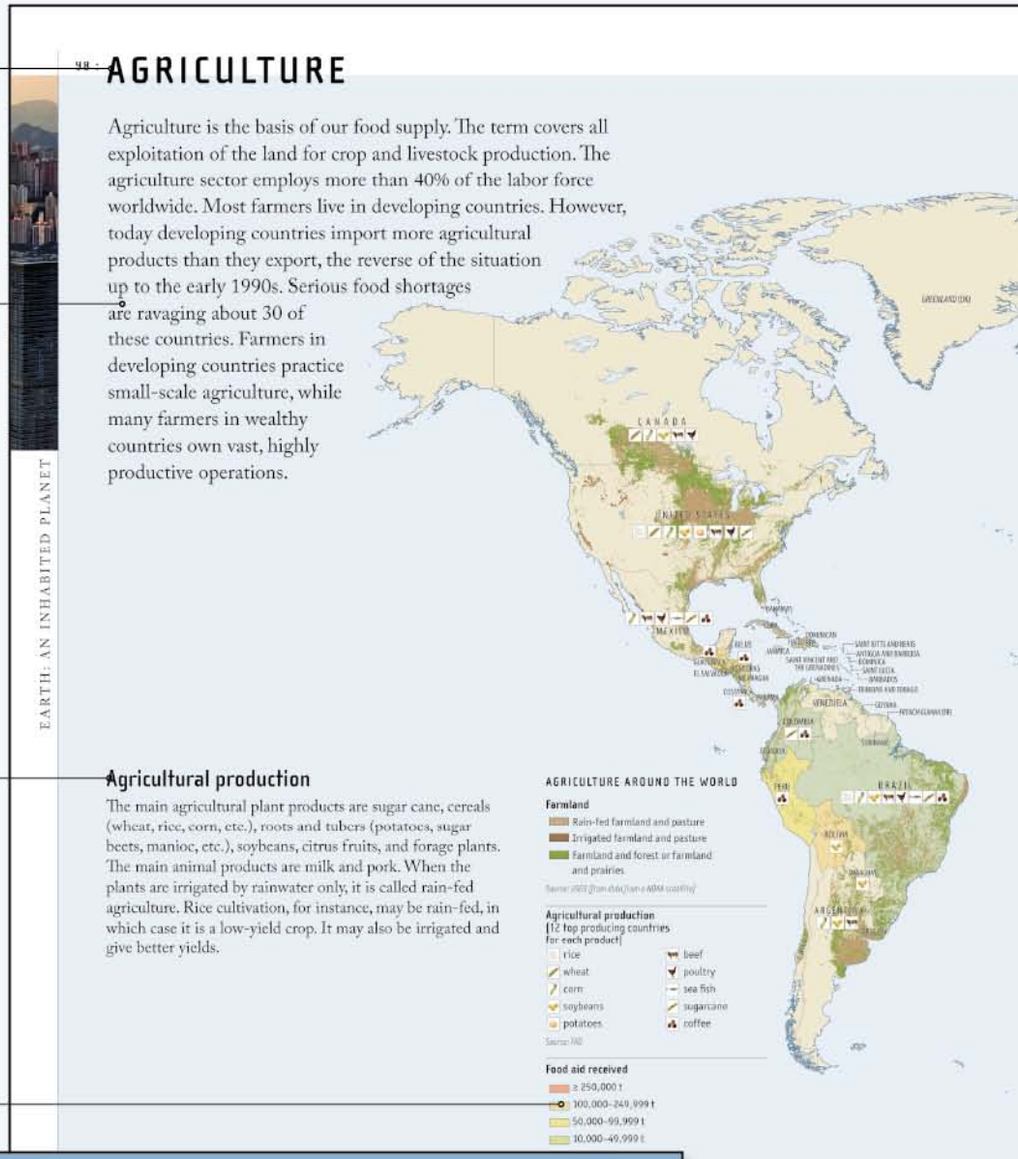
An introductory text gives a basic overview of the subject.

Explanatory texts

Explanatory texts complement the visual information.

Legend

A legend describes the symbols used in the main map.



KEY TO SYMBOLS ON MAP

WHAT IT STANDS FOR	VISUAL PRESENTATION	WHAT IT STANDS FOR	SYMBOL	VISUAL PRESENTATION
mountain range	HIMALAYAS	summit	△	*Kilimanjaro, 5,892 m*
plateau	Patagonia	depression	▼	*Death Valley, -86 m*
plain and basin	Hungarian Basin	lake		*Lake Balkhash*
desert	GREAT SANDY DESERT	watercourse		*Amazon*
ocean	INDIAN OCEAN	capital	☆	Dublin
sea	Weddell Sea	geographic reference point		TROPIC OF CAPRICORN
coastal element	Gulf of Bothnia	main road		—
island	*Caroline Is.*	international border		—
continent	AFRICA	regional boundary		—
region	MIDDLE EAST			
country	EGYPT			
territory (ISO country code)	*GREENLAND* (DK)			
city	Lagos			

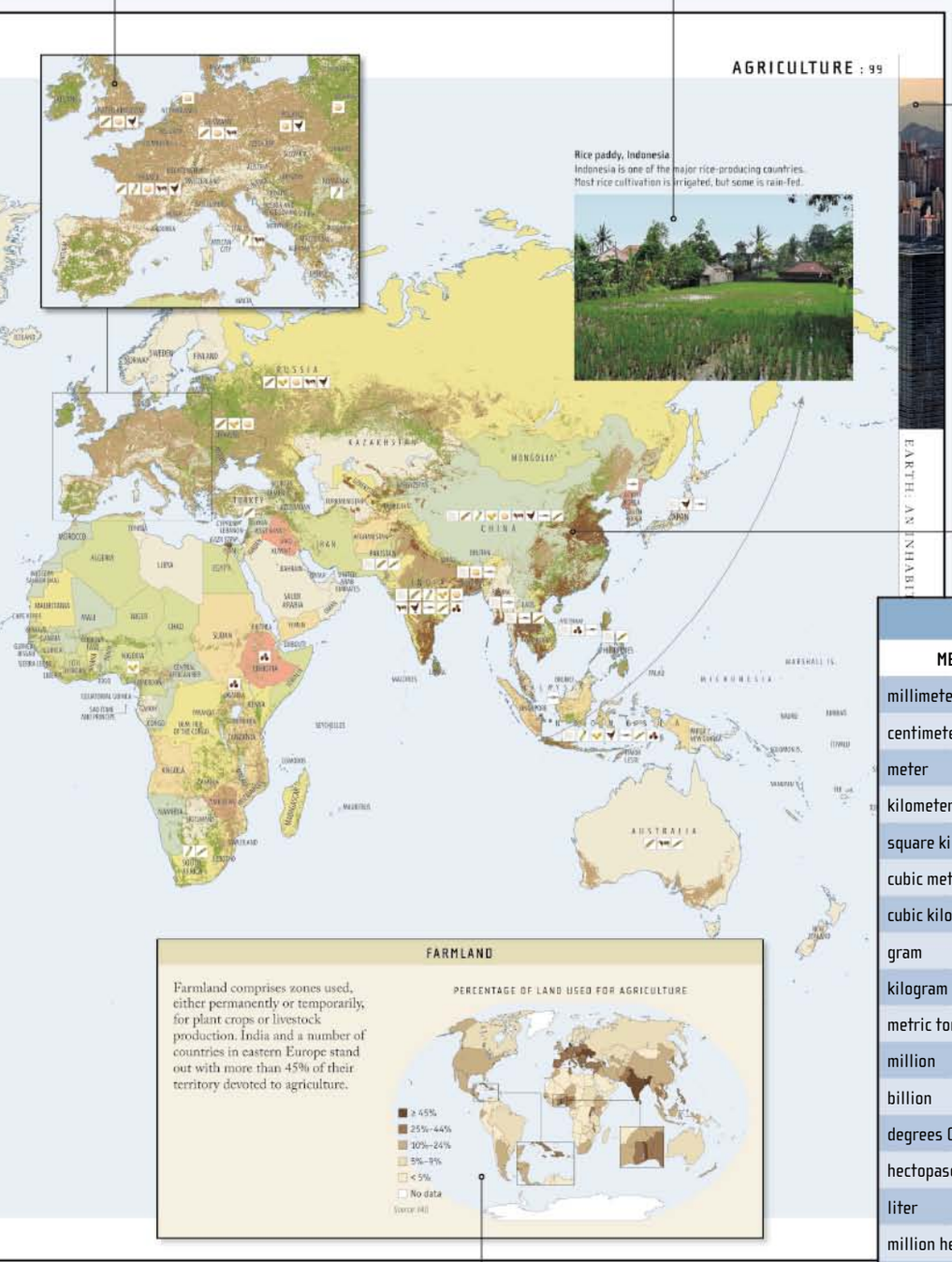
Abbreviated forms of the names of countries comply with the recommendations of the International Organization for Standardization (ISO), detailed on page 164.

Enlargements

Portions of the main map are enlarged to give a detailed view of certain regions.

Photographs

The photographs are linked by lines to the places where they were taken.



Visual tab

A photographic excerpt reminds you of the chapter within which the subject falls.

Main map

The main map gives you an at-a-glance overview of the theme discussed.

Boxes

Supplementary information is given in secondary maps, illustrations, graphs, and statistical tables.

MAIN ABBREVIATIONS USED

METRIC UNIT	ABBREVIATION	U.S. UNIT EQUIVALENT
millimeter	mm	—
centimeter	cm	0.4 inches
meter	m	3.28 feet
kilometer	km	0.62 miles
square kilometer	km^2	0.39 square miles
cubic meter	m^3	1.31 cubic yards
cubic kilometer	km^3	0.24 cubic miles
gram	g	0.03 ounces
kilogram	kg	2.2 pounds
metric ton	t	1.1 short tons
million	M	the same
billion	B	the same
degrees Celsius	°C	33.8 degrees Fahrenheit
hectopascal	hPa	0.03 inches of mercury
liter	L	33.8 ounces
million hectares	M ha	2.47 million acres
hour, second	h, s	the same
kilometer per hour	km/h	the same
kilowatt-hour	kWh	the same
megawatt	MW	the same
degree	°	the same

before the Common Era	BCE
inhabitant	inhab.
U.S. dollar	$
gross domestic product	GDP
gross national product	GNP

We live in an amazing world!

Earth, our blue planet, has a special something that makes it unique: it is home to life. For millions of years, despite countless natural disasters and wild fluctuations in climate, life has persisted.

For about the past 150 years, life on Earth, as tenacious as it may be, has come under increasing threat. The growing impact of human activities on the planet's fragile balance is putting its inhabitants at risk. The forecasted ecological catastrophe can be avoided, if we equip ourselves with the means to do so.

And Earth is worth protecting. Our tiny piece of the Universe offers a panoply of breathtaking landscapes, from the vertiginous heights of the Himalayas and the extraordinary aridity of the Sahara to the bursts of color in tropical seas. With so much beauty and diversity, Earth deserves all of our respect.

In order to respect Earth, we have to know it better. Each region of the world stands out, whether for its geography, its geology, its fauna, its population, its political organization, or its economy. You will find out about all of these aspects in *The Visual World Atlas*.

Today, all the continents have been explored and uncovered, but the knowledge that has accumulated makes sense only if it is explained and deciphered. This book does not present the most minute details on each region, but offers a careful selection of relevant information that will enable you to discover our world and understand the phenomena that sweep across it.

The Visual World Atlas provides a complete, detailed overview of Earth. It covers 31 subjects in physical and human geography and offers thousands of statistical facts concerning the 193 countries of the world. It contains more than 110 thematic maps, as well as photographs taken all over the world.

With this book in your hands, Earth, in all its diversity, is within your reach. In a world in perpetual change, *The Visual World Atlas* gives you the keys to comprehending the present and grasping the challenges to be met in the future.

EARTH: A ROCKY PLANET

Earth is the largest rocky planet in the Solar System. It offers a variety of ever-changing landscapes. As the immense plates that form Earth's crust slowly move toward and away from each other, mountains rise, oceans open up, volcanoes erupt. Erosion is also constantly shaping the planet's relief features: mountains flatten, valleys are dug, coastlines recede. Observing Earth's landscapes enables us to understand the history of our planet, explain its structure, and anticipate its future transformations.

TOP: Rocky beach, California, United States
LEFT: The Glen Coe Valley, Scotland

THE SOLAR SYSTEM

The Universe contains an almost unimaginable number of galaxies—no fewer than 100 billion! In the midst of this immensity is our galaxy, the Milky Way. The Solar System is located on the periphery of the Milky Way. It includes one star, the Sun, and eight planets, three dwarf planets (Ceres, Eris, and Pluto), more than 160 natural satellites orbiting these planets, millions of asteroids (small, rocky celestial bodies), millions of comets (balls of dirty snow), billions of pebbles, and cosmic dust and gases.

The planets of the Solar System

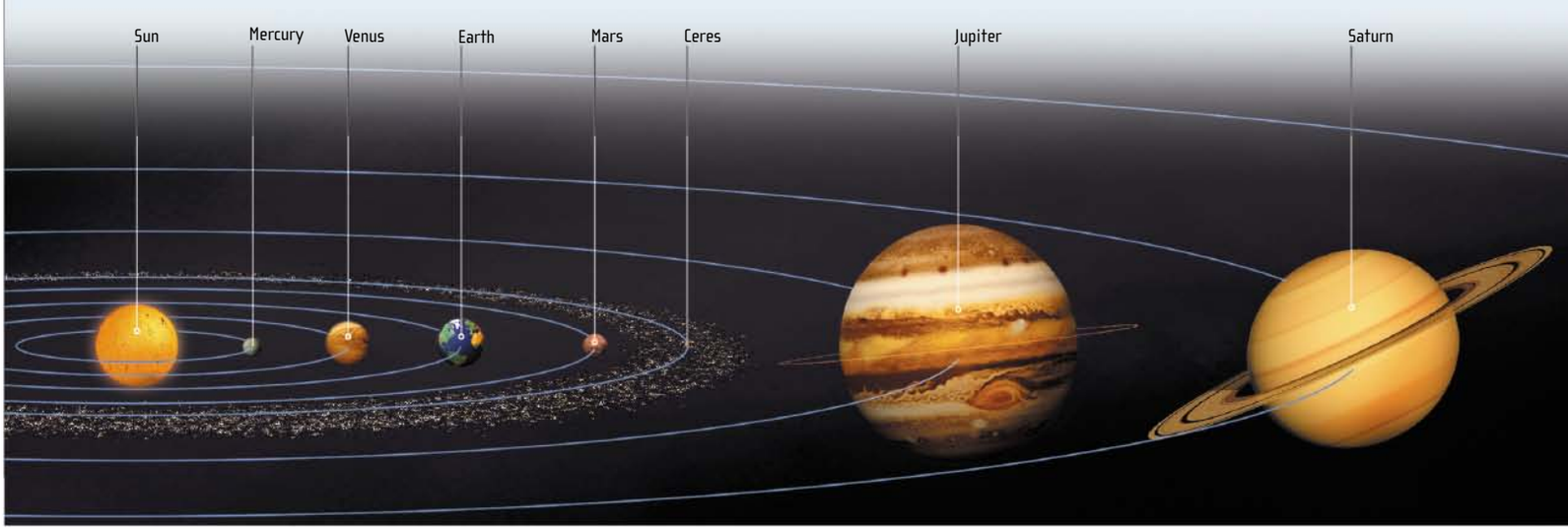
The planets closest to the Sun are rocky planets. They are also called the inner planets, since they are situated between the Sun and the main asteroid belt. Earth is one of them. The planets situated outside the main asteroid belt are called the outer planets. They are gaseous giants, composed mainly of hydrogen and helium.

THE INNER PLANETS

	MERCURY	VENUS	EARTH	MARS
diameter (km)	4,879	12,104	12,756	6,794
average distance from the Sun (AU) 1 AU (astronomical unit) = 149,600,000 km	0.39	0.72	1	1.52
period of rotation	58.6 days	243 days	23.9 hr	24.6 hr
mass (relative to Earth)	0.055	0.82	1 (5.9×10^{24} kg)	0.11
gravity at the equator (relative to Earth)	38%	91%	100% (9.766 m/s^2)	38%
temperature (°C)	–173 to 427	462	–88 to 58	–87 to –5
number of known natural satellites	0	0	1, the Moon	2
composition of the atmosphere	no substantial atmosphere	carbon dioxide, nitrogen	nitrogen, oxygen	carbon dioxide, nitrogen
date of discovery	known since antiquity	known since antiquity	known since antiquity	known since antiquity

Source: NASA

THE ORBITS OF THE PLANETS AND DWARF PLANETS OF THE SOLAR SYSTEM

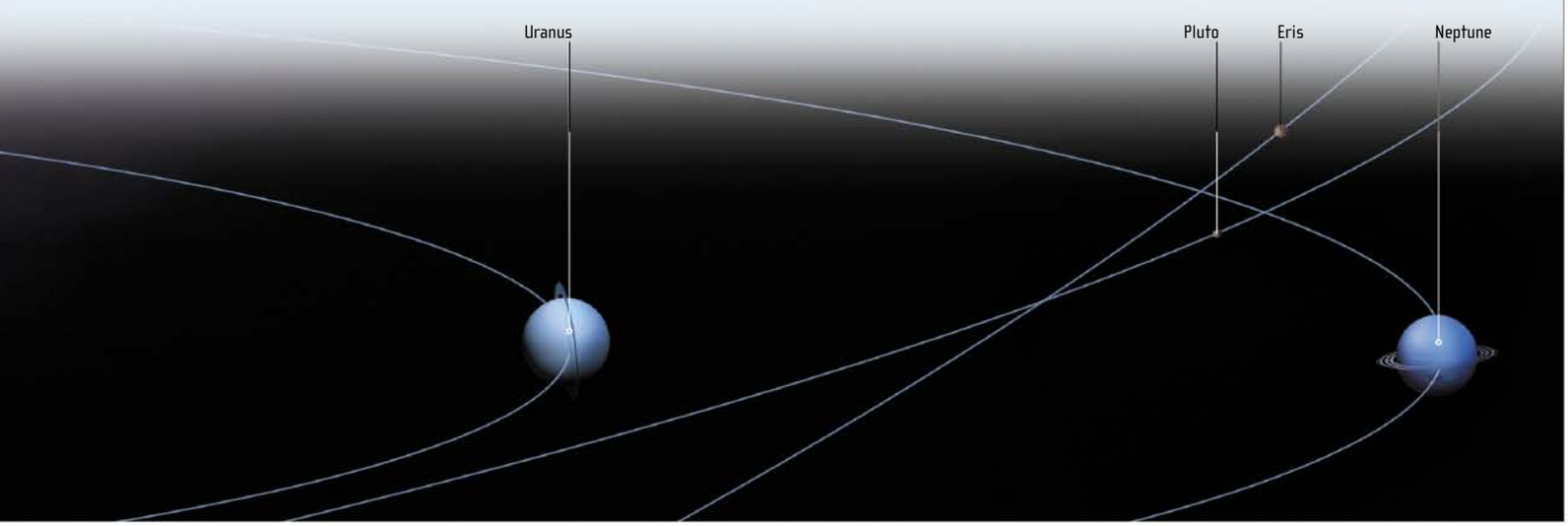


Center of the Milky Way
Our Solar System is situated about 28,000 light-years—that is, 280 million billion km—from the center of the Milky Way.

THE OUTER PLANETS

	JUPITER	SATURN	URANUS	NEPTUNE
diameter (km)	142,984	120,536	51,118	49,528
average distance from the Sun (AU) 1 AU (astronomical unit) = 149,600,000 km	5.2	9.54	19.19	30.07
period of rotation	9.8 hr	10.6 hr	17.2 hr	16.1 hr
mass (relative to Earth)	318	95	14	17
gravity at the equator (relative to Earth)	214%	107%	86%	110%
temperature (°C)	–148	–178	–216	–214
number of known natural satellites	62	60	27	13
composition of the atmosphere	hydrogen, helium	hydrogen, helium	hydrogen, helium, methane	hydrogen, helium, methane
date of discovery	known since antiquity	known since antiquity	1781	1846

Source: NASA



Formed 4.6 billion years ago, Earth is the largest of the four rocky planets in the Solar System. It has a single natural satellite: the Moon. Earth is the densest celestial body in the Solar System: each cubic meter of the planet weighs an average of 5.5 metric tons. It is also the only planet that has vast oceans of liquid water, within which life appeared 3.5 billion years ago.

Lake Manicouagan, Canada
The crater of Lake Manicouagan, in northeast Canada, results from the impact of a meteorite 212 million years ago.

Earth seen from space

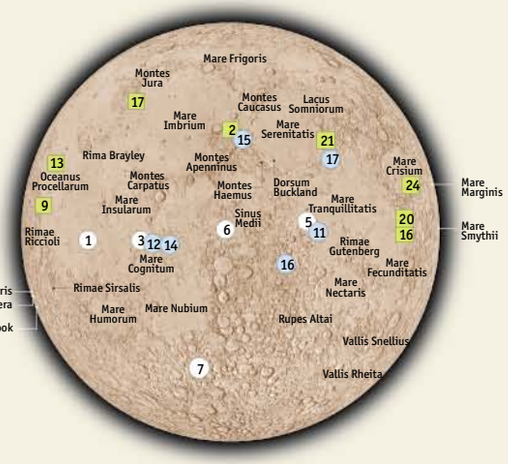
Earth's vast oceans, from which it gets its nickname "the blue planet," can be seen from space. Its continents, with jagged coastlines, are formed of mountains, deserts, lakes—all relief features that are visible from space. Observation satellites can also detect a number of impact craters (the imprints of collisions between Earth and meteorites) and forests. Earth observation satellites are sent into space from launch bases dispersed around the globe.

Hurricane Iris
Cyclones are visible from space. They form cloud disks almost 1,000 km in diameter.

THE MOON

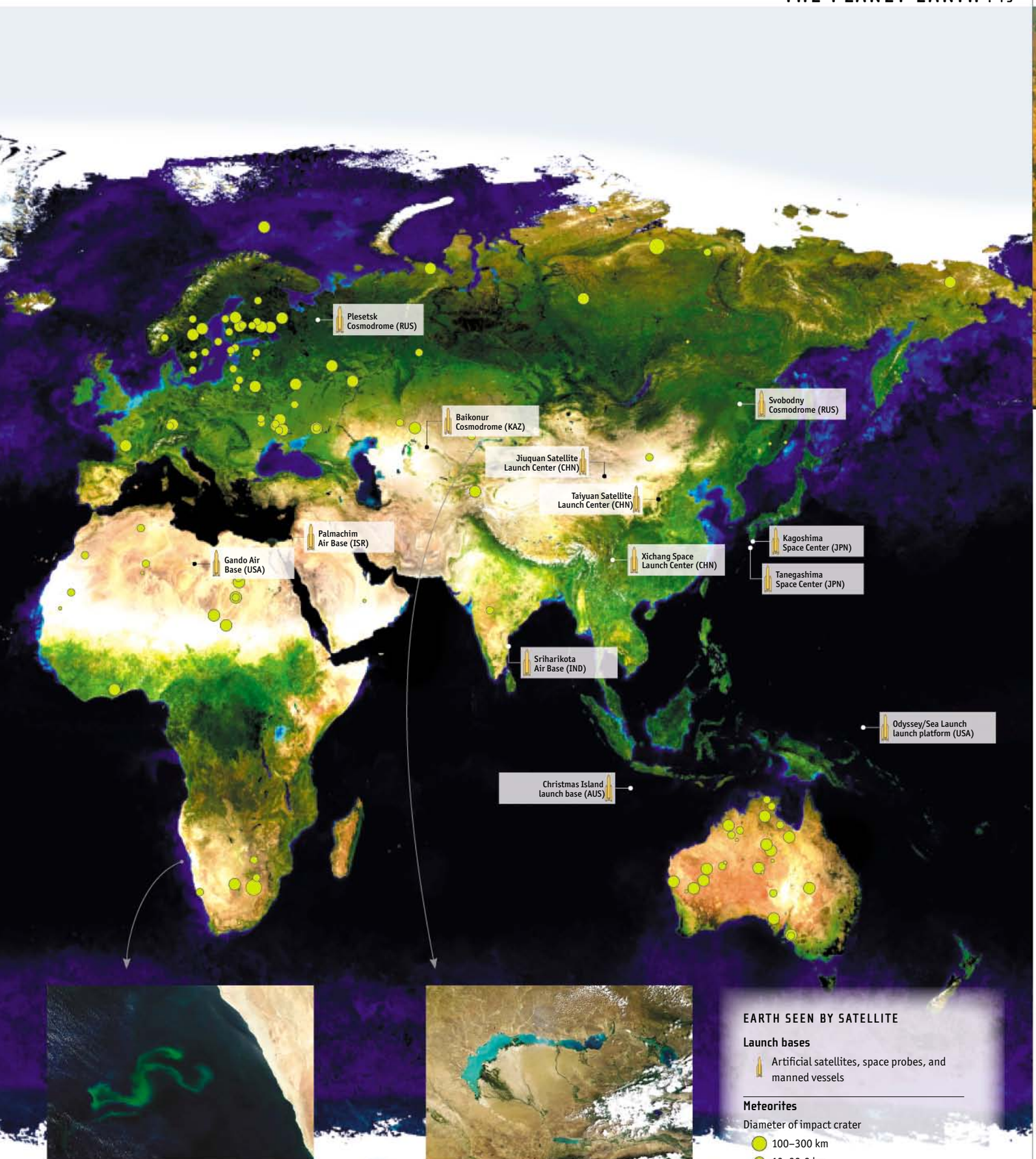
The Moon is Earth's only natural satellite. It makes one revolution around Earth in 28 days and always has the same face turned toward the planet (the visible face). Its diameter is 3,476 km, and its surface is pocked with craters produced by collisions with asteroids. Situated only 384,400 km from Earth, the Moon is the most-studied celestial body after our planet. Since the late 1950s, several dozen space missions, manned and unmanned, have explored it.

THE VISIBLE FACE OF THE MOON
Lunar relief features and landing sites for lunar missions



Lunar mission landing sites
Apollo (manned missions, USA)
Surveyor (USA)
Luna (USSR)
The figure represents the mission number.

Sources: USGS; NASA



Phytoplankton, offshore of Namibia
Artificial satellites allow us to study the development and movement of phytoplankton.

Lake Balkhash, Kazakhstan
The affluents of Lake Balkhash are visible on satellite images.

EARTH SEEN BY SATELLITE

Launch bases

Artificial satellites, space probes, and manned vessels

Meteorites

Diameter of impact crater

- 100–300 km
- 10–99.9 km
- 1–9.9 km
- 0.1–0.9 km

Source: The Earth Impact Database, University of New Brunswick

Composite image built from data recorded by NASA satellites in 2001

THE STRUCTURE OF EARTH

The interior of our planet, with its extreme pressure and temperature conditions, is still a mysterious place. It is where minerals are created and metamorphosed through processes that span millions of years. The immense plates that form Earth's crust float on the surface of a mass of partially liquid rock. As these plates collide with each other, they build mountains and open up oceans.

Plate tectonics

Although it seems to be immobile, the land on which we live moves several centimeters each year. India and Asia, for example, are moving toward each other by 4 to 6 cm every year. This phenomenon, called plate tectonics, results from the fact that the lithosphere, the outer layer of Earth, is fragmented into a dozen huge plates, the tectonic plates, about 100 km thick, that slide over the surface of Earth's mantle. Plate tectonics is responsible for most of the components of Earth's surface, including oceans, created when two plates move apart (divergent plates), and mountain ranges (convergent plates) that come into existence when two plates collide. Sometimes, two plates simply slip against each other along what is called a transform fault. Although the movement of lithospheric plates is slow and continuous, it is nonetheless the cause of the most violent and devastating phenomena on the planet: volcanic eruptions and earthquakes.

San Andreas Fault, California, United States
Frictions along the San Andreas Fault, at the juncture of the Pacific and North American plates, cause frequent earthquakes.

EURASIAN PLATE

PACIFIC PLATE

ARABIAN PLATE

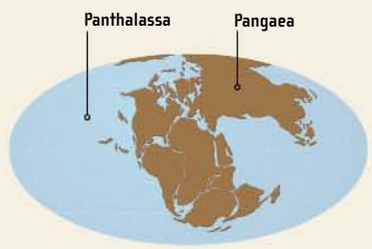
PHILIPPINE SEA PLATE

AFRICAN PLATE

INDIAN-AUSTRALIAN PLATE

CONTINENTAL DRIFT

In the early 20th century, the German geophysicist and climatologist Alfred Wegener noted that the continents looked like they might be able to fit together. He observed, for example, that the contours of the west coast of Africa were an almost perfect match with those of the east coast of South America. He thus formulated the hypothesis, demonstrated in the 1960s, that millions of years ago there was just one huge continent, Pangaea, in a single ocean, Panthalassa. This supercontinent apparently broke up gradually, forming new continents and new oceans that continued to drift on the surface of the globe. The expansion of the sea floor and plate tectonics are responsible for the mechanism of continental drift. The plates carrying continents are moving toward or away from each other at speeds varying from 1 to 18 cm per year.



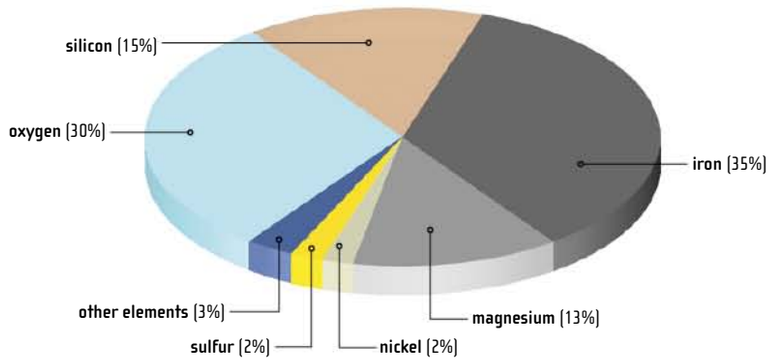
EARTH 250 MILLION YEARS AGO

EARTH TODAY

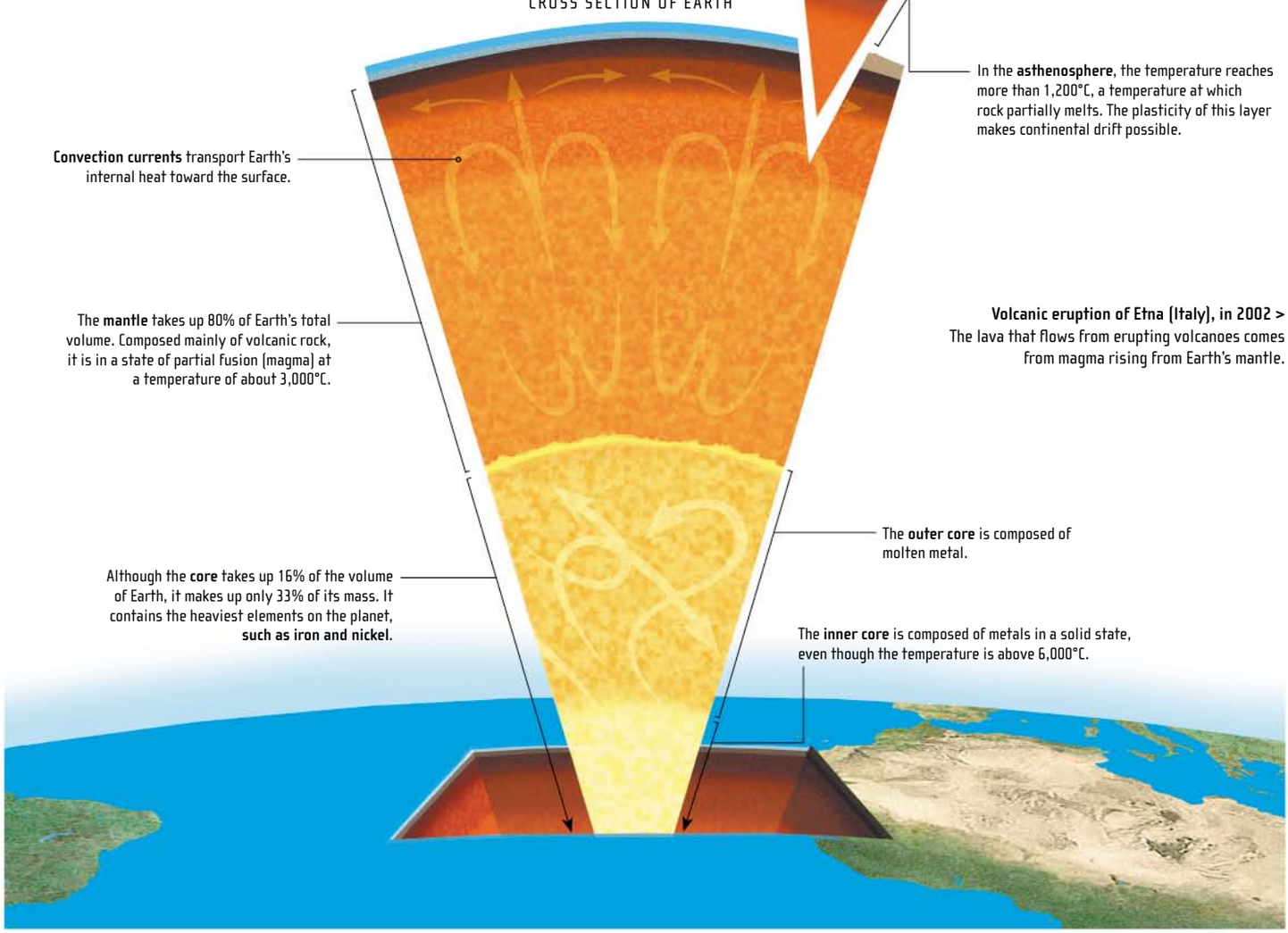
The interior of Earth

It is impossible to have a completely clear picture of Earth's internal structure. However, study of the transformations of the planet's surface and analysis of other planets in the Solar System have supplied much information about the interior of Earth. Our planet has a total mass of about 6 trillion tons and is formed of three concentric layers—from densest to lightest, core, mantle, and crust. Each has an individual chemical composition and specific physical properties. Earth's crust, composed of oceanic crust and continental crust, represents barely 3% of the planet's volume.

COMPOSITION OF EARTH



CROSS SECTION OF EARTH



Volcanic eruption of Etna (Italy), in 2002 >
The lava that flows from erupting volcanoes comes from magma rising from Earth's mantle.

CONTINENTAL RELIEF FEATURES

The movements of Earth's crust and the erosive action of the wind and water shape a variety of relief features on Earth's surface, such as mountains, plains, and plateaus. In spite of the diversity of landforms, all continents have a similar structure, with older and more recent parts. The continents rest on a bedrock formed of very old rocks dating from the Precambrian Era (4.6 billion to 570 million years ago). Most major bedrock zones are situated in the center of the continents.

The landforms of continents

Mountains are the most prominent of Earth's relief features. They are characterized by more or less steep slopes, and their altitude depends on their age. Plains are vast flat areas in which shallow valleys are carved out by watercourses. Plateaus are large flat stretches edged by escarpments, sometimes very steep. Rivers carve encased valleys, or sometimes gorges or canyons, into them. Many plateaus are not very high, but some, such as the Tibetan Plateau, may reach more than 3,000 m in altitude.

Glacier National Park, United States
The steep, snowy slopes of the young Rocky Mountains tower over the landscape of western North America.

Altiplano, Chile
The Altiplano region stretches through Chile, Bolivia, and Peru. At more than 3,000 m altitude, it is one of the highest plateaus in the world.

CONTINENTAL RELIEF FEATURES

Summits and depressions

- △ Summit, altitude
- ▼ Depression, altitude

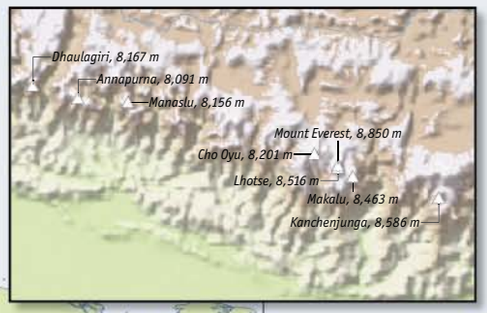
Landforms

MOUNTAIN RANGES
Plateaus
Plains and basins

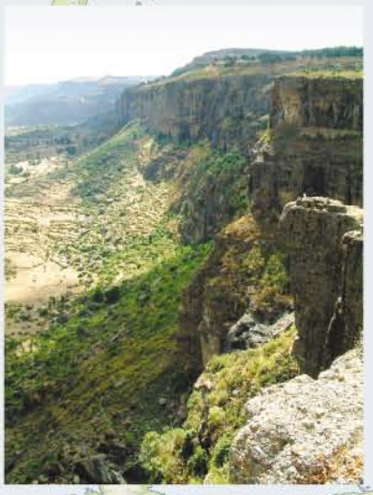
Altitude

- 6,000–8,850 m
- 5,000–5,999 m
- 4,000–4,999 m
- 3,000–3,999 m
- 2,000–2,999 m
- 1,000–1,999 m
- 500–999 m
- 250–499 m
- 1–249 m
- –408–0 m

Sources: NIMA; NASA



Hvannadalshnúkur 2,119 m
Galdhøppigen 2,469 m
SCANDINAVIAN MOUNTAINS
URAL MOUNTAINS
West Siberian Plain
Central Siberian Plateau
VERKHOYANSK MOUNTAINS
CHERSKY RANGE
KOLYMA MOUNTAINS
STANOVOY RANGE
YABLONOVY RANGE
Manchurian Plain
Central Russian Uplands
Volga Uplands
Mount Belukha 4,506 m
ALTAI
Mount Shkhara 5,200 m
Elbrus 5,643 m
CAUCASUS
Caspian Depression
Vpadina Kaundy, -132 m
Pik Pobedy 7,439 m
Vpadina Akchanaya -81 m
TIAN SHAN
Turpan Pendi -154 m
Mount Ararat, 5,137 m
Anatolian Plain
Caspian Sea -28 m
TAURUS MOUNTAINS
ZAGROS MOUNTAINS
ELBRUS
PAMIRS
K2 8,614 m
ALTUN SHAN
Qaidam Basin
HINDU KUSH
KARAKORAM
KUNLUN SHAN
LADAKH
HIMALAYAS
Damavand 5,610 m
Muztag 6,987 m
Minya Konka 7,556 m
Tibetan Plateau
China Plain
Mount Fuji 3,776 m
Sichuan Basin
SULAIMAN RANGE
Zard Kuh 4,548 m
Zarghun 3,578 m
Nanga Parbat 8,126 m
Indus Plain
Ganges Plain
ARAKAN YOMA
South China Plateau
ATLAS
Jebel Toubkal 4,167 m
Chott Melrhir -40 m
Lake Tiberias, -200 m
Dead Sea, -408 m
Sabkhat Ghuzayyil -47 m
Qattara Depression -133 m
Sebkha Tah -55 m
AHAGGAR MASSIF
Djado Plateau
TIBESTI
HIJAZ
ASIR
HADRAMOUT
Agrihan 965 m
Kulul -75 m
Mount Koussi 3,445 m
ENNEDI
Denakil Plain -125 m
DARFUR
Lake Assal, -155 m
Deccan Plateau
WESTERN GHATS
Doda Betta 2,636 m
Khorat plain
ANNAMITIC CORDILLERA
Chuo Yang Sin 2,420 m
Kinabalu 4,101 m
FOUTA DJALLON
Jos Plateau
ETHIOPIAN MASSIF
ADAMAWA MASSIF
Batu, 4,400 m
Mount Cameroon 4,070 m
Mount Stanley 5,109 m
Congo Basin
Mount Kenya, 5,199 m
Kilimanjaro, 5,892 m
East Great Rift Valley
West Great Rift Valley
RUWENZORI MOUNTAINS
Gunung Kerinci 3,805 m
BARISAN RANGE
Bulu Rantekombola 3,478 m
Puncak Jaya 4,884 m
MAOKE MOUNTAINS
Mount Wilhelm 4,509 m
Angola Plateau
Okavango Basin
DRAKENSBERG
Kimberley Plateau
HAMERSLEY RANGE
MOUNT MCDONNELL
CORDILLERA
AUSTRALIA
Mount Zeil 1,531 m
Lake Eyre, -12 m
Nullarbor Plain
FLINDERS RANGES
Mount Kosciusko 2,228 m
Mount Ruapehu 2,797 m
Mount Ossa 1,617 m
Mount Cook 3,764 m
NEW ZEALAND ALPS

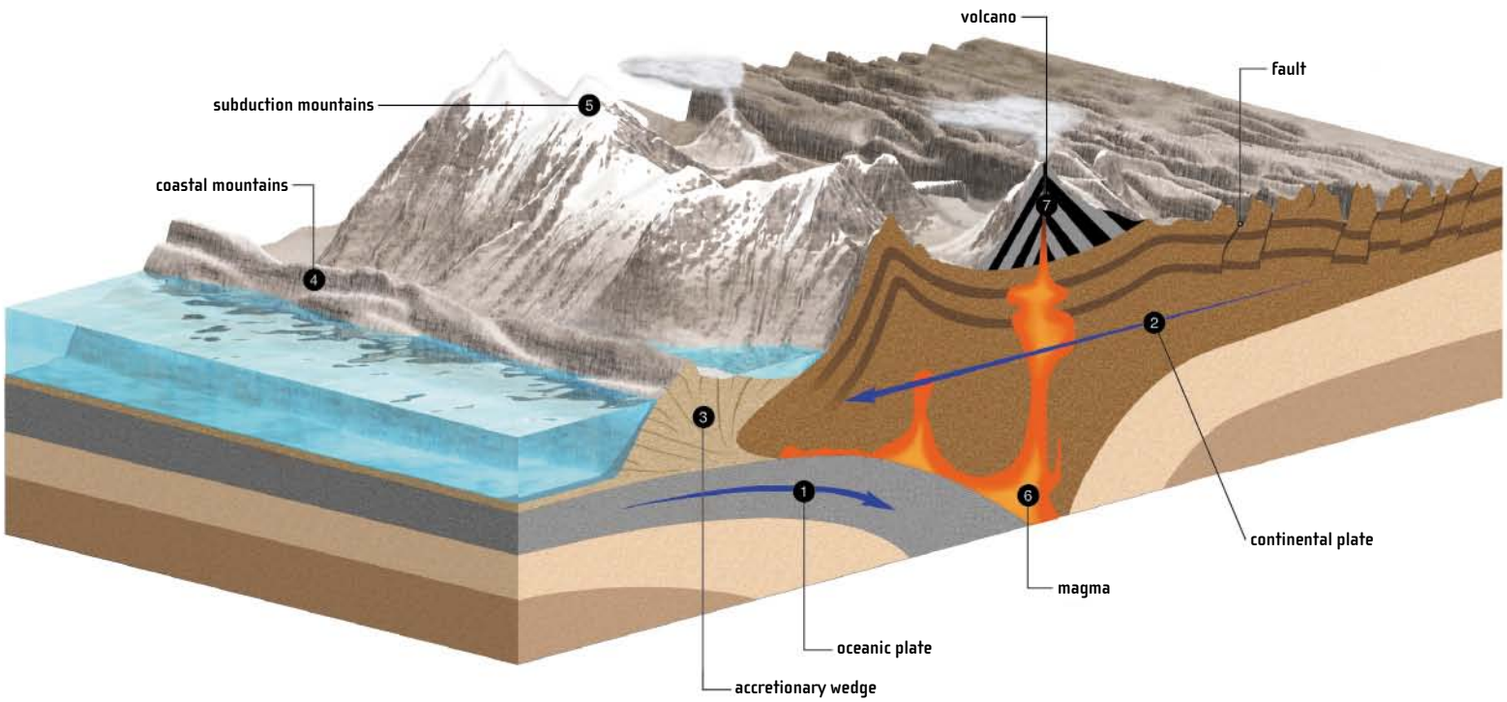


Great Rift Valley, East Africa
The Great Rift Valley is an immense graben. It stretches about 5,500 km through East Africa and is divided into western and eastern sections, in the African Great Lakes region.

Australian Cordillera, Australia
The old mountains of the Australian Cordillera, rounded and gently sloping, are home to the highest peak on the continent, Mount Kosciusko, at an altitude of 2,228 m.

The formation of mountains

The uplift of a landform is the result of a complex process: a single mountain range may be composed of fragments of oceanic crust, volcanic rock, and metamorphic rock (transformed by high pressure and temperatures). These different types of rock are generally arranged in strata that have been folded, upturned, or even dislocated along faults. With the discovery of the existence of lithospheric plates came great progress in the comprehension of orogenesis (the process of mountain formation). In fact, the movement of oceanic and continental plates is responsible for the formation of most mountains. Subduction mountains, such as the Andes, are created when an oceanic and a continental plate come together, while collision mountains, such as the Himalayas, are the result of an impact between two continental plates.



BETWEEN OCEAN AND CONTINENT

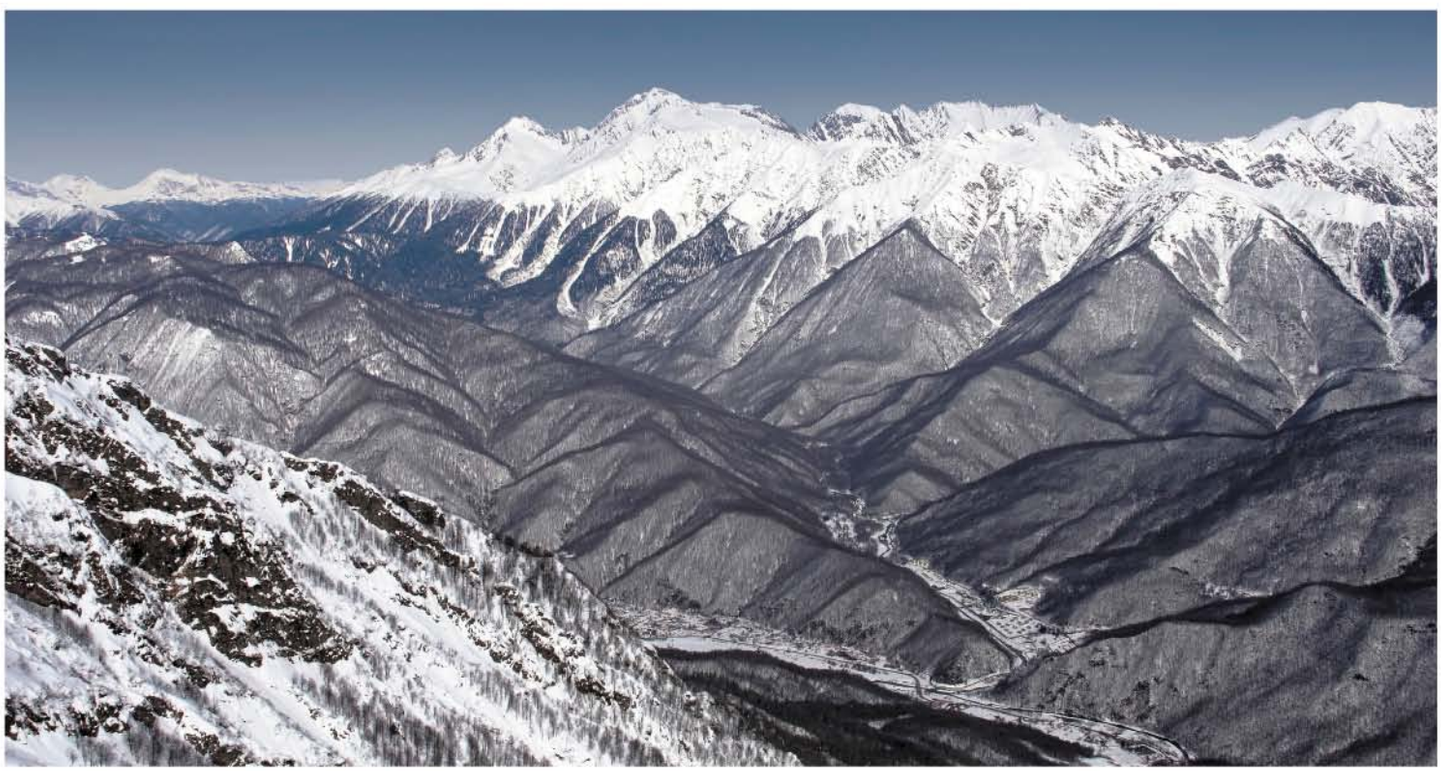
When an oceanic plate ❶ collides with a continent, it slides under the continental plate ❷. Oceanic sediments scraped away by this contact accumulate in what is called an accretionary wedge ❸. As the oceanic plate sinks, the volume of the accretionary wedge increases, to the point that it sometimes rises above sea level and forms coastal mountains ❹.

Subjected to considerable forces, the continental plate folds and deforms, giving rise to a subduction mountain range ❺. When the oceanic plate reaches the mantle, the rocks that form it melt and are transformed into magma ❻. These molten rocks sometimes rise to the surface again, where they are expelled by volcanoes ❼.

YOUNG MOUNTAINS AND OLD MOUNTAINS

The shape of a mountain depends, in large part, on its age. Formed by recent tectonic shocks, the youngest mountain ranges on the planet (Alps, Himalayas, Rockies, Andes, Caucasus) are very jagged, with steep slopes and pointed summits. Most of them have not finished rising, since the slow movements of lithospheric plates continue to reshape the landforms. The Alps, for example, result from an enormous uplift that took place about 50 million years ago, when the Eurasian Plate collided with the African Plate. The oldest mountains (Urals, Appalachians, Australian Cordillera, Drakensberg) look less rugged: they have been smoothed out by erosion, which scrapes material from the slopes and deposits it in the hollows. The Appalachians, created more than 300 million years ago, are among the oldest mountains in the world.

THE HIGHEST SUMMITS IN THE WORLD			
SUMMIT	ALTITUDE	MOUNTAIN RANGE	FIRST ASCENT
North America			
Mount McKinley	6,194 m	Rockies	1913
Mount Logan	5,956 m	Rockies	1925
Orizaba	5,700 m	Sierra Madre	1848
South America			
Aconcagua	6,962 m	Andes Cordillera	1897
Ojos del Salado	6,893 m	Andes Cordillera	1937
Europe			
Mount Elbrus	5,643 m	Caucasus	1874
Mont Blanc	4,807 m	Alps	1786
Africa			
Kilimanjaro	5,892 m	isolated volcano	1889
Mount Kenya	5,199 m	isolated volcano	1899
Asia			
Mount Everest	8,850 m	Himalayas	1953
K2	8,614 m	Karakoram	1954
Kangchenjunga	8,586 m	Himalayas	1955
Makalu	8,463 m	Himalayas	1955
Cho Oyu	8,201 m	Himalayas	1954
Dhaulagiri	8,167 m	Himalayas	1960
Manaslu	8,156 m	Himalayas	1956
Nanga Parbat	8,126 m	Punjab	1953
Annapurna	8,091 m	Himalayas	1950
Antarctica			
Mount Vinson	4,892 m	Ellsworth	1966



Caucasus Mountains, Russia
The Caucasus Mountains extend to the southern border of European Russia, between the Black Sea, to the west, and the Caspian Sea, to the east. They are the highest in Europe, with Mount Elbrus culminating at 5,643 m.

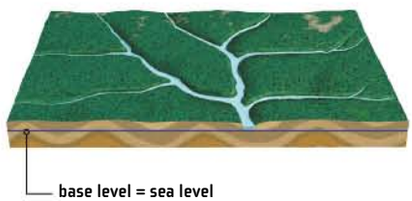
The erosion cycle

Erosion, a process of abrasion, transformation, and degradation, is a cycle that begins with the gradual ablation of surface material and continues with the transportation of loose particles to where they accumulate in the form of sediment. Water and wind are the main agents of erosion: through chemical or mechanical procedures, they profoundly alter the landscape. The erosion cycle occurs at different paces, but all are very slow on the human scale: a fissure in a block of granite usually widens by only a few millimeters over a thousand years. Mountainous massifs, semiarid regions, and areas where the surface of the land has been modified by human activity (clear-cutting, construction of roads and cities, etc.) erode most rapidly. The slowest erosion is associated with lowlands where the materials are very hard, such as the Canadian Shield.

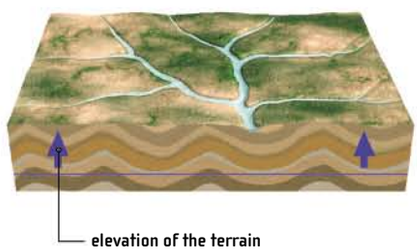
THE EVOLUTION OF A LANDSCAPE

Fluvial landscapes are transformed by erosion caused by watercourses. When the landscape is very uneven, with high peaks and steep slopes, erosion is very rapid. Watercourses carve out deep V-shaped valleys and sweep away much rocky debris.

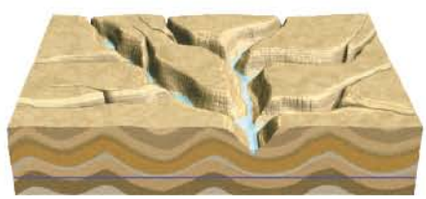
As erosion continues, the relief features flatten out: the summits become rounded and the slopes become gentler. The watercourses transport less debris and flow more slowly.



After several million years of erosion, the landscape becomes a peneplain: there are few relief features and they barely rise above the base level. The erosion process slows.



Geological phenomena may cause a sudden elevation of the terrain. In this case, the peneplain is raised high above the base level.



Erosion may then begin again: watercourses once again carve out deep valleys.

Goblin Valley, United States >
These rocky mushroom-shaped columns 2 to 3 m high, also called hoodoos, rise by the hundreds in Goblin Valley. They were shaped by erosion, mainly by the wind.

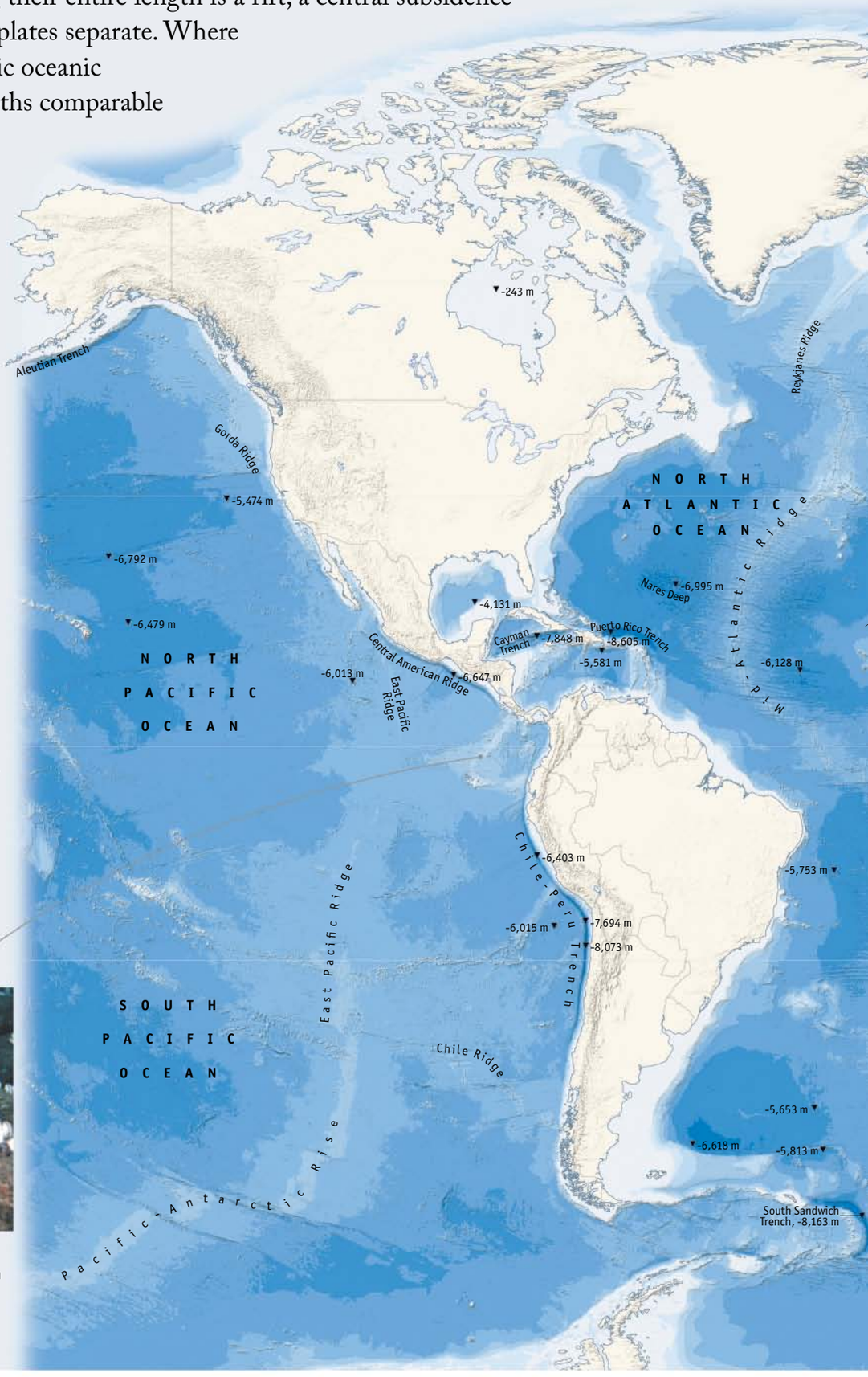
LANDFORMS ON THE OCEAN FLOOR

Landforms on the ocean floor are as diverse as continental landforms. Under the surface of the ocean, mountains, plains, plateaus, volcanoes, trenches, and canyons form stunning landscapes and many of these formations are much larger than are those on land. For instance, vast abyssal plains are crossed by immense mountain ranges, called oceanic ridges, that stretch almost 70,000 kilometers in length. These underwater mountain ranges are between 1,000 and 3,000 meters high, and running their entire length is a rift, a central subsidence plain that forms as the oceanic plates separate. Where lithospheric plates meet, gigantic oceanic depressions, trenches, reach depths comparable to the altitude of the highest continental peaks. The deepest point is 11,034 meters, in the Mariana Trench in the North Pacific Ocean.

The oceanic crust

While the rocks that make up the continents may be 3.8 billion years old, the rocks that make up the ocean floor are never older than 200 million years old. New oceanic crust is constantly being formed by volcanic activity that takes place in the oceanic ridges. With a thickness of about 10 km, the oceanic crust is also much thinner than the continental crust, which is from 20 to 70 km thick.

Pillow lava
Magma situated under the oceanic ridge forms pillow lava when it comes into contact with relatively cold seawater.

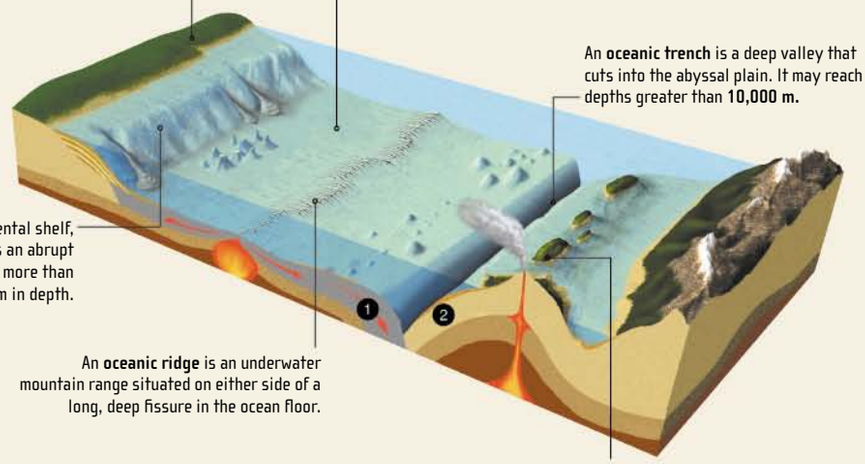


THE OCEAN FLOOR

The **continental shelf** is the part of the continent that extends from 1 to 1,000 km in a gentle slope under the ocean.

Most of the ocean floor is occupied by vast **abyssal plains** that begin at the foot of the continental slope and are at a depth of between 3,000 and 6,000 m.

An **oceanic trench** is a deep valley that cuts into the abyssal plain. It may reach depths greater than **10,000 m.**



At the end of the continental shelf, the **continental slope** is an abrupt drop-off in altitude to more than 3,000 m in depth.

An **oceanic ridge** is an underwater mountain range situated on either side of a long, deep fissure in the ocean floor.

An **island arc** is a string of volcanic islands formed following the subduction of an oceanic lithospheric plate ❶ under another oceanic plate ❷.

Eurasian Basin
-5,254 m
ARCTIC OCEAN
Molloy Hole
-5,669 m
-3,931 m
-694 m
-3,151 m
-5,737 m
-2,954 m
-2,962 m
-3,741 m
-5,317 m
-4,570 m
-2,276 m
Cape Verde Basin
-2,837 m
-5,626 m
-4,119 m
-1,714 m
-7,743 m
-5,862 m
-5,707 m
100 m
-7,586 m
-8,930 m
Java Trench
-7,125 m
INDIAN OCEAN
Bengal Ridge
Wharton Basin
-7,334 m
-6,614 m
-4,091 m
-6,269 m
-6,714 m
-6,973 m
Mid-Atlantic Ridge
SOUTH ATLANTIC OCEAN
Cape Agulhas
-6,180 m
-6,683 m
Southwest Indian Ridge
-7,457 m
-7,773 m
Aleutian Trench
Kuril Trench
-9,533 m
-7,724 m
-7,743 m
NORTH PACIFIC OCEAN
Japan Trench
-6,533 m
-9,780 m
-7,519 m
Ryukyu Ridge
-6,579 m
-8,767 m
-5,016 m
Philippine Trench
Mariana Trench
-11,034 m
-6,912 m
-10,164 m
Yap Trench
-6,035 m
-7,205 m
Vitya Trench
-9,000 m
New Hebrides Trench
Tonga Trench
-10,719 m
-7,374 m
-9,779 m
Kermadec Trench

UNDERWATER LANDFORMS

Depth of seas and oceans

- 6,000–11,034 m
- 5,000–5,999 m
- 4,000–4,999 m
- 3,000–3,999 m
- 2,000–2,999 m
- 1,000–1,999 m
- 500–999 m
- 0–499 m

Source: Scripps Institution of Oceanography, UCSD

Deepest zones

▼ Depth

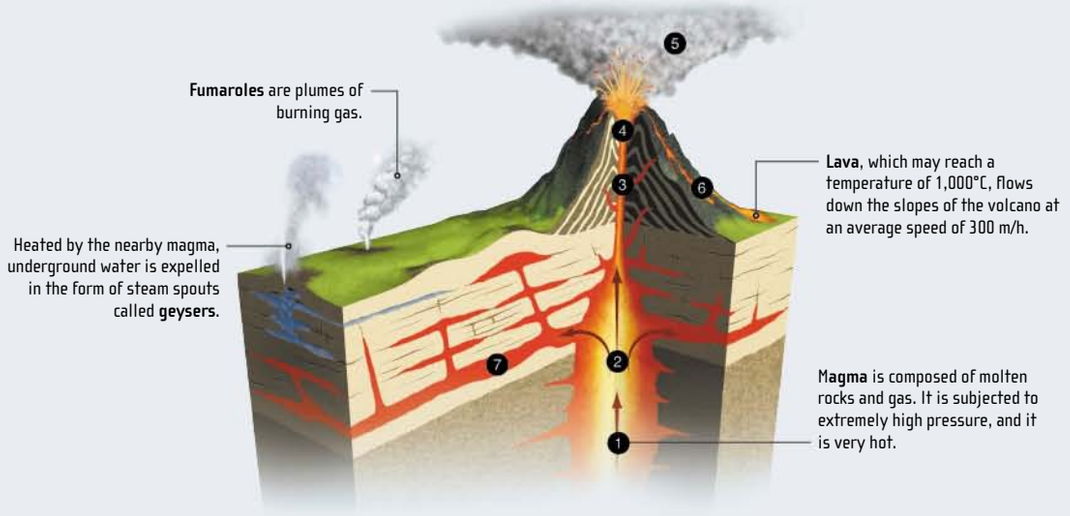
Source: Scripps Institution of Oceanography, UCSD

Volcanoes may erupt at various locations all over the world, especially at the borders between lithospheric plates. Violent and spectacular, volcanic eruptions occur when molten rock, called magma, rises from Earth's mantle. As it rises, the magma releases gases, and the pressure increases to the point that Earth's crust gives way—and there is a volcanic eruption. About 50 eruptions take place on continents every year; the number of underwater eruptions has not been counted. It is possible to observe volcanic eruptions from close up, since volcanoes do not form haphazardly on Earth's surface. Rather, they are situated in zones where Earth's crust is fractured or above hot spots, where magma has pierced the crust.

Unzen Volcano, Japan
Despite an order to evacuate the valley, there were 43 deaths when Unzen Volcano erupted in 1991.

How volcanoes work

Hot, light magma ❶ from Earth's mantle rises toward the surface from the magma chamber ❷ in which it had accumulated. Over time, the buildup of material pushes the magma into the pipe ❸ and brings it to the surface, where it overflows the crater ❹ in the form of lava. The eruption plume is composed of cinders ❺, lava ❻, and rock debris, which are ejected above the crater. The magma that does not reach the surface sometimes penetrates a layer of rock of a different type and solidifies ❼; this phenomenon is called intrusion.



Fumaroles are plumes of burning gas.

Heated by the nearby magma, underground water is expelled in the form of steam spouts called **geysers**.

Lava, which may reach a temperature of 1,000°C, flows down the slopes of the volcano at an average speed of 300 m/h.

Magma is composed of molten rocks and gas. It is subjected to extremely high pressure, and it is very hot.

VOLCANISM

Volcanic eruptions

- Eruptions after 1965 causing more than 10 deaths (named on the map)
- Eruptions that took place between the beginning of the Common Era and today
- Eruptions that took place between 8000 BCE and the beginning of the Common Era

Sources: Smithsonian Institution, Global Volcanism Program; Em-dat

Number of victims per country
(dead, injured, and displaced)

- ≥ 1,000,000
- 100,000–999,999
- 10,000–99,999
- 1,000–9,999
- < 1,000
- no victims

Source: Em-dat

Edges of lithospheric plates

- The Pacific Ring of Fire

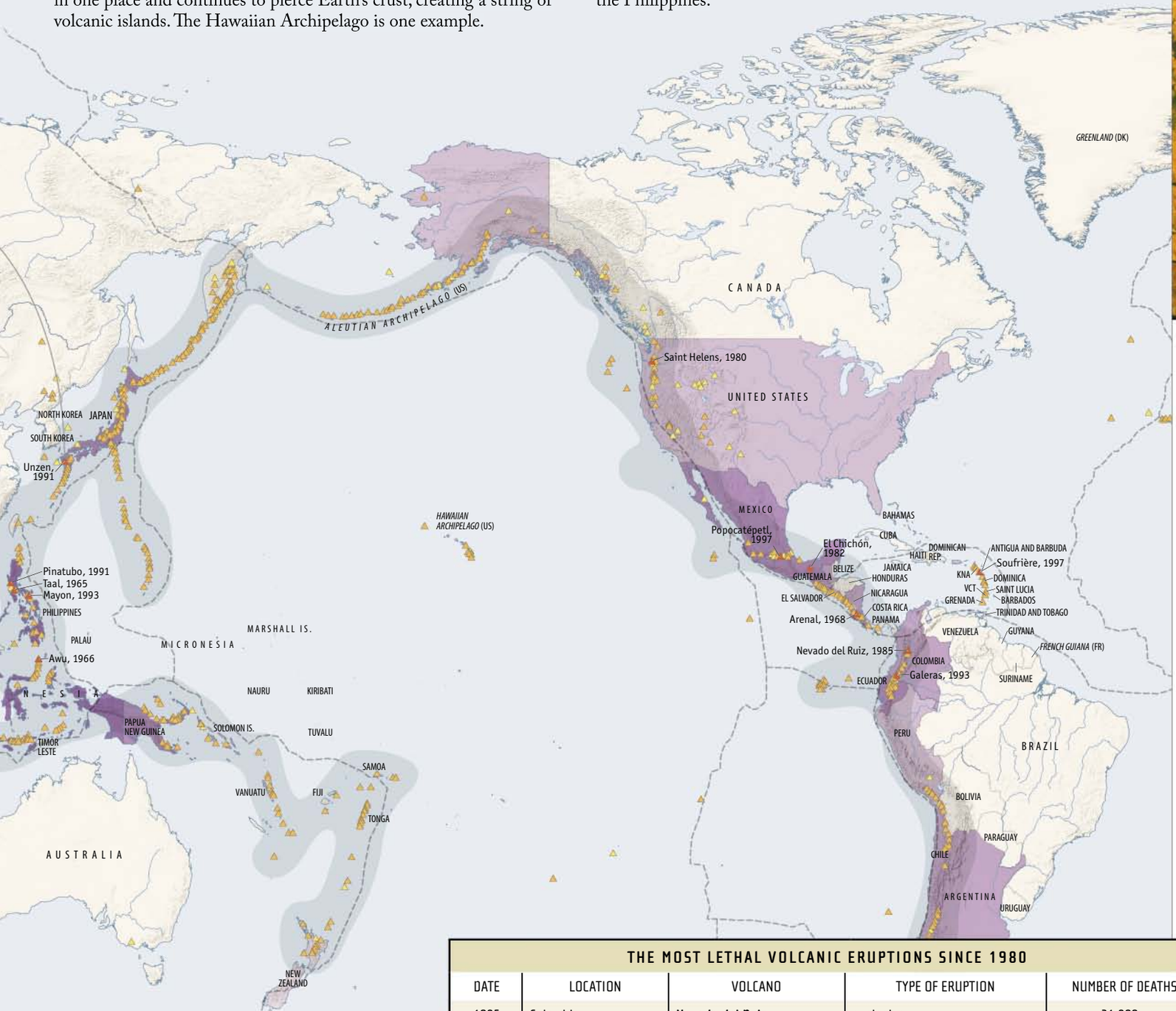
Sources: USGS; ESRI

HOT SPOTS

Hot spots occur in the middle of oceanic or continental plates and not at the edges between plates. Pockets of magma rise from Earth's lower mantle toward the surface and pierce the lithospheric plate. While the lithospheric plate continues to move, the hot spot, still active, remains in one place and continues to pierce Earth's crust, creating a string of volcanic islands. The Hawaiian Archipelago is one example.

THE PACIFIC RING OF FIRE

Usually, volcanoes emerge along the edges of lithospheric plates, forming an island chain. One of the best known is the Pacific Ring of Fire, which contains many of the world's volcanoes. The Ring of Fire includes the volcanic archipelagos of the Aleutian Islands, Japan, and the Philippines.



VOLCANIC ERUPTIONS

There are two main types of volcanic eruptions: effusive and explosive. Effusive eruptions involve flows of very fluid lava and free gas emissions from volcanoes that usually have gentle slopes. Explosive eruptions are more formidable and usually involve volcanoes with steep slopes. Very thick, viscous lava blocks the escape of gases in the magma chamber, so that the pressure increases inside the volcano to the point that it causes explosions accompanied by expulsions of rock, lava, and cinders over hundreds of kilometers.

THE MOST LETHAL VOLCANIC ERUPTIONS SINCE 1980

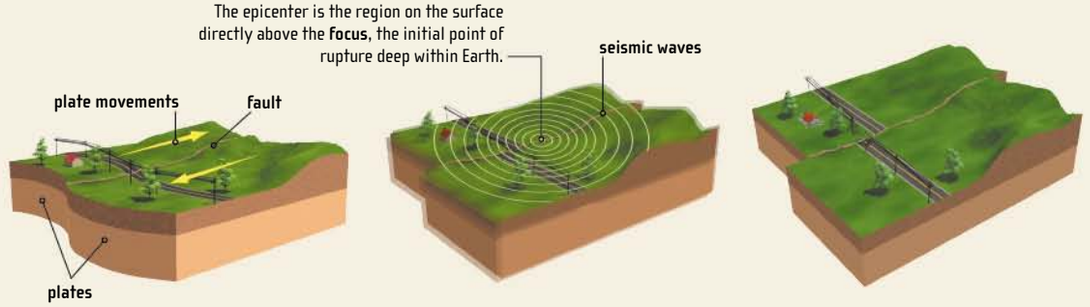
DATE	LOCATION	VOLCANO	TYPE OF ERUPTION	NUMBER OF DEATHS
1985	Colombia	**Nevado del Ruiz**	explosive	21,800
1986	Cameroon	**Lake Nyos (volcanic)**	emission of carbon dioxide	1,746
1991	Philippines	**Pinatubo**	explosive	640
2002	Dem. Rep. of the Congo	**Nyiragongo**	effusive	200
1981	Java (Indonesia)	**Semeru**	explosive	192
1982	Mexico	**El Chichón**	explosive	100
1980	United States	**Saint Helens**	explosive	90
1993	Philippines	**Mayon**	explosive	79
1994	Java (Indonesia)	**Merapi**	explosive	58
1991	Japan	**Unzen**	explosive	43
1984	Cameroon	**Lake Monoun (volcanic)**	emission of carbon dioxide	37
1990	Java (Indonesia)	**Kelut**	explosive	33
1997	Montserrat	**Soufrière**	explosive	32

Earthquakes, also known as seisms, are produced when there is a sudden tremor on the surface of Earth due to a discharge of energy issuing from the depths of the planet. The movement of lithospheric plates and the enormous tensions that accumulate at their meeting points are directly responsible for seismic activity. Earthquakes therefore take place mainly along faults in Earth's crust, at the edges of the plates. There are almost 1 million tremors around the planet each year, but only just over 5% of them are felt. When they occur in urban areas, earthquakes cause disasters, sometimes killing thousands of people. Almost 830,000 people died during the most lethal earthquake in history, which shook northern China in 1556.

The Richter scale

Invented by the American geophysicist Charles Francis Richter, the Richter scale measures the magnitude of an earthquake—that is, the amount of energy that it releases. Each whole number on the scale corresponds to an intensity 32 times higher than the preceding number. Thus, a magnitude 6 earthquake is 32 times more powerful than a magnitude 5 earthquake. Earthquakes of a magnitude above 4 are felt by most people; those with a magnitude above 5 cause damage. Earthquakes of a magnitude above 8 cause total destruction of inhabited zones. They are rare, occurring fewer than four times a year.

THE MECHANISM OF EARTHQUAKES



1. As lithospheric plates move, they compress and expand the rock, subjecting it to considerable tension and friction. At this stage, nothing moves. The edges of the plates remain immobile against each other while the tension increases.
2. When the tension becomes too great, an immense quantity of energy is suddenly released in the form of seismic waves that propagate to the surface, producing a series of tremors of Earth's crust.
3. Usually, the earthquake is strongest and the damage is greatest at the epicenter. After the earthquake, the affected region undergoes a morphological alteration, since the two plates, still side by side, are slightly displaced.

EARTHQUAKES

Magnitude of earthquakes occurring since 1900
Earthquakes that caused more than 10,000 deaths are named.

- 9–9.5
- 8–8.9
- 7–7.9
- 6–6.9
- 5–5.9
- 4–4.9

Source: Em-dat

Edges of lithospheric plates

Sources: USGS; ESRI

Earthquake in Kobe, Japan
An earthquake with a magnitude of 6.9 on the Richter scale caused more than 5,000 deaths in the Kobe region of Japan in January 1995.

Izmit, 1999
Spitak, 1988
Erzincan, 1939
Qazvin, 1962
Gilan Province, 1990
Ashgabat, 1948
Tien Shan, 1907
Khorosan Province, 1968
Tabas, 1978
Quetta, 1935
Bam, 2003
Avezzano, 1915
Messina, 1908
Muzaffarabad, 2005
Agadir, 1960
Gansu Province, 1932
Kangra District, 1905
Qinghai Province, 1927
Anshan, 1975
Tangshan, 1976
Kanto Plain, 1923
Sichuan Province, 1933
Sichuan Province, 2008
Sichuan Province, 1974
Guangdong Province, 1918
Tonghai, 1970
Gujarat, 2001
Sumatra, 2004

Number of earthquake victims by country since 1900
(dead, injured, and displaced)

- ≥ 10,000,000
- 1, 000,000–9,999,999
- 100,000–999,999
- 10,000–99,999
- 1,000–9,999
- < 1,000
- Borders of country groups (ex-USSR and ex-Yugoslavia)

Source: Em-dat

THE MOST LETHAL EARTHQUAKES SINCE 1900

DATE	REGION AFFECTED	MAGNITUDE	NUMBER OF DEAD
December 26, 2004	**Sumatra (Indonesia)**	9.0	283,106 (earthquake and tsunami)
July 27, 1976	**Tangshan (China)**	7.5	at least 255,000
May 22, 1927	**Qinghai (China)**	8.3	200,000
December 16, 1920	**Gansu (China)**	7.8	200,000
September 1, 1923	**Kanto (Japan)**	7.9	143,000
October 5, 1948	**Ashgabat (Turkmenistan)**	7.3	110,000
December 28, 1908	**Messina (Italy)**	7.2	85,000 (earthquake and tsunami)
October 8, 2005	**Northern Pakistan**	7.6	80,360
May 12, 2008	**Sichuan (China)**	7.9	at least 80,000
December 25, 1932	**Gansu (China)**	7.6	70,000
May 31, 1970	**Peru**	7.9	66,000
June 20, 1990	**Western Iran**	7.7	45,000
May 30, 1935	**Quetta (Pakistan)**	7.5	45,000

EARTH: A BLUE PLANET

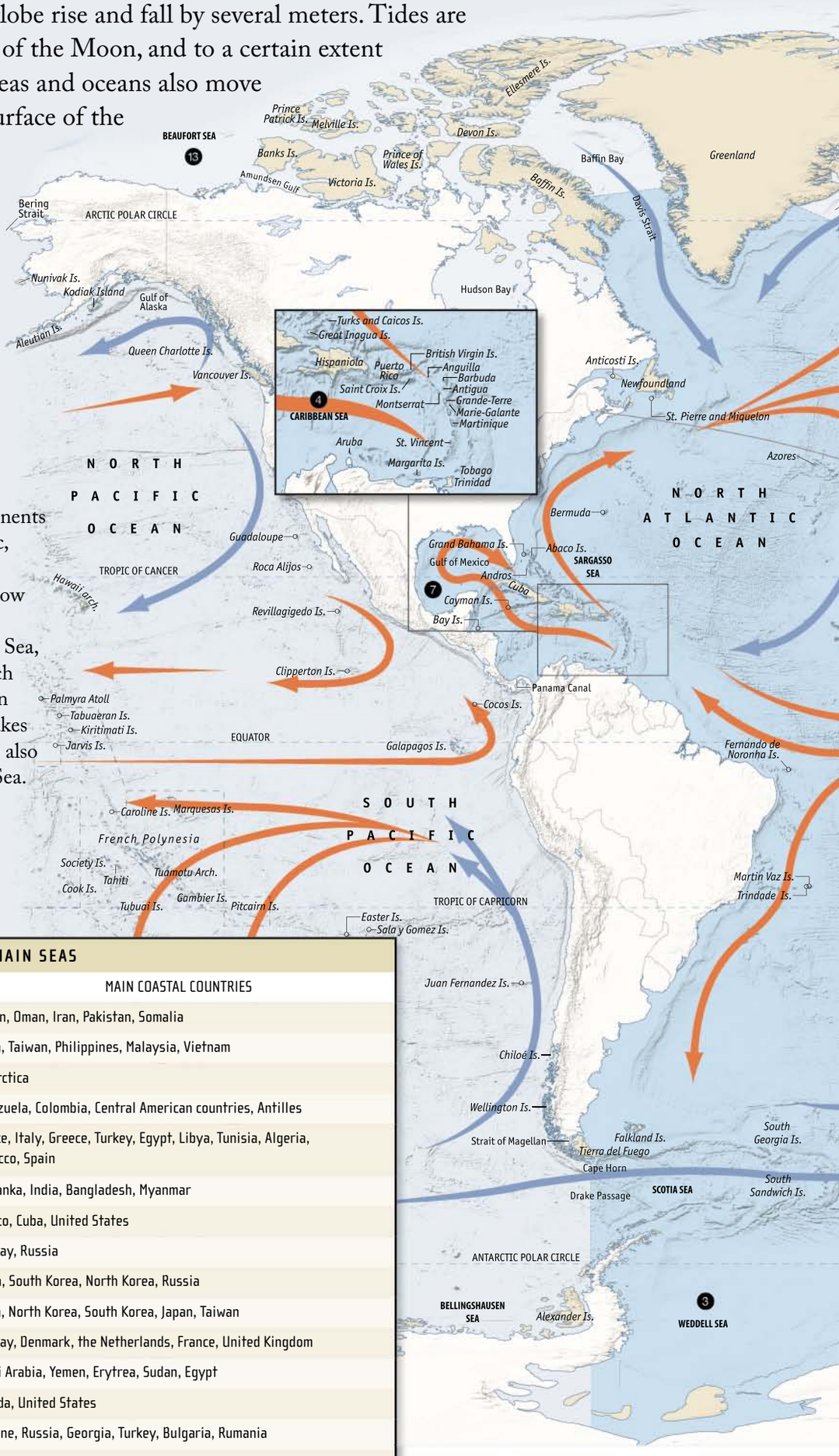
Almost three-quarters of Earth's surface is covered with water. The abundance of liquid water, which distinguishes Earth from all other planets in the Solar System, has earned it the nickname "blue planet." The four oceans and dozens of seas that form the world ocean contain salt water, while the planet's glaciers and ice caps contain freshwater. Freshwater constantly circulates through the huge reservoirs that are the oceans and seas, inland waters, the atmosphere, and the biosphere. However, access to it is very uneven from one region to another.

TOP: Falkland Islands, in the South Atlantic Ocean
LEFT: Iceberg, off Antarctica

Only 30% of Earth's surface is exposed land. The rest is covered by a huge body of salt water with a volume of more than 1 billion cubic kilometers: the world ocean. Twice a day, the oceans of the globe rise and fall by several meters. Tides are caused by the gravitational pull of the Moon, and to a certain extent of the Sun, on our planet. The seas and oceans also move in waves—undulations of the surface of the water generated by the wind. Ocean currents, on the other hand, are movements of huge masses of ocean water along very precise routes.

Vast stretches of salt water

The world ocean is divided by the continents into four main regions (Pacific, Atlantic, Indian, and Arctic) and many smaller basins, the seas, most of which are shallow and set back from the oceans. While marginal seas, such as the South China Sea, open out to an ocean, enclosed seas, such as the Mediterranean, are attached to an ocean by a narrow passage. Some salt lakes that have no contact with the ocean are also called seas; an example is the Caspian Sea.



THE MAIN SEAS

SEA	AREA	MAIN COASTAL COUNTRIES
❶ Arabian Sea	3,600,000 km²	Yemen, Oman, Iran, Pakistan, Somalia
❷ South China Sea	3,500,000 km²	China, Taiwan, Philippines, Malaysia, Vietnam
❸ Weddell Sea	2,800,000 km²	Antarctica
❹ Caribbean Sea	2,600,000 km²	Venezuela, Colombia, Central American countries, Antilles
❺ Mediterranean Sea	2,510,000 km²	France, Italy, Greece, Turkey, Egypt, Libya, Tunisia, Algeria, Morocco, Spain
❻ Bay of Bengal	2,170,000 km²	Sri Lanka, India, Bangladesh, Myanmar
❼ Gulf of Mexico	1,540,000 km²	Mexico, Cuba, United States
❽ Barents Sea	1,405,000 km²	Norway, Russia
❾ Sea of Japan	970,000 km²	Japan, South Korea, North Korea, Russia
❿ East China Sea	770,000 km²	China, North Korea, South Korea, Japan, Taiwan
⓫ North Sea	570,000 km²	Norway, Denmark, the Netherlands, France, United Kingdom
⓬ Red Sea	450,000 km²	Saudi Arabia, Yemen, Erytrea, Sudan, Egypt
⓭ Beaufort Sea	450,000 km²	Canada, United States
⓮ Black Sea	420,000 km²	Ukraine, Russia, Georgia, Turkey, Bulgaria, Rumania
⓯ Persian Gulf	233,000 km²	Iraq, Iran, United Arab Emirates, Saudi Arabia, Kuwait

THE OCEANS

OCEAN	AREA	VOLUME	LENGTH OF COAST	DEEPEST POINT
Pacific	165,000,000 km^2	707,000,000 km^3	135,663 km	11,034 m (Mariana Trench)
Atlantic	82,400,000 km^2	323,600,000 km^3	111,866 km	8,605 m (Puerto Rico Trench)
Indian	73,400,000 km^2	292,000,000 km^3	66,526 km	7,125 m (Java Trench)
Arctic	14,000,000 km^2	16,700,000 km^3	45,389 km	5,669 m (Molloy Hole)

ARCTIC OCEAN
GREENLAND SEA
Svalbard
Severnaya Zemlya
BARENTS SEA
Novaya Zemlya
KARA SEA
LAPTEV SEA
New Siberia Is.
EAST SIBERIAN SEA
Wrangel Is.
CHUKCHI SEA
North Cape
Jan Mayen
Denmark Strait
NORWEGIAN SEA
Iceland
WHITE SEA
Gulf of Bothnia
Faroe Is.
Shetland Is.
NORTH SEA
BALTIC SEA
Great Britain
Ireland
St. Lawrence Is.
BERING SEA
SEA OF OKHOTSK
Kamchatka
Komandor Is.
Sakhalin
Hokkaido
ADRIATIC SEA
Corsé
Sardaigne
BLACK SEA
CASPIAN SEA
AEGEAN SEA
MEDITERRANEAN SEA
Sicily
Crete
SEA OF JAPAN
Honshu
NORTH PACIFIC OCEAN
YELLOW SEA
EAST CHINA SEA
Shikoku
Kyushu
Madeira
Canary Is.
Suez Canal
Persian Gulf
Gulf of Oman
Ryukyu Is.
Ogasawara Gunto
Midway Is.
Marcus Is.
Taiwan
RED SEA
ARABIAN SEA
PHILIPPINE SEA
Wake Is.
Khuriya Muriya Is.
Bay of Bengal
SOUTH CHINA SEA
Luzon
Johnston Atoll
Gulf of Aden
Socotra
Lakshadweep
Andaman Is.
Guam
Sri Lanka
Nicobar Is.
Mindanao
Caroline Is. arch.
Senyavin Is.
Chuuk Is.
Bioko
CELEBES SEA
Admiralty Is.
Howland Is.
Mentawai Is.
Sumatra
Borneo
BISMARCK SEA
New Ireland
Gilbert Is.
Sulawesi
Bougainville Is.
Baker Is.
Choiseul
Phoenix Is.
JAVA SEA
FLORES SEA
BANDA SEA
New Britain
Santa Isabel Is.
Gardner Is.
Java
New Guinea
Malaita
Zanzibar
ARAFURA SEA
Tokelau
Ascension Is.
Farquhar Is.
Agalega Is.
Mayotte
Christmas Is.
Cocos Is.
Saint Croix Is.
Guadalcanal
TIMOR SEA
Wallis Is.
INDIAN OCEAN
Gulf of Carpentaria
Futuna Is.
Vanua Levu
Viti Levu
American Samoa
St. Helen's Is.
Cargados Carajos Sh.
Rodrigues Is.
Mozambique Channel
Madagascar
Reunion
New Caledonia
Loyalty Is.
Australia
Kermadec Is.
Norfolk Is.
Cape Agulhas
Great Australian Bight
SOUTH ATLANTIC OCEAN
TASMANIAN SEA
North Is.
Tasmania
Chatham Is.
South Is.
Crozet Is.
Stewart Is.
Prince Edward Is.
Kerguelen Is.
Antipodes Is.
Auckland Is.
Campbell Is.
Heard and McDonald Is.
Macquarie Is.
Bouvet Is.

SEAS AND OCEANS

Ocean currents
- Warm
- Cold

Landmasses
- Continents
- Islands

Sources: ESRI; NIMA

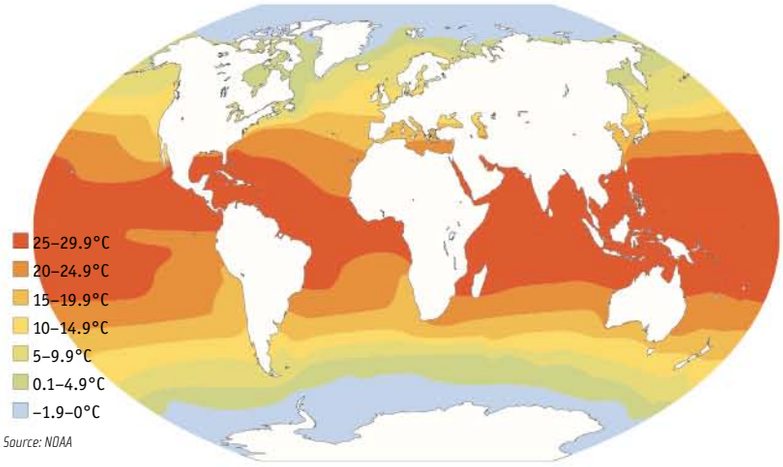
Edges of the archipelagos in the Pacific Ocean

Bay of Fundy, Canada
This bay, about 290 km long, is famous for its very high tides, which may rise by 16 m in just a few hours. This phenomenon is due to the fact that the bay is shallow and funnel-shaped, narrowing as it goes inland.

THE SURFACE TEMPERATURE OF SEAWATER

Water and the atmosphere are constantly exchanging energy in the form of heat. The surface temperature of the seas and oceans thus plays a fundamental role in the regulation of atmospheric processes. Measurement of seawater temperature enables us to follow the evolution of climatic phenomena, such as El Niño, and ocean currents, such as the Gulf Stream, and to predict the formation of cyclones. Seawater temperature also provides information on the development of phytoplankton and shoals of fish. The distribution of surface temperatures is linked to hours of sunlight, which, in turn, depends on the latitude. The temperature of the oceans ranges from 28°C, near the equator, to –2°C, in the high latitudes (north and south), closely following the distribution of solar radiation that reaches the surface of the water.

SURFACE TEMPERATURE OF SEAWATER

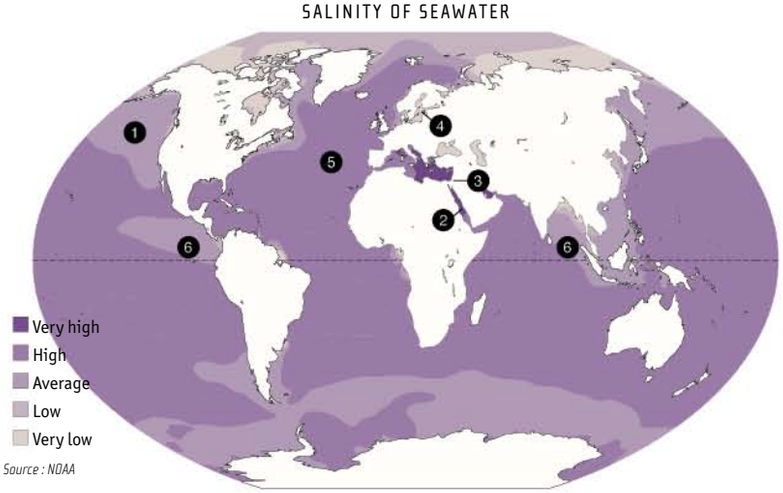


Source: NOAA

THE SALINITY OF SEAWATER

The salinity of seawater is the amount of salt dissolved in the water. On average, seawater contains 35 g of salt per liter. The more enclosed the sea, the higher its salinity. For example, salinity is lower than average in the North Pacific Ocean (32 g/l) ❶, but higher than average in the Red Sea (40 g/l) ❷. The Dead Sea ❸ is the saltiest body of water in the world, with a salinity of 330 g/l, and the Baltic Sea ❹ is one of the least salty, with a salinity of only 8 g/l. The balance between water evaporation from the oceans and precipitation is responsible for differences in salinity. Under subtropical anticyclones such as those in the Azores ❺, evaporation is very high, and so the seawater is saltier. On the other hand, the equatorial region is subjected to strong and frequent rainfall, which results in a lower salinity level in seawater around the equator ❻.

SALINITY OF SEAWATER

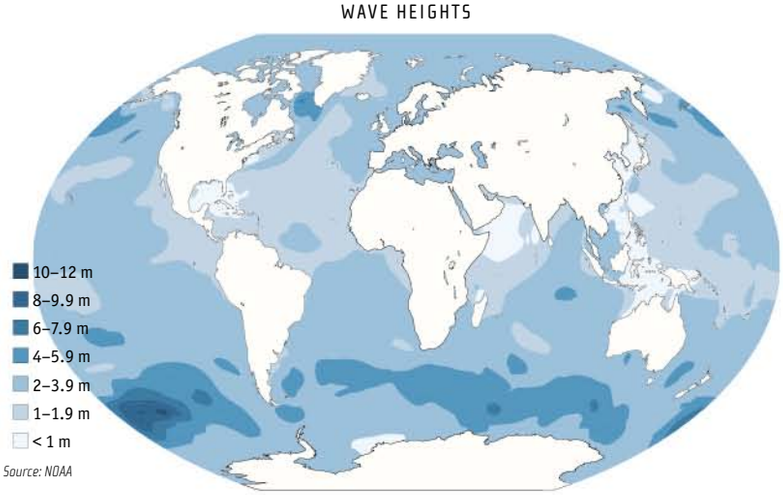


Source : NOAA

WAVE HEIGHTS

Earth observation satellites are used to measure wave heights. Wave-height data are used to study relationships between sea and air and their meteorological and climatic consequences. Wave height is also very useful information for marine transport and offshore drilling. In fact, each wave is a shape produced by undulations created by the wind in the high seas. Near the coasts, the wave's amplitude is determined by the relief features on the ocean floor. The undulation that moves the wave is stopped when it hits the shore.

WAVE HEIGHTS

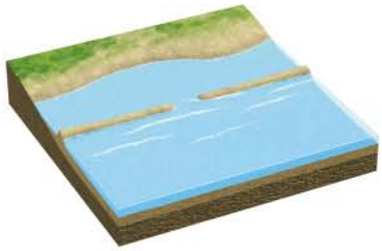


Source: NOAA

Waves unfurling on the beach, Australia >
A wave about to break on the shore momentarily forms a tube (cylinder of air) at its peak.

Littorals

A littoral is a coastal zone between the low-tide line and the high-tide line. This landscape is constantly changing due to the continuous action of the sea, rivers, and wind, and it may take a variety of forms depending on the geological nature of the coast.



A **barrier reef** (or barrier island) is a sandbar parallel to the shore at a distance of between a few and several dozen kilometers. A lagoon forms behind the reef.

Deltas form at the mouths of rivers. They result from the accumulation and deposit of sediments carried by watercourses.

Fjords (fjord means "long arm of the sea" in Norwegian) are valleys that were carved out long ago by glaciers, then invaded by water.

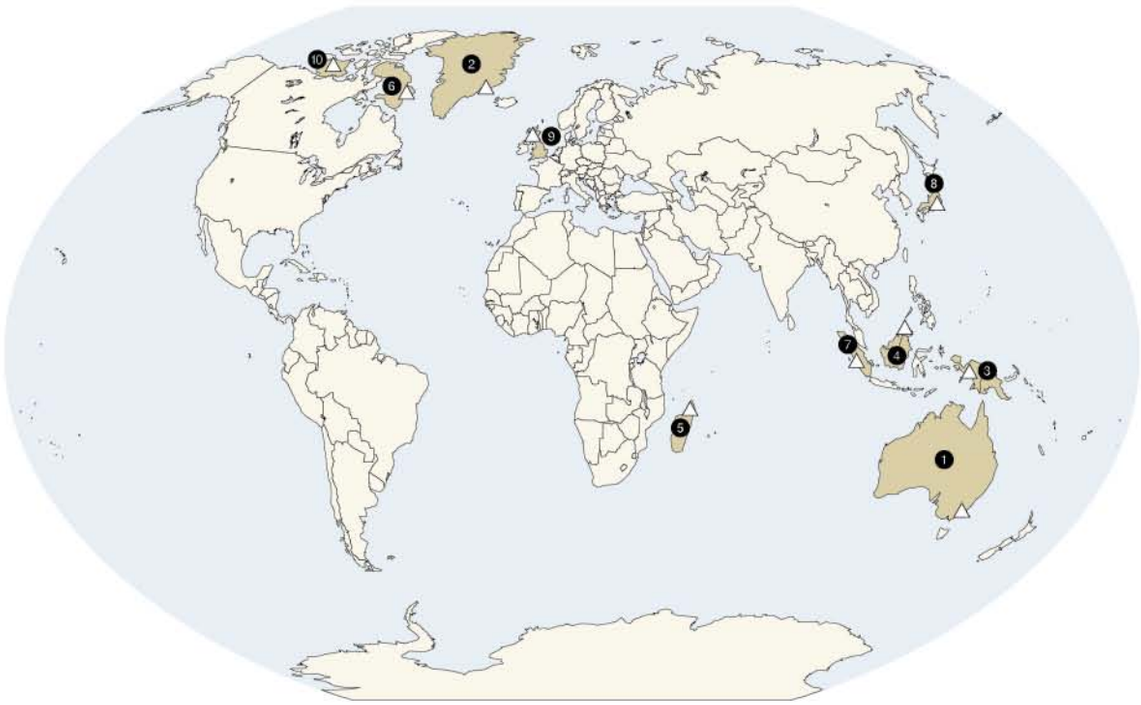
Geologic events have sometimes modified the coastline by producing faults. This is the case for very high **shore cliffs** formed by tectonic faults.

A ria is a fluvial valley that is submerged following a rise in sea level or a subsidence of land.

An atoll is a coral reef that forms around a volcanic island. It is ring-shaped and surrounds a lagoon.

Lanzarote, Canary Islands (Spain)
Parts of the volcanic island of Lanzarote, situated in the ocean off southern Morocco, have coastal escarpments that form cliffs, such as the ones around the Papagayo beach.

THE LARGEST ISLANDS IN THE WORLD				
ISLAND	AREA	OCEAN	△ HIGHEST POINT	ALTITUDE (m)
❶ **Australia**	7,740,000 km²	Indian and Pacific	Mount Kosciusko	2,228
❷ **Greenland**	2,166,086 km²	Arctic	Gunnbjorn	3,733
❸ **New Guinea**	792,500 km²	Pacific	Puncak Jaya	4,884
❹ **Borneo**	725,500 km²	Pacific	Mount Kinabalu	4,095
❺ **Madagascar**	587,040 km²	Indian	Mount Maromokotro	2,876
❻ **Baffin Island**	507,500 km²	Arctic	Mount Odin	2,147
❼ **Sumatra**	427,300 km²	Indian	Mount Kerinci	3,805
❽ **Honshu**	227,400 km²	Pacific	Mount Fuji	3,776
❾ **Great Britain**	218,100 km²	Atlantic	Ben Nevis	1,344
❿ **Victoria**	217,300 km²	Arctic	unnamed summit	655



Barely 2.8% of all water on Earth is freshwater. Most of it is found in glaciers and pack ice (77%) and in groundwater (22%). The rest, only 1%, forms the watercourses that irrigate valleys and plains. As it flows down from mountaintops to the ocean, freshwater feeds glaciers, lakes, and rivers. The water evaporates and forms clouds, precipitation from which feeds watercourses. For millions of years, this vast water cycle has created landscapes by carving out valleys, eroding mountains, and changing shorelines. It plays an essential role in the redistribution of water around the planet.

Watersheds

A watershed is a region where all water—precipitation, runoff, and groundwater—flows toward a common body of water. A single watershed may contain a number of smaller watersheds.

THE LARGEST RIVERS

RIVER	CONTINENT	LENGTH	AREA OF WATERSHED
❶ Nile	Africa	6,670 km	2,870,000 km²
❷ Amazon	South America	6,570 km	6,915,000 km²
❸ Yangzi Jiang	Asia	6,300 km	1,855,000 km²
❹ Mississippi–Missouri	North America	5,970 km	2,980,000 km²
❺ Jenissei–Angara	Asia	5,870 km	2,580,000 km²
❻ Ob–Irtych	Asia	5,410 km	2,990,000 km²
❼ Paranà–Rio de la Plata	South America	4,880 km	3,100,000 km²
❽ Congo	Africa	4,630 km	3,680,000 km²
❾ Amur	Asia	4,440 km	1,855,000 km²
❿ Lena	Asia	4,268 km	2,490,000 km²
⓫ Mackenzie	North America	4,241 km	1,790,000 km²
⓬ Niger	Africa	4,184 km	2,090,000 km²
⓭ Mekong	Asia	4,023 km	810,000 km²
⓮ Volga	Europe	3,687 km	1,380,000 km²
⓯ Murray–Darling	Oceania	3,370 km	1,057,000 km²

RIVERS, LAKES, AND WATERFALLS

Hydrography

- Waterfalls
- River
- Lake

Edge of watersheds

Source: Pfafstetter Classification, USGS

Freshwater available in the main watersheds
(billions of m³ per year)

- ≥ 250
- 100–249
- 40–99
- 20–39
- 10–19
- < 10
- No data available
- Regions with no major watershed

Source: World Resources Institute

Niagara Falls, on the Canada–United States border
Although they are not very high, the Niagara Falls are spectacular, as they are wide and have a high discharge rate. Every minute, 155 million liters of water, or the equivalent of 50 Olympic-size swimming pools, flow over the falls from a height of about 50 m!

Yellow River, China
The Yellow River (Huang He in Chinese) owes its name to the large quantities of alluvia that it carries.

THE LARGEST LAKES

LAKE	AREA	DEPTH	ORIGIN
① **Caspian Sea**	386,400 km²	1,025 m	tectonic
② **Lake Superior**	82,100 km²	405 m	glacial
③ **Lake Victoria**	69,500 km²	82 m	tectonic
④ **Lake Huron**	59'800 km²	228 m	glacial
⑤ **Lake Michigan**	57,750 km²	281 m	glacial
⑥ **Lake Tanganyika**	32,900 km²	1,436 m	tectonic
⑦ **Lake Baikal**	31,700 km²	1,620 m	tectonic
⑧ **Great Bear Lake**	31,600 km²	82 m	glacial
⑨ **Lake Malawi**	29,500 km²	706 m	tectonic
⑩ **Great Slave Lake**	28,900 km²	614 m	glacial

THE HIGHEST WATERFALLS

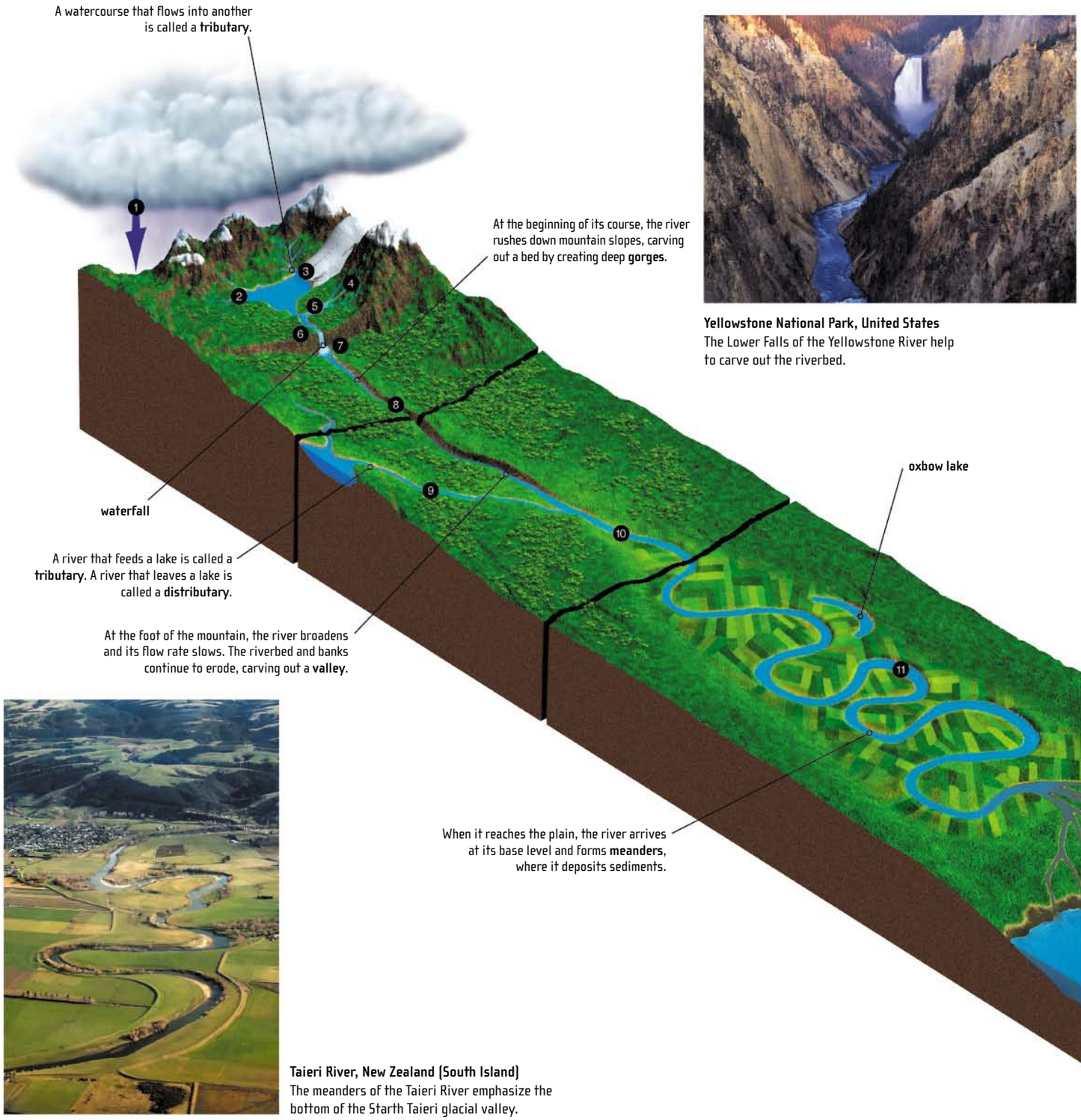
WATERFALL	COUNTRY	HEIGHT
[1] **Angel Falls**	Venezuela	979 m
[2] **Mtarazi**	Zimbabwe	762 m
[3] **Yosemite**	United States	739 m
[4] **Tugela**	South Africa	614 m
[5] **Sutherland**	New Zealand	580 m
[6] **Della**	Canada	440 m
[7] **Gavarnie**	France	422 m
[8] **Glass**	Brazil	404 m
[9] **Krimmler**	Austria	381 m
[10] **Wallaman**	Australia	347 m

Watercourses

Springs, rivers, and lakes form a network with a hierarchy: each flows into a large watercourse, and all watercourses finally flow into the sea. A river such as the Amazon, for example, is fed by 15,000 tributaries.

Rainwater ❶ seeps into the ground and rises to the surface in the form of a spring ❷, then flows down hills and mountains. Sometimes fed by meltwater from glaciers ❸, the stream ❹ becomes a torrent ❺; then, fed by more springs, it becomes a young river ❻ that continues to flow down the mountain, following sleep slopes and forming waterfalls ❼. The river carves out deep gorges ❽, and then broadens. Fed by tributaries ❾, it becomes a large river ❿. As it grows wider, the river forms meanders ⓫. Many rivers form deltas ⓬ at their mouths, and finally flow into the sea ⓭. Evaporation ⓮ of water from the oceans forms clouds, and the water cycle starts over.

WATER CYCLE



Yellowstone National Park, United States
The Lower Falls of the Yellowstone River help to carve out the riverbed.

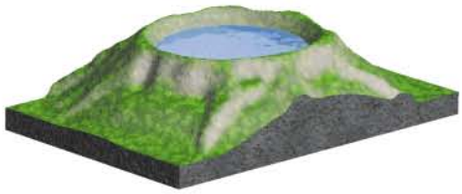
Taieri River, New Zealand (South Island)
The meanders of the Taieri River emphasize the bottom of the Starth Taieri glacial valley.

Lakes

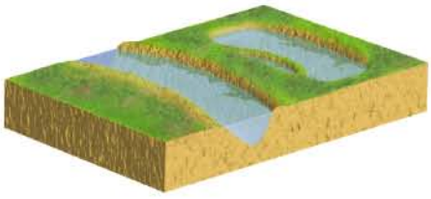
Surface water usually flows toward the sea, but sometimes it is held back by a depression or dam and forms a lake. Although most lakes are filled with freshwater, others have high salinity due to a high evaporation rate and accumulation of dissolved mineral salts.

Water in **glacial lakes** has accumulated in depressions carved out by glaciers and in valleys where moraines (glacial deposits), some of which are 200 m high, have created dams. Most lakes in the northern hemisphere are of this type.

Tectonic lakes occupy natural basins that result from movements of Earth's crusts along folds and faults. Many are situated below sea level, and some form closed systems with no distributaries.

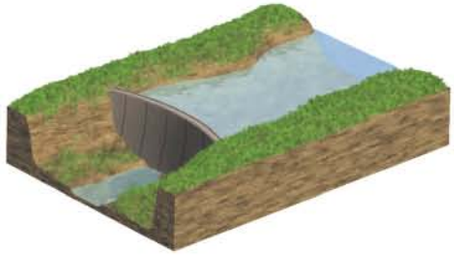


The craters of some volcanoes fill with water. These **volcanic lakes** may also form in valleys where lava flows hold back water.

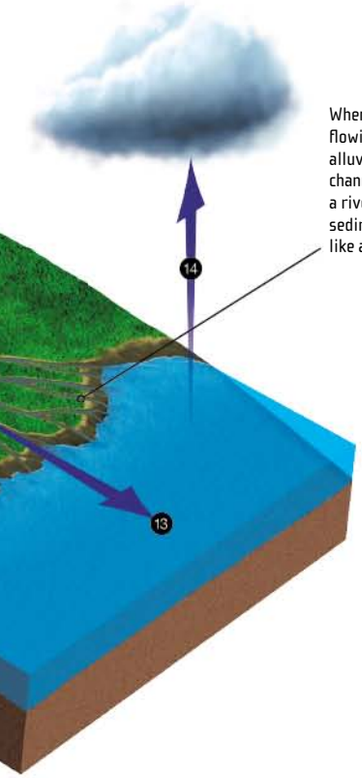


Oxbow lakes sometimes form in the areas around rivers. They are formed in meanders, or oxbows, abandoned by the watercourse. Unless they are regularly fed by new water, they rapidly dry up.

An **oasis** is formed in a desert when the wind erodes the ground and exposes the water table. Oases also appear where a fault line causes water to flow toward a particular point.



Reservoirs, artificial lakes whose waters are usually held in by dams, supply water for human consumption, irrigation, or production of hydroelectric power.



When a river does not encounter a stronger current as it is flowing into the sea, it deposits its sediments at the mouth. The alluvia—sediment deposits—spread out in a fan shape divided into channels of various widths and shapes. This is called a **delta**. When a river encounters a tide that is more powerful than its current, the sediments that it is carrying disperse. The river's mouth opens out like a funnel, and this is called an estuary.

Rio de la Plata estuary, on the border between Argentina and Uruguay
The Rio de la Plata marks the mouth of the Parana and Uruguay rivers.

Nile Delta, Egypt
At its mouth, the Nile forms a vast delta, clearly visible on a satellite image.

EARTH: A PLANET IN BALANCE

Earth is enveloped in a thin layer of air called the atmosphere. Depending on the characteristics of air masses around the globe, different regions have more or less cold, humid, and windy climates. Most weather phenomena take place in the 15 kilometers of the atmosphere closest to the ground. This layer of the atmosphere is also home to many living species. Together, air, water, and a layer of earth form the biosphere, the habitable part of the planet. Living beings and their environments form ecosystems. The constant interactions between the components of an ecosystem maintain its equilibrium. For the last hundred years, the intensification of human activities has caused air, water, and soil pollution and threatens to upset the equilibrium of our planet.

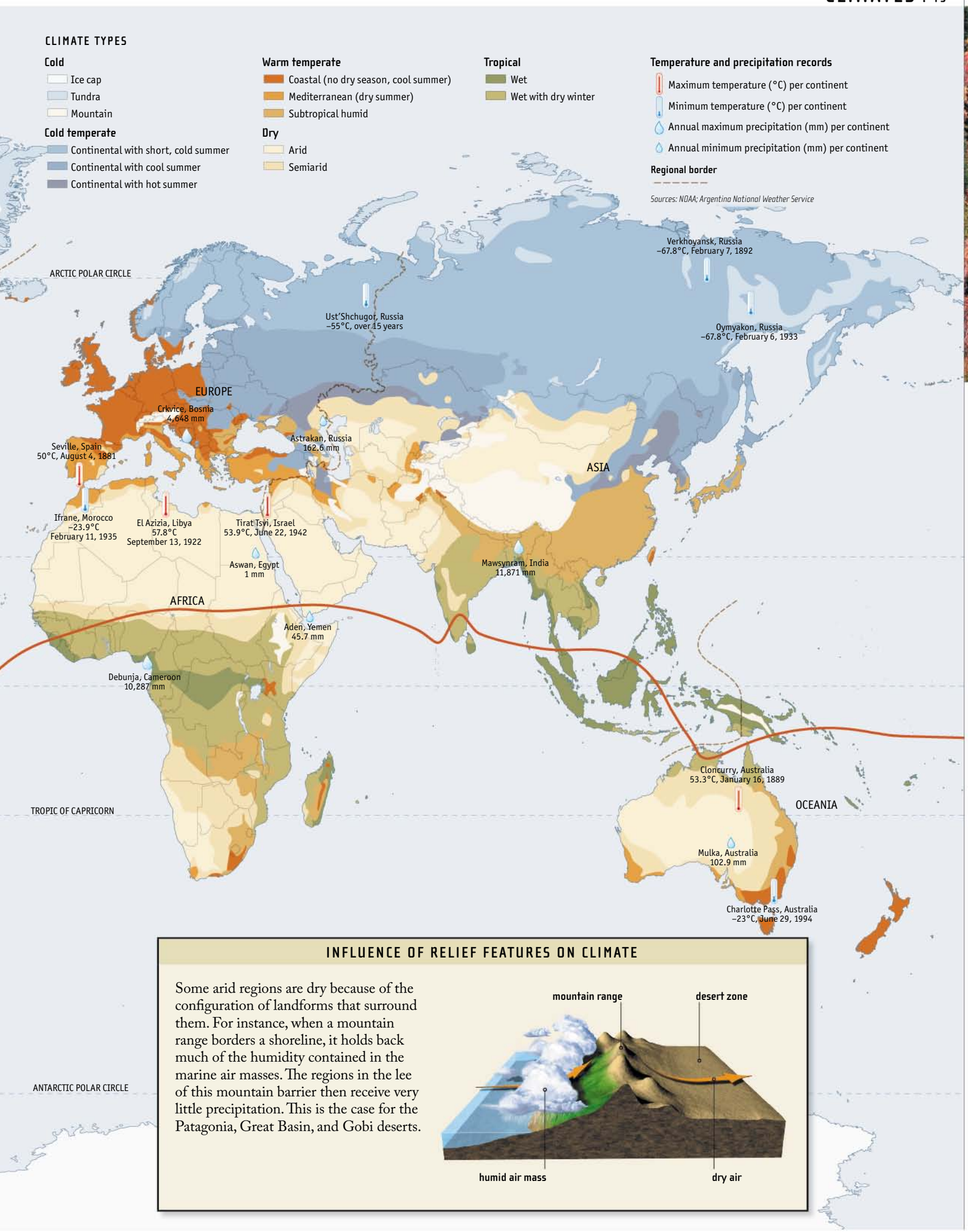
TOP: Elk, in Yellowstone National Park, United States
LEFT: Emperor penguins, on South Georgia Island, in the South Atlantic Ocean

Temperatures, precipitation, humidity, and winds vary enormously from one region of the world to another. So, Earth has a number of very different climates, each one with specific atmospheric and meteorological conditions. The distribution of climatic zones on the surface of the planet depends primarily on latitude, because sunshine conditions (length of the day, alternation of seasons, angle of solar rays) play the most important role in determining climate. Other factors are also involved, such as the lay and orientation of the land, dominant winds, altitude, landforms, and ocean currents.

Climates of the world

One-quarter of the planet's landmass has a dry (arid or semiarid) climate, characterized by drought throughout the year. Regions in the intertropical zone, between the Tropics of Cancer and Capricorn, have a tropical climate with high temperatures due to regular and continual sunshine conditions. The wet tropical climate has abundant and constant humidity, which encourages growth of the tropical rainforest, while the wet tropical climate with dry winter has a wet season with monsoon rains and a dry winter season. Temperate regions have a mild climate and four well-defined seasons. Temperate climates are very diverse, however, as they are influenced by geographic factors such as altitude, relief features, and proximity to the ocean. Mountainous regions and high plateau zones have a cold climate with low temperatures. Finally, at the poles, the temperature rarely rises above 0°C and the ground remains frozen for most of the year.

Antarctica
A number of low temperature records have been set in Antarctica.



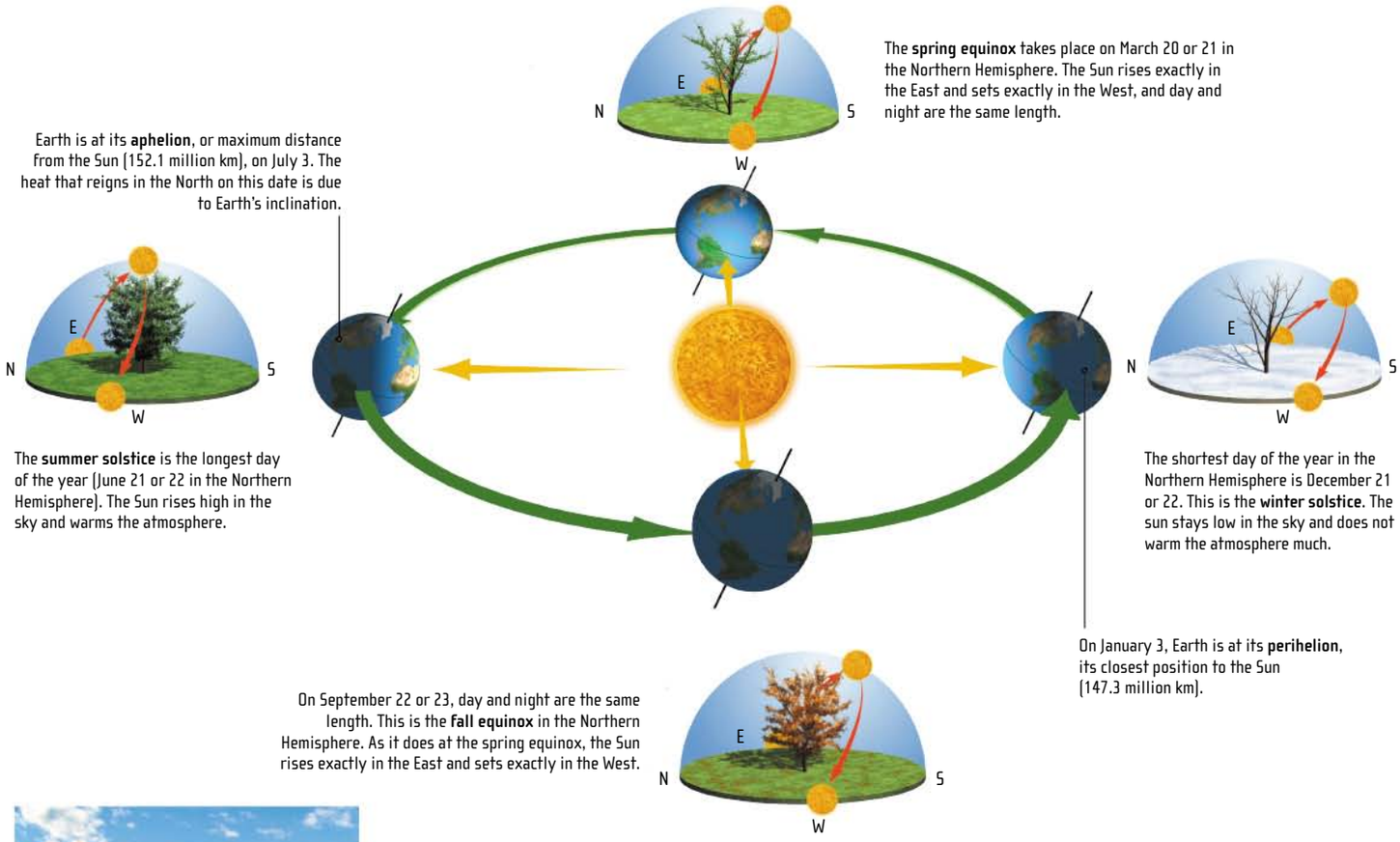
INFLUENCE OF RELIEF FEATURES ON CLIMATE

Some arid regions are dry because of the configuration of landforms that surround them. For instance, when a mountain range borders a shoreline, it holds back much of the humidity contained in the marine air masses. The regions in the lee of this mountain barrier then receive very little precipitation. This is the case for the Patagonia, Great Basin, and Gobi deserts.

The Cycle of the Seasons

Contrary to popular belief, the cycle of the seasons—that is, the periodic changes in climate as the months go by—is due not to the distance of Earth from the Sun but to its inclination: our planet's axis of rotation is tilted by about 23.5° in relation to the ecliptic (Earth's orbital plane). This inclination is directly responsible for the variation in sunlight conditions, and therefore for the succession of seasons throughout the year. This also explains why the seasons in the two hemispheres are opposite: summer in the South always takes place during winter in the North.

Temperate regions have four alternating seasons: after spring comes summer, then autumn, and finally winter. Elsewhere in the world, the march of the seasons is less distinct. Subtropical regions have only two seasons: a dry season and a wet season. As the seasons pass, the air temperature and atmospheric pressure vary. Atmospheric pressure is the force that air exerts upon a given surface. It may differ by altitude and temperature. There are therefore zones of high and low pressure. In general, a high-pressure zone, or anticyclone, is responsible for good weather and a low-pressure zone, or depression, is responsible for bad weather.



The **spring equinox** takes place on March 20 or 21 in the Northern Hemisphere. The Sun rises exactly in the East and sets exactly in the West, and day and night are the same length.

Earth is at its **aphelion**, or maximum distance from the Sun (152.1 million km), on July 3. The heat that reigns in the North on this date is due to Earth's inclination.

The **summer solstice** is the longest day of the year (June 21 or 22 in the Northern Hemisphere). The Sun rises high in the sky and warms the atmosphere.

The shortest day of the year in the Northern Hemisphere is December 21 or 22. This is the **winter solstice**. The sun stays low in the sky and does not warm the atmosphere much.

On January 3, Earth is at its **perihelion**, its closest position to the Sun (147.3 million km).

On September 22 or 23, day and night are the same length. This is the **fall equinox** in the Northern Hemisphere. As it does at the spring equinox, the Sun rises exactly in the East and sets exactly in the West.

African savanna, Kenya
Kenya has two dry seasons, from December to March and July to October; these alternate with two rainy seasons: one from April to June, and one in November, which sometimes extends to mid-December.

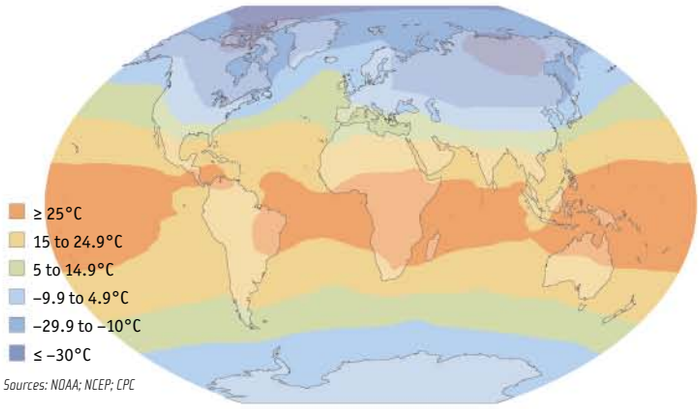
Schoolchildren in snowsuits, Canada
Canada has four distinct seasons. Winters are particularly cold and snowy.

INFLUENCE OF LATITUDE ON LENGTH OF DAY

	SUMMER SOLSTICE	SPRING EQUINOX	WINTER SOLSTICE	AUTUMN EQUINOX
poles (90°)	24 hr	12 hr	0 hr	12 hr
Helsinki (60°)	19 hr	12 hr	6 hr	12 hr
Montreal (45°)	16 hr	12 hr	8 hr	12 hr
Cairo (30°)	14 hr	12 hr	10 hr	12 hr
equator (0°)	12 hr	12 hr	12 hr	12 hr

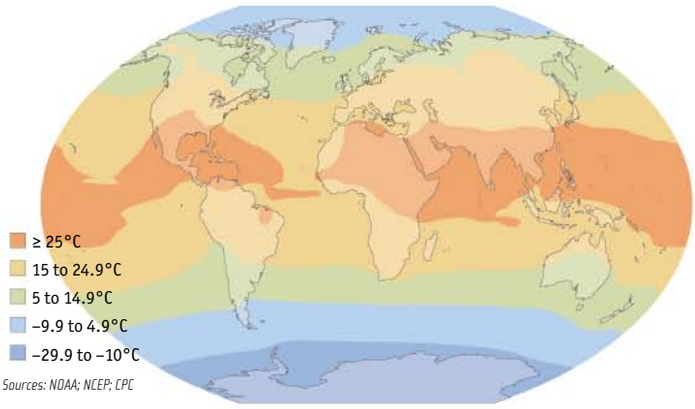
SEASONAL VARIATIONS IN AIR TEMPERATURE AND ATMOSPHERIC PRESSURE

AIR TEMPERATURE IN JANUARY
Average calculated from 1960 to 2005



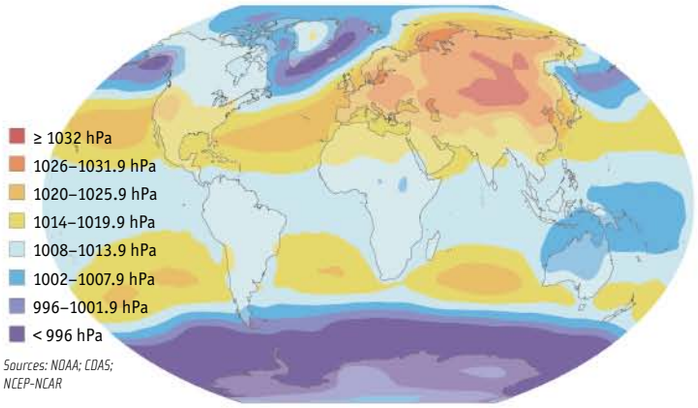
Sources: NOAA; NCEP; CPC

AIR TEMPERATURE IN JULY
Average calculated from 1960 to 2005



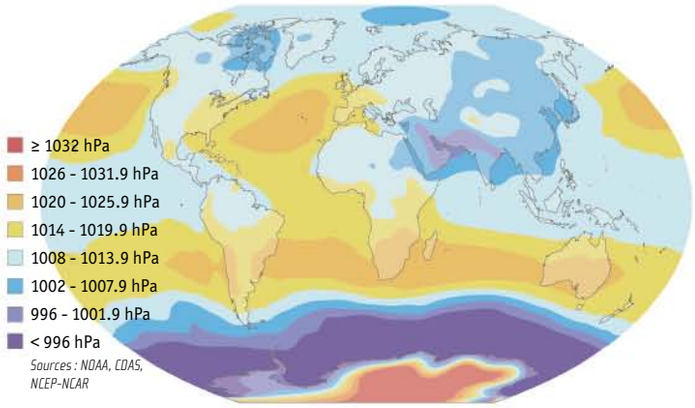
Sources: NOAA; NCEP; CPC

ATMOSPHERIC PRESSURE IN JANUARY
Average calculated from 1960 to 2005



Sources: NOAA; CDAS; NCEP-NCAR

ATMOSPHERIC PRESSURE IN JULY
Average calculated from 1960 to 2005

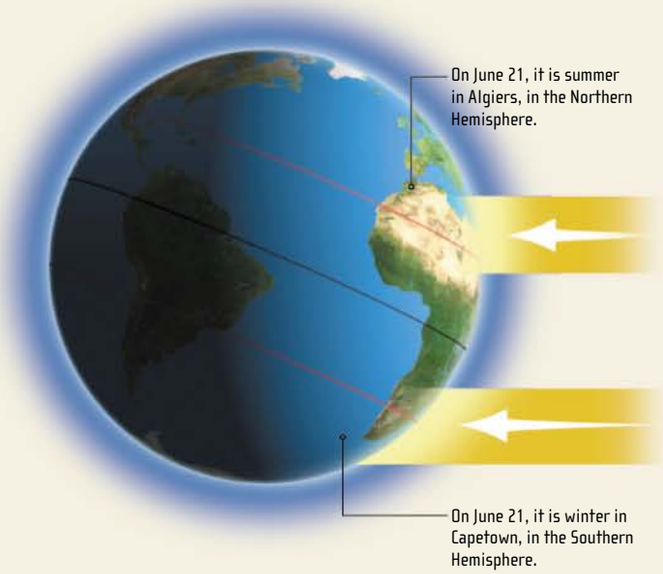


Sources : NOAA, CDAS, NCEP-NCAR

THE ANGLE OF SOLAR RAYS

The temperature on the surface of Earth depends directly on the angle at which the Sun's rays penetrate the atmosphere. When this angle of incidence is small—when the rays graze the planet's surface—the Sun's energy is dispersed. On the contrary, heat is at its maximum when the Sun's rays reach the ground at a 90° angle.

Because of Earth's inclination, sunlight reaches the Northern Hemisphere at a maximum angle during the Northern summer. At the same time, the Sun's rays graze the Southern Hemisphere and it is winter in the South.



At the highest latitudes, close to the poles, the climate is dominated by polar air masses, which do not heat up much even during the long period of summer sunshine. In the center of Antarctica and Greenland, where the temperature never rises above 0°C, the ground remains permanently frozen and covered with a thick ice cap, the continental ice sheet. The northern edges of Eurasia and North America have a more temperate climate: summer temperatures rise above the freezing point, which enables a thin top layer of ground to thaw and tundra vegetation to grow.

Perito Moreno Glacier, Argentina
Some 30 km long and covering some 250 km², Perito Moreno is an immense continental glacier.

The main cold regions

The coldest regions of the planet are the poles and mountain summits. The poles are permanently frozen, but how far the pack ice stretches toward the middle latitudes varies with the seasons. The highest mountain peaks are also covered with glaciers.

Source: NSIDC

Pack ice

In the coldest oceans on the planet, especially at the poles, the seawater is covered by a floating layer of ice, a stretch of frozen seawater formed when the water temperature falls below –1.9°C. These masses of ice, called pack ice, may be 3 to 4 m thick. In winter, Arctic pack ice ❶ invades fjords, bays, estuaries, and straits. Hudson Bay ❷ is totally icebound during the winter. Antarctica ❸, covered by an ice cap, is also surrounded by pack ice.

This layer of ice forms a vast sheet measuring 20 million km² at its maximum winter extent, but it shrinks a great deal in the summer. Pack ice is different from the ice shelves (the Ross Ice Shelf, the Larsen Ice Shelf, etc.) that form the edge of some parts of Antarctica. These are actually floating glaciers, several hundred meters thick, contiguous to the continental ice cap.

Icebergs

In cold regions, glaciers reach the sea before they melt. Waves and tides then break up glacier tongues into gigantic blocks of floating freshwater ice blocks called icebergs, only the tip of which rises above the surface of the water. Pushed by the wind and ocean currents, icebergs travel thousands of kilometers, sometimes drifting as far as the tropics, before melting due to the combined effects of waves, salt, and solar rays.

Iceberg, north of the 48th parallel
Icebergs usually drift along the coast. Most of those that come from the Arctic melt before crossing the 48th parallel.

EXTENSION OF THE ICE CAP DURING THE ICE AGE

For 2 million years, cold periods, called glacial periods (or ice ages), have alternated with warmer, interglacial, periods due to variations in Earth's orbit around the Sun. Currently, we are in an interglacial period. The last ice age was 18,000 years ago. A huge ice cap covered the continents of the Northern Hemisphere. In the Southern Hemisphere, on the other hand, the ice cap was the same size as today's, since no continent is close enough to Antarctica to support the ice cap during glacial periods.

MAXIMUM EXTENSION OF GLACIERS
DURING THE LAST ICE AGE (–18,000 YEARS)

Source: Frenzel et al

ARID ENVIRONMENTS

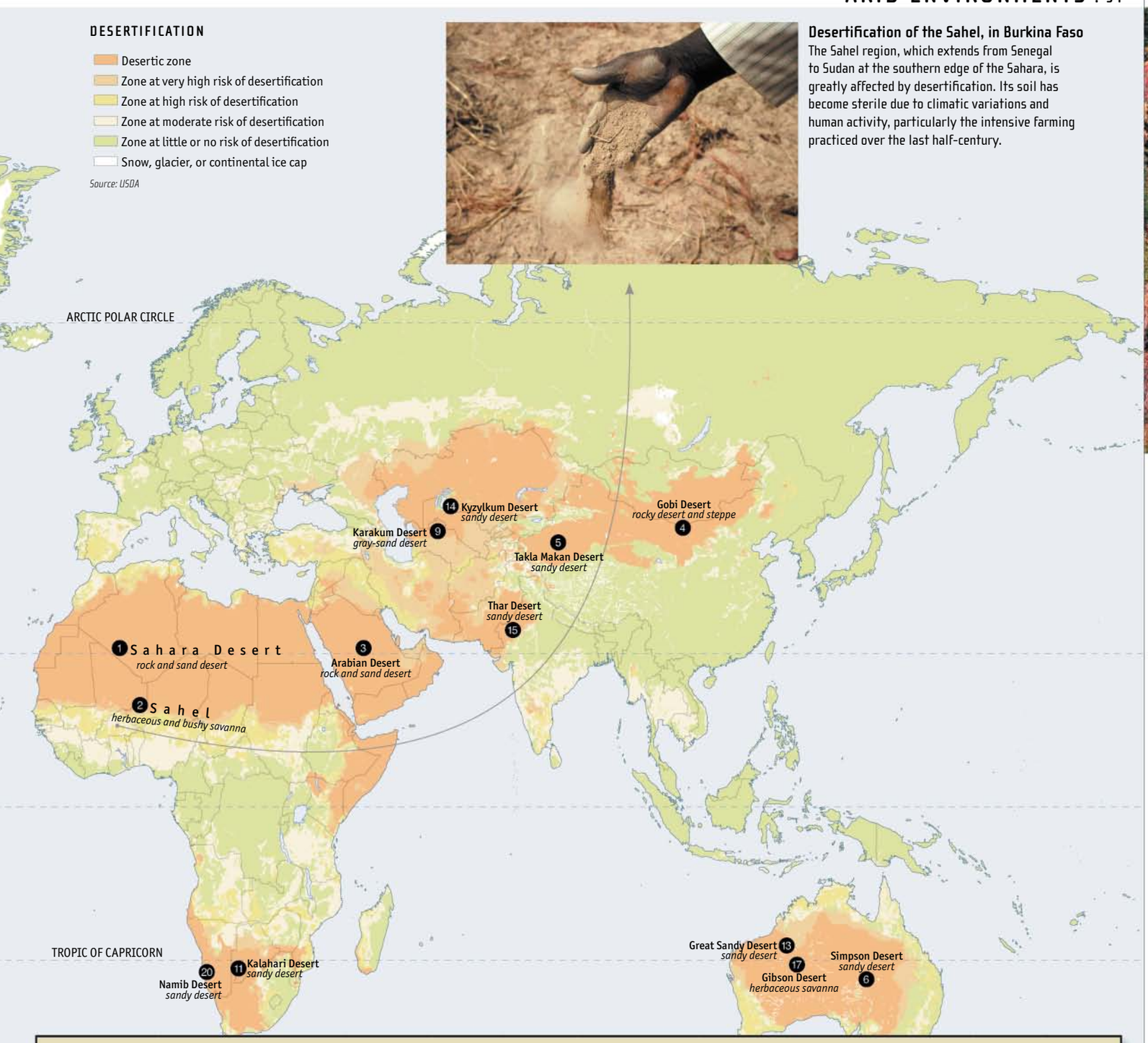
One-quarter of the planet's landmass (about 35 million square kilometers) has an arid or semiarid climate. All of these regions have very low precipitation. Vegetation grows slowly, leaving the ground almost bare. In most cases, this aridity is related to the presence of permanent high-pressure zones that impede the development of clouds. This is the case for "high-pressure" deserts such as the Sahara Desert, the Arabian Desert, the Kalahari Desert, and the Great Sandy Desert. These deserts are situated at latitudes adjacent to the tropics, where the climate features very dry air and high atmospheric pressure. Geographic factors may also be the cause of aridity. "Rain shadow" deserts are situated at the foot of mountains that block humid air from the ocean; examples are the Patagonia Desert, the Atacama Desert and the Gobi Desert.

Desertification

Under the combined effects of climatic variations and human activity, more and more previously arable regions are being transformed into deserts. For instance, 4,000 years ago, the Sahara was a fertile region. Today, it is a desert. Desertification involves the degradation of arable land. Each year, 5 to 6 million hectares are affected by desertification on every continent.

ARIDITY

Arid regions are characterized by water resources that are insufficient in comparison to the needs of the vegetation, because there is not enough precipitation or because the water is frozen and thus not usable by plants. Arid regions can be classified according to the volume of precipitation that they receive per year. A very arid zone receives very little precipitation, between 10 and 15 mm per year. This is an absolute desert, and an example is the Namib. Arid zones, such as the Arabian Desert, receive no more than 200 mm of precipitation per year. In semiarid zones, precipitation is below 500 mm in the winter and below 800 mm in the summer. Such zones—for example, the Sahel—are in a state of advanced desertification.



Desertification of the Sahel, in Burkina Faso
The Sahel region, which extends from Senegal to Sudan at the southern edge of the Sahara, is greatly affected by desertification. Its soil has become sterile due to climatic variations and human activity, particularly the intensive farming practiced over the last half-century.

THE MAIN DESERTS

DESERT	AREA (km²)	CONTINENT	ARIDITY	MIN. TEMP. (°C)	MAX. TEMP. (°C)	DESERT	AREA (km²)	CONTINENT	ARIDITY	MIN. TEMP. (°C)	MAX. TEMP. (°C)
1 Sahara	8,000,000	Africa	arid to very arid	10–20	> 30	11 Kalahari	335,500	Africa	arid	0–10	20–30
2 Sahel	3,053,200	Africa	semiarid	20–30	> 30	12 Colorado Plateau	326,400	N. America	semiarid	< 0	20–30
3 Arabian	1,851,300	Asia	arid	10–20	> 30	13 Great Sandy Desert	317,800	Oceania	arid	10–20	> 30
4 Gobi	1,300,000	Asia	arid	< 0	20–30	14 Kyzylkum	297,800	Asia	arid	< 0	20–30
5 Takla Makan	741,900	Asia	very arid	< 0	20–30	15 Thar	238,700	Asia	arid	0–10	20–30
6 Simpson	584,500	Oceania	arid	10–20	> 30	16 Sonoran	223,000	N. America	arid	10–20	> 30
7 Chihuahuan	509,500	N. America	arid	0–10	20–30	17 Gibson	155,900	Oceania	arid	10–20	20–30
8 Patagonia	487,200	S. America	arid	0–10	10–20	18 Mojave	130,600	N. America	arid	10–20	> 30
9 Karakum	349,600	Asia	arid	< 0	> 30	19 Atacama	105,200	S. America	very arid	10–20	20–30
10 Great Basin	335,900	N. America	arid	< 0	10–20	20 Namib	80,900	Africa	very arid	10–20	10–20

Sources: WWF; University of Arizona

In spite of industrial and technological progress in recent decades, human beings are still at the mercy of major weather disasters. Tornadoes, cyclones, snowstorms, and hailstorms cause serious destruction and thousands of deaths every year all over the world. Lightning is responsible for electrical blackouts and huge forest fires. And rainstorms may cause floods and landslides.

DISTRIBUTION OF CLIMATIC CATASTROPHES

Cyclones
(density of cyclones)
- Very high
- High
- Average
- Main paths of cyclones
- Cyclones that have caused more than 2,000 deaths since 1900

Sources: Em-dat; UNEP

Tornadoes
- Lethal tornadoes since 1980

Source: Em-dat

Thunderstorms
(lightning density)
- ≥ 10 lightning bolts/yr/km²

Source: NASA

Population density
(inhabitants/km²)
- ≥ 10,000
- 1,000–9,999
- 500–999
- ≤ 500

Source: SEDAC, University of Columbia

The most affected regions

Cyclones cause the most damage in coastal regions of the intertropical zone. Tornadoes are most frequent in the eastern United States, while thunderstorms usually hit warm, humid regions near the equator. The more densely populated the region, such as Southeast Asia, the more victims claimed by climatic catastrophes.

THE MOST LETHAL TORNADOES SINCE 1900

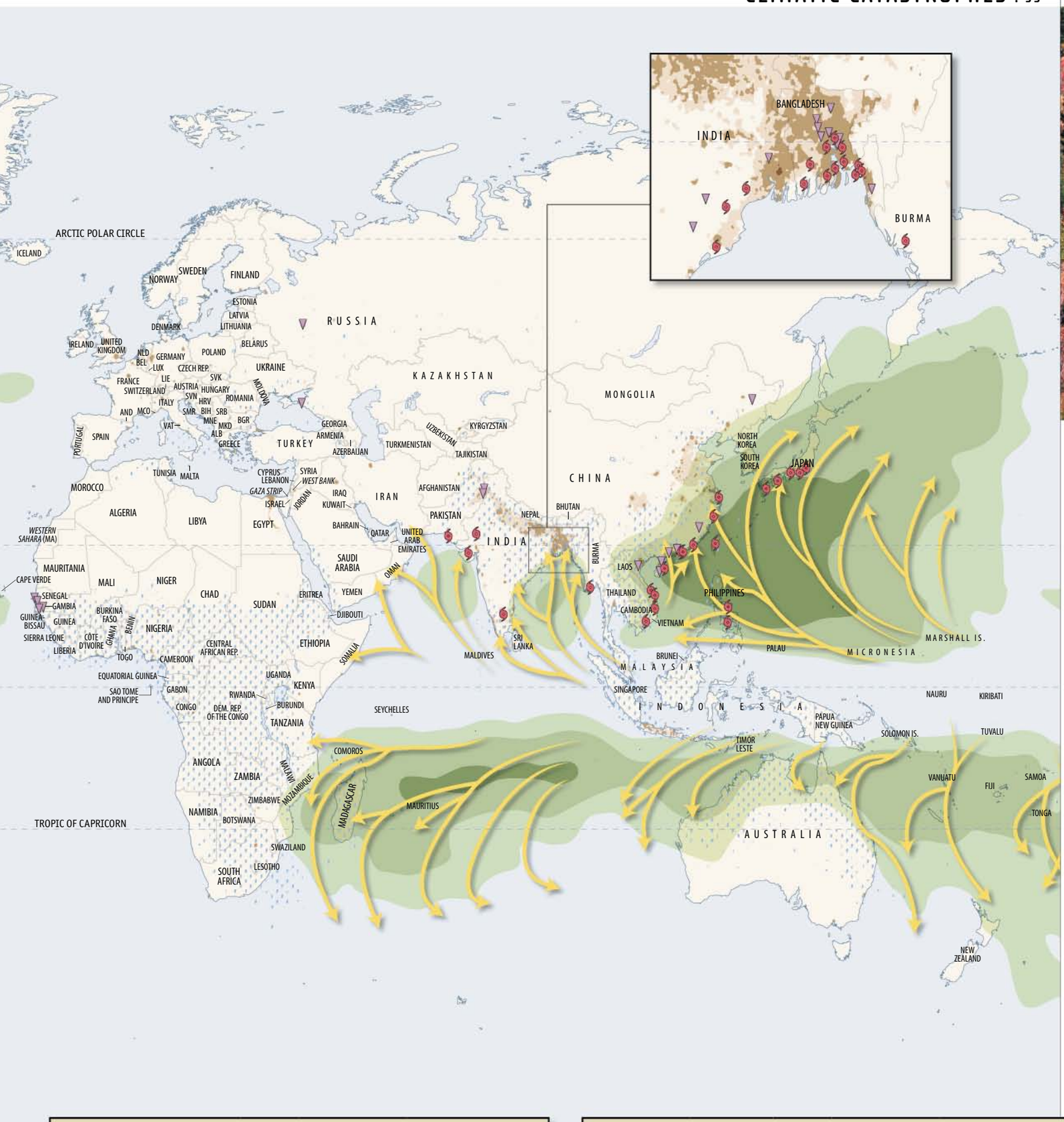
COUNTRY	NO. DEAD	YEAR	COUNTRY	NO. DEAD	YEAR
Bangladesh	800	1989	**India**	250	1998
United States	600	1984	**United States**	203	1963
Comores	500	1951	**Bangladesh**	200	1972
India	500	1978	**Senegal**	165	1999
ex-USSR	400	1984	**Bangladesh**	121	1991
United States	322	1974	**India**	120	1981
United States	257	1965	**United States**	104	1985

Source: Em-dat

THE MOST LETHAL THUNDERSTORMS SINCE 1900

COUNTRY	NO. DEAD	YEAR	COUNTRY	NO. DEAD	YEAR
United Kingdom	4,000	1952	**India**	500	1990
Haiti	1,122	1994	**India**	470	1981
Bangladesh	1,000	1978	**India**	450	1975
Bangladesh	700	1973	**China**	448	1992
Bangladesh	600	1977	**Japan**	419	1954
Bangladesh	525	1995	**India**	350	1952
Bangladesh	525	1996	**Germany**	347	1962

Source: Em-dat



EARTH: A PLANET IN BALANCE

THE MOST LETHAL CYCLONES SINCE 1900

COUNTRY	NO. DEAD	YEAR	COUNTRY	NO. DEAD	YEAR
Bangladesh	300,000	1970	**India**	40,000	1942
Bangladesh	138,866	1991	**Bangladesh**	36,000	1965
Myanmar	> 130 000	2008	**Honduras**	14,600	1998
China	100,000	1922	**India**	14,204	1971
Bangladesh	61,000	1942	**Bangladesh**	12,047	1965
India	60,000	1935	**Bangladesh**	11,500	1963
China	50,000	1912	**China**	11,000	1937

Source: Em-dat

THE MOST LETHAL FLOODS SINCE 1900

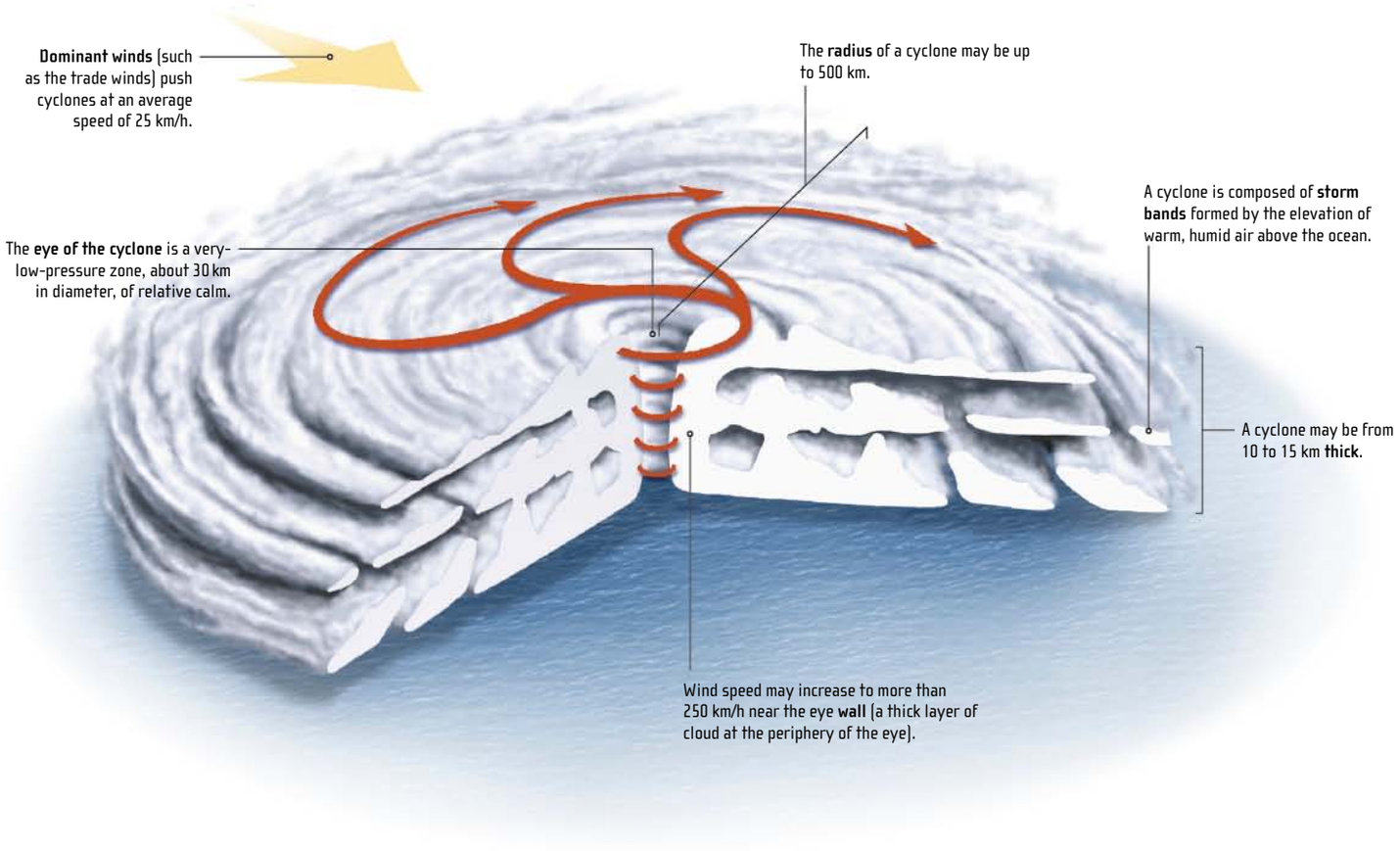
COUNTRY	NO. DEAD	YEAR	COUNTRY	NO. DEAD	YEAR
China	3,700,000	1931	**China**	30,000	1954
China	2,000,000	1959	**Venezuela**	30,000	1999
China	500,000	1939	**Bangladesh**	28,700	1974
China	142,000	1935	**China**	18,000	1933
China	100,000	1911	**Bangladesh**	10,000	1960
China	57,000	1949	**China**	6,200	1980
Guatemala	40,000	1949	**India**	4,892	1968

Source: Em-dat

Cyclones

Andrew, Allen, Mitch, Katrina—these innocuous names are attached to one of the most devastating weather phenomena: cyclones. At their strongest, these gigantic tropical storms may be accompanied by winds of more than 250 km/h. And yet cyclones need only a few factors in place to trigger them: a large mass of warm water, an initial depression, and moderate winds blowing in a constant direction. Like immense steam machines, cyclones transform the humid heat of the atmosphere and oceans into a circular motion. Cyclones are formed only in the intertropical zone, between 5° and 20° latitude on either side of the equator, and have different names depending on the region. In the Pacific Northwest, they are called typhoons; in the North Atlantic and Northeast Pacific, hurricanes; and in the Indian Ocean and Southwest Pacific, cyclones.

INSIDE A CYCLONE



STORM SURGE

During a storm surge, ocean water is pulled by the strong sucking effect of the hurricane. This causes the formation of a small "mountain of water" under the hurricane. When the cyclone reaches land, this mass of water unfurls on the coast and floods vast stretches.

Hurricane Dennis, United States
Much of the damage caused by Hurricane Dennis, which hit Florida on July 10, 2005, was caused by a storm surge several meters high.

THE SAFFIR-SIMPSON SCALE

Since the 1970s, cyclones have been classified according to various characteristics, including wind speed and height of the storm surge. The Saffir-Simpson scale, with five cyclone categories, enables scientists to assess the dangers of a storm and predict the scope of the damage.

CATEGORY 1
Wind speed: 118–152 km/h
Surge height: 1.2–1.7 m
Trees and shrubs damaged; mobile homes, docks, and moorings of small boats damaged.

CATEGORY 2
Wind speed: 153–176 km/h
Surge height: 1.8–2.6 m
Small trees uprooted; mobile homes seriously damaged; some roofs damaged.

CATEGORY 3
Wind speed: 177–208 km/h
Surge height: 2.7–3.8 m
Foliage torn off trees, large trees uprooted; mobile homes destroyed; some roofs, windows, and doors of houses damaged.

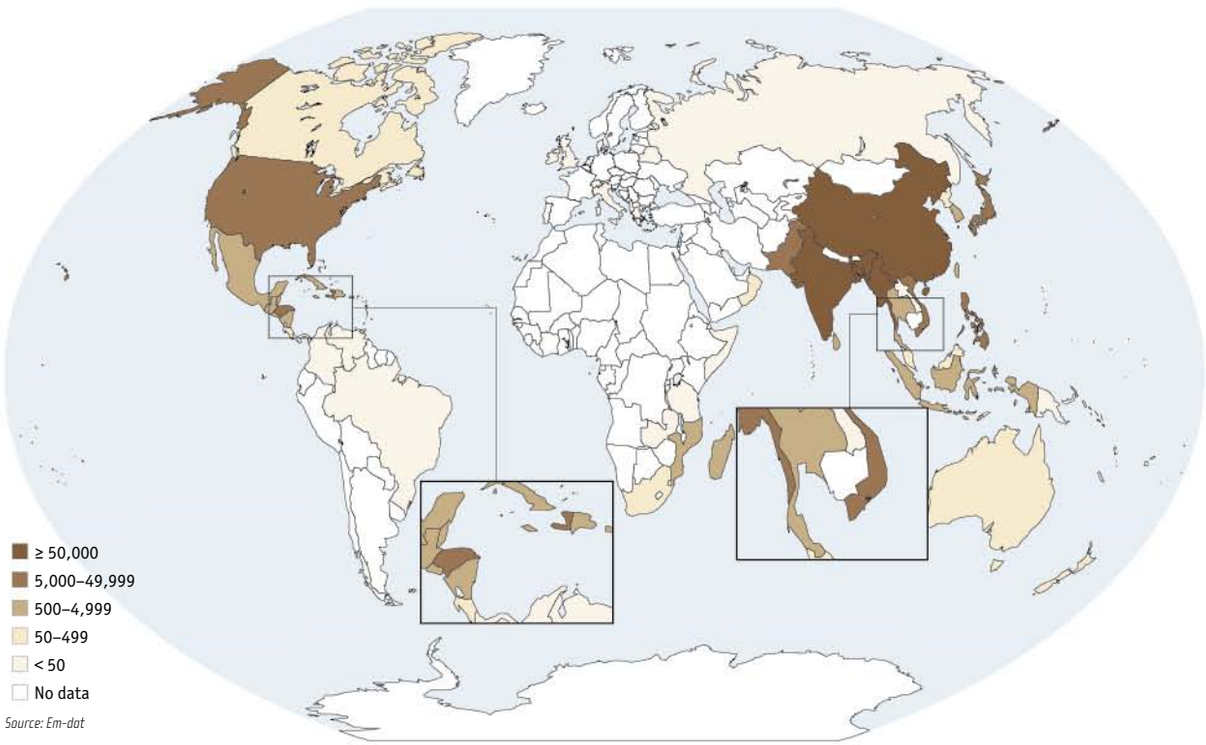
CATEGORY 4
Wind speed: 209–248 km/h
Surge height: 3.9–5.5 m
Traffic lights knocked over; roofs, windows, and doors of houses seriously damaged.

CATEGORY 5
Wind speed: over 248 km/h
Surge height: over 5.5 m
Some buildings destroyed; many roofs of houses collapsed.

CYCLONES: LETHAL NATURAL DISASTERS

Cyclones play an essential role in the planet's energy balance, but they are also responsible for the deaths of an average of 20,000 people every year. The destructive effects of a cyclone are felt when it reaches the coast. Violent winds rip up trees and destroy structures. Torrential rains make rivers overflow and cause landslides. Finally, storm surges lead to floods, often with tragic results: more than 300,000 drowned during a cyclone in 1970, when the sea rose 12 m.

VICTIMS OF CYCLONES
Number of dead per country since 1900

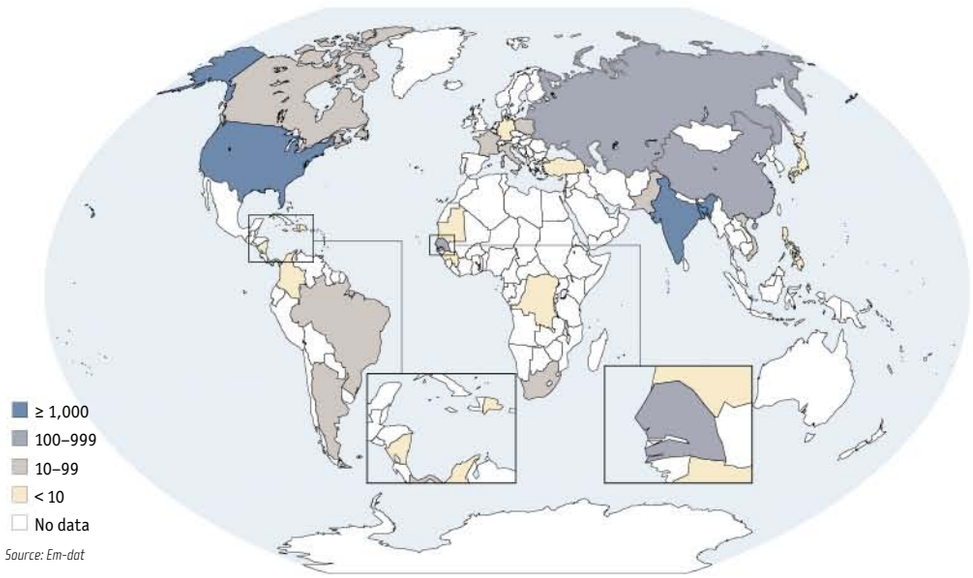


Source: Em-dat

Tornadoes

Like cyclones, tornadoes result from the spinning of ascending winds around a low-pressure zone. However, unlike cyclones, tornadoes are of short duration (a number of minutes) and generate extremely violent winds (spikes of 512 km/h were observed by radar at Oklahoma City, in the United States, in 1999). The diameter of a tornado generally varies between 100 and 600 m. It may reach a height of several kilometers. Although tornadoes are usually very localized and of short duration, their violence makes them particularly dangerous and destructive. North America, where an average of 750 occur each year, is the most affected continent, but tornadoes also touch down regularly in Europe, Asia, and Australia.

VICTIMS OF TORNADOES
Number of dead per country since 1950



Source: Em-dat

THE FUJITA SCALE

The suddenness and brevity of tornadoes makes scientific observation of them difficult. In addition, traditional anemometers are not strong enough to resist the winds that accompany the strongest tornadoes. Therefore, a retrospective analysis of the damage must usually be used to assess the violence of the phenomenon. The Fujita scale (named after the Japanese meteorologist T. Theodore Fujita) establishes a six-category classification of tornadoes that links the type and scale of the damage caused to wind speed. The three least violent categories account for 88% of all tornadoes observed. F5 tornadoes, much rarer, are the most lethal.

CATEGORY F0
With winds not over 199 km/h, an F0 tornado causes only minor damage: broken tree branches, twisted TV antennas.

CATEGORY F1
An F1 tornado, with winds of 120 to 180 km/h, may blow down small trees, overturn trailers, and rip shingles off houses.

CATEGORY F2
The winds in an F2 tornado reach 180 to 250 km/h and are capable of destroying wooden structures, moving small vehicles, and knocking down mature trees.

CATEGORY F3
With winds of 250 to 330 km/h, an F3 tornado may overturn large vehicles. Walls collapse and objects weighing a number of kilograms are lifted into the air and become projectiles.

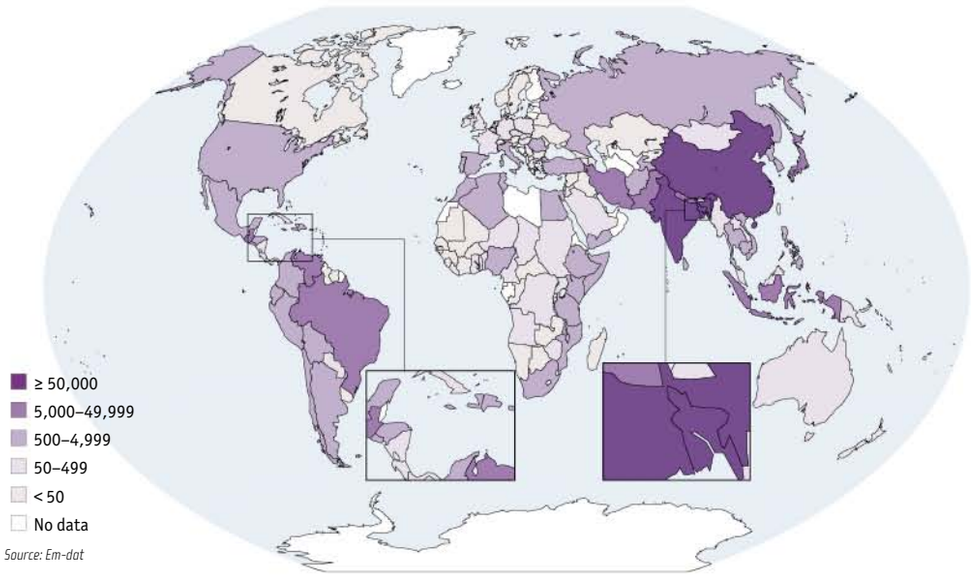
CATEGORY F4
An F4 tornado (winds of 330 to 420 km/h) destroys solid houses, lifts vehicles, and throws into the air objects weighing about 100 kilograms.

CATEGORY F5
An F5 tornado is the most violent. Its winds are over 420 km/h and destroy all sorts of vehicles and structures as they pass.

Floods

Although most floods are linked to a river or lake overflowing its banks after heavy rain, some floods have sea-related causes. This is the case, for example, for storm surges during a cyclone, and for the formation of gigantic waves (tsunamis) following an earthquake. Floods cause not only major material damage but also much loss of life.

VICTIMS OF FLOODS
Number of dead per country since 1950



Source: Em-dat

Flood in New Orleans, United States
The passage of Hurricane Katrina, in August 2005, caused the dams protecting the American city of New Orleans to fail. Within a few hours, entire neighborhoods were submerged underwater and several hundred thousand people had to be evacuated. It was one of the worst natural disasters in the history of the United States.

Living organisms occupy a layer of earth, water, and air that is very thin in comparison to the volume of the planet. This habitable part of Earth, called the biosphere, is composed of many ecosystems. Each ecosystem is an ecological unit in which animals, plants, and bacteria (the biocenosis) live in a close relationship with their physical environment (the biotope). An ecosystem may be as small as a stone wall or as vast as an ocean. Biotope and biocenosis are tightly interwoven: the different aspects of the biotope (geology, climate, geography, chemistry, etc.) determine the composition and diversity of the biocenosis, which, in turn, influences the environment and may even change it radically.

Temperate forest, France
The temperate forest is composed mainly of deciduous trees, among them oak, ash, and beech.

Boreal forest, Canada
The boreal forest is a vast stretch of forest composed mainly of conifers, but it may also contain some deciduous trees.

Tropical rainforest, Amazonia (Brazil)
The tropical rainforest is a dense forest with very high biodiversity. It is fed by abundant and regular precipitation.

Temperate prairie, Argentina
The temperate prairie is a herbaceous zone with very few trees. Graminaceous plants predominate, and the winters are relatively dry and cold.

Biomes

A biome is a homogeneous community of organisms that live in similar geographic and climatic conditions. Most often, a biome refers to a terrestrial community. There are 9 different terrestrial biomes spread throughout the biosphere. They are named according to their dominant vegetation, which is dependent on the climatic conditions. Aquatic communities may also be classified as biomes: marine biomes include coral reefs, estuaries, and the ocean floor, while freshwater biomes include lakes, ponds, and watercourses.

Maquis, Greece
The maquis has a vegetation cover, today degraded, composed of evergreen shrubs that are adapted to drought.

Tundra, Siberia (Russia)
The tundra is a plant formation found in cold, arid regions, composed of mosses, lichens, grasses, bushes, and dwarf trees.

Savanna, Kenya
The savanna, found in warm regions with a rainy season, is a grassy area in which tall graminaceous plants and shrubs predominate.

Desert, South Africa
The desert is an arid region where precipitation is under 200 mm per year and with little vegetation.

Ice, Antarctica
The polar regions are covered with ice all year long. How far the ice extends varies, however, according to whether it is summer or winter.

ICELAND
NORWAY
SWEDEN
FINLAND
RUSSIA
ESTONIA
LATVIA
LITHUANIA
DENMARK
IRELAND
UNITED KINGDOM
NLD
BEL
GERMANY
POLAND
BELARUS
LUX
CZECH REP.
UKRAINE
FRANCE
LIE
SVK
SWITZERLAND
AUSTRIA
HUNGARY
MOLDOVA
SVN
HRV
ROMANIA
ITALY
AND
MCO
SMR
BIH
SRB
MNE
BGR
VAT
MKD
ALB
GREECE
PORTUGAL
SPAIN
TURKEY
GEORGIA
ARMENIA
AZERBAIJAN
KAZAKHSTAN
UZBEKISTAN
KYRGYZSTAN
TURKMENISTAN
TAJIKISTAN
MONGOLIA
NORTH KOREA
SOUTH KOREA
JAPAN
CHINA
TUNISIA
MALTA
CYPRUS
LEBANON
SYRIA
WEST BANK
GAZA STRIP
JORDAN
ISRAEL
IRAQ
KUWAIT
IRAN
AFGHANISTAN
PAKISTAN
MOROCCO
ALGERIA
LIBYA
EGYPT
BAHRAIN
QATAR
UNITED ARAB EMIRATES
SAUDI ARABIA
OMAN
NEPAL
BHUTAN
INDIA
BANGLADESH
BURMA
WESTERN SAHARA (MA)
MAURITANIA
MALI
NIGER
CHAD
SUDAN
ERITREA
YEMEN
DJIBOUTI
LAOS
VIETNAM
THAILAND
CAMBODIA
CAPE VERDE
SENEGAL
GAMBIA
GUINEA BISSAU
GUINEA
BURKINA FASO
BENIN
NIGERIA
SIERRA LEONE
CÔTE D'IVOIRE
GHANA
TOGO
LIBERIA
CENTRAL AFRICAN REP.
ETHIOPIA
SOMALIA
CAMEROON
EQUATORIAL GUINEA
SAO TOME AND PRINCIPE
GABON
UGANDA
KENYA
RWANDA
CONGO
DEM. REP. OF THE CONGO
BURUNDI
TANZANIA
SEYCHELLES
COMOROS
MALDIVES
SRI LANKA
PHILIPPINES
BRUNEI
MALAYSIA
SINGAPORE
INDONESIA
PALAU
MICRONESIA
MARSHALL IS.
NAURU
KIRIBATI
PAPUA NEW GUINEA
SOLOMON IS.
TUVALU
TIMOR LESTE
VANUATU
SAMOA
FIJI
TONGA
ANGOLA
ZAMBIA
MALAWI
MOZAMBIQUE
ZIMBABWE
NAMIBIA
BOTSWANA
MADAGASCAR
SWAZILAND
LESOTHO
SOUTH AFRICA
AUSTRALIA
NEW ZEALAND

BIOMES

Terrestrial biomes

- Tundra
- Boreal forest
- Temperate forest
- Temperate prairie
- Maquis
- Tropical rainforest
- Savanna
- Desert
- Rock and ice

Source: FAO

Example of a marine biome

- Coral reef

Source: WRI

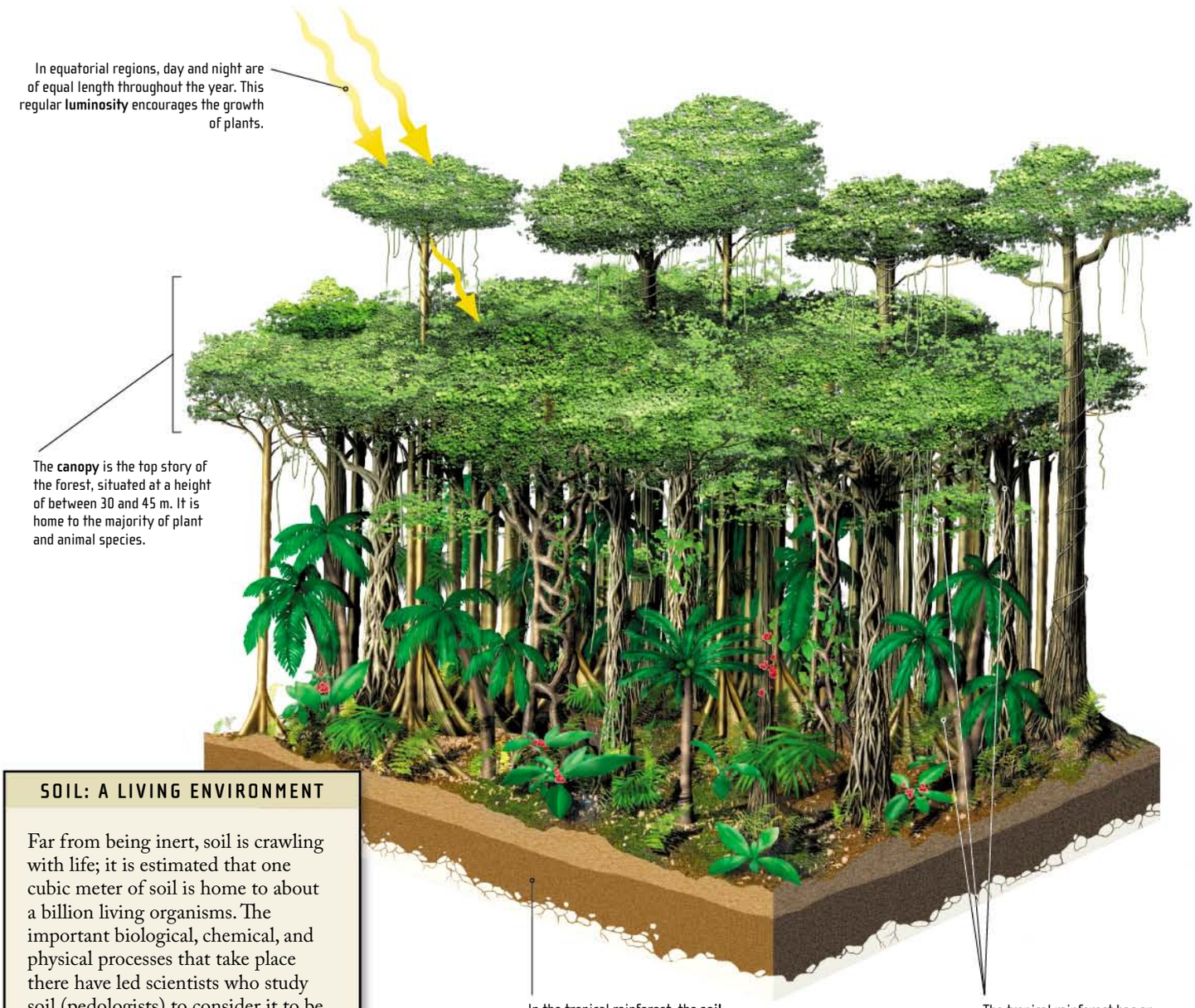
Forests

About one-third of the planet's landmass is covered with forests. Forests are complex ecosystems characterized by generally dense plant cover composed mainly of trees.

The composition of forests varies from region to region as a function of the climate, the nature of the soil, the altitude, and the latitude. The last parameter greatly influences the diversity of animal and plant species (biodiversity) in the forest. In the North, the boreal forest, populated with conifer species such as spruce, larch, and fir, is very homogeneous. Farther south, mixed forests are composed of conifers and deciduous trees, such as birch and willow. They form a transition zone between the boreal forest and the deciduous forests in more temperate zones, where, under the branches of large trees such as oaks and beeches, the undergrowth is generally dense.

The subtropical regions are too dry for forests to grow. The intertropical zones, on the other hand, have the lushest forests on the planet. The tropical rainforest, or equatorial forest, contains incredible biodiversity. Although it covers only 7% of Earth's landmass, it houses half of all living species on the planet and 20 times more species of trees than do temperate forests. The equatorial forest of Borneo, in the Pacific Ocean, holds the record for biodiversity with no fewer than 10,000 species of plants.

THE TROPICAL RAINFOREST



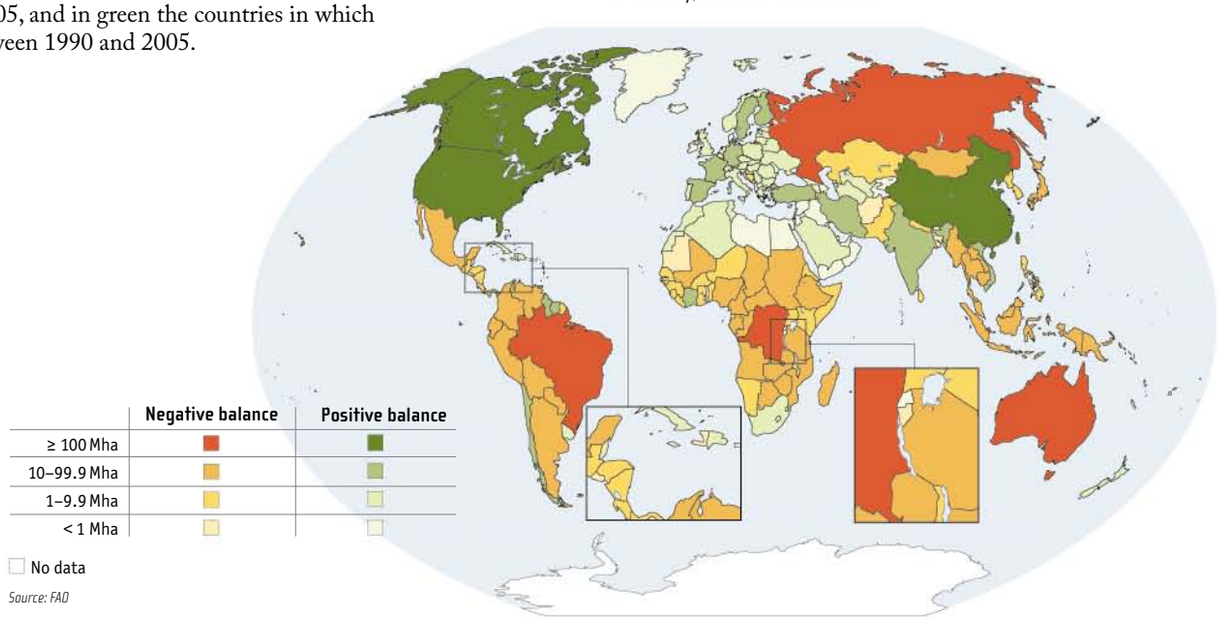
SOIL: A LIVING ENVIRONMENT

Far from being inert, soil is crawling with life; it is estimated that one cubic meter of soil is home to about a billion living organisms. The important biological, chemical, and physical processes that take place there have led scientists who study soil (pedologists) to consider it to be a true ecosystem.

AREA OF FOREST PER COUNTRY

The countries that have the smallest area of forest are those in desert regions, where the climate and nature of the soil are not propitious to the growth of plants. The map opposite shows in red the countries in which forest cover shrank between 1990 and 2005, and in green the countries in which forest cover grew between 1990 and 2005.

THE EVOLUTION OF THE AREA OF FOREST
Per country, between 1990 and 2005



Source: FAO

Mixed forest, Canada
In autumn, deciduous trees are distinguished from conifers, as their leaves change color before falling.

For almost two centuries, intensification of human activities has seriously accelerated the pace of extinction of plant and animal species on the surface of the planet. Today, for every new species that appears, 1,000 others become extinct. Protected areas are zones in which measures of various degrees of strictness are taken to preserve biodiversity. Since the creation in 1872 of the first national park (Yellowstone Park, in the United States), the number of protected areas has increased exponentially, and today there are over 100,000.

Boreal felt lichen, in Canada
Affected by air pollution, boreal felt lichen has completely disappeared from Scandinavia. This lichen survives only in eastern Canada.

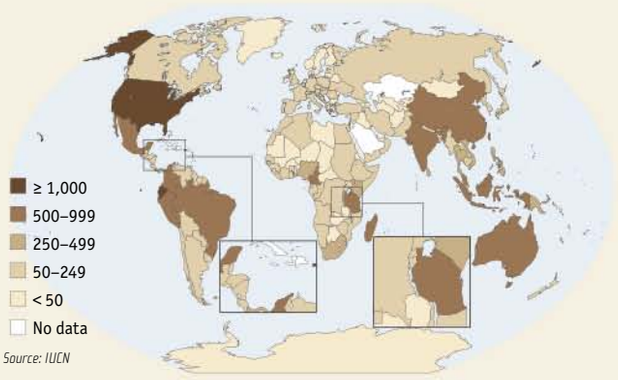
Biodiversity

Biodiversity is the diversity of living species in a given environment. It is usually measured by ecoregion. An ecoregion is a region of Earth that has a unique ecosystem. The World Wildlife Fund (WWF) defines 867 ecoregions, some of which are divided up.

THREAT AND PROTECTION

About 15,500 species are threatened with extinction due to pollution, deforestation, intensive farming, urban sprawl, and mining. The regions of the intertropical zone are those where biodiversity is most threatened.

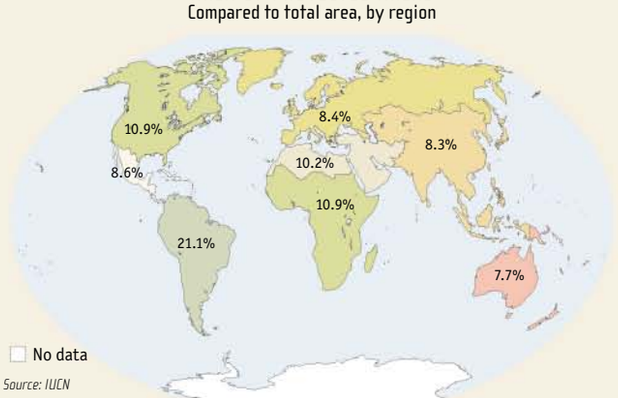
NUMBER OF THREATENED SPECIES PER COUNTRY



Source: IUCN

In protected areas, human activities such as cutting down trees, exploiting rivers, and even walking are regulated in order to preserve ecosystems. Some protected areas are gigantic: the biggest, Greenland National Park, has an area of 972,000 km². In 2003, the World Conservation Union (IUCN) counted more than 100,000 protected areas, covering more than 18 million km².

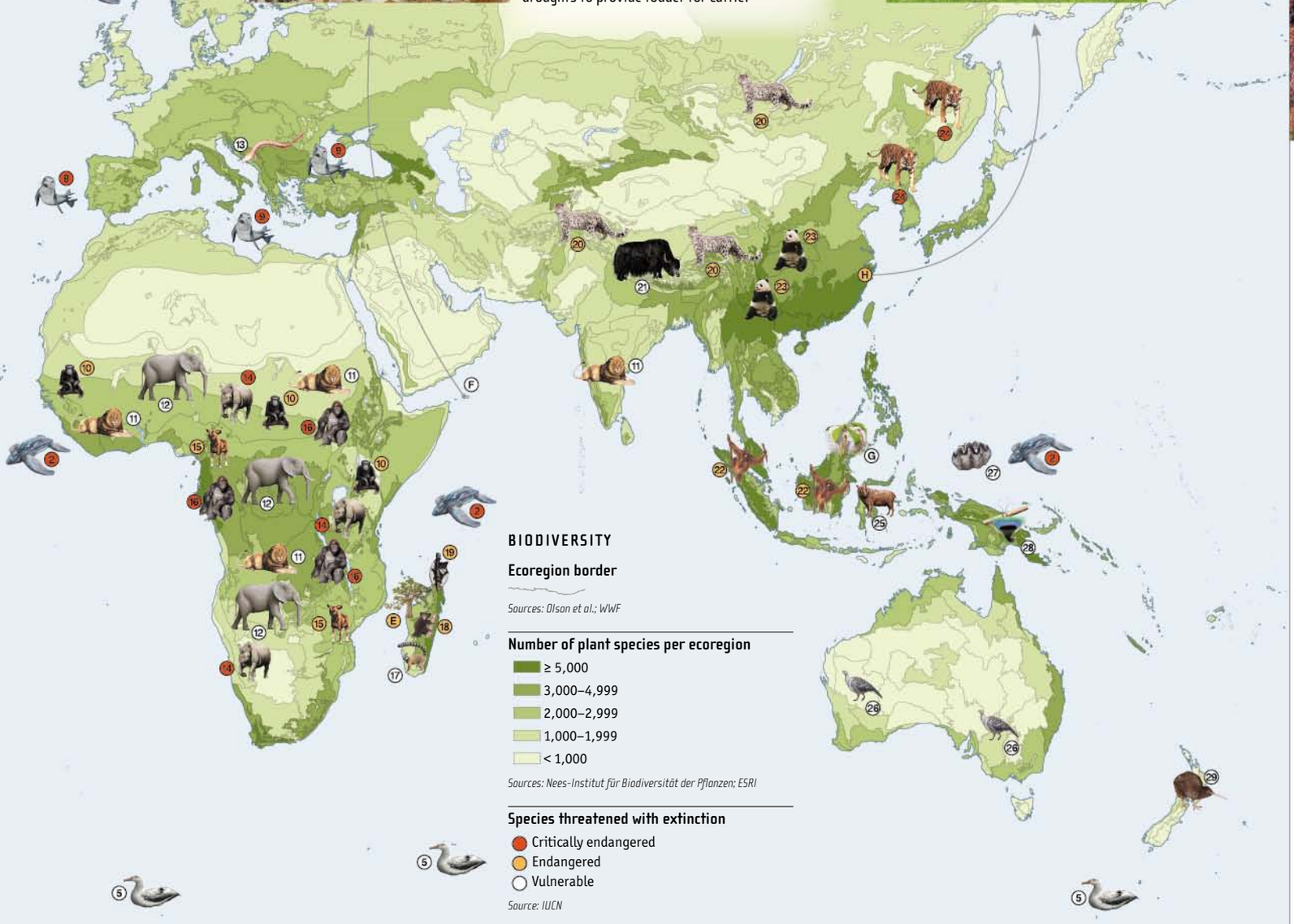
AREA OF PROTECTED AREAS
Compared to total area, by region



Source: IUCN

Ginkgo biloba, China
The ginkgo biloba is the only survivor of a family of plants that appeared more than 150 million years ago. Cultivated for centuries, it now exists in its natural state only in China.

Cucumber tree, Socotra
The cucumber tree, which is found now only on the Yemeni island of Socotra, is cut down during droughts to provide fodder for cattle.



SOME THREATENED SPECIES

ANIMAL SPECIES				PLANT SPECIES
1 Northern right whale	9 Mediterranean monk seal	17 Ring-tailed lemur	25 Babirussa	A Giant sequoia
2 Leathery turtle	10 Common chimpanzee	18 Aye-aye	26 Malleefowl	B Pincushion cactus
3 California condor	11 Lion	19 Indri	27 Giant clam	C Venus flytrap
4 Marine iguana	12 African elephant	20 Snow leopard	28 Blue bird-of-paradise	D Boreal felt lichen
5 Wandering albatross	13 Proteus	21 Yak	29 Brown kiwi	E Baobab
6 Three-wattled bellbird	14 Black rhinoceros	22 Orangutan		F Cucumber tree
7 Poison frog	15 African wild dog	23 Giant panda		G Pitcher plant
8 Hyacinth macaw	16 Gorilla	24 Siberian tiger		H Ginkgo biloba

Source: IUCN

The atmosphere, composed of 99% nitrogen and oxygen, has had a remarkably stable composition for millions of years. Gaseous and particulate pollutants make up only a tiny part of the atmosphere, and most of them have a natural origin (volcanoes, decomposition). However, the development of industrial activities over the last two centuries has considerably increased their concentration. Due to the presence of polluting gases, some rain may be 1,000 times more acid than normal. Atmospheric pollution causes particular damage to the health of populations residing in industrial regions, but the effects of this pollution are also felt elsewhere. The wind disperses pollutants to all continents, sometimes very far from the source of the pollution. There are even pollutant particles, such as lead, in the fur of polar bears.

The greenhouse effect

Some gases in the atmosphere are able to absorb infrared rays emitted by Earth. This natural phenomenon, called the greenhouse effect, helps to maintain our planet at a temperature conducive to life. Without it, the average temperature on the surface of Earth, which is now 15°C, would be only –18°C. However, because some human activities release quantities of "greenhouse gases" (methane, carbon dioxide, nitrogen oxide, CFCs, etc.) into the atmosphere, they contribute to further increases in the planet's temperature.

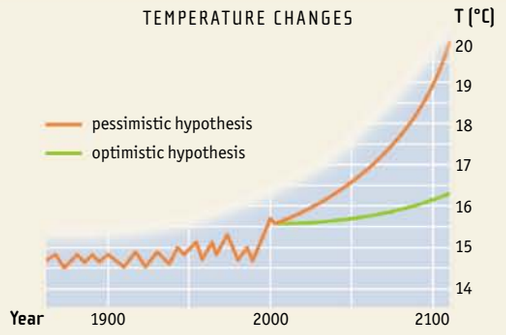
The quantities of greenhouse gases have been increasing in the lower atmosphere for a century and a half. According to numerous studies, this increase is directly responsible for the current global warming.

THE MAIN GREENHOUSE GASES

GAS	NATURAL SOURCE	ANTHROPOGENIC SOURCE
carbon dioxide (CO_2)	volcanic eruption	- forest fires - transportation - use of fossil fuels (industry, heating)
methane (CH_4)	decomposition of matter by microorganisms	- agriculture (animals' digestion, flooded rice paddies) - extraction of natural gas
nitrogen oxide (N_2O)	decomposition of matter by microorganisms	- use of fossil fuels - agriculture (nitrogenous fertilizers) - transportation
chlorofluorocarbons (CFCs)	chloromethane produced by plants in coastal marshes in the tropics	- aerosol sprays - refrigerators - foam insulation Responsible for the destruction of the ozone layer, CFCs have been banned in countries that have signed the Montreal Protocol (1987). They are still present in the atmosphere, since their life span is between 60 and 110 years.

TEMPERATURE INCREASES

While the average annual temperature on Earth's surface grew by 0.6°C over the last century, studies indicate that it may climb another 1°C to 4.5°C over the next 100 years if greenhouse-gas emissions continue to increase at the current pace.



Forest fires, United States
They contribute to the greenhouse effect by releasing CO_2 into the atmosphere. In addition, climatic warming, a consequence of the greenhouse effect, leads to more forest fires.

ATMOSPHERIC POLLUTION

Emissions of carbon dioxide

Very high

Low

Source: NSIDC

Forest fires

Zones affected in 2000

Source: UNEP

Kyoto Protocol

Not all overseas territories have necessarily ratified the agreement.

- In effect
- Signed
- No position

Source: CCNUCC

THE KYOTO PROTOCOL

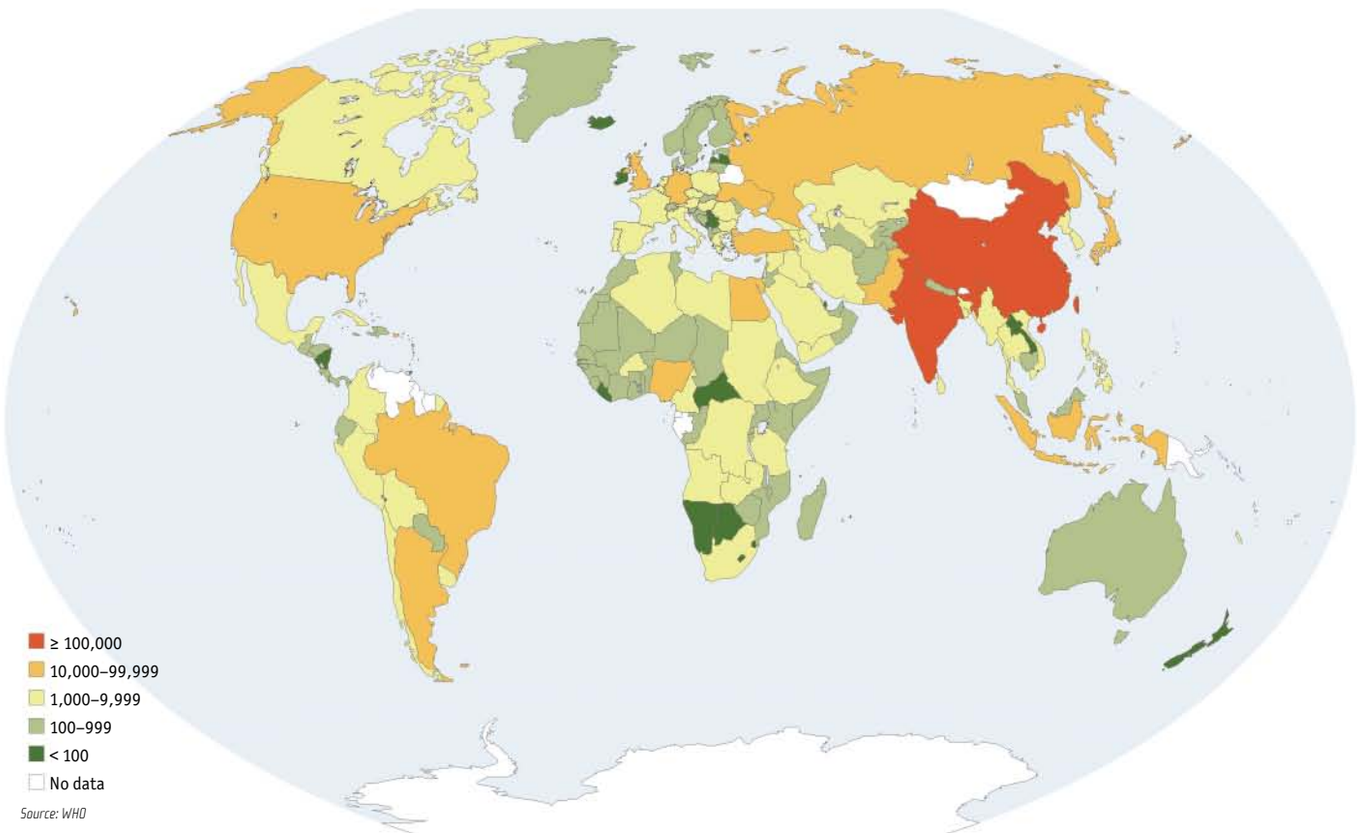
This international treaty, written in 1997, provides for the reduction in greenhouse-gas emissions by an average of 5.2% from 1990 levels by 2012. Most countries have signed the treaty, but it has come into effect only in countries that have ratified it.

Urban pollution and health

The high population density in cities is related to concentration in pollution sources, notably motor vehicles and industry. As a consequence, urban air is more polluted. Air pollution has a major impact on the health of urban populations. Respiratory problems (coughing, bronchitis, lung cancer, etc.) are more common in cities.

Mortality attributable to urban air pollution is particularly high in Southeast Asia. This public-health problem will be amplified in coming years, as forecasts call for most population growth to be absorbed by cities.

MORTALITY CAUSED BY AIR POLLUTION
Number of dead per country



ATMOSPHERIC PARTICULATE POLLUTION

Atmospheric pollutants are not exclusively gases. Nongaseous pollution includes particulates of different sizes. Soot and dust are coarse particles. Lead, copper, zinc, and cadmium are small metal particles. Finally, nitrates and sulfates are very fine salt particles. Atmospheric particulate pollution is harmful to the health. Particles may come from combustion plants and industrial processes such as mineral extraction, but also from natural sources such as volcanic eruptions or simply erosion of landforms.

URBAN POLLUTION

Particulate-pollution level in the most polluted cities with a population of more than 3 million inhab., in micrograms per m^3 of air

CITY	COUNTRY	PARTICULATE-POLLUTION LEVEL	CITY	COUNTRY	PARTICULATE-POLLUTION LEVEL
Karachi	Pakistan	220	**Calcutta**	India	153
Baghdad	Iraq	189	**Tianjin**	China	149
Delhi	India	187	**Chongqing**	China	147
Cairo	Egypt	178	**Shenyang**	China	120
Lahore	Pakistan	178	**Surabaja**	Indonesia	120
Dhaka	Bangladesh	174	**Riyadh**	Saudi Arabia	118
Xi'an	China	167	**Jinan**	China	112
Alexandria	Egypt	163	**Nanjiang**	China	110

Source: World Bank

St. Petersburg, Russia >
The chimneys in this industrial complex release black smoke into the St. Petersburg sky.

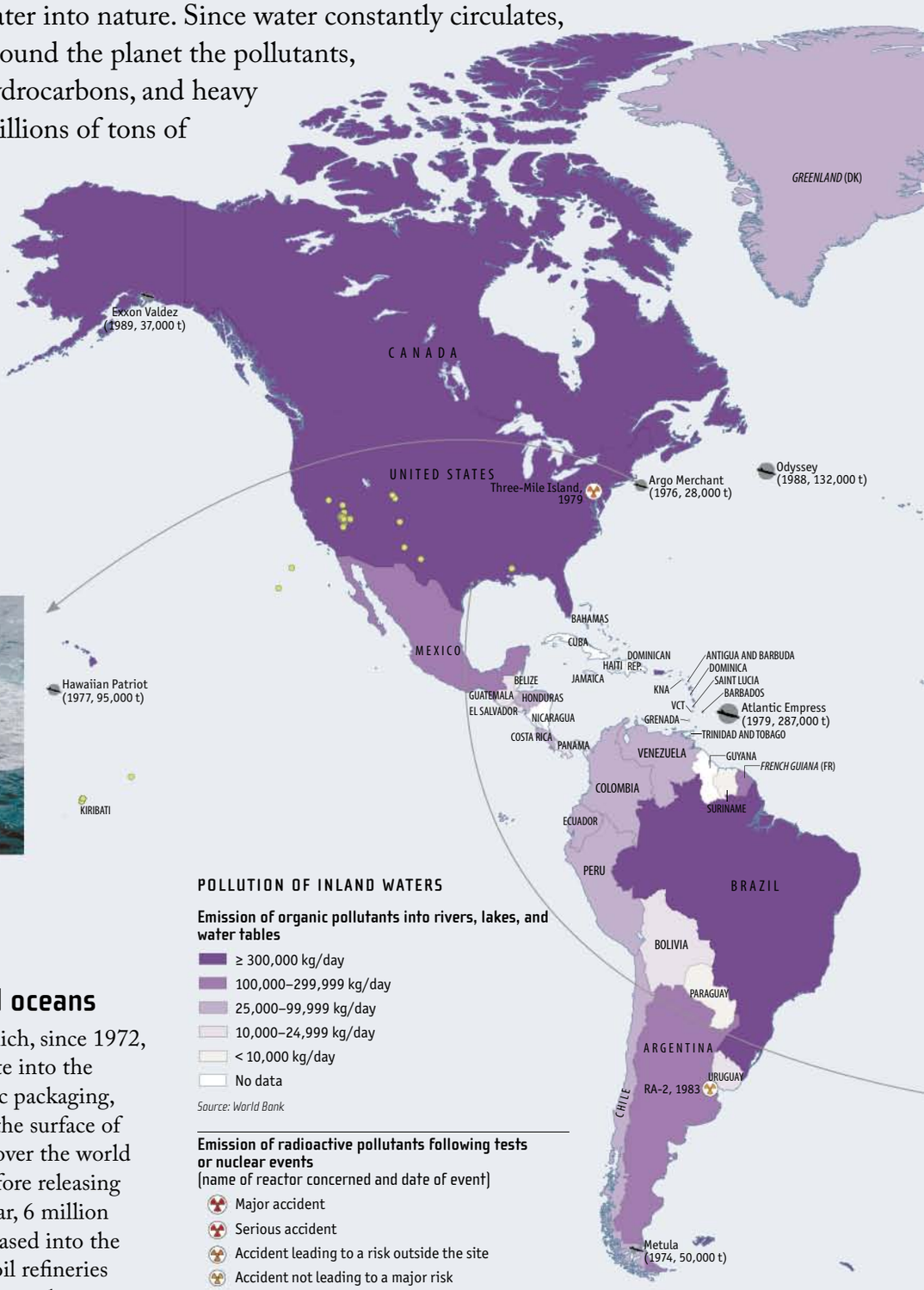
WATER AND SOIL POLLUTION

Industries, farming operations, mines, street cleaning, and even housecleaning—many human activities release dirty water into nature. Since water constantly circulates, it transports and redistributes around the planet the pollutants, including pesticides, bacteria, hydrocarbons, and heavy metals. The soil is polluted by millions of tons of industrial waste, household trash, fertilizers, and pesticides released into the environment every year.

The Argo Merchant, off the coast of the United States
The shipwreck of the oil tanker, in 1976, caused heavy pollution off the Massachusetts coast.

Pollution of inland waters and oceans

In spite of the London Convention, which, since 1972, has banned dumping of household waste into the sea, huge amounts of solid waste (plastic packaging, cans, fishing nets) continue to float on the surface of the oceans. In addition, many cities all over the world do not always treat their wastewater before releasing it into rivers, seas, and oceans. Every year, 6 million tons of petroleum products are also released into the oceans due to oil spills and leaks from oil refineries and offshore drilling rigs. Finally, during nuclear tests and incidents at nuclear plants (power plants, for example), radioactive elements may be dispersed into watercourses, water tables, seas, and oceans, as well as the soil and the atmosphere.



POLLUTION OF INLAND WATERS

Emission of organic pollutants into rivers, lakes, and water tables

- ≥ 300,000 kg/day
- 100,000–299,999 kg/day
- 25,000–99,999 kg/day
- 10,000–24,999 kg/day
- < 10,000 kg/day
- No data

Source: World Bank

Emission of radioactive pollutants following tests or nuclear events
(name of reactor concerned and date of event)

- Major accident
- Serious accident
- Accident leading to a risk outside the site
- Accident not leading to a major risk outside the site
- Serious incident
- Sites of nuclear tests

Sources: SMOC; IAEA

POLLUTION OF OCEANS

Oil spills
Oil tanker (year, quantity of oil spilled)

- ≥ 200,000 t
- 100,000–199,000 t
- < 100,000 t

Source: ITOPF

ACID RAIN

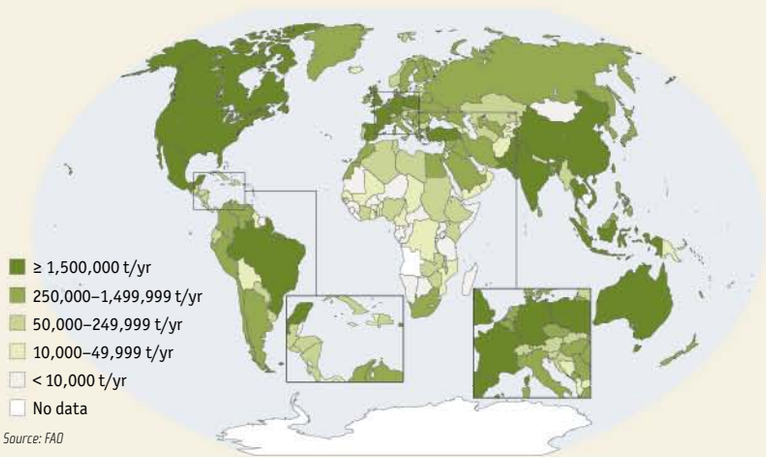
Rainwater is naturally acid, since the air contains carbon dioxide, which is transformed into carbonic acid in contact with water. However, some polluting gases, notably sulfur dioxide (SO_2) and nitrogen dioxide (NO_2), help to increase this acidity. There are certainly natural sources of these gases, such as volcanic eruptions and certain microbial and chemical processes in the soil, but there are many anthropogenic sources, including use of fossil fuels (thermal power plants, refineries, foundries) and transportation. Rain observed in 1974 in Pitlochry, Scotland, was as acid as lemon juice, or about 1,000 times more acid than normal rainwater. This phenomenon has disastrous effects on the environment, especially forests and lakes.

Industrial pollution, United States
Industries release more than 700 different substances into the soil, among them mercury, lead, and trichloroethylene.

SOIL POLLUTION

The origins of soil pollution are domestic, agricultural, and industrial. Household waste is made mainly of biodegradable materials, but it also contains plastics, detergents, solvents, and heavy metals. Spreading of fertilizers increases the quantity of nitrates and phosphates in the soil, disturbing natural nitrogen and phosphorus cycles. However, most nonbiodegradable pollutants come from industry.

USE OF FERTILIZERS PER COUNTRY



Source: FAO

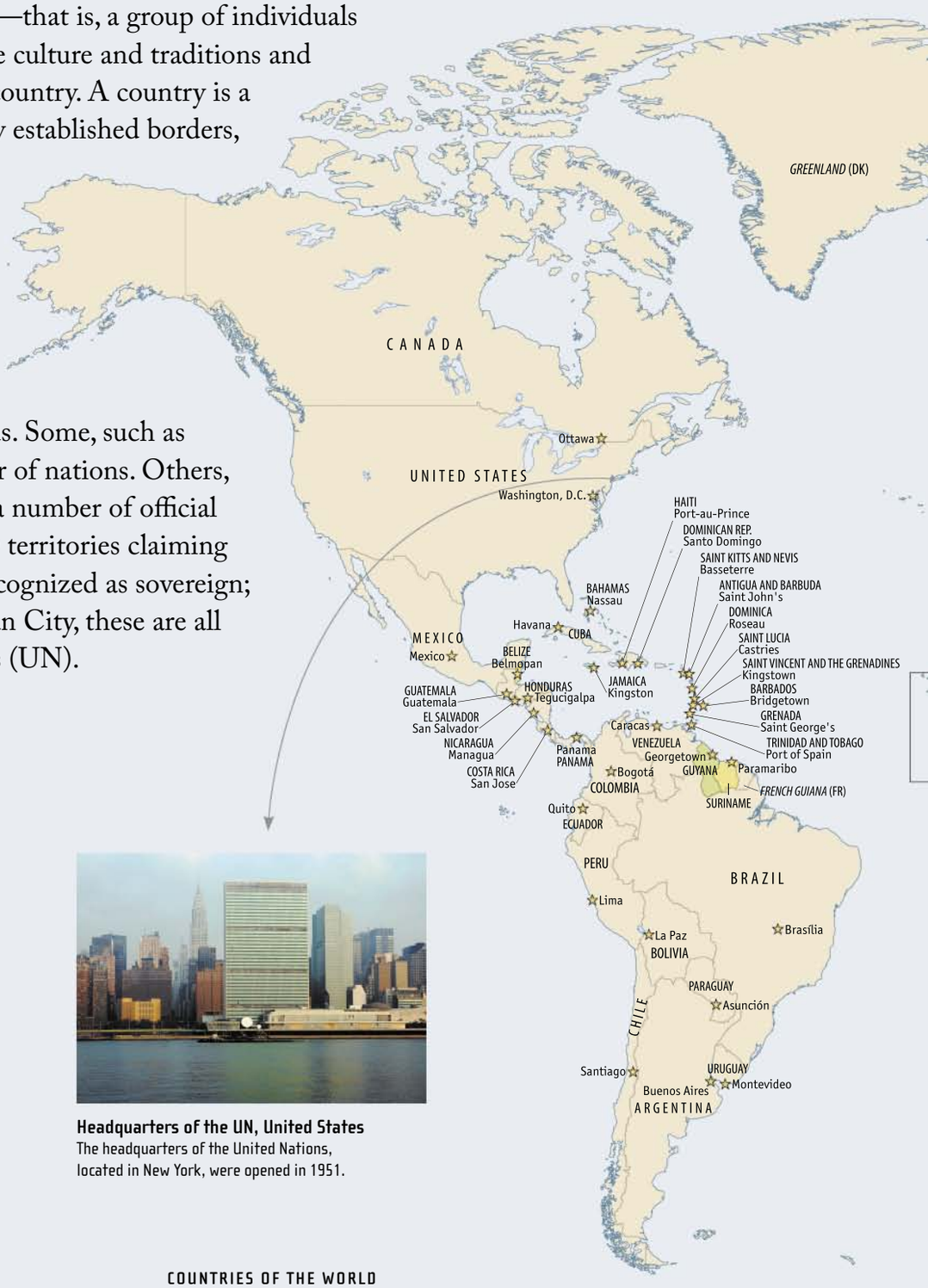

DHL
ISUZU
EXAMINE THIS SELF

EARTH: AN INHABITED PLANET

The appearance of human beings on Earth changed the face of the world. Very quickly, the first peoples drew borders to define their territories, and the continents were gradually divided into nations, where today a wide variety of peoples—with different languages, religions, and lifestyles—live. Conflicts arising from these territorial divisions are still boiling over in a number of regions, but there are also peaceful interactions such as cultural exchanges, development projects, economic transactions, and sports tournaments.

TOP: The holy city of Varanasi, on the shores of the Ganges, India
LEFT: The Idumata Market, in Lagos, Nigeria

A nation encompasses a people—that is, a group of individuals who share more or less the same culture and traditions and who generally live in the same country. A country is a geographic territory with clearly established borders, belonging to a nation or a group of nations. A country has its own government laws, armed forces, money, capital, and flag. It offers its nationals political rights such as citizenship. Countries are not necessarily homogeneous. Some, such as China, group together a number of nations. Others, such as Switzerland, recognize a number of official languages. Out of the some 240 territories claiming the status of country, 193 are recognized as sovereign; with the exception of the Vatican City, these are all members of the United Nations (UN).



Official flag of the UN
The emblem of the United Nations, adopted in 1946, portrays a planisphere centered on the North Pole and surrounded by two olive branches, the symbol of peace.

Headquarters of the UN, United States
The headquarters of the United Nations, located in New York, were opened in 1951.

The United Nations

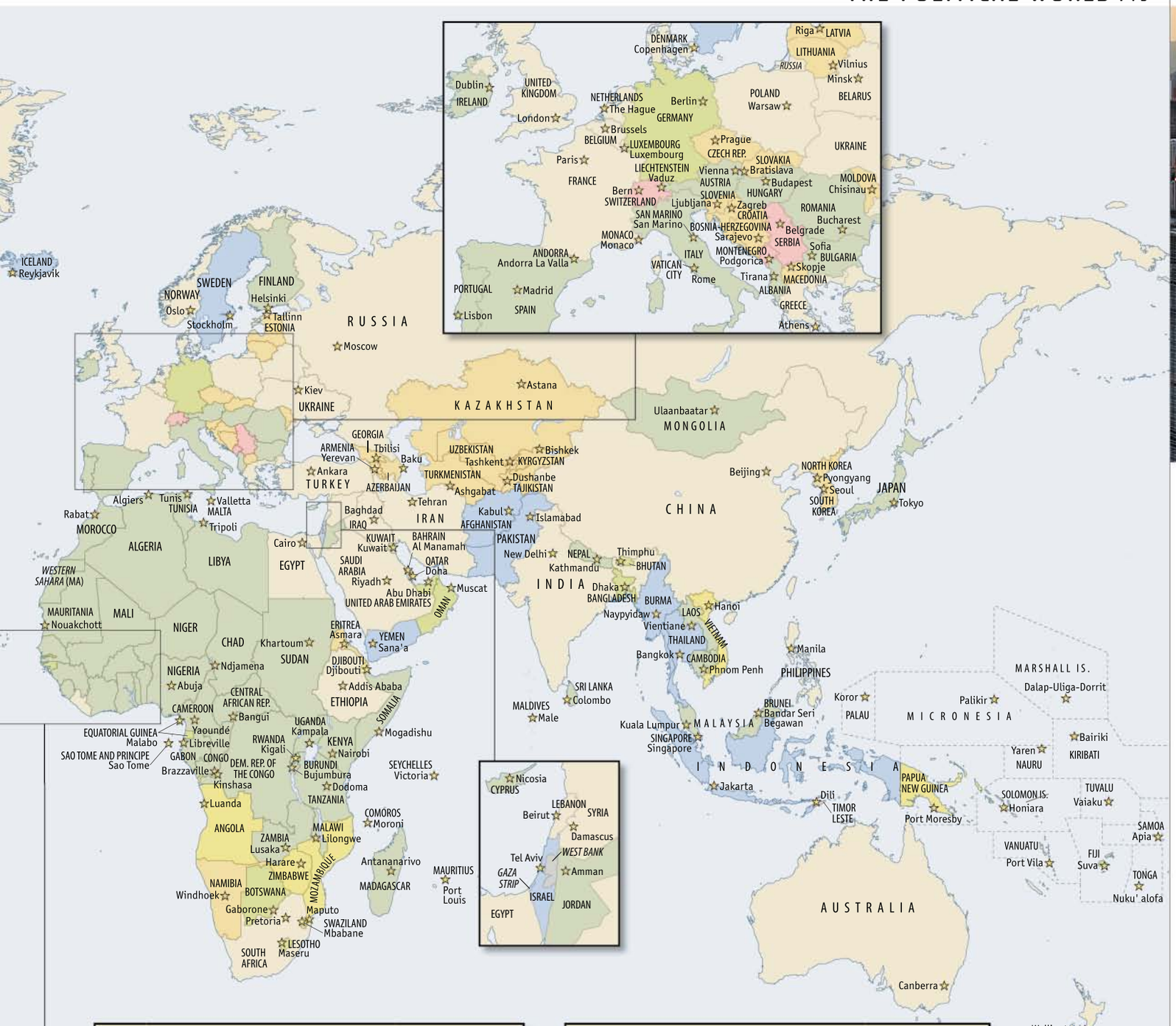
Created in 1945 to maintain world peace, the UN also has mandates concerning the environment, public health, and humanitarian aid. Issues involving international peace are submitted to the Security Council, formed of 15 members, five of which are permanent: China, the United States, France, the United Kingdom, and Russia.

COUNTRIES OF THE WORLD

BRAZIL: country
FRENCH GUYANA (FR): territory (sovereign country)
☆ Capital

Date of entry to the UN
- 1995–2006
- 1985–1994
- 1975–1984
- 1965–1974
- 1955–1964
- 1946–1954
- 1945
- Non-member

Source: UN



THE LARGEST COUNTRIES

RANK	COUNTRY	AREA
1	**Russia**	17,075,400 km²
2	**Canada**	9,970,610 km²
3	**United States**	9,629,091 km²
4	**China**	9,596,961 km²
5	**Brazil**	8,514,047 km²
6	**Australia**	7,741,220 km²
7	**India**	3,287,263 km²
8	**Argentina**	2,780,400 km²
9	**Kazakhstan**	2,724,900 km²
10	**Sudan**	2,505,813 km²
11	**Algeria**	2,381,741 km²
12	**Democratic Republic of the Congo**	2,344,858 km²
13	**Saudi Arabia**	2,149,690 km²
14	**Mexico**	1,958,201 km²

Source: UN

THE SMALLEST COUNTRIES

RANK	COUNTRY	AREA
193	**Vatican City**	0.4 km²
192	**Monaco**	1 km²
191	**Nauru**	21 km²
190	**Tuvalu**	26 km²
189	**San Marino**	61 km²
188	**Liechtenstein**	160 km²
187	**Marshall Islands**	181 km²
186	**Saint Kitts and Nevis**	261 km²
185	**Maldives**	298 km²
184	**Malta**	316 km²
183	**Grenada**	344 km²
182	**Saint Vincent and The Grenadines**	388 km²
181	**Antigua and Barbuda**	442 km²
180	**Seychelles**	455 km²

Source: UN

Political systems

A state's political system is the way in which power is organized and exercised in that state. About one-third of the states in the world have a democratic system, in which the people theoretically hold the power. Another third aspire to a democratic system (emerging democracies). The other countries are under authoritarian systems, in which power is held by an individual (absolute ruler) or a small group of individuals (single party, state religion, army) who impose their authority by force and strictly regulate the lives of their fellow citizens without consulting them. Depending on whether the system is democratic or authoritarian, the powers of the head of state, monarch, or president of a republic are more or less extensive.

TYPES OF GOVERNMENT

- Parliament
- Parliament and head of state (joint power)
- President (limited power)
- President (extensive power)
- Communist party
- Absolute monarch
- Army
- Transitional government

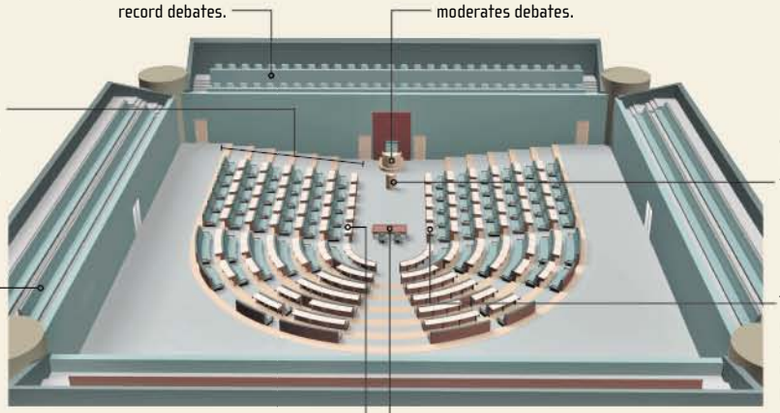
Sources: J. Derbyshire, Encyclopedia of World Political Systems; CIA World Factbook; Ministère français des Affaires étrangères

DEMOCRACY

In a democracy, each citizen may make his or her voice heard through elections. Representatives elected by the people form the parliament, which debates and votes on laws. The parliament is formed of one or two chambers (upper and lower chambers). The upper chamber, often called a senate, usually has less power than the lower chamber, often called the National Assembly or House of Commons.

Democracy is the political system that is most respectful of individual freedoms; in principle, citizens are equal before the law and enjoy freedom of opinion, expression, and worship, the press is independent, and a number of political parties coexist. In practice, all democracies are imperfect to some degree (discrimination against minorities, government corruption, etc.).

A PARLIAMENT



SEPARATION OF POWERS

Separation of powers is one principle of democracy. Its aim is to avoid having a small group of people seizing control of an entire country. There are usually three types of power within a democratic nation. Legislative power is in the hands of the people's representatives (parliament), who formulate and pass laws. These laws are applied by judges and magistrates, who thus hold judicial power. Executive power, which consists in administering the state, is in the hands of the government. The government's policy is submitted to the control of parliament: if the assembly disagrees with the policy, it may oppose or even defeat the government. The press, which monitors all three branches of power, is sometimes considered to be a fourth power.

Supreme Court in Washington, United States
The Supreme Court is the highest court in the United States. It guarantees equal justice for all American citizens in compliance with the law. Judicial power, independent of executive power, also guarantees that the government's actions comply with the law.

Westminster Palace in London, United Kingdom
Westminster Palace is the seat of the British Parliament, where the House of Lords (upper chamber) and the House of Commons (lower chamber) sit. Westminster Palace is known for its majestic clock tower, which houses the bell nicknamed Big Ben.

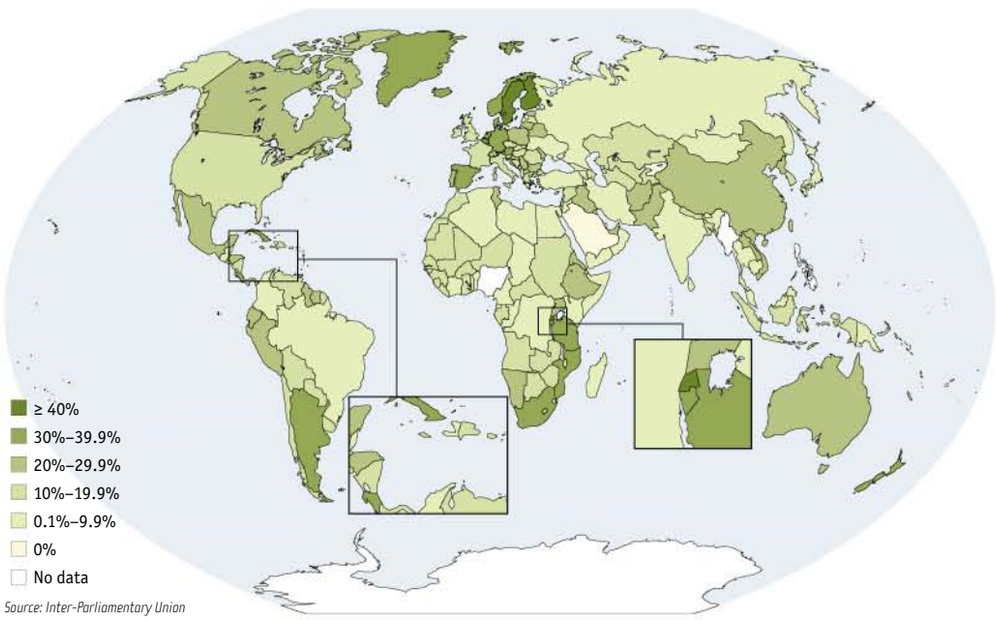
Women in politics

Although women form about half of the world's population, their place in politics remains secondary in most countries in the world. Women occupy an average of 16% of parliamentary seats (40% in Nordic countries, less than 7% in Arab countries). Only a dozen countries are currently led by a woman, including Chile, Finland, and Germany. About 7% of ministerial positions, most of them in the social affairs field, are filled by women.

A number of countries are trying to improve women's representation in political bodies through quotas. According to the Inter-Parliamentary Union, out of the 39 countries that held parliamentary elections in 2005, 15 had implemented measures in favour of women (voluntary or statutory quotas requiring that political parties present more female candidates or reserving parliamentary seats for women). These countries have twice as many elected women as do countries where no measure has been undertaken (26.9% vs. 13.6%).

However, several countries still do not recognize the right of women to run for office in an election; some, such as Saudi Arabia, do not even allow women to vote. Kuwait allowed women to vote and run for office only in 2005.

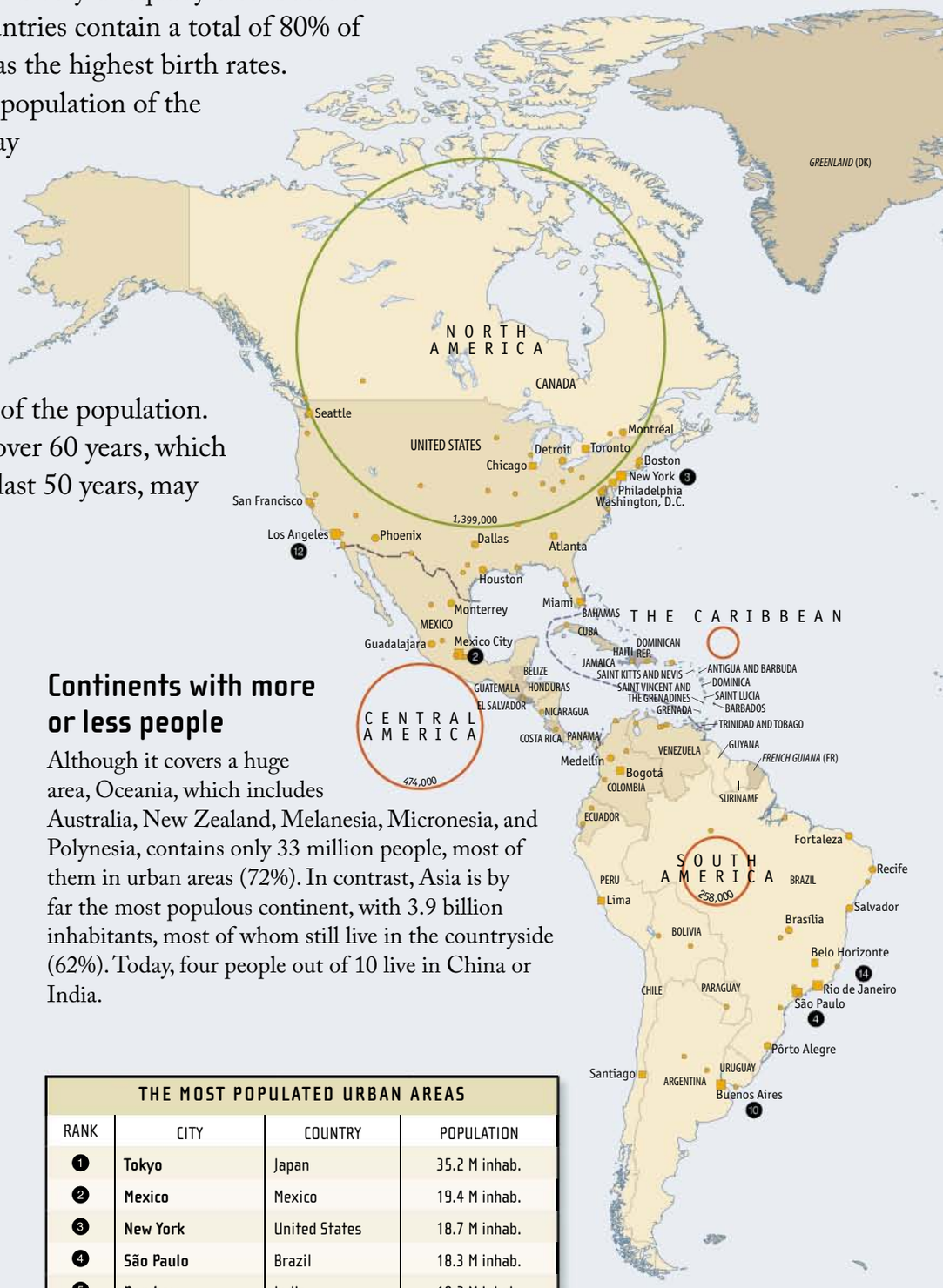
WOMEN IN PARLIAMENT
Proportion of women in the lower chamber of parliament



Source: Inter-Parliamentary Union

Presidential election in Chile, March 2006
Elected president of the Republic of Chile, Michelle Bachelet is one of the few female heads of state.

In the summer of 2005, the world's population passed the 6.5 billion mark. The population is very unequally distributed on the planet, since developing countries contain a total of 80% of the world's inhabitants, as well as the highest birth rates. Demographers predict that the population of the 50 least-developed countries may more than double by 2050, while that in developed countries should remain at 1.2 billion. The world's population would then reach 9.1 billion. Demographers are also predicting an overall aging of the population. The proportion of people aged over 60 years, which went from 8% to 10% over the last 50 years, may double by 2050.



Continents with more or less people

Although it covers a huge area, Oceania, which includes Australia, New Zealand, Melanesia, Micronesia, and Polynesia, contains only 33 million people, most of them in urban areas (72%). In contrast, Asia is by far the most populous continent, with 3.9 billion inhabitants, most of whom still live in the countryside (62%). Today, four people out of 10 live in China or India.

DISTRIBUTION OF THE POPULATION

Population density

- ≥ 400 inhab./km²
- 300–399 inhab./km²
- 150–299 inhab./km²
- 75–149 inhab./km²
- 25–74 inhab./km²
- < 25 inhab./km²

Source: UN

Main urban areas

- ≥ 10 M inhab.
- 5–9.9 M inhab.
- 3–4.9 M inhab.
- 1–2.9 M inhab.

Source: UN

Net migration per region
(migrants/yr)

8 mm = 200,000

- Net loss (more emigrants than immigrants)
- Net gain (more immigrants than emigrants)
- Null migration (equivalent emigration and immigration)

Source: UN

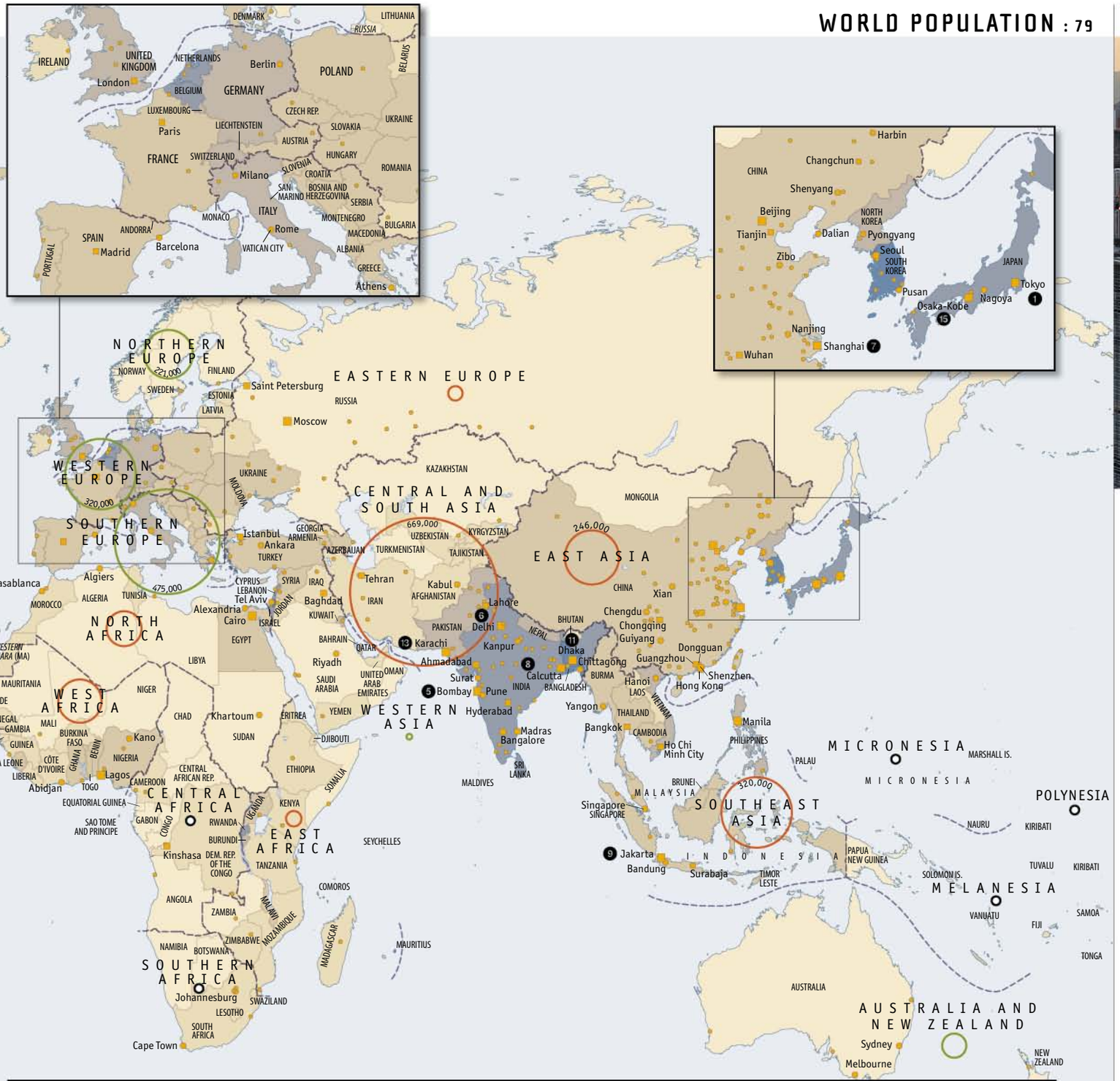
Regional border

Source: UN

THE MOST POPULATED URBAN AREAS

RANK	CITY	COUNTRY	POPULATION
1	**Tokyo**	Japan	35.2 M inhab.
2	**Mexico**	Mexico	19.4 M inhab.
3	**New York**	United States	18.7 M inhab.
4	**São Paulo**	Brazil	18.3 M inhab.
5	**Bombay**	India	18.2 M inhab.
6	**Delhi**	India	15.0 M inhab.
7	**Shanghai**	China	14.5 M inhab.
8	**Calcutta**	India	14.3 M inhab.
9	**Jakarta**	Indonesia	13.2 M inhab.
10	**Buenos Aires**	Argentina	12.5 M inhab.
11	**Dhaka**	Bangladesh	12.4 M inhab.
12	**Los Angeles**	United States	12.3 M inhab.
13	**Karachi**	Pakistan	11.6 M inhab.
14	**Rio de Janeiro**	Brazil	11.5 M inhab.
15	**Osaka-Kobe**	Japan	11.3 M inhab.

Source: UN



URBANIZATION OF THE POPULATION

Almost half of the world's population lives in cities. Although some countries, such as Laos, are still very rural, others, such as Israel, are almost completely urbanized. Urbanization of the population, a recent phenomenon, is intensifying. According to UN estimates, in 30 years, cities will be home to more than 60% of the world's population. The cities in developing countries should grow the most rapidly, such as Dhaka, Bangladesh; Lagos, Nigeria; and Delhi, India. In developed countries, where urban dwellers already represent three-quarters of the population, the urban population will grow more slowly. Today's megalopolises, such as Tokyo and Mexico, which together contain almost 4% of the world's population, will remain the most populous, but will expand less quickly.

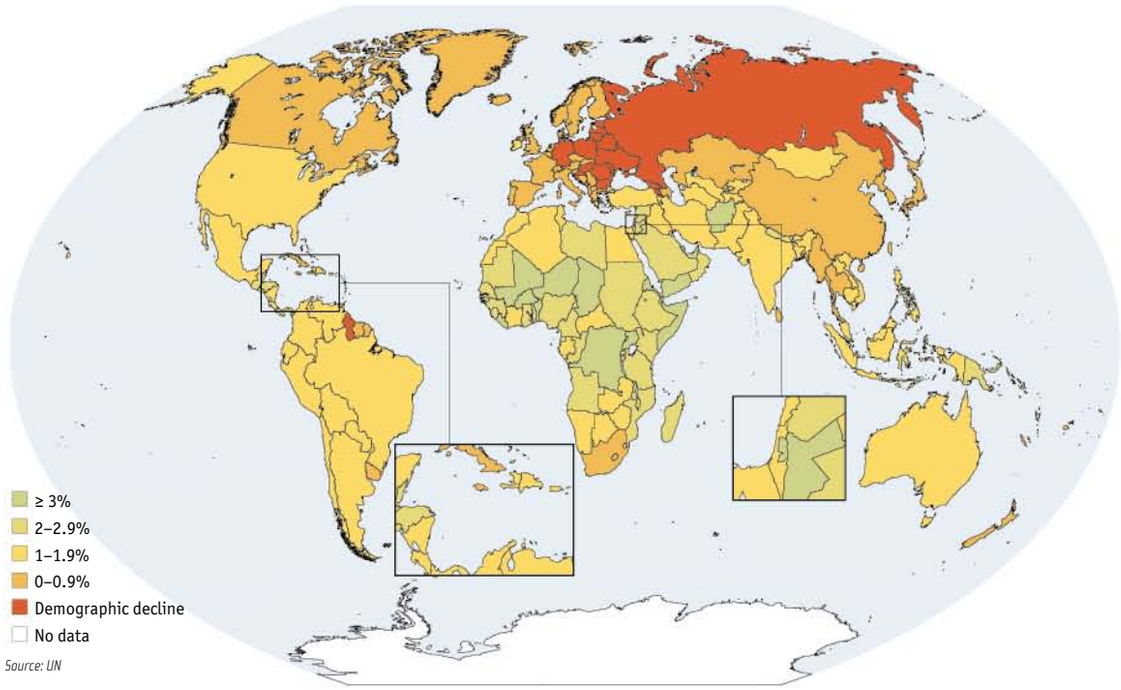
PART OF THE POPULATION THAT LIVES IN THE CITIES

Source: UN

Population growth

The rate of population growth is the rate at which a country's total population has increased or decreased during a given year. This rate takes account of births, deaths, and migration. In Germany, for example, population growth between 2000 and 2005 was slightly positive, thanks to the arrival of immigrants and in spite of a low birth rate. However, population growth will be negative in 2005–2010, since decreasing immigration will no longer be able to compensate for the drop in births and increased mortality due to the aging of the population. After reaching a peak in the late 1960s (2.04%), growth of the world's population will stand at 1.17% per year for 2005–2010.

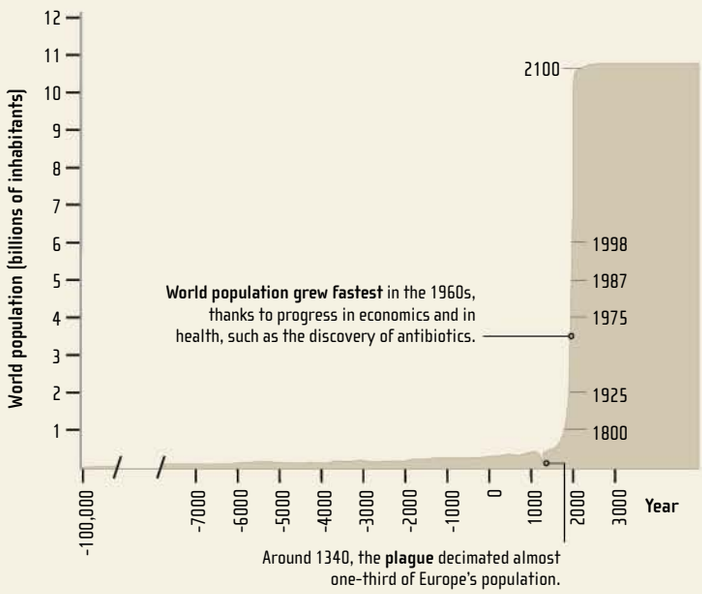
ANNUAL RATE OF POPULATION GROWTH
2005–2010



Source: UN

CHANGES IN WORLD POPULATION

Modern human beings, who appeared about 200,000 years ago in Africa, gradually colonized the planet. The first estimates of world population go back to year zero, when Earth had about 300 million inhabitants. A thousand years later, there were only 320 million. Birth and death rates were high but so balanced that the world's population remained stable for hundreds of years. During the Renaissance in Europe, living conditions improved. A demographic transition began: mortality dropped, but the birth rate remained high. The overall population began to grow, reaching 1 billion in 1800, 2 billion in 1925, and 3 billion in 1960. The demographic transition in industrialized countries was then complete: the birth rate and death rate evened out at a low level. In developing countries, this transition is currently underway: over the last 50 years, the death rate has fallen, and in certain countries, such as China, the birth rate is now on the same path. A century from now, a new population balance should be established in the world, with low birth and death rates, returning stability to the world's population.

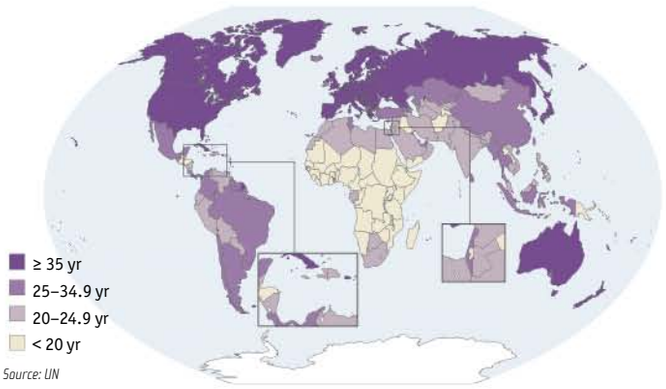


THE MEDIAN AGE OF THE POPULATION

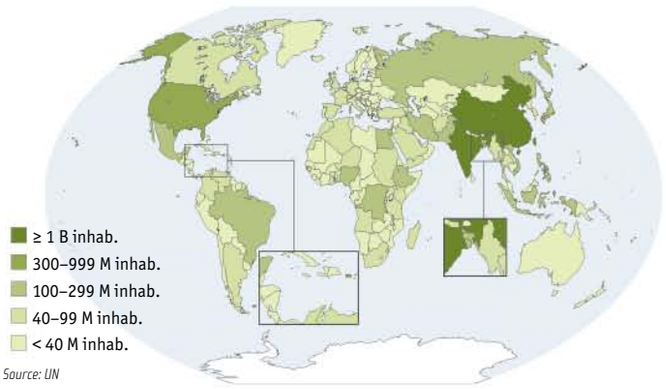
The median age is the age that divides a population into two halves: one-half of the population is older; the other half, younger. The higher the median age, the older the population. For 30 years, the median age worldwide has risen constantly, going from 22.2 years in 1970 to 28.0 years in 2005. However, population aging does not affect all regions of the world in the same way. Between 1950 and 2005, the proportion of people aged over 60 years went from 11.7% to 20.1% in developed regions, but only from 6.4% to 8.1% in developing countries. In Africa, it even dropped slightly, reaching 5.2% in 2005.

WORLD POPULATION IN 2050

Population estimates take account of many demographic variables, among them population growth, population age, and fertility rate (number of children per woman). It is estimated that the world's population will reach 9.1 billion in 2050. Europe's demographic load should fall, while Africa's should rise. The share of the other continents should remain stable. By mid-century, Asia will be home to almost three-quarters of the world's population.



Source: UN



Source: UN

Street in Old Delhi, India
India's rate of population growth (1.46% per year between 2005 and 2010) is slightly above the world average. The country's demographic load should remain stable in coming years.

Language, exclusive to human beings, is the faculty to express thought through speech, in a linguistic system that has been transmitted. It is one of the main characteristics of a people's culture. Almost 7,000 different languages are spoken in the world. The division of its population according to language spoken reflects a country's cultural diversity. About half of all countries have one or several languages designated as official in the constitution or a statute. An official language is often, but not always, spoken by a large proportion of the population.

Language families

A language family is a group of languages that are derived from a single language of origin. There are more than 10 major language families. The Indo-European family includes more than 400 languages with a common Indo-European origin that may go back to 2000 BCE. The languages in this family are the most widely spoken in the world, with almost 3 billion speakers from Europe to Asia. The Indo-European family includes languages spoken in India, the Slavic languages (Russian, Polish), Greek, the Germanic languages (German, English, Flemish, Norwegian, etc.), the Celtic languages, and the languages of Latin origin (French, Italian, Spanish, Portuguese, etc.). Smaller families, like the Papuan languages (in Papua New Guinea), include almost 3,400 languages, spoken by less than 4% of the world population. Amerindian languages belong to indigenous languages, as well as Australian (mainly Aborigene), Eskimo-Aleut and Tasmanian languages.

THE MAIN LANGUAGE FAMILIES

FAMILY	NUMBER OF LANGUAGES	MAIN LANGUAGES
Nigero-Congolese	1,514	Wolof, Dogon, Swahili, Zulu
Austronesian	1,268	Javanese, Malay
Amerindian	about 900	Inuktituk, Cree, Nahuatl, Yucateco
Indo-European	449	Hindi, English, Spanish, Bengali, Russian, Portuguese, French
Sino-Tibetan	403	Chinese (13 different languages), Tibetan
Afro-Asiatic	375	Somali, Arabic, Hebrew, Kabyle
Dravidian	73	Telugu, Tamil
Altaic	66	Turkish, Manchurian
Uralian	39	Finnish, Hungarian
Japanese	12	Japanese and 11 languages that are becoming extinct

Sources: Ethnologue, SIL International; J. Leclerc, TLFQ, Univ. Laval

DISTRIBUTION OF THE MAIN LANGUAGE FAMILIES

- Indo-European
- Amerindian and other indigenous languages
- Afro-Asiatic
- Nigero-Congolese
- Nilo-Saharan
- Khoisian
- Austronesian
- Uralian
- Altaic
- Sino-Tibetan
- Austro-Asiatic
- Japanese
- Papuan languages
- Other, including Dravidian

Sources: J. Leclerc, TLFQ, Univ. Laval; Ethnologue, SIL International; Meyers Großer Weltatlas

Sign in a Shanghai street, China
Chinese writing uses characters called sinographs. Not all of them are ideographs that represent a single word or idea. Most of these characters are ideophonographs that associate a phonetic indication and a semantic indication.

Languages and writing

The most widespread language in the world is Mandarin (Chinese), with more than 870 million speakers. Many other languages are used by only several hundred people. Half of all current languages may rapidly disappear, as they are abandoned for international languages.

A language is usually associated with a writing system, a group of symbols allowing the language to be transcribed onto a medium. Many writing systems are alphabetic (Latin, Arab, Cyrillic, etc.), with the alphabetic characters used to construct the sounds of the language. But there are also syllabic writing systems, in which the symbols represent syllables (Japanese) and logographic writing systems, in which each symbol corresponds to a word or group of words (Chinese).

THE MOST WIDELY SPOKEN LANGUAGES

LANGUAGE	SPEAKERS	MAIN COUNTRIES
Mandarin (Chinese)	874 M	China
Hindi	366 M	India
English	341 M	United Kingdom, countries of North America and Oceania
Spanish	322 M	Spain, countries of South and Central America
Bengali	207 M	Bangladesh
Arab	206 M	countries of the Middle East and North Africa

Source: Ethnologue, SIL International

A religion is a group of doctrines and rituals designed to connect the human soul to the realm of the divine and the sacred. For centuries, religions have overlapped and competed with each other. Their origins are sparked by a person or an event, and some are much older than others. Religions play a cultural and social role, the importance of which varies depending on the people, the period, and the country.

Dome of the Rock in Jerusalem, Israel
Three religions—Judaism, Christianity, and Islam—have made Jerusalem a holy city. The Dome of the Rock and the Al-Aqsa mosque embody Muslim Jerusalem.

The main religions of the world

Christianity is the most widespread religion today, with almost 2 billion believers worldwide. Its influence is great in European and North American countries, but the greatest number of practitioners is now found in South America and southern Africa. Islam currently has more than 1 billion followers, mainly in Asia and North Africa. Most adherents to Buddhism and Hinduism are in Asia, while most Jews live in the United States and Israel. In some societies, especially in Africa and Oceania, people practice "traditional" forms of religion, in which the beliefs are often transmitted orally.

THE MOST WIDELY PRACTICED RELIGIONS

RELIGION	CHARACTERISTICS	FOLLOWERS
Christianity	Religion based on the life and teachings of Jesus Christ and drawing on the New Testament.	1,928 M
Catholicism	Christian religion that admits the authority of the Pope in Rome.	968 M
Protestantism	Group of religions (Anglicanism, Calvinism, Lutheranism, etc.) formed of Christian churches resulting from the Reform launched in the 16th century by Luther, who was protesting against the mores and practices of the Catholic church.	394 M
Orthodoxy	The group of Eastern Christian churches that separated from Rome in 1054.	218 M
Islam	Religion practiced by Muslims based on the belief in a single god, Allah. The Koran, a collection of the revelations made by Allah to the prophet Muhammad, is the holy book of Muslims.	1,100 M
Sunnism	Branch of Islam based on the texts of the Sunna, which contains accounts of Muhammad' s words, behaviors, and judgments.	913 M
Shiism	When Muhammad died, those who recognized his son-in-law Ali as his successor founded Shiite Islam, Shiism, considered the historical branch of Islam.	176 M
Judaism	Religion according to which God elected the Jewish people and made an alliance with them.	14 M
Hinduism	Polytheist religion of India descended from ancient tribal religions.	781 M
Buddhism	Eastern religion founded by an Indian wise man, Buddha.	324 M
Other Asian religions	Confucianism is a Chinese religion based on the teachings of Confucius, a philosopher rather than a religious leader. Founded, like Confucianism, in the 6th century BCE, Taoism is a Far Eastern religion based on the philosophy of Lao-tzu and folk beliefs. Shintoism is a polytheist Japanese religion whose divinities are personifications of natural forces (stars, animals, plants, etc.).	246 M

Source: adherents.com, from Britannica

Church of the Holy Sepulchre in Jerusalem, Israel
Standing outside the old city of Jerusalem, the Church of the Holy Sepulchre is a venerated sanctuary for Christians. It is said to have been built on the site of Christ's crucifixion, His tomb, and His resurrection.

Temple Mount Esplanade in Jerusalem, Israel
Jewish Jerusalem is represented by the Temple Mount Esplanade, also known as the Western Wall or the Wailing Wall. It is the only vestige of the temple of Herod, king of the Jews, destroyed in 70 CE, of which only the west wall has survived.

Pilgrims at Mecca, Saudi Arabia
According to the precepts of Islam, every Muslim who has the means must make the pilgrimage to Mecca once in his or her life.

The Ganges in Varanasi, India
The Ganges is a holy river for the Hindus, who go there to perform their ablutions.

DOMINANT RELIGIONS

- Catholicism
- Protestantism
- Orthodoxy
- Sunnism
- Shiism
- Judaism
- Hinduism
- Buddhism
- Confucianism, Taoism
- Shintoism
- Traditional religions
- No data
- Major Jewish communities

Sources: UNESCO; Atlas of the World, National Geographic

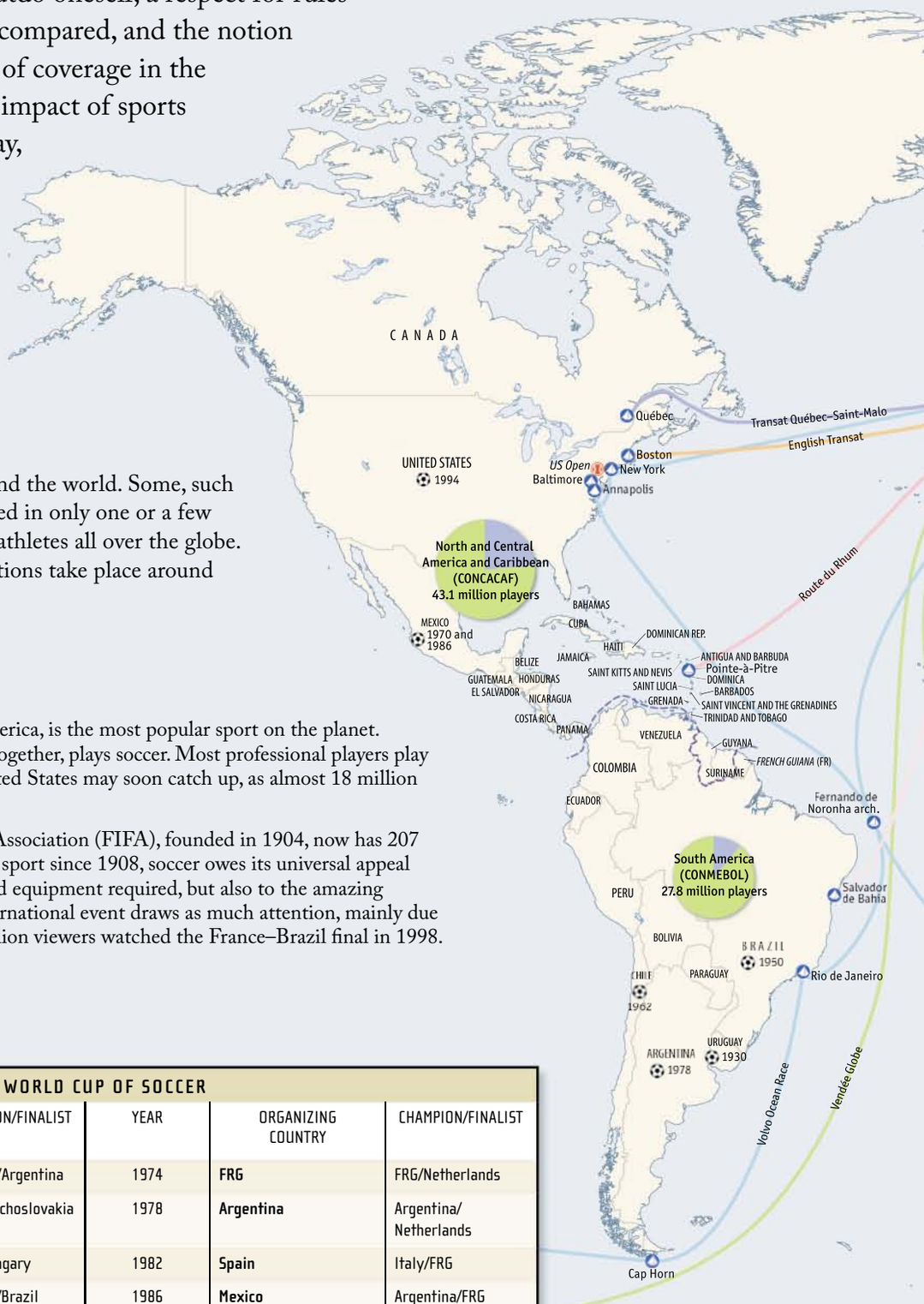
Holy sites

- Buddhism
- Christianity
- Hinduism
- Islam
- Judaism

There is an extremely wide variety of sports. Whether individual or team, based on physical strength or tactical intelligence, they have in common a striving to outdo oneself, a respect for rules that enable performances to be compared, and the notion of pleasure. Since the explosion of coverage in the media, the social and economic impact of sports has increased considerably. Today, sports is a mass cultural phenomenon, conveying the social values of recognition and success. The Olympic movement has been a major contributor to this trend.

A worldwide phenomenon

Several hundred sports are played around the world. Some, such as Sumo wrestling in Japan, are practiced in only one or a few countries, but most disciplines involve athletes all over the globe. Every year, international-level competitions take place around the world.



SOCCER

Soccer, called football outside of North America, is the most popular sport on the planet. Almost one person in 25, or 260 million altogether, plays soccer. Most professional players play in Europe and South America, but the United States may soon catch up, as almost 18 million American children play soccer.

The Fédération Internationale de Football Association (FIFA), founded in 1904, now has 207 member national associations. An Olympic sport since 1908, soccer owes its universal appeal to its simple rules and the lack of specialized equipment required, but also to the amazing popularity of the World Cup. No other international event draws as much attention, mainly due to television broadcast of the games: 1.7 billion viewers watched the France–Brazil final in 1998.

THE WORLD CUP OF SOCCER

YEAR	ORGANIZING COUNTRY	CHAMPION/FINALIST	YEAR	ORGANIZING COUNTRY	CHAMPION/FINALIST
1930	**Uruguay**	Uruguay/Argentina	1974	**FRG**	FRG/Netherlands
1934	**Italy**	Italy/Czechoslovakia	1978	**Argentina**	Argentina/ Netherlands
1938	**France**	Italy/Hungary	1982	**Spain**	Italy/FRG
1950	**Brazil**	Uruguay/Brazil	1986	**Mexico**	Argentina/FRG
1954	**Switzerland**	FRG/Hungary	1990	**Italy**	FRG/Argentina
1958	**Sweden**	Brazil/Sweden	1994	**United States**	Brazil/Italy
1962	**Chile**	Brazil/ Czechoslovakia	1998	**France**	France/Brazil
1966	**England**	England/FRG	2002	**South Korea and Japan**	Brazil/Germany
1970	**Mexico**	Brazil/Italy	2006	**Germany**	Italy/France

SELECTED MAJOR SPORTS EVENTS

Soccer

- World Cup of Soccer
- Boundaries of confederations
- Number of players per confederation
- Women
- Men

Source: FIFA

Tennis

- Grand Slam tournaments

Source: ITF

Sailboat races

- Start, leg, and finish
- Race routes

Source: Official Web site of each race

Young African soccer players, Mozambique
A fun game that requires very little equipment, soccer is very popular in Africa.

The Olympic Games

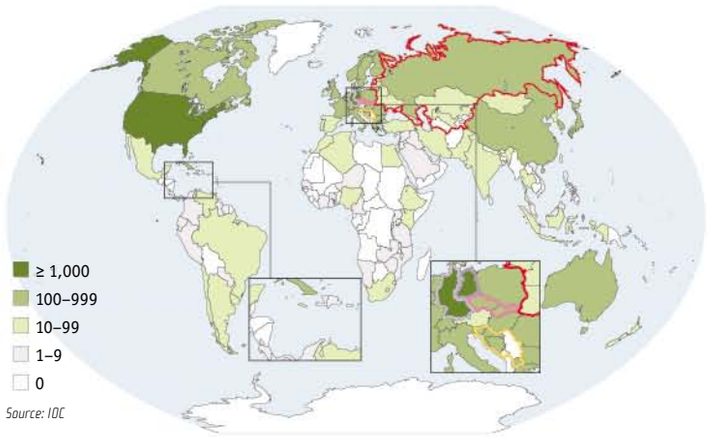
The Olympic Games originated in antiquity. The first games took place in 776 BCE in Olympia, Greece. These ancient games had only a few sports disciplines, among which where foot races in the stadium, and they took place every four years. This tradition lasted more than 1,000 years. It was revived by Frenchman Pierre de Coubertin: in 1896, the first Olympic Games of the modern era brought 241 athletes and nine sports together in Athens, Greece. Today, more than 10,000 athletes compete at the Olympic Games. The program for the Summer Games includes 28 sports, while the Winter Games, created in 1924, has seven sports. Since 1994, the Summer and Winter Olympic Games have not occurred at the same time every four years, but have alternated every two years. For instance, the 2008 Summer Games in Beijing, China, will be followed by the 2010 Winter Games in Vancouver, Canada. From Nadia Comaneci to Carl Lewis, numerous athletes have achieved greatness at the Games, following the Olympic motto "Faster, Higher, Stronger."

OLYMPIC MEDALS THROUGH HISTORY

Over the history of the Olympic Games, some countries have disappeared and others have appeared. The table below lists the number of Olympic medals won at Summer and Winter Games by some former countries. The colors in the table correspond to outlined zones on the maps below.

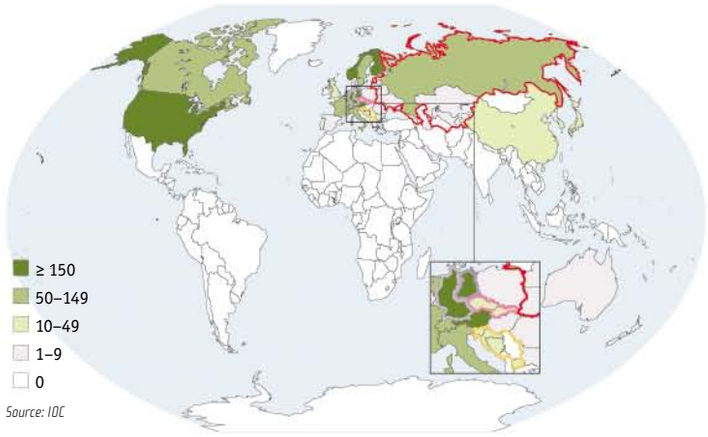
FORMER COUNTRY (YEAR OF PARTICIPATION)	SUMMER GAMES MEDALS	WINTER GAMES MEDALS
Yugoslavia (between 1924 and 2000)	90	4
Czechoslovakia (between 1920 and 1992)	143	25
German Democratic Republic (GDR) (between 1968 and 1990)	409	110
Federal Republic of Germany (FRG) (between 1968 and 1990)	204	41
USSR (between 1952 and 1994)	1,122	217

OLYMPIC MEDALS AT THE SUMMER GAMES
Total medals won per country since 1896

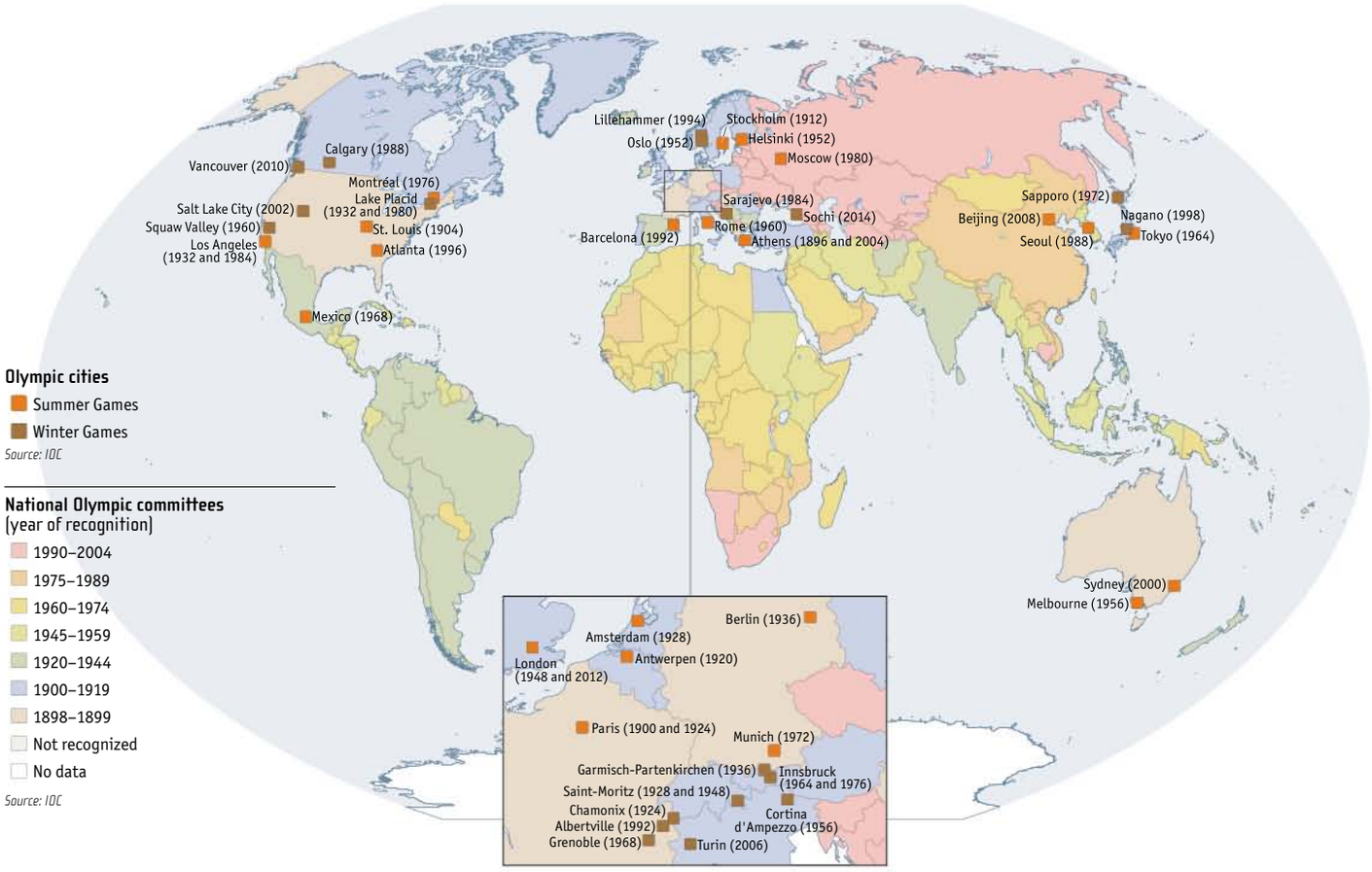


Source: IOC

OLYMPIC MEDALS AT THE WINTER GAMES
Total medals won per country since 1924



Source: IOC



First Olympic stadium, Athens, Greece
The first Games of the modern era were held there in 1896.

To meet their needs and satisfy their desires, human beings use goods, such as housing or books, and services, such as a bank account or a visit to a doctor. An economy comprises the activities of production, distribution, and consumption of goods and services, as well as the resulting distribution of wealth. Usually, goods and services are exchanged for money by different actors in the economy (individuals, companies, the state).

In recent decades, the economy has become globalized and international trade has intensified. Some of the goods and services that are produced by multinational corporations (with facilities in a number of countries) are consumed thousands of kilometers from where they originated.

Money, Europe
Euro coins and bills have been the currency in a number of countries in the European Union since 2002.

Economic sectors

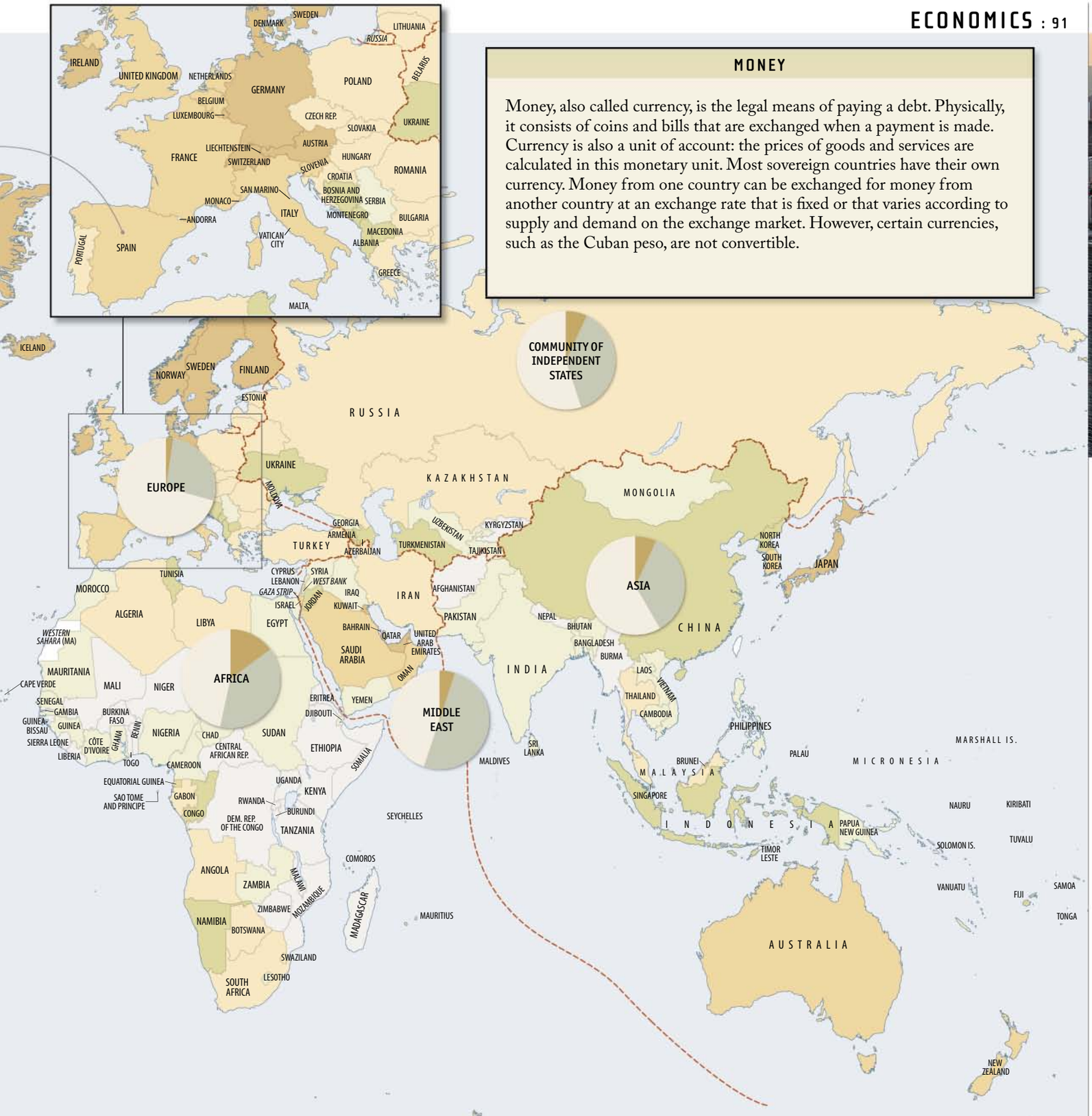
Traditionally, three economic sectors are distinguished. The primary sector involves direct exploitation of natural resources (fishing, agriculture, livestock production, mining, etc.). The industries that transform resources form the secondary sector, which includes a very diverse range of activities, from the agri-food industry to shipbuilding to the pharmaceutical industry to energy production. The tertiary sector encompasses all service activities (banking services, retail, health-care services, telecommunications, transportation, etc.).

THE LARGEST MULTINATIONAL CORPORATIONS

RANK*	COMPANY	COUNTRY OF ORIGIN	INDUSTRIAL SECTOR	EMPLOYEES	
				TOTAL NUMBER	ABROAD
1	**General Electric**	United States	Electric and electronic equipment	307,000	46.3%
2	**Vodafone Group**	United Kingdom	Telecommunications	57,378	80.1%
3	**Ford Motor**	United States	Automobile	225,626	45.5%
4	**General Motors**	United States	Automobile	324,000	35.4%
5	**British Petroleum**	United Kingdom	Oil	102,900	83.1%
6	**Exxon Mobil**	United States	Oil	105,200	50.3%
7	**Royal Dutch Shell**	The Netherlands	Oil	114,000	84.2%
8	**Toyota**	Japan	Automobile	265,753	35.6%
9	**Total**	France	Oil	111,401	55.9%
10	**France Télécom**	France	Telecommunications	206,524	39.5%

*Ranked by foreign assets

Source: UNCTAD/Erasmus University database



ECONOMIC DEVELOPMENT OF COUNTRIES

A number of economic units are used to compare countries' economies. One of these units, the gross domestic product (GDP), measures the total value of goods and services created during one year within the country only. The industrial GDP per inhabitant is used to put into perspective the data regarding industrial activities only, as these are most comparable between rich and poor countries.

International trade

International trade consists of all of the exchanges of goods and services between one country and another. The goods that enter a country constitute its imports, while its exports are the goods that leave it. The nature of the goods exchanged depends on the industrial strengths of the respective country; Brazil, for example, has a wealth of bauxite ore and exports massive amounts of this mineral, while Canada imports large amounts of bauxite to feed its powerful aluminum industry. A country's import-export flows comprise its balance of trade. The balance of trade is positive when a country exports more than it imports (trade surplus) and negative in the opposite case (trade deficit). The World Trade Organization (WTO) governs trade practices among its member countries (151 in 2007, including most of the trade powers in the world). When there are disagreements between partner countries, the WTO must make a ruling. In its first eight years of existence, from 1995 to 2002, the WTO was called upon to decide on about 300 disputes.

TRADE ON THE GLOBAL SCALE

Intercontinental trade
(trade between one continent and another as a proportion of total trade)

- ≥ 10%
- 2%–9.9%
- < 2%

Source: WTO

Regional borders

Balance of trade
(trade surplus and trade deficit)

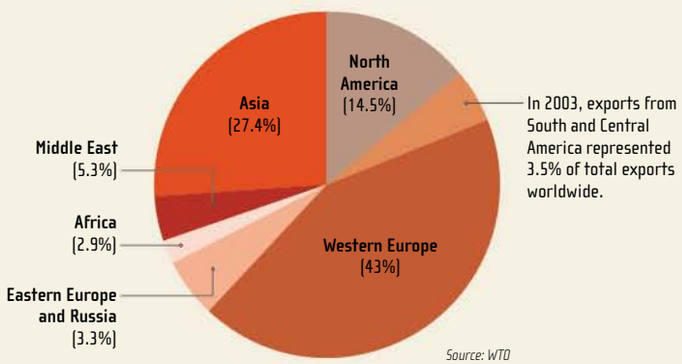
- ≥ $50 B
- $1 B to $49.9 B
- –$0.9 B to $0.9 B
- –$49.9 B to –$1 B
- < –$50 B
- No data

Source: WTO

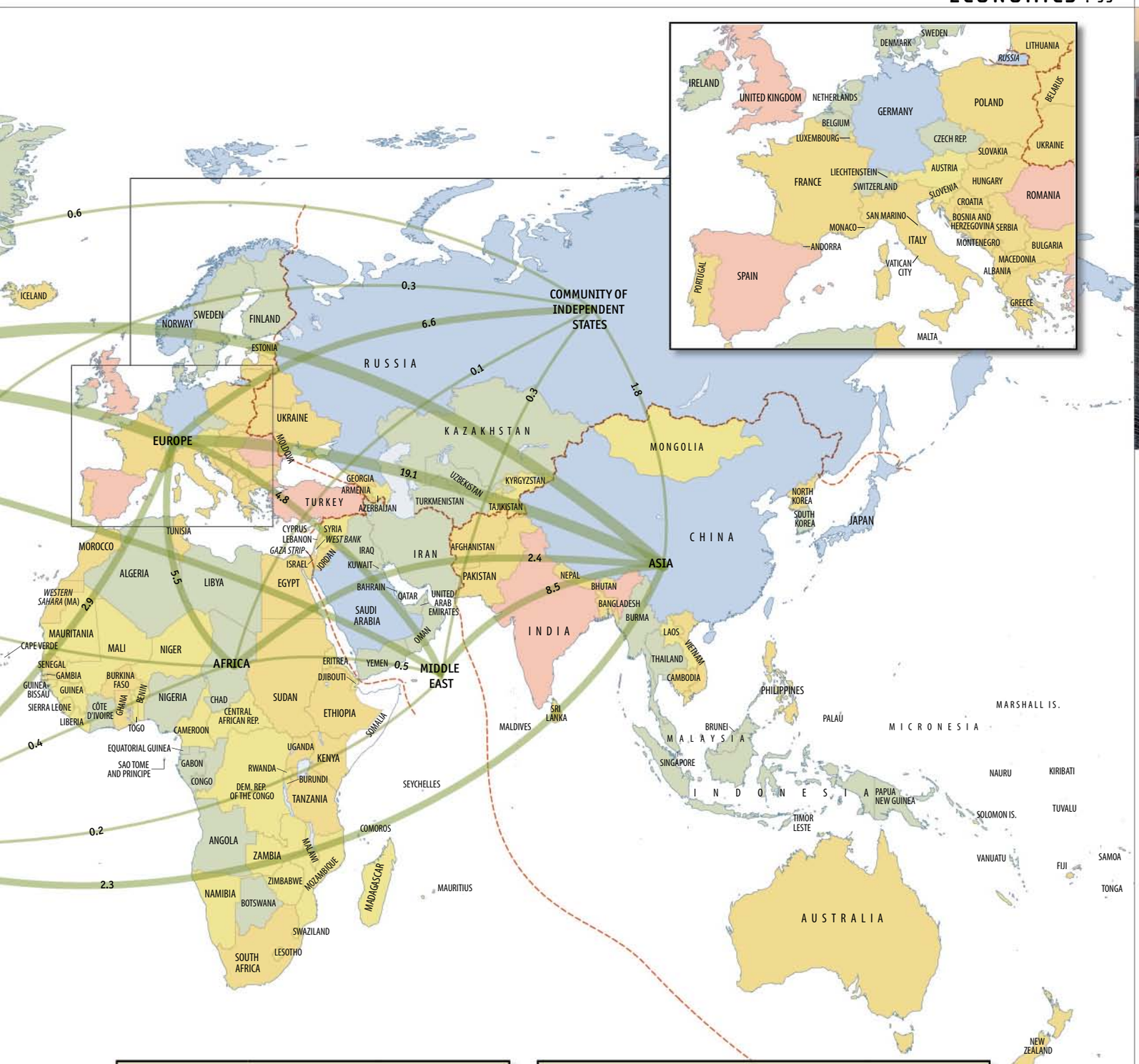
INTERNATIONAL TRADE BY REGION

Western Europe and Asia are the most active regions in terms of international trade. Together, they are responsible for more than two-thirds of exports (70.4%) and almost two-thirds of imports (40.1% and 22.8%, respectively; 62.9% total).

DISTRIBUTION OF EXPORTS WORLDWIDE



Source: WTO



THE TRADE POWERS

Annual volume of trade (billion $)

COUNTRY	EXPORTS	IMPORTS
Germany	970	774
United States	904	1,732
China	762	660
Japan	595	515
France	460	498
The Netherlands	402	359
United Kingdom	383	510
Italy	367	380
Canada	359	320
Belgium	334	319

Source: WTO

WORLDWIDE EXPORTS OF GOODS

(billion $)

GOODS	ANNUAL VOLUME
Agricultural products	852
Fuels and products from extractive industries	1,748
Manufactured products, including:	7,312
iron and steel	318
chemical products	1,104
telecommunications and office equipment	1,275
products of the automobile industry	914
textiles and clothing	479

Source: WTO

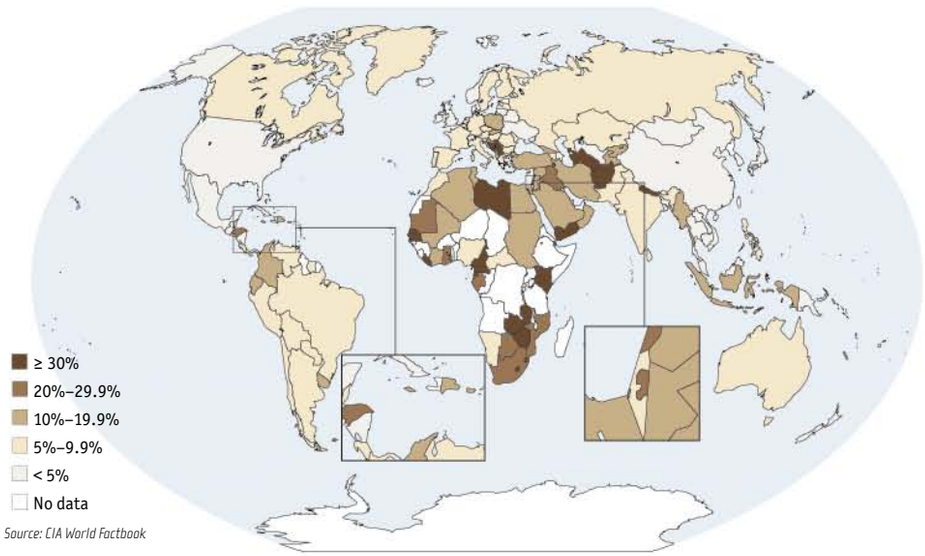
Employment

Individuals participate in the economy by consuming goods and services, but also by working. Employment is defined as remunerated work. It enables individuals to meet their own needs and sometimes those of their families. Assessing the employment situation involves measuring the unemployment rate—that is, the proportion of people who do not have a job but are available to work. According to estimates by the International Labour Organization (ILO), there were about 190 million unemployed people in the world (6.3% of the labor force in 2005). However, having a job does not protect against poverty: in 2005, out of the 2.8 billion employed workers, 1.4 billion earned less than $2 per day. All over the world, young people and women are the most vulnerable to unemployment and job insecurity.

UNEMPLOYMENT

In 2005, unemployment rates varied from 3.8% in East Asia to 13.2% in the Middle East and North Africa. About half of those who are unemployed are young people aged 15 to 24 years.

PROPORTION OF THE LABOR FORCE THAT IS UNEMPLOYED

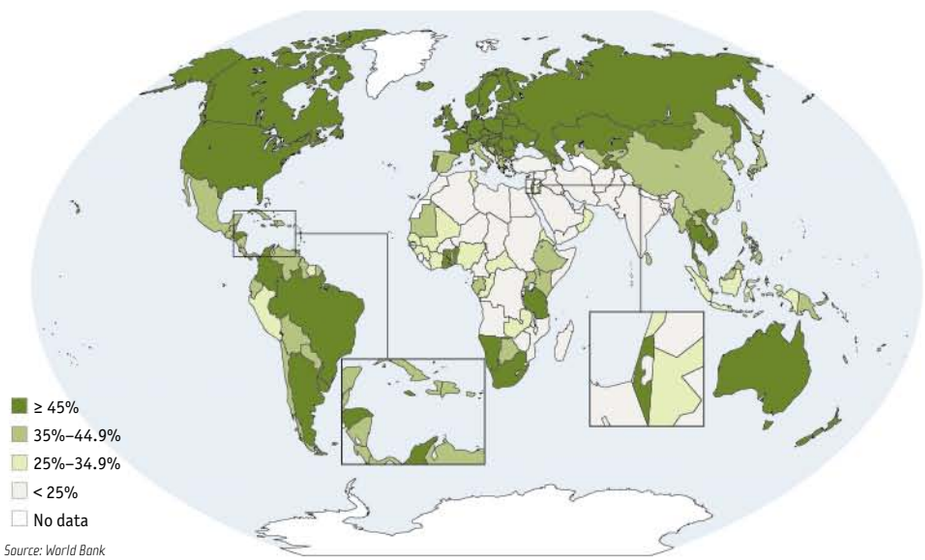


Source: CIA World Factbook

FEMALE LABOR

In spite of the progress made with regard to employment equity, there is still a gap between men and women. Women comprise about 40% of workers worldwide. In Latin America and the Caribbean, the proportion of employed women tends to drop. In the Middle East and North Africa, it is growing, but from a very low starting level.

WOMEN AT WORK
Proportion of women in the total labor force



Source: World Bank

DISTRIBUTION OF LABOR IN SELECTED COUNTRIES					
COUNTRY	TOTAL LABOR FORCE	UNEMPLOYMENT RATE	AGRICULTURE	INDUSTRY	SERVICES
United States	146,319,600	4.7%	2.4%	22.4%	75.2%
Indonesia	99,749,750	6.1%	45.3%	17.3%	37.3%
Poland	19,879,810	16.1%	19.1%	30.5%	50.4%

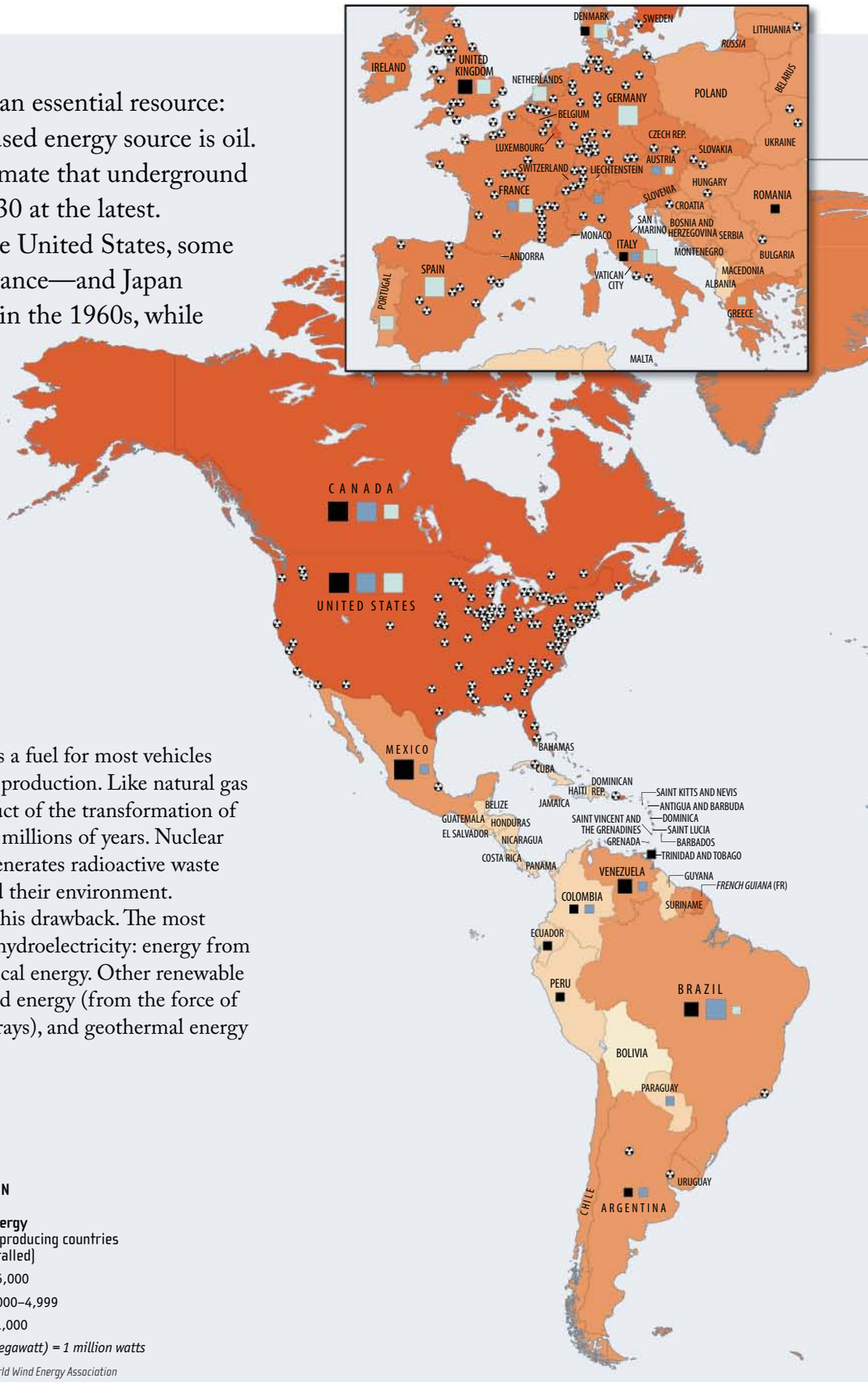
Source: World Bank

Young woman in a wooden-furniture plant, Canada
In 2004, the female labor force represented 46% of the total labor force in Canada. Only 11% of the female labor force, however, worked in the secondary sector, which employs 32% of the male labor force. On the other hand, the tertiary sector employs 87% of the female labor force and 64% of the male labor force.

The world economy is based on an essential resource: energy. Today, the most widely used energy source is oil. The most optimistic experts estimate that underground reserves will be exhausted by 2030 at the latest. Anticipating the oil shortage, the United States, some European countries—such as France—and Japan began to turn to nuclear energy in the 1960s, while countries such as Canada and Brazil adopted hydroelectricity. Other renewable energy sources are now being developed.

The main energy sources

Oil, the main source of energy, is used as a fuel for most vehicles and for lighting, heating, and electricity production. Like natural gas and coal, it is a fossil fuel. It is the product of the transformation of organic matter buried in the ground for millions of years. Nuclear energy also produces electricity, but it generates radioactive waste that is highly toxic to human beings and their environment. Renewable energy sources do not have this drawback. The most highly developed renewable resource is hydroelectricity: energy from a watercourse is transformed into electrical energy. Other renewable energy sources are being developed: wind energy (from the force of the wind), solar energy (from the Sun's rays), and geothermal energy (from the heat of Earth's mantle).



WORLD ENERGY PRODUCTION AND CONSUMPTION

Oil production
(thousands of barrels per day)
- ≥ 3,000
- 1,000–2,999
- < 1,000

Source: BP

Hydroelectric production
20 main producing countries
(billions of kWh)
- ≥ 150
- 75–149
- < 75

1 kWh (kilowatt-hour) = 1,000 Wh

Source: Energy Information Administration

Nuclear power plants

Source: International Nuclear Safety Center

Wind energy
20 main producing countries
(MW installed)
- ≥ 5,000
- 1,000–4,999
- < 1,000

1 MW (megawatt) = 1 million watts

Source: World Wind Energy Association

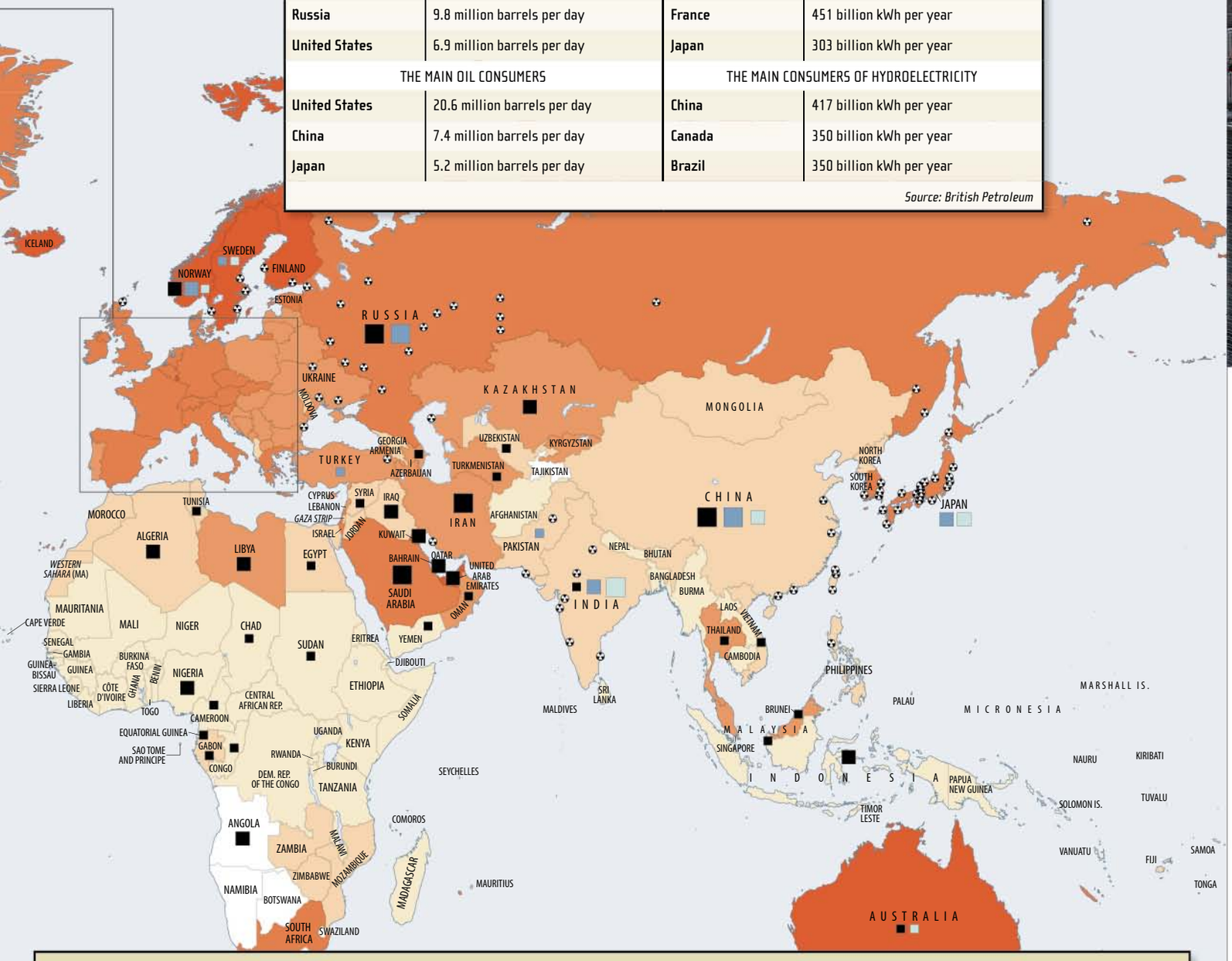
Energy consumption
(kWh/person/year)
- ≥ 10,000
- 5,000–9,999
- 2,000–4,999
- 500–1,999
- < 500
- No data

Source: International Energy Agency

MAIN ENERGY-PRODUCING AND ENERGY-CONSUMING COUNTRIES

THE MAIN OIL PRODUCERS		THE MAIN CONSUMERS OF NUCLEAR ENERGY	
Saudi Arabia	10.9 million barrels per day	**United States**	829 billion kWh per year
Russia	9.8 million barrels per day	**France**	451 billion kWh per year
United States	6.9 million barrels per day	**Japan**	303 billion kWh per year
THE MAIN OIL CONSUMERS		**THE MAIN CONSUMERS OF HYDROELECTRICITY**	
United States	20.6 million barrels per day	**China**	417 billion kWh per year
China	7.4 million barrels per day	**Canada**	350 billion kWh per year
Japan	5.2 million barrels per day	**Brazil**	350 billion kWh per year

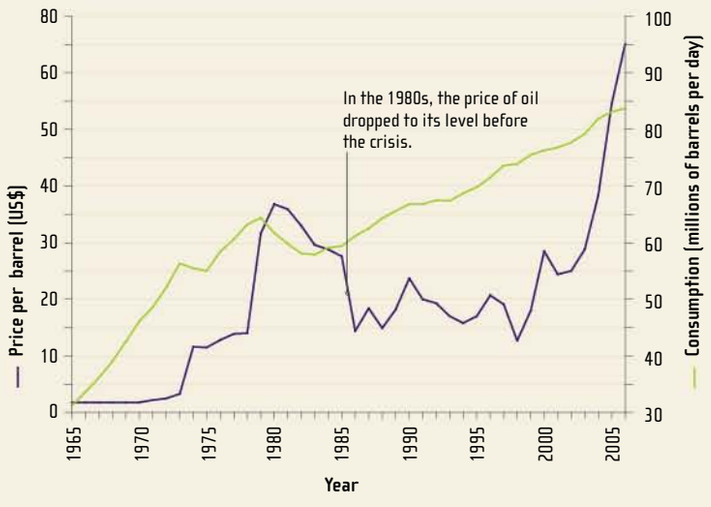
Source: British Petroleum



THE OIL CRISIS

Between 1960 and 1970, world oil consumption more than doubled, making oil a major economic stake. This put the producing countries of the Persian Gulf—notably Iran, Iraq, and Saudi Arabia—in a position of strength. In 1973, they gained a larger share of oil revenues and control over the stages of production on their territories, which enabled them to keep prices artificially high. Oil prices shot up and the oil crisis began. Consuming countries made an effort to reduce consumption and develop alternate energy sources (nuclear energy, hydroelectricity, etc.). Gradually, the balance of power was reversed, and in the 1980s the Organization of the Petroleum Exporting Countries (OPEC) countries agreed to reestablish normal prices. Currently, however, oil prices are still unstable due to international conflicts, the growing energy needs of countries such as China, and the exhaustion of world oil reserves. Diversification of energy sources is more important than ever today.

CHANGES IN THE PRICE OF A BARREL OF CRUDE OIL AND IN OIL CONSUMPTION



Source: British Petroleum

Agriculture is the basis of our food supply. The term covers all exploitation of the land for crop and livestock production. The agriculture sector employs more than 40% of the labor force worldwide. Most farmers live in developing countries. However, today developing countries import more agricultural products than they export, the reverse of the situation up to the early 1990s. Serious food shortages are ravaging about 30 of these countries. Farmers in developing countries practice small-scale agriculture, while many farmers in wealthy countries own vast, highly productive operations.

Agricultural production

The main agricultural plant products are sugar cane, cereals (wheat, rice, corn, etc.), roots and tubers (potatoes, sugar beets, manioc, etc.), soybeans, citrus fruits, and forage plants. When the plants are irrigated by rainwater only, it is called rain-fed agriculture. Rice cultivation, for instance, may be rain-fed, in which case it is a low-yield crop. It may also be irrigated and give better yields.

AGRICULTURE AROUND THE WORLD

Farmland

- Rain-fed farmland and pasture
- Irrigated farmland and pasture
- Fragmented farmland

Source: USGS (from data from a NOAA satellite)

Agricultural production
(12 top producing countries for each product)

- rice
- wheat
- corn
- soybeans
- potatoes
- beef
- poultry
- sea fish
- sugarcane
- coffee

Source: FAO

Food aid received

- ≥ 250,000 t
- 100,000–249,999 t
- 50,000–99,999 t
- 10,000–49,999 t
- < 10,000 t
- None

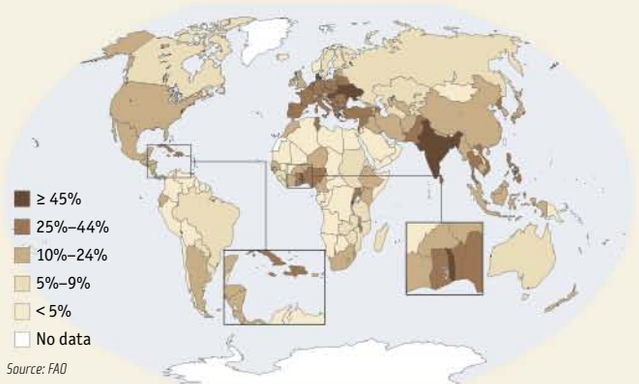
Source: FAO

Rice paddy, Indonesia
Indonesia is one of the major rice-producing countries. Most rice cultivation is irrigated, but some is rain-fed.

FARMLAND

Farmland comprises zones used, either permanently or temporarily, for plant crops or livestock production. India and a number of countries in eastern Europe stand out with more than 45% of their territory devoted to agriculture.

PERCENTAGE OF LAND USED FOR AGRICULTURE

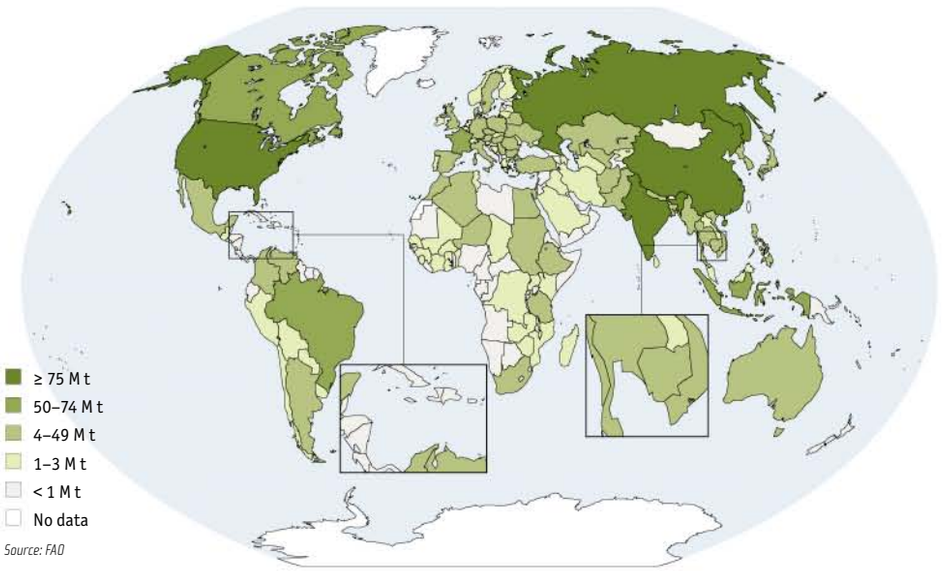


Source: FAO

THE MAIN CEREAL-PRODUCING COUNTRIES

Cereals are plants usually cultivated on a large scale. The main producing countries are also among the largest (China, United States, India, Russia). Consumption of cereals has been dropping for more than a century in wealthy countries, while in developing countries cereals are still the main source of dietary energy. The most-consumed cereals in the world are wheat and rice.

CEREAL PRODUCTION

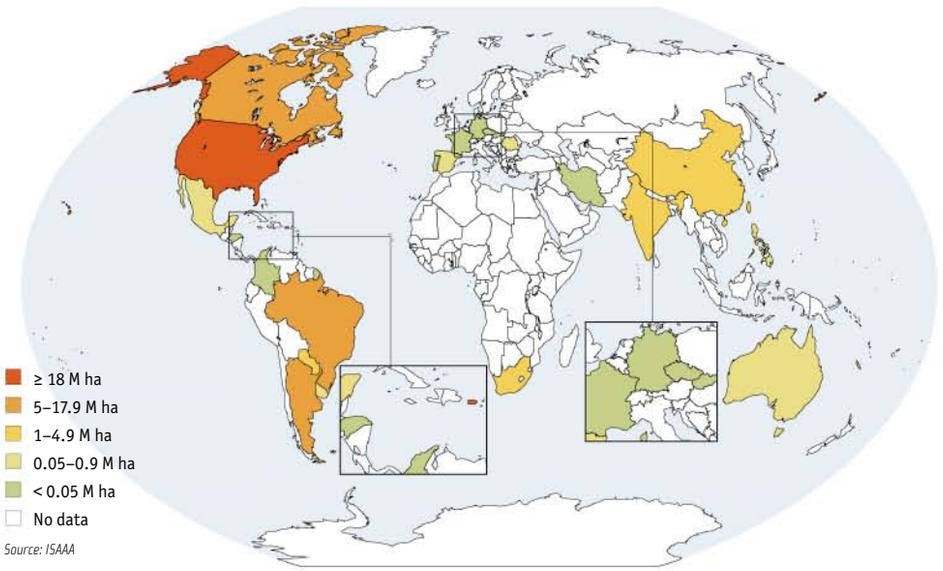


Source: FAO

THE MAIN COUNTRIES PRODUCING GENETICALLY MODIFIED ORGANISMS (GMOs)

Genetically modified plants are agricultural plants whose characteristics have been modified, for instance, to increase yield or resistance to insects. They are cultivated commercially in some 20 countries. The most widely grown genetically modified plants are soybeans and corn.

AREA USED FOR GMO CULTIVATION

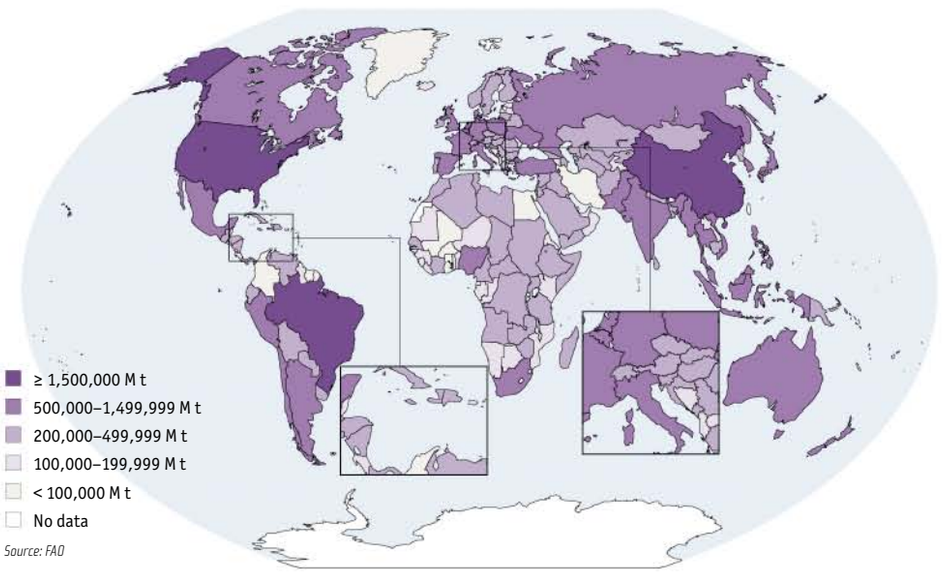


Source: ISAAA

THE MAIN MEAT-PRODUCING COUNTRIES

The main meat-producing countries are China, the United States, and Brazil. They are also the main consumers of meat. A wide variety of animals are raised for their meat, but only three kinds of meat are produced in large quantities: pork, beef, and chicken. Livestock also produce milk and eggs.

MEAT PRODUCTION



Source: FAO

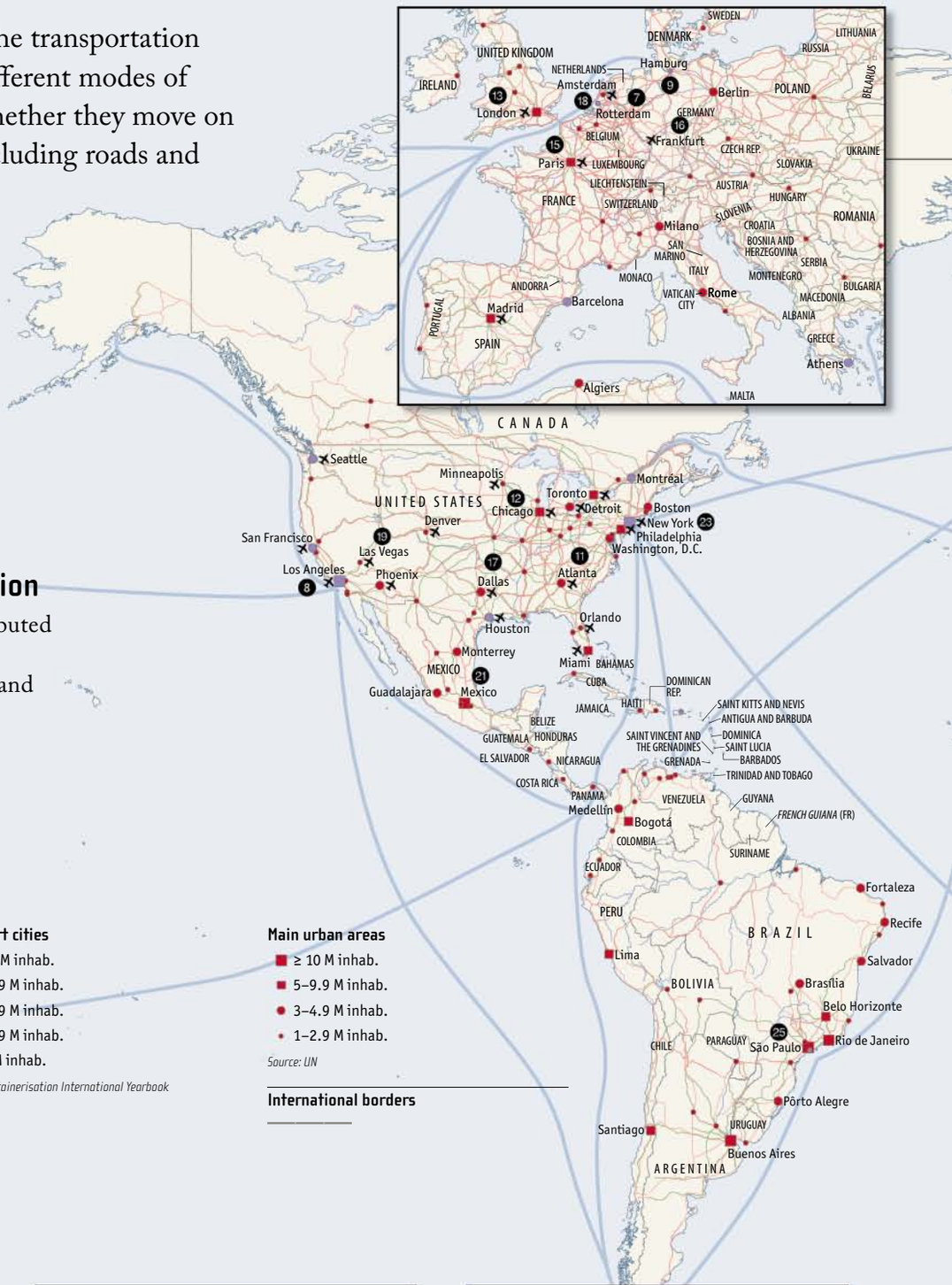
Corn field in Illinois, United States
In Illinois, a state situated in the northern United States, corn is cultivated intensively; this form of agriculture consumes more resources (water, fertilizer) with the goal of increasing the yield of the land farmed. In contrast, subsistence farming produces food mainly for local populations.

TRANSPORTATION

Most human activities require the transportation of people or goods. There are different modes of transportation depending on whether they move on land (ground transportation, including roads and railroads), on water (inland waterways and maritime transport), or in the atmosphere (air transport).

The geography of transportation

Transportation infrastructure is distributed around the planet as a function of geographic constraints and the needs and means of populations.



MAJOR TRANSPORTATION NETWORKS

Main transportation infrastructure

- Roads — *Source: ESRI*
- Railroad lines — *Source: ESRI*
- High-speed-train lines — *Sources: CER, raileurope.com; SNCF*
- Shipping lanes — *Source: OECD*
- Cities served by the 30 largest airports by number of passengers — *Source: Airports Council International*

Main port cities

- ≥ 10 M inhab.
- 5–9.9 M inhab.
- 3–4.9 M inhab.
- 1–2.9 M inhab.
- < 1 M inhab.

Source: Containerisation International Yearbook

Main urban areas

- ≥ 10 M inhab.
- 5–9.9 M inhab.
- 3–4.9 M inhab.
- 1–2.9 M inhab.

Source: UN

International borders

MAIN PORTS (millions of TEUs)

TEU: equivalent to loading a container 20 feet (6.1 m) long

1 Hong Kong	21.93
2 Singapore	20.60
3 Shanghai	14.57
4 Shenzhen	13.65
5 Pusan	11.43
6 Kaohsiung	9.71
7 Rotterdam	8.30
8 Los Angeles	7.32
9 Hamburg	7.03
10 Dubai	6.43

Source: Containerisation International Yearbook

MAIN AIRPORTS (millions of passengers)

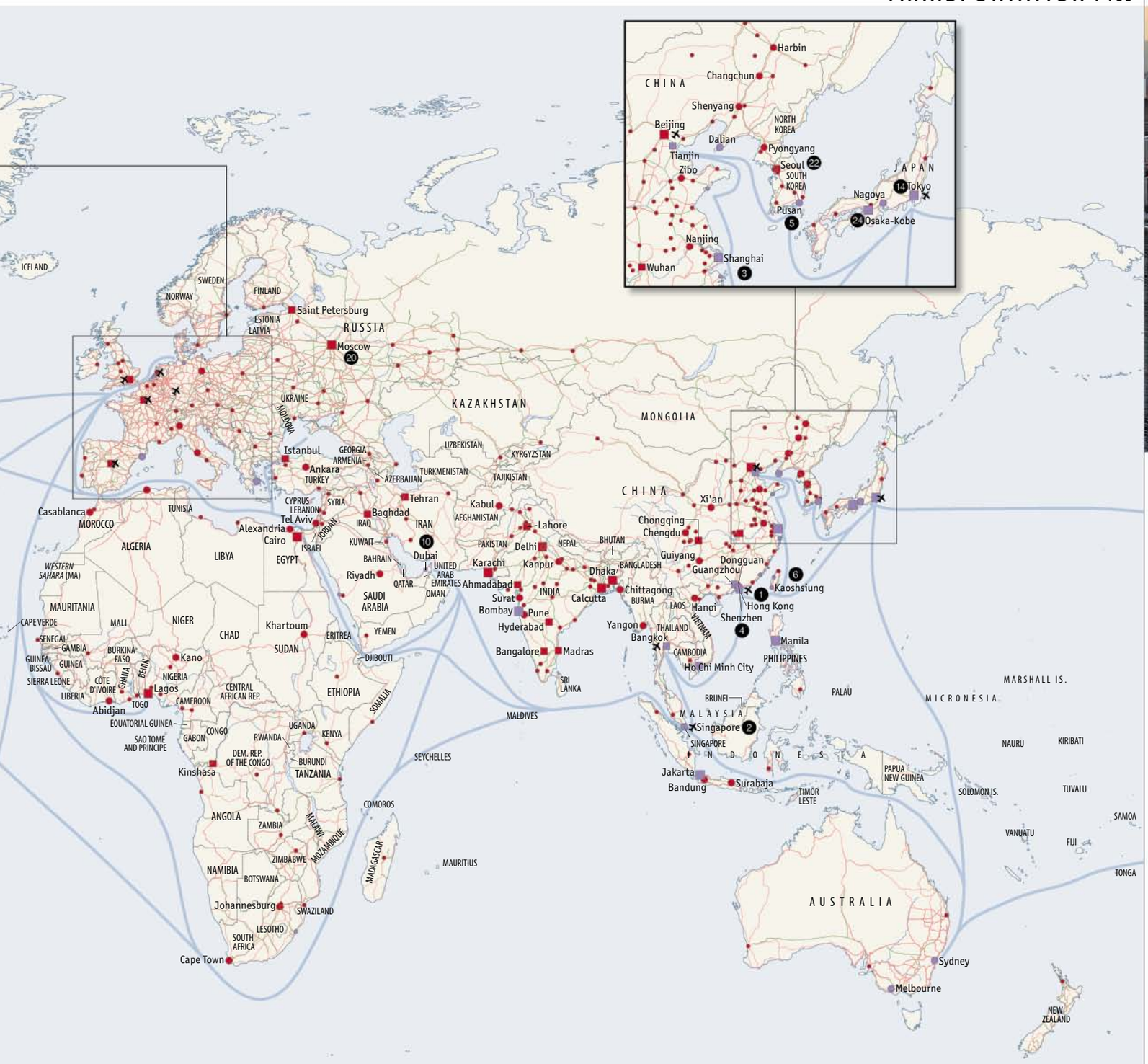
11 Atlanta	85.91
12 Chicago	76.51
13 London (Heathrow)	67.91
14 Tokyo (Tokyo Int.)	63.28
8 Los Angeles	61.49
15 Paris	53.80
16 Frankfurt	52.22
17 Dallas	51.18
18 Amsterdam	44.16
19 Las Vegas	43.99

Source: Airports Council International

MAIN SUBWAYS (millions of passengers)

20 Moscow	3,200
14 Tokyo	2,700
21 Mexico	1,400
22 Seoul	1,300
23 New York	1,200
15 Paris	1,100
24 Osaka-Kobe	1,000
1 Hong Kong	780
13 London	770
25 São Paulo	700

Sources: Transport Geography on the Web, Hofstra University



Maritime transportation

Ships are the form of transportation most used for long distances (international trade) and for transportation of heavy goods, in bulk and in containers. It is estimated that 71% of world freight (96% by weight) transits through shipping lanes, oceanic routes several kilometers wide that link the main ports of the globe. Some major rivers, such as the Amazon and the St. Lawrence, provide ships with routes to the interior of continents. Since the advent of air transport, maritime transport of passengers has been limited to sea cruises in passenger ships and short crossings on ferries.

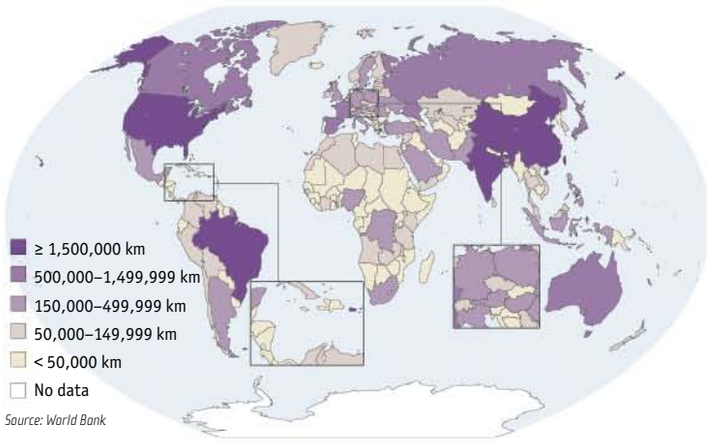
Container ship, port of Rotterdam
With traffic of more than 8 million TEUs, the port of Rotterdam is the seventh-largest port in the world.

Road transportation

Ground transportation is by far the most widely used form. In developing countries, non-motorized means of ground transportation—walking, bicycles, and horse and cart—are still very widespread. In developed countries, on the other hand, ground transportation has taken over from all other forms of transportation, due to its rapidity and flexibility. In the wealthiest countries, there are 45 cars per 100 inhabitants and the road networks have more than 10 million kilometers of roads. Road traffic is regulated more or less strictly from country to country. In most countries, drivers must have a driving permit that is adapted to their vehicle, and they must obey speed limits.

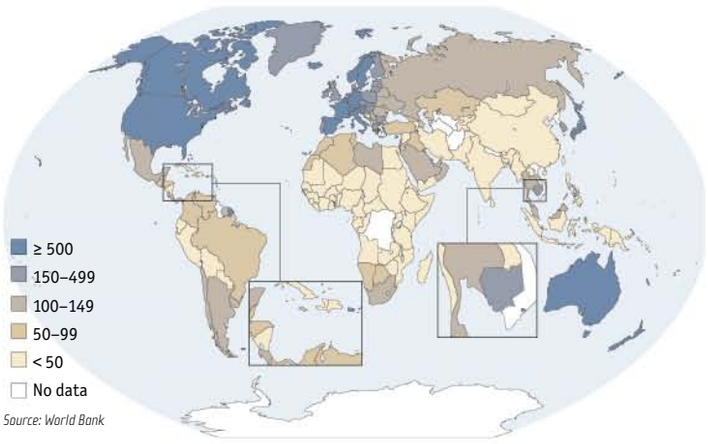
Road traffic on the Golden Gate Bridge in San Francisco, United States
In 2003, the United States had 3.6 times as many cars per 100 inhabitants as did Mexico. On the other hand, road traffic was less dense in the U.S., with 13 vehicles per vehicular route, compared to 59 in Mexico.

ROAD NETWORK
Total length of roads



Source: World Bank

VEHICLES
Number of vehicles per 1,000 inhabitants

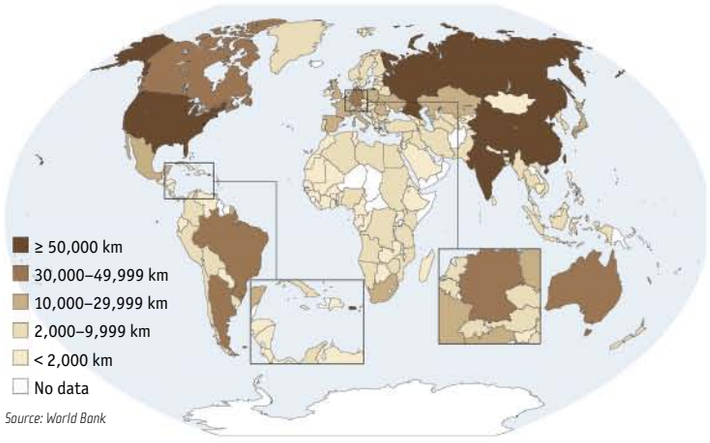


Source: World Bank

Rail transportation

Heavily used in the 19th century and the first half of the 20th century, rail transportation then declined as road transportation became more popular. The development of high-speed trains in the 1980s, with a maximum speed of 513 km/h, revived interest in railroads. Most of these trains are in operation in Europe and Japan. In spite of its lack of flexibility, rail transportation has several advantages over road transportation. Because most trains run on electricity, they are less polluting than trucks and automobiles. In addition, rail transportation is a form of public transit: trains, subways, and tramways transport hundreds of people at a time without clogging the road network.

RAIL NETWORK
Total length of train tracks



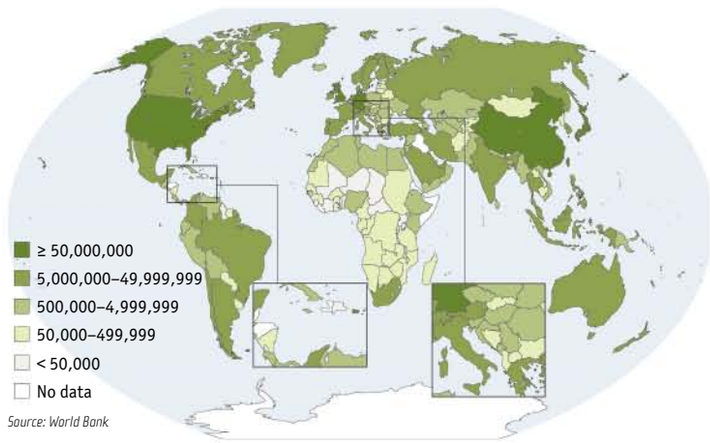
Source: World Bank

Maglev, China
The Maglev, for Magnetic Levitation, is a train that uses magnetic forces to move and is therefore not in contact with the rails when it runs. It has reached a speed of over 500 km/h.

Air transportation

The history of air transportation dates back to the early 20th century: in 1903, Orville Wright's airplane flew for 12 seconds over a distance of 36 m. More than a century later, the performance of airplanes is of a completely different order. The largest airliners can carry more than 800 passengers from one continent to another. In November 2005, a Boeing 777 airplane established the record for the longest commercial flight by flying the 21,600 km between Hong Kong and London without touching down. Democratized in the 1960s, air travel has become the favorite means of transportation over long distances. Today, the limitations of air transportation are linked less to the capacity of airplanes than to problems with managing air traffic. In 2003, more than 1.6 billion people flew on airplanes, and there were over 21 million commercial flights.

NUMBER OF PASSENGERS TRANSPORTED PER YEAR



Source: World Bank

AIR TRAVEL

COUNTRY	NUMBER OF TAKEOFFS PER YEAR	NUMBER OF PASSENGERS PER YEAR	COUNTRY	NUMBER OF TAKEOFFS PER YEAR	NUMBER OF PASSENGERS PER YEAR
United States	7,789,100	589 M	**France**	695,900	47 M
Canada	1,036,100	36 M	**Japan**	638,500	104 M
China	946,400	86 M	**Australia**	529,600	41 M
United Kingdom	891,200	76 M	**Spain**	518,800	42 M
Germany	844,800	72 M	**Brazil**	486,800	32 M

Source: World Bank

Beluga cargo plane, United States
The Beluga is often used to transport different parts of a plane (wings, fuselage, etc.) that must be assembled at a site different from where they are made. The Beluga is loaded by the front through a door 17 m high. The cockpit is at the bottom of the plane to make room for this immense opening.

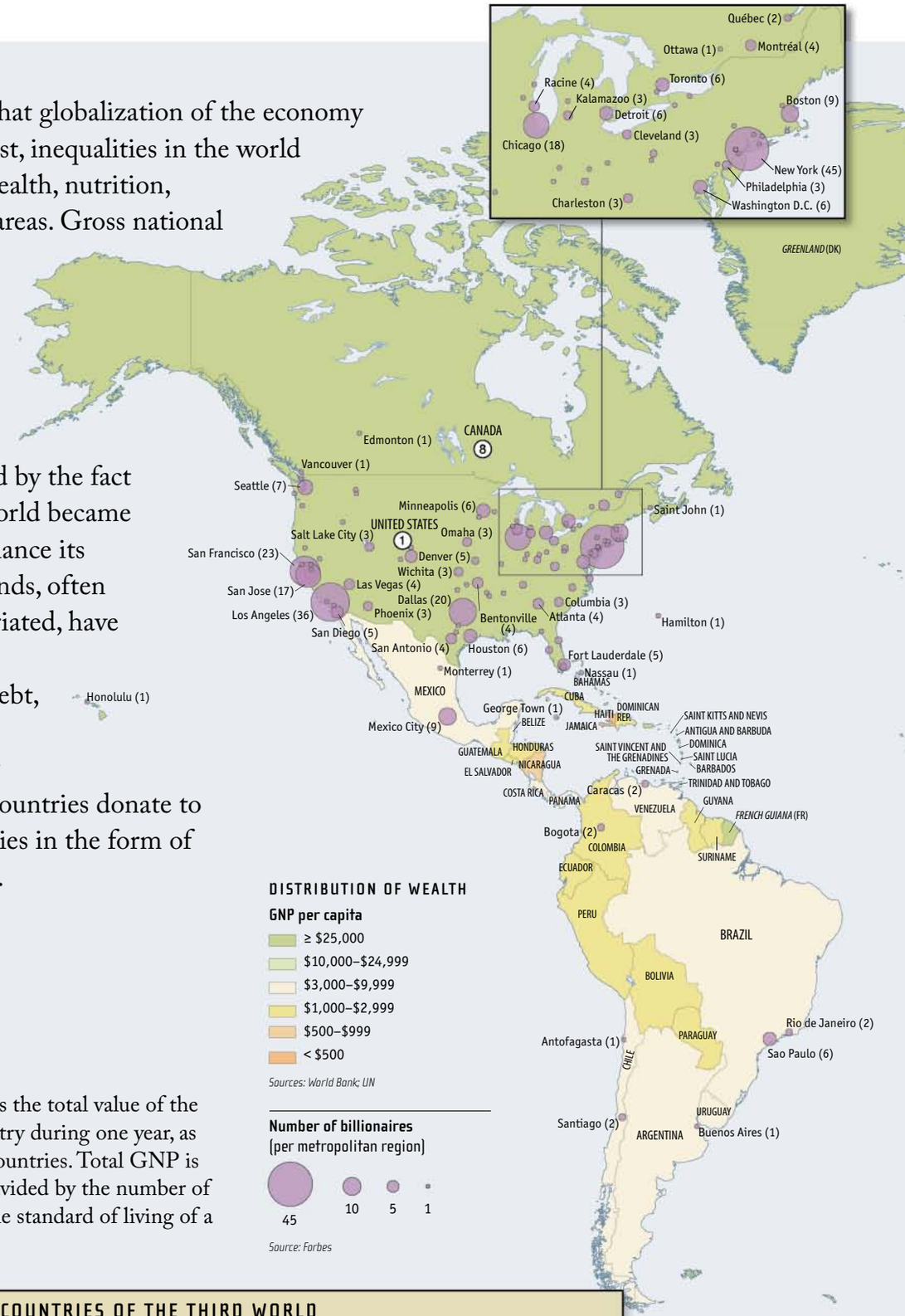
Despite economists' forecasts that globalization of the economy will benefit the poorest the most, inequalities in the world are getting worse in terms of health, nutrition, education, housing, and other areas. Gross national product (GNP) per capita, a country's main socioeconomic development indicator, ranges from about $100 in the poorest countries to almost $60,000 in the wealthiest.

These disparities are aggravated by the fact that in the 1970s, the Third World became heavily indebted in order to finance its development. The borrowed funds, often poorly managed or misappropriated, have not had the anticipated effect.

Today, unable to pay back its debt, the Third World is demanding that the debt be written off. At the same time, the wealthiest countries donate to the most disadvantaged countries in the form of official development assistance.

Measuring wealth

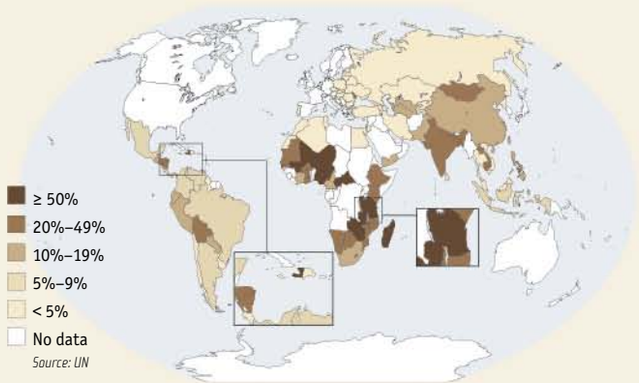
The GNP is an indicator that measures the total value of the goods and services produced in a country during one year, as well as its net revenues from foreign countries. Total GNP is used to measure a country's wealth. Divided by the number of inhabitants, it gives an indication of the standard of living of a country's population.



THE COUNTRIES OF THE THIRD WORLD

The expression "Third World" was coined during the Cold War to designate countries that belonged to neither the capitalist nor the communist sphere of influence. Since the 1970s, "Third World" has referred to the poorest countries on the planet. Many of these countries' populations live in extreme misery. About 1.3 billion people, representing 20% of the world's population, survive on less than $1 per day—that is, under the poverty line defined by the United Nations.

POVERTY LINE
Share of the population living on less than $1 per day



OFFICIAL DEVELOPMENT ASSISTANCE

The member countries of the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD) offer aid to developing countries by agreeing to reduce their debt or by providing them with new funding.

MAIN DONOR COUNTRIES OF INTERNATIONAL ASSISTANCE

RANK	COUNTRY	ASSISTANCE IN 2005	% OF GNP
①	**United States**	$27,622 M	0.2
②	**Japan**	$13,147 M	0.3
③	**United Kingdom**	$10,767 M	0.5
④	**Germany**	$10,082 M	0.4
⑤	**France**	$10,026 M	0.5
⑥	**Netherlands**	$5,115 M	0.8
⑦	**Italy**	$5,091 M	0.3
⑧	**Canada**	$3,756 M	0.4
⑨	**Sweden**	$3,362 M	0.9
⑩	**Spain**	$3,018 M	0.3

Source: OECD

MAIN RECIPIENT COUNTRIES OF INTERNATIONAL ASSISTANCE

RANK	COUNTRY	ASSISTANCE IN 2005	% OF GNP
❶	**Afghanistan**	$2,192 M	31.3
❷	**Sudan**	$1,472 M	6.4
❸	**Ethiopia**	$1,202 M	10.8
❹	**Dem. Rep. of the Congo**	$1,034 M	14.8
❺	**Tanzania**	$871 M	6.8
❻	**Zambia**	$836 M	14.4
❼	**Mozambique**	$771 M	12.5
❽	**Uganda**	$704 M	8.8
❾	**Bangladesh**	$563 M	0.8
❿	**Madagascar**	$500 M	8.7

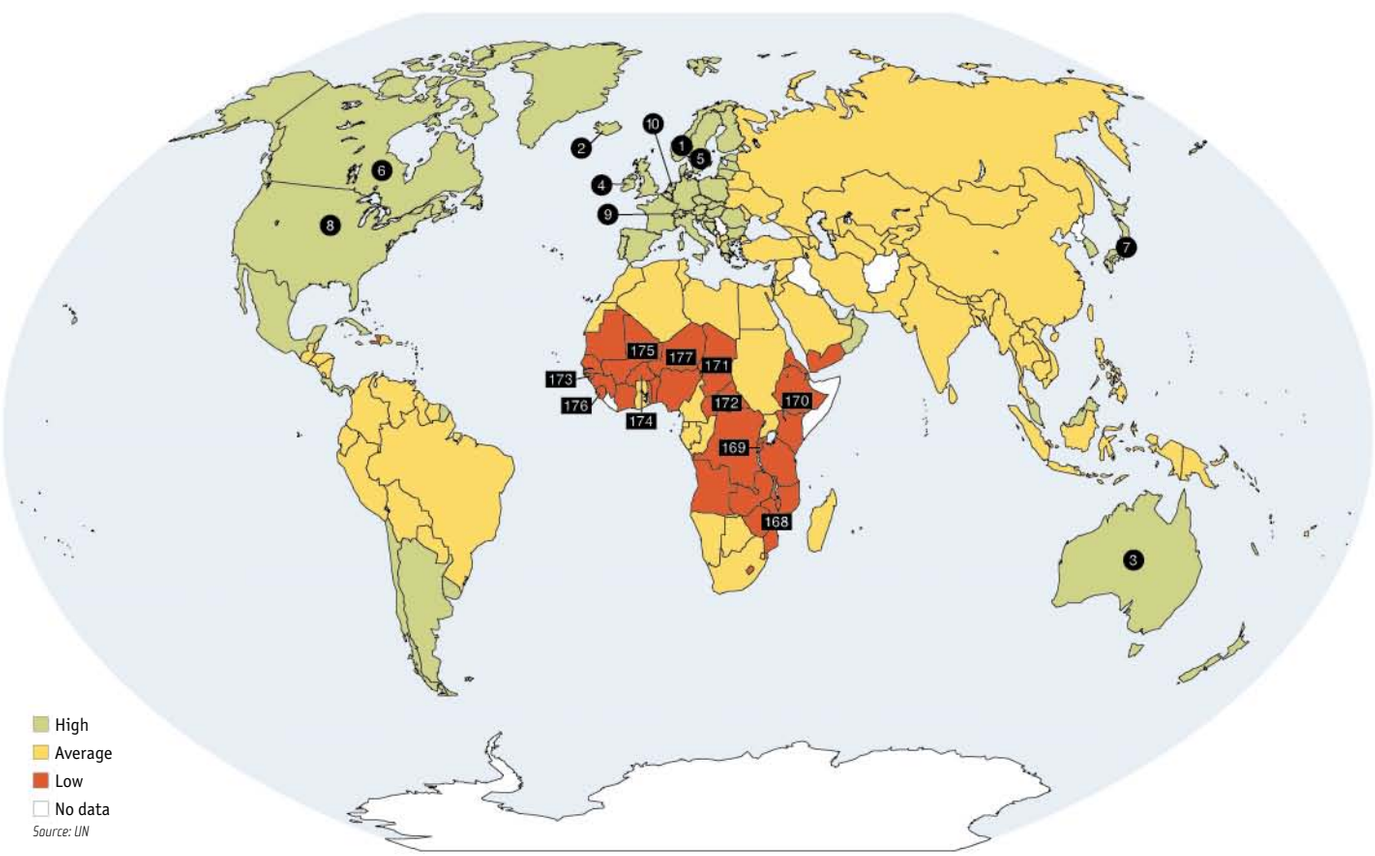
Source: OECD

Development indicators

Development indicators are numerical indicators used to estimate the development of nations. They measure different parameters that affect the quality of life of human beings. GNP measures a country's wealth or poverty, while life expectancy and infant mortality rate reflect its state of health. Other indicators assess satisfaction of basic human needs, such as access to drinking water, sufficient food, and housing. Still others measure level of education, the guarantee of a population's future.

To integrate these different parameters into a single indicator, the United Nations Development Programme (UNDP) calculates the human development index. This index, which takes account of longevity, education, literacy, and standard of living (purchasing power) assesses development on a scale from 0 to 1. In 2004, the index ranged from 0.311 for Niger to 0.965 for Norway.

HUMAN DEVELOPMENT INDEX



RANKING OF COUNTRIES ACCORDING TO THE HUMAN DEVELOPMENT INDEX

THE HIGHEST-RANKED COUNTRIES			THE LOWEST-RANKED COUNTRIES		
RANK	COUNTRY	INDEX	RANK	COUNTRY	INDEX
1	Norway	0.965	168	Mozambique	0.390
2	Iceland	0.960	169	Burundi	0.384
3	Australia	0.957	170	Ethiopia	0.371
4	Ireland	0.956	171	Chad	0.368
5	Sweden	0.951	172	Central African Republic	0.353
6	Canada	0.950	173	Guinea-Bissau	0.349
7	Japan	0.949	174	Burkina Faso	0.342
8	United States	0.948	175	Mali	0.338
9	Switzerland	0.947	176	Sierra Leone	0.335
10	Netherlands	0.947	177	Niger	0.311

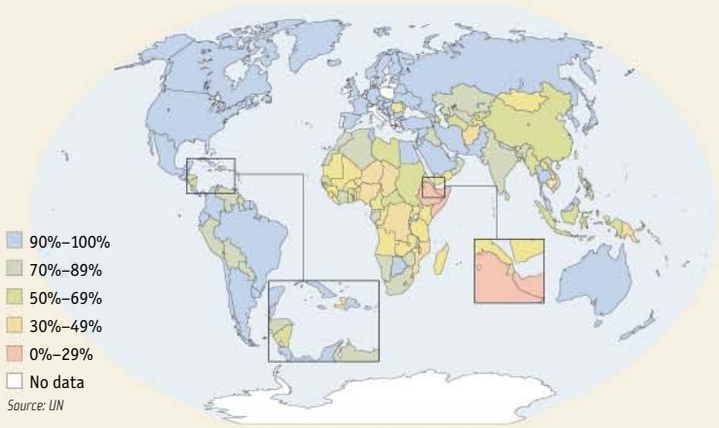
World average: 0.741

Source: UNDP

ACCESS TO DRINKING WATER

Access to water is one of the main development indicators. It corresponds to the proportion of the population that has access to at least 20 liters of water per day per person from an improved source (pipeline, protected well, rainwater collection, etc.) less than one kilometer from their residence. In many regions of the world, populations lack water, leading to serious sanitary problems.
The East Asia/Pacific region has the largest number of inhabitants without access to improved water sources. Inhabitants of urban areas have a better chance of benefiting from an improved source. Mongolia, for example, has very wide disparities between drinking-water access in urban zones (87%) and rural zones (30%).

SHARE OF THE POPULATION WITH ACCESS TO DRINKING WATER

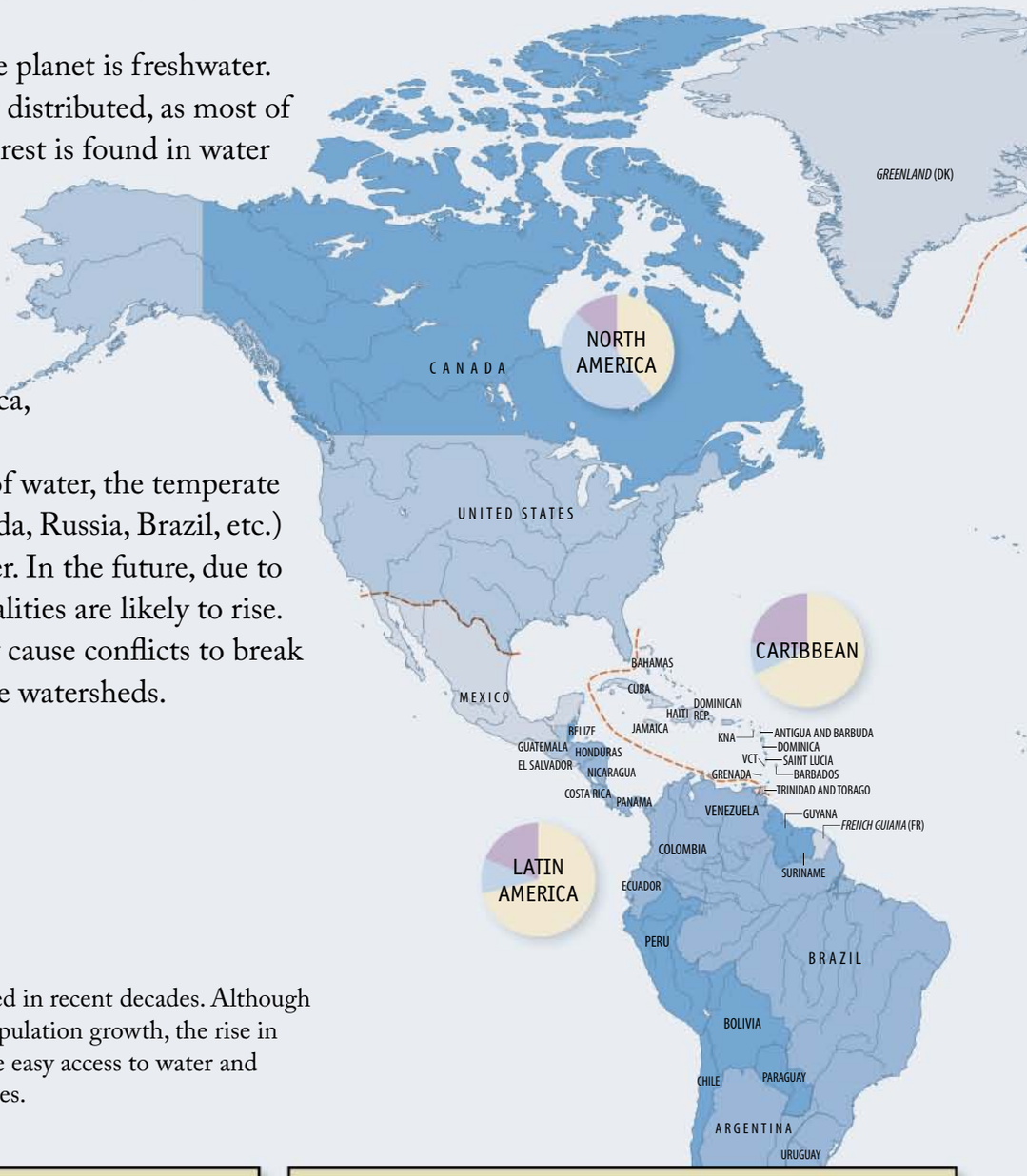


Source: UN

Water point, Tanzania
Access to a source of drinking water is one of the main development indicators.

FRESHWATER RESOURCES

Less than 3% of all water on the planet is freshwater. It is a resource that is unequally distributed, as most of it is frozen at the poles and the rest is found in water tables, which refill very slowly. Nevertheless, world freshwater reserves would satisfy the needs of humanity if they were better distributed and used. While subtropical regions (North Africa, South Africa, the Middle East, etc.) suffer from a serious lack of water, the temperate and intertropical regions (Canada, Russia, Brazil, etc.) have an abundance of freshwater. In the future, due to population growth, these inequalities are likely to rise. The risk of water shortages may cause conflicts to break out between countries that share watersheds.



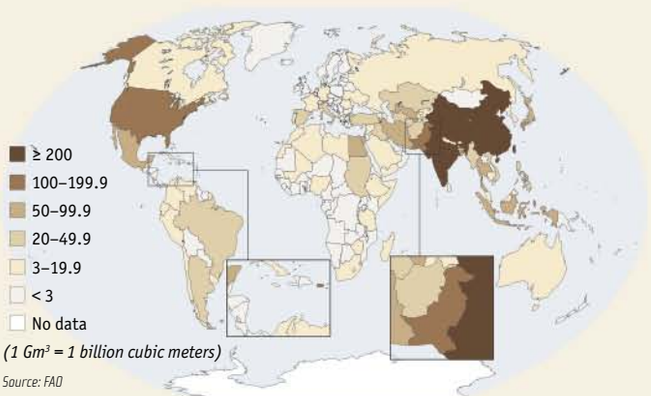
Water consumption

Water consumption has greatly increased in recent decades. Although the overall increase is attributable to population growth, the rise in consumption per capita results from the easy access to water and economic development in some countries.

AGRICULTURAL USE

On the global scale, the agricultural sector is the greatest consumer of water. About 70% of water consumed in the world is used for farmland irrigation. The countries that irrigate the most are situated in Asia (China, India, Pakistan). Due to insufficient precipitation, the most arid countries have little capacity for irrigation.

WATER CONSUMED FOR AGRICULTURAL USE
(Gm³/yr)



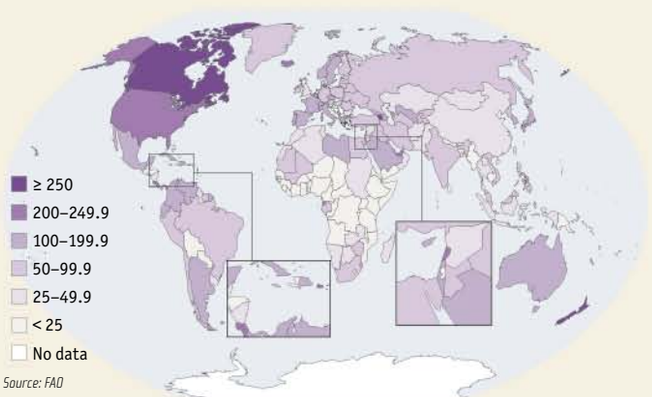
(1 Gm³ = 1 billion cubic meters)

Source: FAO

DOMESTIC USE

Water consumption for domestic use rises along with the standard of living of populations. Running water, sewer systems, and household appliances such as dishwashers and washing machines have propelled consumption up to 60 billion m³ per year in the United States.

WATER CONSUMED FOR DOMESTIC USE
(m³/year/inhab.)



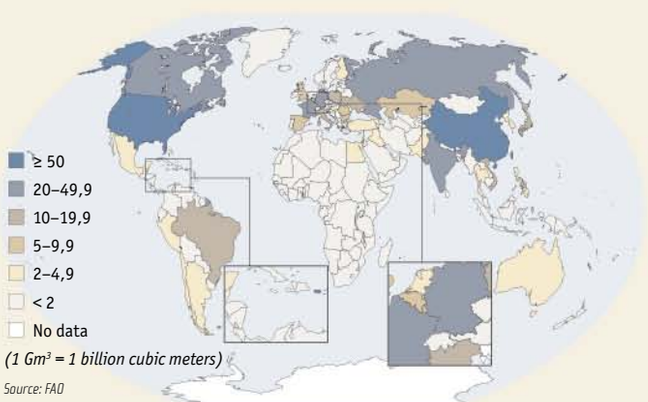
Source: FAO

Lake Nasser, Egypt
Formed at the border between Egypt and Sudan following construction of the Aswan dam on the Nile, Lake Nasser is a freshwater reservoir containing almost 162 billion m³ of freshwater. By reducing the amount of alluvia in the Nile's river bed downstream of the dam, this structure is likely responsible for erosion of the Nile Delta.

INDUSTRIAL USE

In the most highly industrialized countries, about the same amount of water is consumed for industry as for agriculture. The industries that consume the most water are transformation industries, such as chemistry and metallurgy. In addition, industrial waste is a major contributor to water pollution. Thus, not only does the quantity of available water diminish, but its quality does, too.

WATER CONSUMED FOR INDUSTRIAL USE
(Gm³/yr)



(1 Gm³ = 1 billion cubic meters)

Source: FAO

FRESHWATER RESERVES

Freshwater available

- ≥ 50,000 m³/year/inhab.
- 10,000–49,999 m³/year/inhab.
- 5,000–9,999 m³/year/inhab.
- 1,000–4,999 m³/year/inhab.
- 100–999 m³/year/inhab.
- ≤ 100 m³/year/inhab.
- No data

Source: FAO

Use of freshwater by sector

Source: FAO

Regional borders

The health of populations varies from country to country depending on their respective wealth levels, and even on wealth differences within individual countries. The mortality of children under 5 years of age, which is a good reflection of a population's health, rises as the gross national product (GNP) drops. In many countries in Africa, this figure is above 15%. Children with malnutrition are predisposed to falling ill during epidemics. In wealthy countries, on the other hand, adult obesity is lowering life expectancy, since it is likely to lead to heart disease. Health-care personnel are also unequally distributed around the planet: the countries faced with the direst health crises must make do with the fewest health-care professionals.

Epidemics and life expectancy

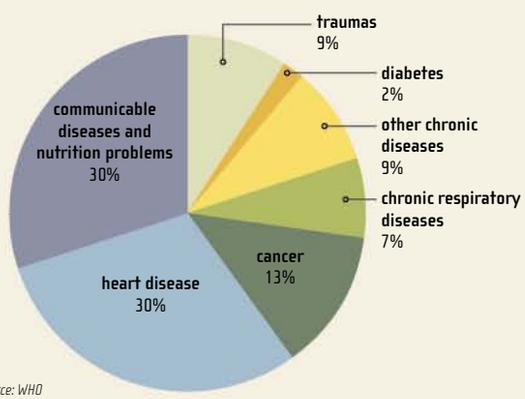
In developing countries, infectious and parasitic diseases cause most deaths, all age groups combined. Helped along by malnutrition, a shortage of drinking water, lack of vaccinations, and illiteracy, epidemics propagate rapidly. Inequalities of life expectancy at birth, which had narrowed during the 1980s, have increased considerably since. The main cause of this growing disparity is the AIDS epidemic that has struck Africa. More than 7% of the population on the continent is infected. In southern Africa, about one-quarter of the population is affected (and up to 38.8% in Swaziland).

Going to the vaccination center, Zambia
Vaccination campaigns conducted by nongovernmental organizations, such as the Red Cross, were responsible in large part for 84% of Zambian children over 1 year old being vaccinated against measles in 2004.

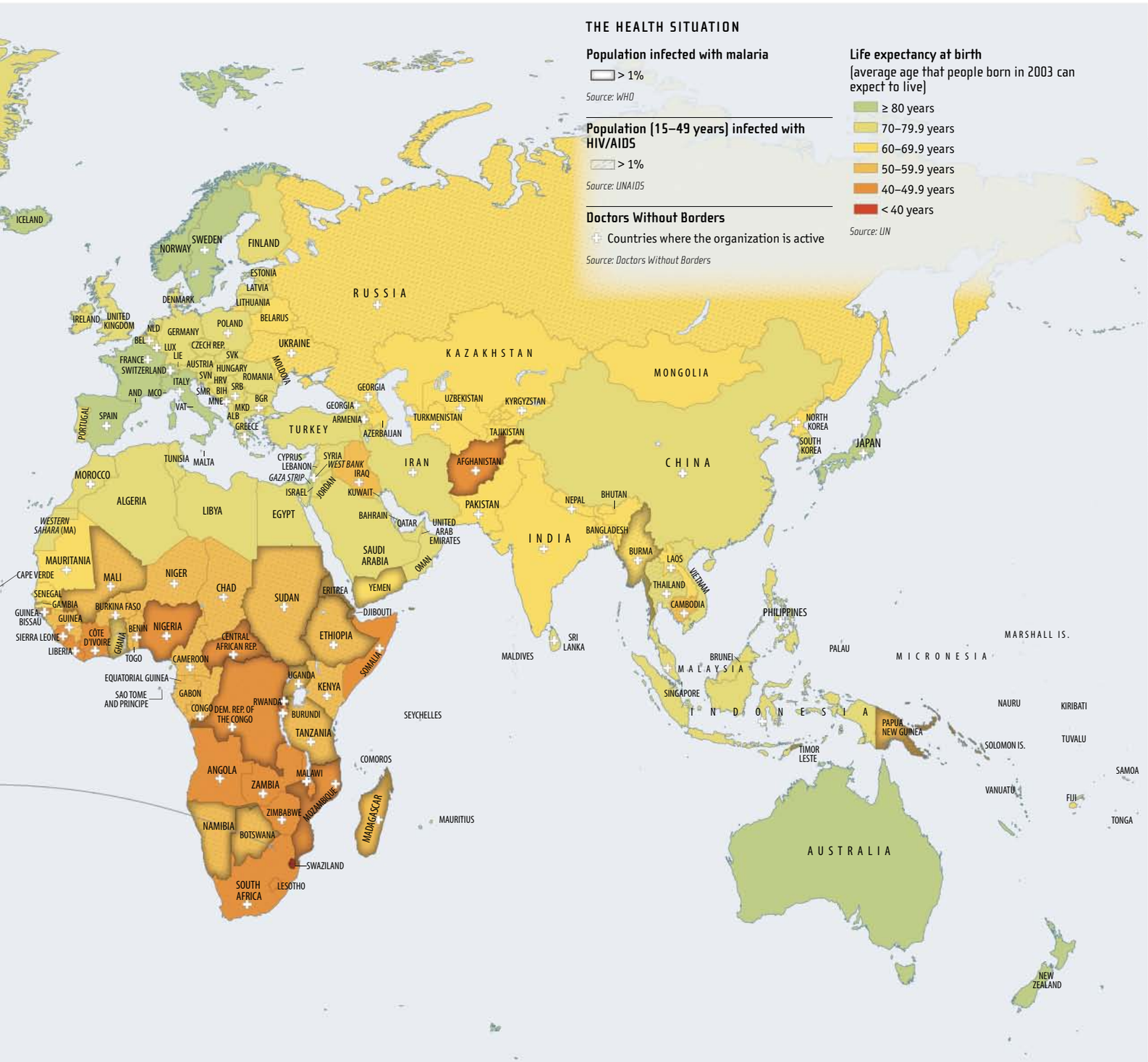
DISEASE AND DEVELOPMENT LEVEL

Heart disease and cancer are the scourges of the wealthiest countries, while communicable diseases affect developing countries. As the risk factors for communicable diseases (malnutrition, lack of water, etc.) diminish, the risk factors for chronic conditions (obesity, smoking, etc.) are amplified. According to the World Health Organisation (WHO), the annual number of deaths due to smoking in the world should grow from 4.9 million in 2000 to more than 10 million in 2020. The increase will be steepest in developing countries.

THE MAIN MEDICAL CAUSES OF DEATH IN THE WORLD



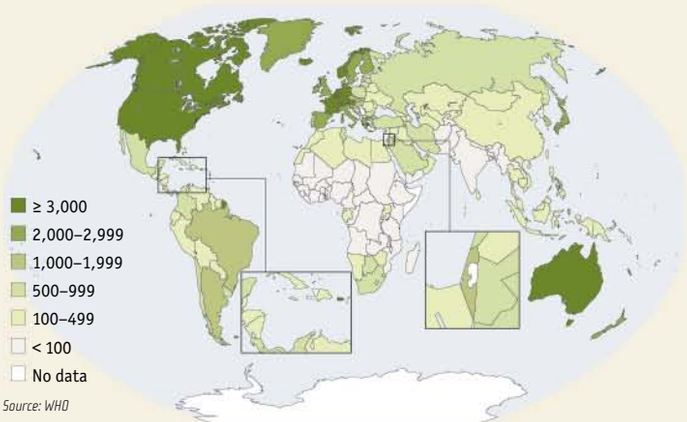
Source: WHO



INVESTING IN HEALTH

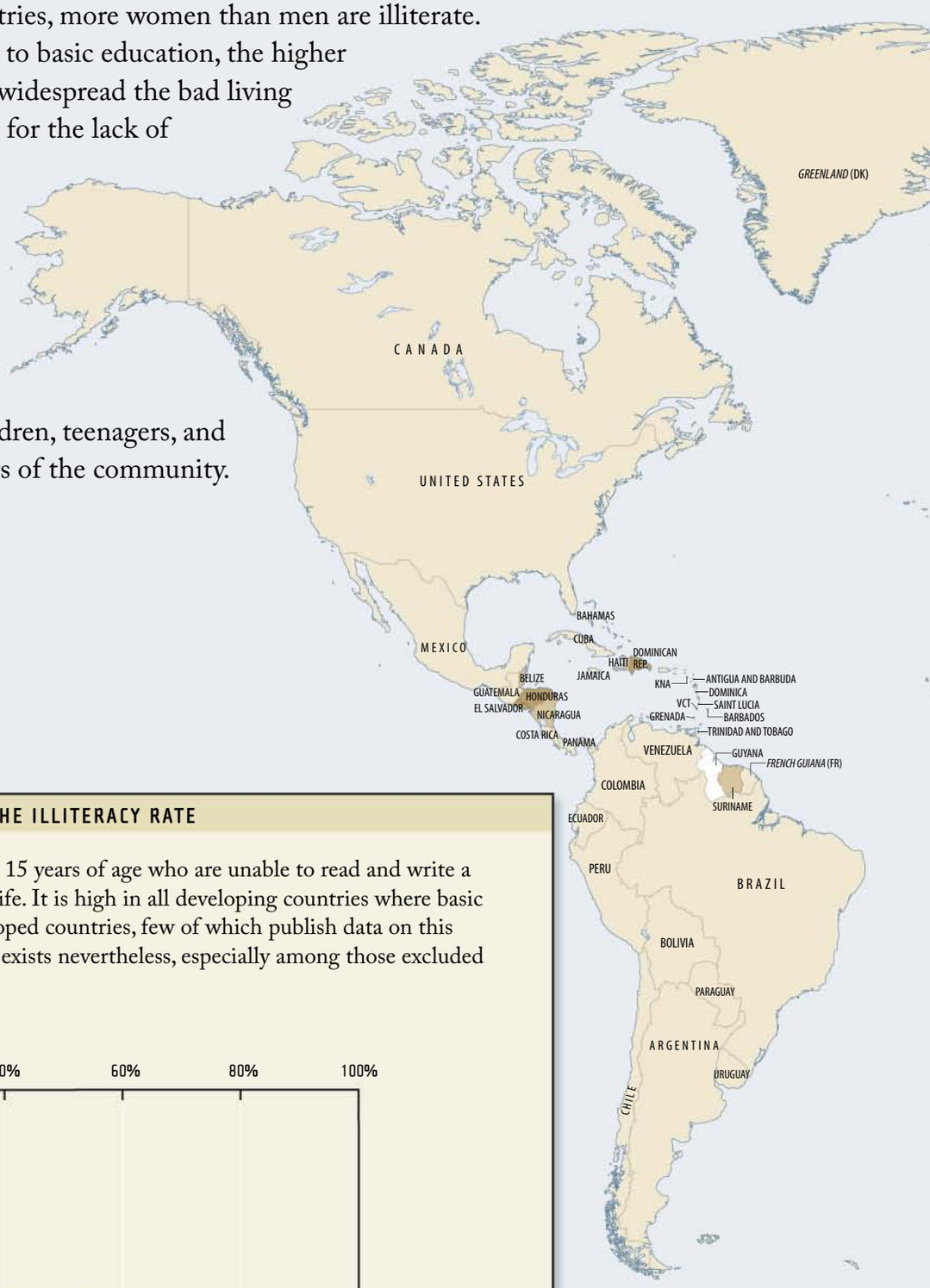
The share of the national budget devoted to health varies from less than 5% in the poorest countries to more than 20% in the wealthiest ones. Thus, national revenue has a major impact on the state of health and the life expectancy of a country's population. However, it does not explain on its own the inequalities from one country to another. Malaysia, for example, has an infant-mortality rate equal to that of the United States (0.7%), while its GNP is one-quarter the size. Governments that invest in water quality, hygiene education, and installation of an extended health-care system (sufficient number of physicians, vaccinations, etc.) improve their health situation. With a GNP per capita identical to that of India, Vietnam has a life expectancy that is longer by eight years (68 years) and an infant-mortality rate almost four times lower (2.3%), notably because 99% of children under 1 year old are vaccinated, as compared to 70% in India.

HEALTH-CARE EXPENDITURES
($/year/inhab.)



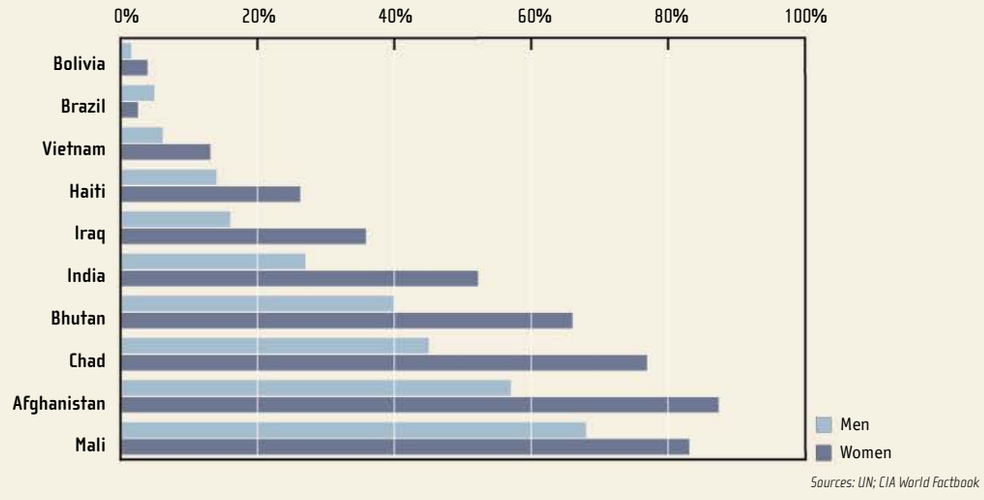
Source: WHO

More than 750 million people around the world are illiterate, and about 64% of them are women. The illiteracy rate varies hugely from country to country and between genders: in many countries, more women than men are illiterate. The less access a population has to basic education, the higher the illiteracy rate and the more widespread the bad living conditions. In order to make up for the lack of basic education, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is helping to set up nonconventional schooling structures in many developing countries that offer training to everyone in a community—children, teenagers, and adults—and are run by members of the community.



THE ILLITERACY RATE

The illiteracy rate counts people over 15 years of age who are unable to read and write a short sentence about their everyday life. It is high in all developing countries where basic education is not systematic. In developed countries, few of which publish data on this subject, illiteracy is less visible, but it exists nevertheless, especially among those excluded from mainstream society.



Sources: UN; CIA World Factbook

Child writing, United Kingdom
Learning to read and write begins when a child is about 6 years old. To fight illiteracy, obligatory school attendance for young children must be a priority.

ILLITERACY IN THE WORLD

Illiteracy rate per country

- ≥ 75%
- 50%–74.9%
- 25%–49.9%
- 10%–24.9%
- < 10%
- No data

Sources: UNESCO; État du monde

Nonconventional schooling, Uganda
The young students in this school are learning English. Nonconventional schooling includes basic education programs in reading, writing, and arithmetic, for children and adults.

The number of conflicts has dropped significantly since the end of the Cold War, but there are still numerous zones where confrontations occur. The nature of conflicts has changed: although there are still several wars between states and a number of border disputes, most conflicts are civil wars. The parties confront each other within a single country for ideological, ethnic, religious, or economic reasons. In some civil wars, a group claims independence for its territory (armed independence movements). Although officially confined to a single country, civil wars often involve a number of states, which support one or another of the belligerents financially or militarily.

THE MAIN ARMED CONFLICTS

Number of armed conflicts per country (1989–2006)

- 8–9
- 6–7
- 4–5
- 2–3
- 1
- 0

Source: Uppsala Conflict Database

Armed conflicts in the last 15 years

- International conflict
- ****Border dispute
- Armed independence movement
- Civil war

Sources: Le Monde diplomatique; BBC News

INTERNATIONAL CONFLICTS

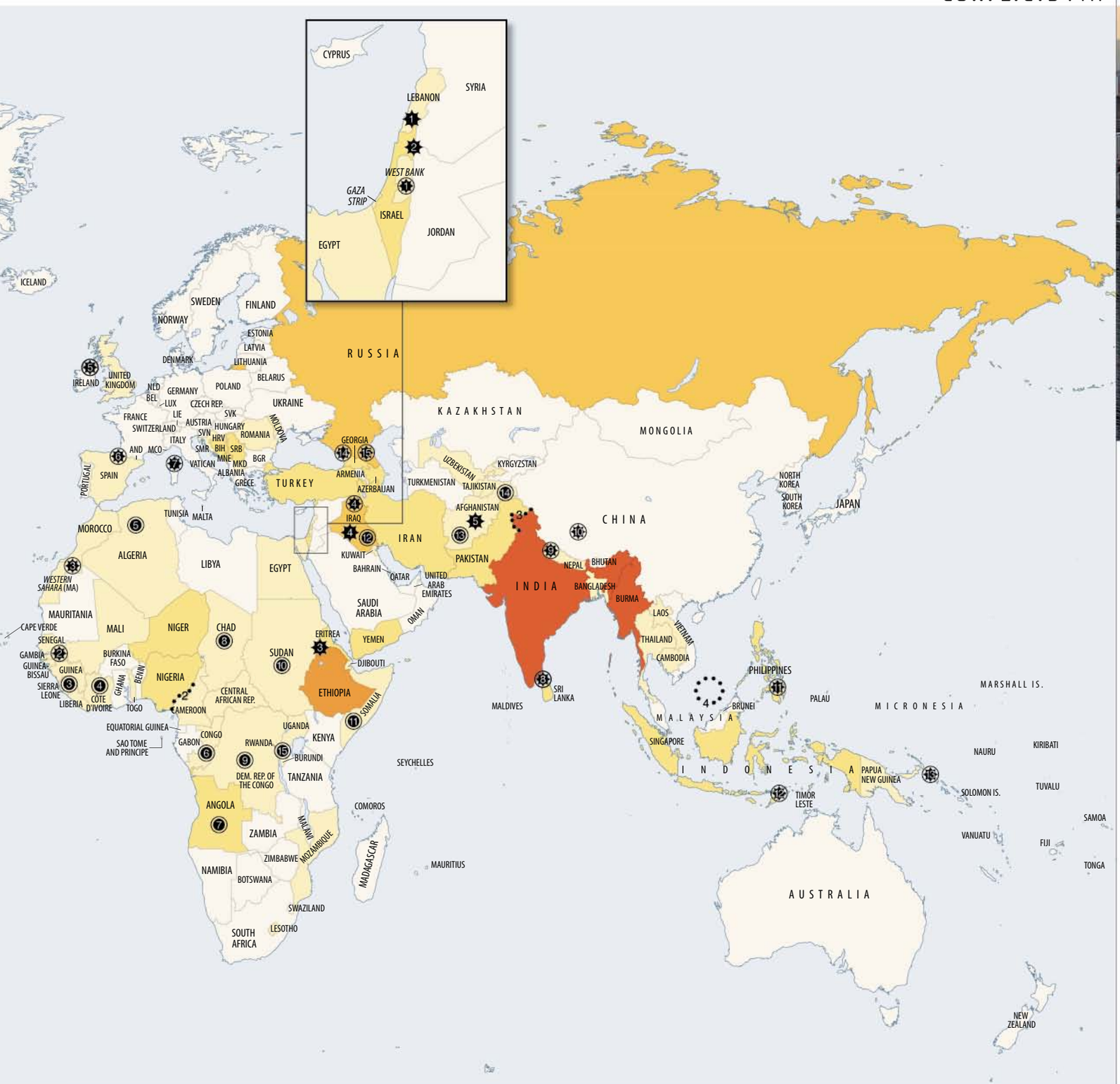
1. Israel against Lebanon to stop activities by terrorists established in Lebanon (1978–2006)
2. Israel against Syria for possession of the Golan Heights (since 1981)
3. Eritrea against Ethiopia for control of the city of Badme (1998–2000)
4. Invasion of Iraq by the United States to end the dictatorship of Saddam Hussein (2003)
5. Invasion of Afghanistan by the United States to combat terrorism (2001)

BORDER DISPUTES

- **1** Peru and Ecuador for control of the Condor cordillera (1981–1998)
- **2** Cameroon and Nigeria for control of the oil-rich Bakassi Peninsula (1994–1996)
- **3** India and Pakistan for control of the Kashmir region (since 1948)
- **4** Vietnam, China, Taiwan, Brunei, the Philippines, and Malaysia, for control of the Spratly Islands (since 1988)

ARMED INDEPENDENCE MOVEMENTS

11. For independence of Palestine occupied by Israel (since 1964)
12. For independence of Casamance in southern Senegal (1982–2004)
13. Polisario Front against the Moroccan government for independence of the Western Sahara (since 1991)
14. Separatist Kurdish group in Iraq, Turkey, Iran, and Syria (1994–1998)
15. Irish Republican Army (IRA) against the British government for independence of Northern Ireland (1919–2005)
16. Basque separatist group (ETA) against the Spanish government for independence of the Basque Country (since 1959)
17. Corsican separatist group against the French government for independence of the island (since 1976)
18. Tamul Tiger separatist group in northern and eastern Sri Lanka (since 1976)
19. Maoist groups for the creation of an independent communist state, in Nepal (since 1996)
10. For independence of Tibet occupied by China (since 1959)
11. Islamist groups for independence of the Mindanao region in the southern Philippines (since 1969)
12. For independence of East Timor, obtained in 2002 (1975–2002)
13. Separatist group on Bougainville, an island in Papua New Guinea (1989–1997)
14. Separatist group in Abkhazia and South Ossetia in Georgia (since 1992)
15. Chechen separatist group in Russia (since 1994)

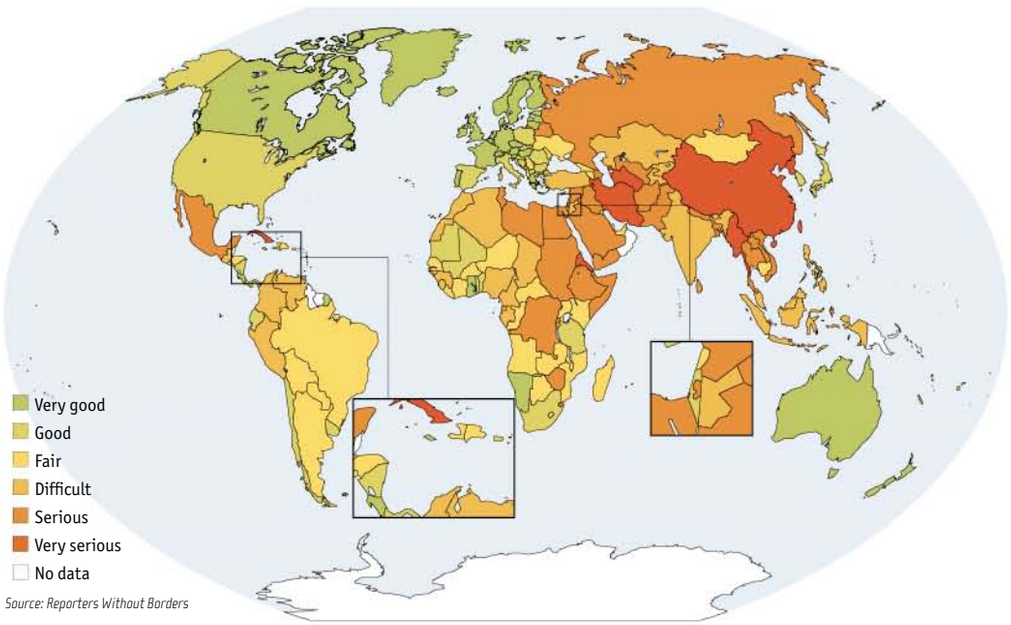


CIVIL WARS

① In Guatemala, guerrillas against the military government for a change of regime (1960–1996)	⑥ Ethnic conflict for control of the Congo (1997–2003)	⑪ In Somalia, clan conflict for control of the country (1991–2004)
② In Colombia, communist group (FARC) against the government for control of the country (since 1966)	⑦ Popular liberation movement of Angola against the Unita rebel group for control of the country (1975–2002)	⑫ Confrontation between Shiite and Sunni Muslims in Iraq (since 2005)
③ In Sierra Leone, armed group against the government for control of diamond production (1991–2002)	⑧ In Chad, ethnic and religious conflict for control of the country (1998–2003)	⑬ In Afghanistan, mujahadin against the Taliban for control of the country (1992–2001)
④ In Côte d'Ivoire, ethnic and religious conflict for control of the country (1999–2005)	⑨ In the Democratic Republic of the Congo, rebel group against the government for control of the country (1997–2002)	⑭ In Tajikistan, Islamists and democrats against the pro-Russian army for control of the country (1992–1997)
⑤ In Algeria, Islamists against the government for control of the country (1991–2005)	⑩ In Sudan, animists and Christians against the Islamist government and ethnic conflict in Darfur (1983–2005)	⑮ Ethnic conflict between Tutsis and Hutus for control of Rwanda (1994–2001)

Freedom of the press

Media propaganda is used in many conflicts to manipulate opinion and the adversary. Freedom of the press is a bulwark against this propaganda. Each year, the French association Reporters Without Borders, through its network of correspondents, lists attacks against journalists (assassinations, imprisonments, assaults, threats, etc.) and the media (censorship, seizures, searches, pressure, etc.). On the basis of this information, it assigns each country a ranking that reflects its freedom of the press. The lower the ranking, the greater the freedom of the press. In 2007, 169 countries were ranked. Their rankings ranged from 0.75 in Iceland to 114.75 in Eritrea.

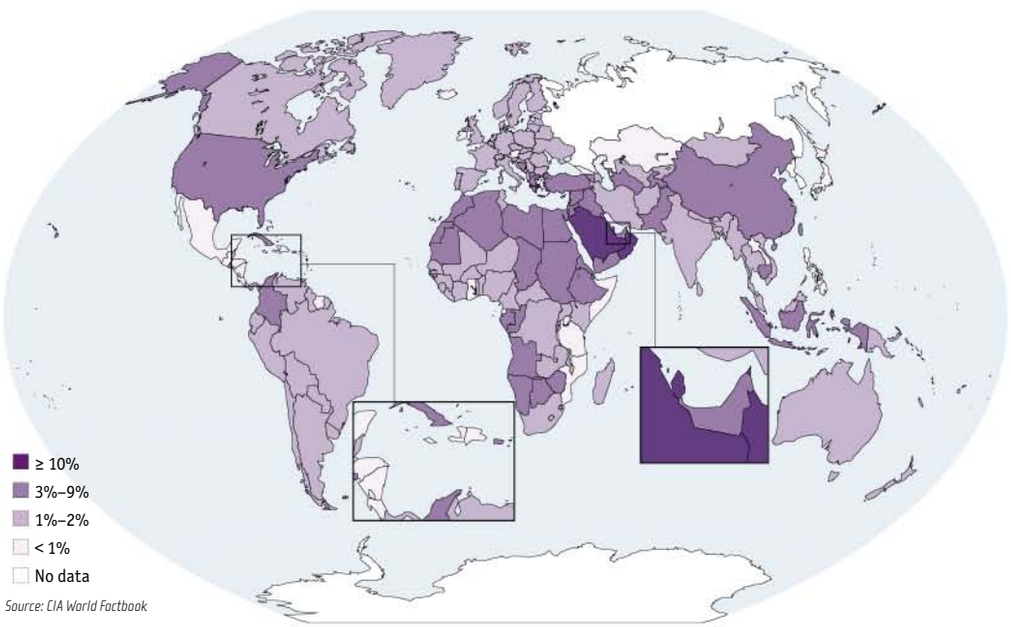


Source: Reporters Without Borders

Military expenditures

Military expenditures are the total amounts allocated to armed forces, governmental defense agencies, and military activities in space but exclude, among other things, the cost of destroying weapons. Although they often represent only a low proportion of government expenditures, they form a major geopolitical indicator for analyzing conflicts in the world. In 2006, world military expenditures stood at $184 per person on average, or 2.5% of the world gross domestic product (GDP).

AMOUNT OF MILITARY EXPENDITURES
(compared to GDP, per country)



Source: CIA World Factbook

Antitank mines
Antitank mines are part of the war arsenal long used in many conflicts, alongside powerful antipersonnel mines, which cause many civilian deaths.

THE CONTINENTS

The seven continents take up almost one-third of the planet's surface. Their main characteristics, such as shape, area, relief features, and climate, vary widely. The continents have changed greatly over geological time, as they have been shaped by plate tectonics, volcanism, and sedimentation for millions of years. From the Canadian Far North to the plains of Patagonia, from the Sahara Desert to the steppes of Siberia, our planet offers a huge diversity of landscapes, inhabited by a great variety of peoples.

TOP: Badlands National Park, United States
LEFT: Kimmeridge Bay, Great Britain

Great Salt Lake, Utah, United States
The Great Salt Lake resulted from the gradual evaporation of a much larger prehistoric lake, Lake Bonneville.

PHYSICAL MAP OF NORTH AMERICA

☆ Administrative capital
● City with a population of over 1 M inhab.

Altitude (m) / Depth (m)
8,850
6,000
5,000
4,000
3,000
2,000
1,000
500
0
-500
–2,500
–5,000
–8,000
–11,034

Sources: NIMA; NASA

ASIA
Bering Strait
INTERNATIONAL DATE LINE
St. Lawrence Is.
Bering Sea
Nunivak Is.
ALASKA (US)
BROOKS RANGE
Mount McKinley, 6,194 m
ALASKA RANGE
Aleutian Is.
Kodiak Is.
Gulf of Alaska
Tombstone Mountain, 2,196 m
Mount Logan, 5,956 m
Keele Peak, 2,972 m
Yukon
MACKENZIE MOUNTAINS
Mackenzie
COAST MOUNTAINS
Queen Charlotte Is.
Mount Robson, 3,959 m
Fraser
Vancouver Is.
Mount Waddington, 4,019 m
Vancouver
Seattle
Portland
CASCADE RANGE
Columbia
Snake
ROCKY MOUNTAINS
Mount Borah, 3,859 m
Sacramento
SIERRA NEVADA
Sacramento
San Francisco
San Jose
Great Basin
Death Valley, -86 m
Las Vegas
Colorado
Grand Canyon
MOJAVE DESERT
Los Angeles
Riverside
San Diego
Tijuana
Colorado Plateau
Phoenix
SONORAN DESERT
Guadaloupe
Roca Alijos
Baja California
Gulf of California
NORTH PACIFIC OCEAN
Revillagigedo Is.
Rio Grande
Ciudad Juárez
Yaqui
SIERRA MADRE OCCIDENTAL
CHIHUAHUAN DESERT
Torreón
Monterrey
MEXICO
Rio Grande de Santiago
León
Guadalajara
Mexico
Toluca
Puebla
Orizaba, 5,700 m
Balsas
SIERRA MADRE DEL SUR
Isthmus of Tehuantepec
Usumacinta
Yucatán
Gulf of Mexico
Florida
Miami
Orlando
Tampa
Atlantic Coastal Plain
APPALACHIANS
Mount Mitchell, 2,037 m
Ozark Plateau
Arkansas
Mississippi
Alabama
Tombigbee
Memphis
Atlanta
New Orleans
Houston
San Antonio
Austin
Dallas
Brazos
Great Plains
Missouri
Kansas City
St. Louis
Ohio
Indianapolis
Cincinnati
Denver
Pikes Peak, 4,301 m
Great Salt Lake
UNITED STATES
Milwaukee
Chicago
Minneapolis
Lake Michigan
Detroit
Lake Erie
Cleveland
Pittsburgh
Columbus
Lake Huron
Lake Superior
Lake Nipigon
Lake Manitoba
Lake Winnipegosis
Lake Winnipeg
Cedar Lake
Edmonton
Saskatchewan
Calgary
Great Bear Lake
Great Bear River
Great Slave Lake
Slave Riv.
Peace Riv.
Lake Athabasca
Reindeer lake
Nelson
Canadian Shield
CANADA
Hudson Bay
James Bay
Ungava Bay
Mont d'Iberville, 1,652 m
-243 m
Thelon
Nettilling Lake
Mount Odin, 2,147 m
Davis Strait
Baffin Bay
Baffin Is.
Prince of Wales Is.
Victoria Is.
Amundsen Gulf
Banks Is.
Beaufort Sea
Prince Patrick Is.
Melville Is.
Devon Is.
Ellesmere Is.
Mount Barbeau, 2,616 m
GREENLAND (DK)
-4,177 m
-4,131 m
LAURENTIANS
St. Lawrence
Montréal
Ottawa
Toronto
Lake Ontario
Boston
Providence
Susquehanna
Hudson
New York
Philadelphia
Baltimore
Washington, D.C.
Virginia Beach
Mount Washington, 1,917 m
0 500 1,000 km

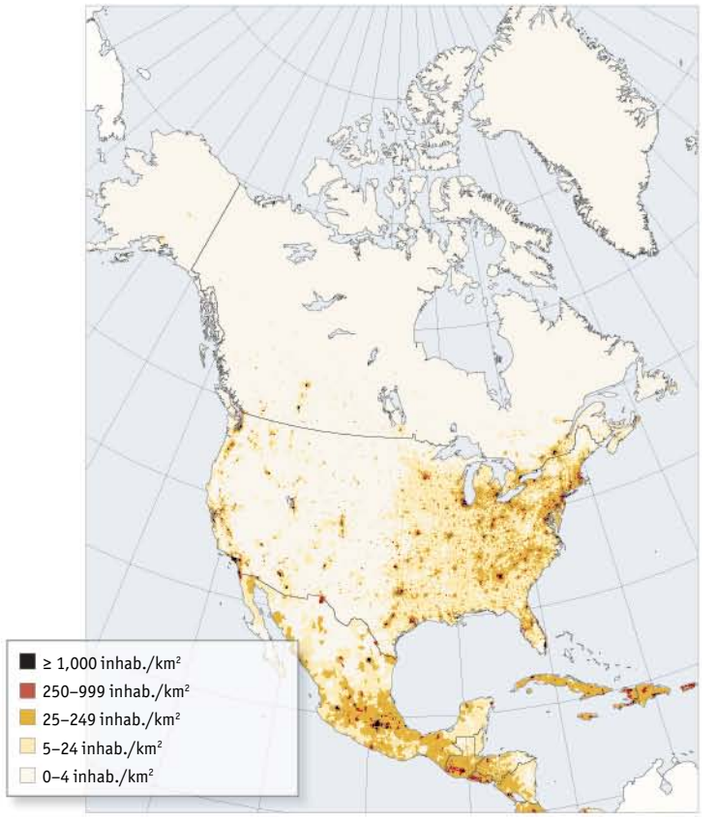
North America is a large continent extending from the Tropic of Cancer ❶ to the North Pole region. Surrounded on three sides by the Pacific, Atlantic, and Arctic oceans, it represents 16% of the planet's landmass. The oldest part of the continent, the Canadian Shield ❷, borders Hudson Bay ❸. All around it, the North American platform is home to major watersheds (the St. Lawrence ❹ and the Great Lakes ❺, the Mississippi ❻, the Rio Grande ❼ , and the Mackenzie ❽). While the ancient, eroded Appalachian Mountains ❾ form the main relief feature of the eastern part of the continent, the west is marked by high mountain ranges (Rockies ❿, Sierra Madre ⓫, etc.) following the Pacific coast all the way from Alaska to Mexico. Relatively sparsely populated except along the coasts, North America has a wide variety of landscapes, from the Chihuahuan desert to the Arctic tundra, including temperate forests and prairies. North America is bordered on the south by Central America, a mountainous isthmus that links it to South America.

New York, United States
New York's port is one of the 15 largest in the world.

The Appalachians in Tennessee, United States
The eroded Appalachian Mountains form the main relief feature of eastern North America.

The Mississippi, United States
The combined course of the Mississippi and Missouri rivers is 5,970 km.

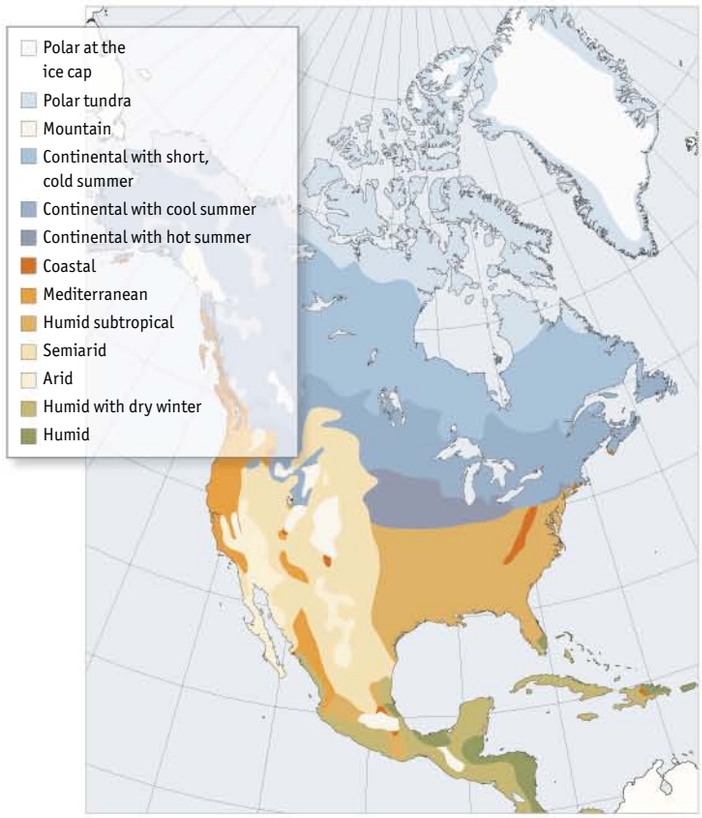
POPULATION DISTRIBUTION IN NORTH AMERICA



Source: SEDAC, Columbia University

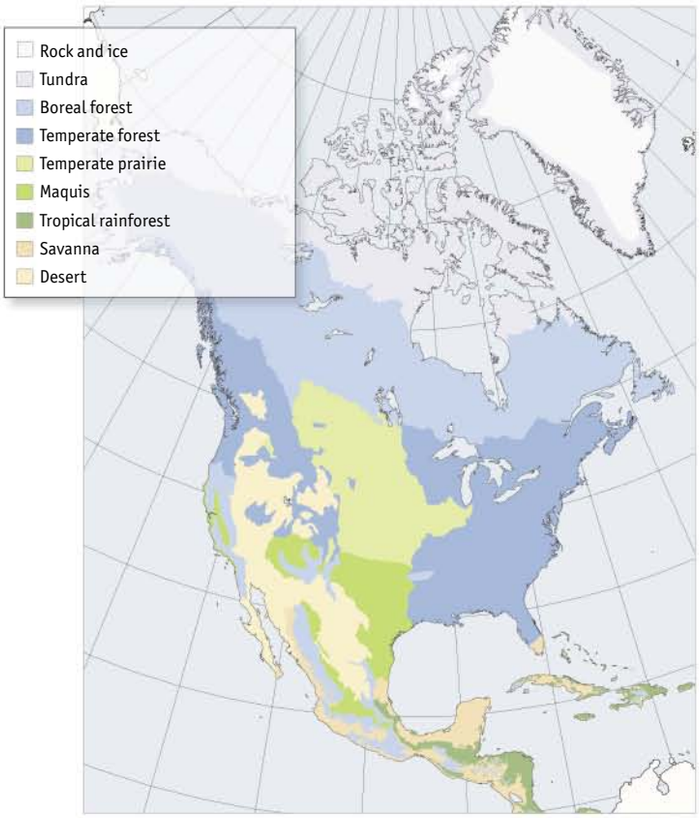
Mexico City, Mexico
The most populous city in North America, with 19.4 million inhabitants in 2005, Mexico's capital is also one of the most polluted cities in the world.

THE CLIMATES OF NORTH AMERICA



Source: Kottek et al., World Map of the Köppen-Geiger climate classification updated

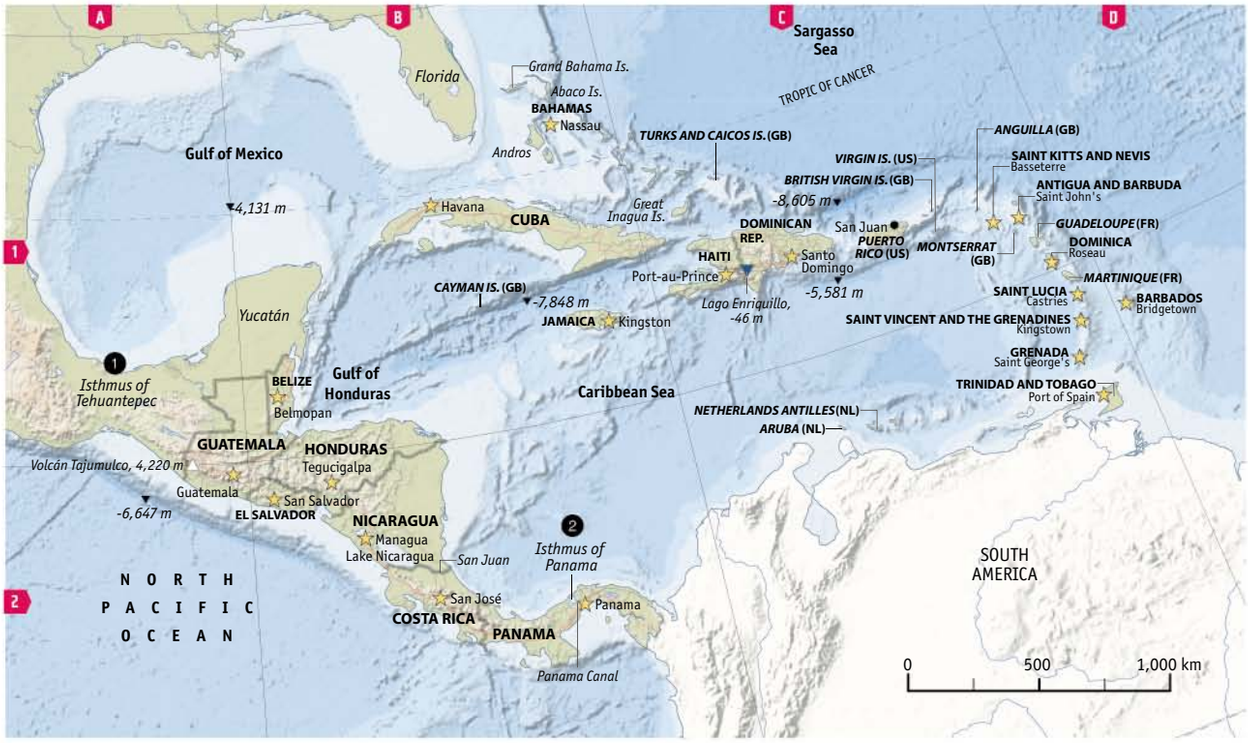
THE BIOMES OF NORTH AMERICA



Source: FAO

Central America and the Antilles

North America and South America are linked by a narrow strip of mountainous land that stretches almost 2,000 km in length between the Caribbean Sea and the Pacific Ocean. This region, known as Central America, is defined by two isthmuses: the Isthmus of Tehuantepec, 200 km wide, to the north ❶, and the Isthmus of Panama, 80 km wide, to the south ❷. Central America was shaped by tectonic activity, and its highest point is Tajumulco (4,220 m), one of the many volcanoes in the region, situated in Guatemala. The numerous valleys and basins create a very compartmentalized landscape that is reflected in the political fragmentation in the region. The Antilles archipelago, an island arc between Florida and Venezuela, includes two separate groups. The Greater Antilles, to the north, contain the largest and most populous islands of the archipelago: Cuba, Jamaica, Hispaniola (which consists of Haiti and the Dominican Republic), and Puerto Rico. To the southeast, the Lesser Antilles are composed of a long string of volcanic islands encircling the Caribbean Sea. Constantly swept by trade winds, the Antilles archipelago has a hot, humid climate, punctuated by frequent hurricanes.



PHYSICAL MAP OF CENTRAL AMERICA AND THE ANTILLES

☆ Administrative capital
● Cities with a population of over 1 M inhab.

THE PANAMA CANAL

The Panama Canal, 80 km long, crosses the Isthmus of Panama ❷ to connect the Caribbean Sea with the Pacific Ocean. Opened in 1914, the canal was first administered by the United States. It was returned to Panama in 1999 and has since been a major source of revenue for the country. In 2004, 14,035 ships, or almost 40 per day, have passed through the canal, paying more than $750 million in tolls.

Lock in the Panama Canal, Panama
To fit into the canal's locks, ships must be no more than 32.3 m wide and 294.1 m long.

THE COUNTRIES OF NORTH AMERICA

FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)	FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)
	Canada	9,900,000	32.85		**El Salvador**	21,041	6.85
	United States	9,600,000	305.69		**Bahamas**	13,878	0.331
	Mexico	1,900,000	106.62		**Jamaica**	10,991	2.71
	Nicaragua	130,000	5.61		**Trinidad and Tobago**	5,130	1.33
	Honduras	112,088	7.10		**Dominica**	751	0.068
	Cuba	110,861	11.26		**Saint Lucia**	539	0.165
	Guatemala	108,889	13.35		**Antigua and Barbuda**	442	0.083
	Panama	75,517	3.34		**Barbados**	430	0.294
	Costa Rica	51,100	4.46		**Saint Vincent and the Grenadines**	388	0.120
	Dominican Republic	48,511	9.75		**Grenada**	344	0.105
	Haiti	27,750	9.59		**Saint Kitts and Nevis**	261	0.049
	Belize	22,966	0.288				

THE TERRITORIES OF NORTH AMERICA

TERRITORY	AREA (km²)	POPULATION (M inhab.)	SOVEREIGN COUNTRY	TERRITORY	AREA (km²)	POPULATION (M inhab.)	SOVEREIGN COUNTRY
Greenland	2,175,600	0.057	Denmark	**Cayman Islands**	264	0.046	United Kingdom
Puerto Rico	8,875	3.99	United States	**Saint-Pierre-et-Miquelon**	242	0.006	France
Guadeloupe	1,705	0.444	France	**Aruba**	180	0.103	The Netherlands
Martinique	1,102	0.398	France	**British Virgin Islands**	151	0.022	United Kingdom
Dutch Antilles	800	0.191	The Netherlands	**Montserrat**	102	0.006	United Kingdom
Turks and Caicos Islands	430	0.024	United Kingdom	**Anguilla**	91	0.012	United Kingdom
Virgin Islands	347	0.111	United States	**Bermuda**	53	0.064	United Kingdom

Arenal Volcano, Costa Rica
A range of volcanic mountains crosses this small Central American country.

Mountains, Jamaica
The mountains of central Jamaica have a temperate climate, while the coasts have a tropical climate.

South America accounts for 12% of the planet's landmass. Its relief features are similar to those in North America. The east side of the continent is an ancient bedrock, formed of the Guyana Plateau ❶ in the north, the Brazilian Plateau ❷ in the center and the Patagonian Plateau ❸ in the south. The plateaus are separated by depressions through which major rivers flow: the Orinoco ❹, the Amazon ❺, and the Parana ❻. The major mountain ranges are found on the west coast: the Andes Cordillera ❼ stretches north to south, from Venezuela to southern Chile. From the high peaks of the Andes to the cold Patagonia region, including the equatorial plains of Amazonia, South America has a number of climatic zones. South of the Tropic of Capricorn ❽, warm temperate climates dominate, with some arid and semiarid regions, while the north has tropical climates. The Andes Cordillera generates a wide variety of climates, depending on latitude, altitude, and orientation of the slopes.

Salto Angel, Venezuela
With a height of 979 m, the Salto Angel falls are the highest in the world.

Machu Picchu, Peru
The ruins of the Inca city of Machu Picchu are situated at about 2,400 m altitude in the Andes Cordillera.

The Amazon, Brazil
With its source in the Andes, the Amazon flows more than 6,500 km. It crosses through a dense rainforest and empties into the Atlantic Ocean.

Torres del Paine, Chile
Torres del Paine National Park, with an area of 181,000 ha, stretches from the Chilean Andes to the steppes of Patagonia.


C
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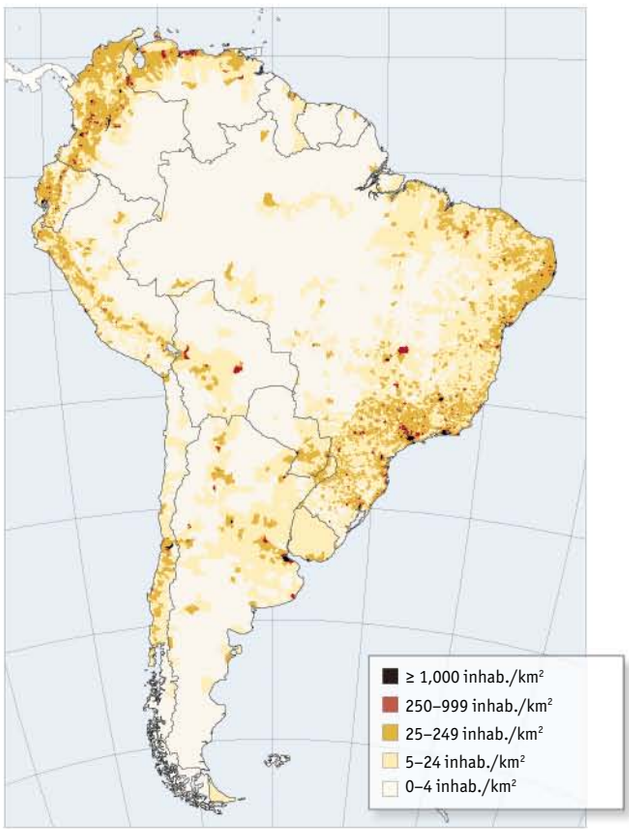
NORTH AMERICA
Pico Cristóbal Colón, 5,776 m
Barranquilla
Maracaibo
Lake Maracaibo
Valencia
Caracas
Maracay
Barquisimeto
Margarita Is.
Magdalena
Pico Bolivar, 4,981 m
Llanos
Orinoco
Bucaramanga
Medellín
Bogotá
Cali
VENEZUELA
COLOMBIA
Guyana Plateau
GUYANA
SURINAME
FRENCH GUIANA (FR)
Georgetown
Paramaribo
NORTH ATLANTIC OCEAN
ECUADOR
Quito
Cotopaxi, 5,897 m
Chimborazo, 6,310 m
Guayaquil
Pico da Neblina, 2,994 m
Rio Negro
Rio Branco
Putumayo
Japura
Amazon
Manaus
Amazonia
Marajó Is.
Belém
EQUATOR
Tapajós
Xingu
Fortaleza
Fernando de Noronha Is.
Natal
Maranón
Madeira
Purus
Andes
PERU
Huascarán, 6,768 m
Yerupajá, 6,617 m
-6,403 m
Lima
Ucayali
Madre de Dios
Guapore
Juruena
Tapajós
Téles Pires
Araguaia
Tocantins
Parnaíba
Recife
Maceió
BRAZIL
São Francisco
Salvador
-5,753 m
Pacific Ocean
Lake Titicaca
La Paz
Illimani, 6,438 m
BOLIVIA
Mato Grosso
Brasília
Goiânia
Brazilian Plateau
Paraguay
Sajama, 6,542 m
Santa Cruz
Altiplano
Paranaíba
Rio Grande
Belo Horizonte
Pico da Bandeira, 2,890 m
Vitória
-7,694 m
-6,015 m
ATACAMA DESERT
Llullaillaco, 6,739 m
Bonete, 6,759 m
Cachi, 6,380 m
Ojos del Salado, 6,893 m
-8,073 m
TROPIC OF CAPRICORN
PARAGUAY
Asunción
Gran Chaco
Parana
Campinas
Rio de Janeiro
São Paulo
Santos
Parana Plateau
Curitiba
Serra do Mar
Martin Vaz Is.
Trindade Is.
Uruguay
ARGENTINA
Pôrto Alegre
SOUTH ATLANTIC OCEAN
Córdoba
Parana
Mercedario, 6,700 m
Aconcagua, 6,962 m
Santiago
Tupungato, 6,565 m
URUGUAY
Rosario
Buenos Aires
Río de la Plata
Montevideo
Juan Fernandez Is.
Pampas
CHILE
SOUTH PACIFIC OCEAN
Colorado
Gulf of San Matias
Valdes Pen.
Chiloé Is.
Chubut
Patagonia
Gulf of San Jorge
-6,618 m
Laguna del Carbón, -105 m
Wellington Is.
FALKLAND IS. (GB)
Strait of Magellan
Tierra del Fuego
Cape Horn
0
500
1,000 km
PHYSICAL MAP OF SOUTH AMERICA
Administrative capital
City with a population of over 1 M inhab.
Altitude (m)
8,850
6,000
5,000
4,000
3,000
2,000
1,000
500
0
Depth (m)
–500
–2,500
–5,000
–8,000
–11,034
Sources: NIMA; NASA

POPULATION DISTRIBUTION IN SOUTH AMERICA



Source: SEDAC, Columbia University

Rio de Janeiro, Brazil
Situated in southeast Brazil, Rio de Janeiro, with a population of 11.5 million inhabitants, is the second-most populous city in South America after São Paulo.

THE CLIMATES OF SOUTH AMERICA

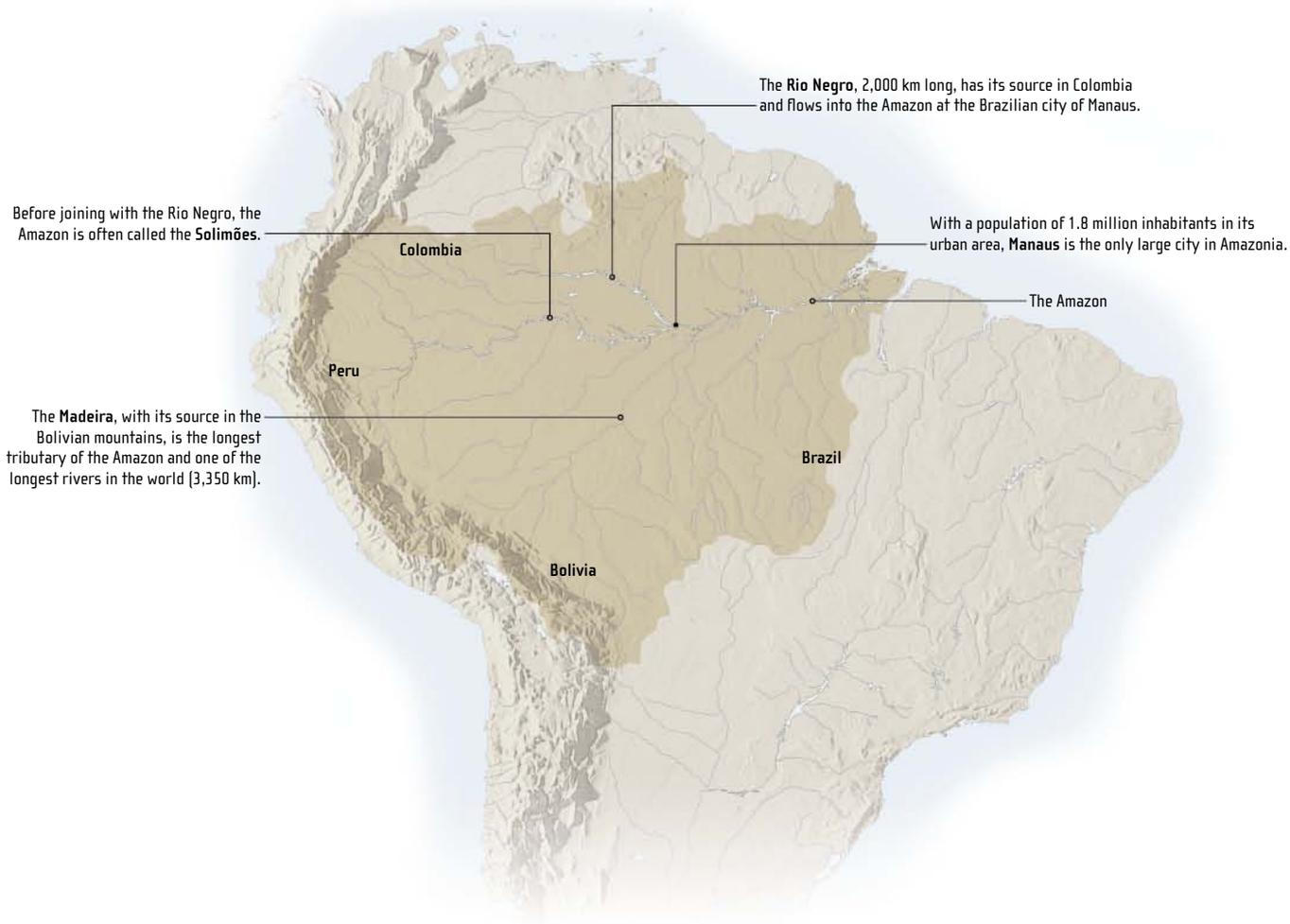
Source: Kottek et al., World Map of the Köppen-Geiger climate classification updated

THE BIOMES OF SOUTH AMERICA

Source: FAO

The Amazon

The source of the Amazon is in the Andes. It crosses Peru and Brazil and then flows into the Atlantic Ocean. This river, which has the greatest rate of flow in the world, pours almost 200,000 m^3 of water into the ocean per second. Its watershed covers 7 million km^2, or more than one-third of the continent. Shared among several South American countries (including Brazil, Peru, Colombia, and Bolivia), the Amazonian forest extends over 3.5 million km^2, or 30% of all rainforests in the world. This natural environment is home to a very wide variety of endemic species. It is estimated that one-quarter of all bird species in the world live in Amazonia.



DEFORESTATION

The area of the Amazonian forest is constantly shrinking. The main causes of deforestation are overcutting of the forest's trees, fires (accidental or deliberate), and land clearing for farming or urban development. Deforestation poses a considerable threat to the biodiversity of the Amazonian forest. Some species of trees that have only one representative per hectare may quickly disappear. In addition, the destruction of forest habitats threatens the survival of many animal species. A total of more than 1,000 species are currently threatened with extinction in the forests of South America.

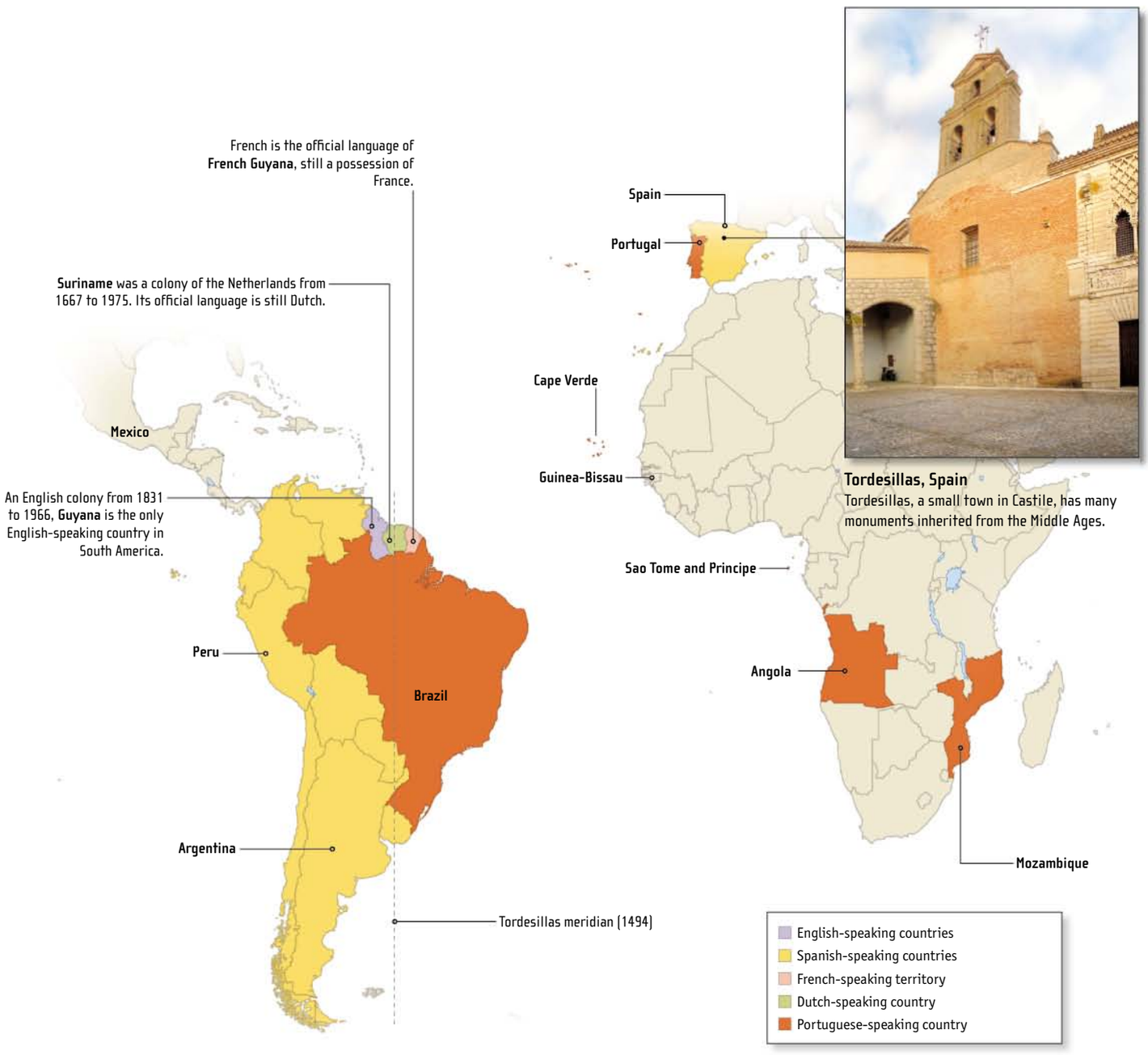
Deforestation of the Amazonian forest, Brazil
Since 1970, more than 17% of the Brazilian part of the Amazonian forest has disappeared.

Language distribution in South America

Spanish is the national language of nine of the 12 countries in South America, while in Brazil the national language is Portuguese. Since Brazil alone accounts for half the continent in terms of both area and population, South America has just about an equal number of speakers of Spanish and Portuguese.

The explanation for this language distribution dates back to the 15th century. In 1494, Spain and Portugal signed the Treaty of Tordesillas. Following Christopher Columbus's discovery of America (1492), this treaty was aimed at presenting disputes between Spain and Portugal in the distribution of land yet to be discovered. The Treaty of Tordesillas stipulated that an imaginary line passing 370 leagues (about 2,000 km) west of the Cape Verde archipelago divided Earth in two: the territories situated east of this meridian were declared Portuguese; those to the west, Spanish.

In the ensuing decades, Spain built an empire stretching from Mexico to Argentina, while Portugal settled its colonies in Africa and on the coast of Brazil, officially discovered in 1500. Gradually, the Portuguese pushed the border of their territory westward to the current borders of Brazil. Thus, if we trace the Tordesillas meridian on a modern map of South America, at 46° 37' west longitude, we note that much of Brazil is situated in the Spanish zone.



Tordesillas, Spain
Tordesillas, a small town in Castile, has many monuments inherited from the Middle Ages.

THE COUNTRIES OF SOUTH AMERICA

FLAG	COUNTRY	AREA (km^2)	POPULATION (M inhab.)	DATE OF INDEPENDENCE
	Brazil	8,514,047	191.57	1822
	Argentina	2,780,400	39.53	1816
	Peru	1,285,216	27.91	1824
	Colombia	1,138,914	46.10	1819
	Bolivia	1,098,581	9.51	1825
	Venezuela	912,050	27.63	1810
	Chile	756,626	16.62	1818
	Paraguay	406,752	6.12	1811
	Ecuador	283,561	13.34	1822
	Guyana	214,969	0.74	1966
	Uruguay	175,016	3.34	1828
	Suriname	163,820	0.457	1975

Lake Maracaibo, Venezuela
With an area of 13,512 km^2, this lake in northwest Venezuela covers one of the largest oil deposits on the continent.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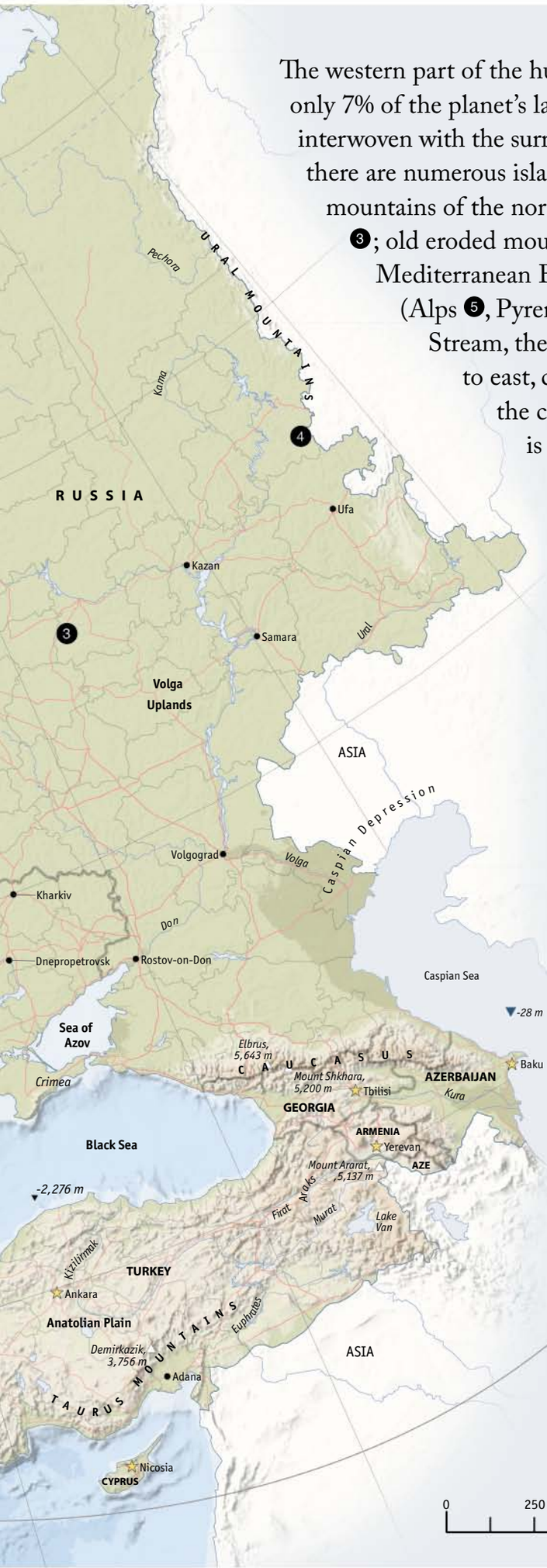
NORTH AMERICA
JAN MAYEN (NO)
North Cape
Barents Sea
Kola Pen.
Lofoten Is.
Norwegian Sea
Kebnekaise, 2,111 m
Kemijoki
White Sea
Northern Dvina
ICELAND
Reykjavik
ARCTIC POLAR CIRCLE
Hvannadalshnúkur, 2,119 m
-3,931 m
FINLAND
Lake Onega
Suir
Lake Ladoga
FAROE IS. (DK)
Galdhøppigen, 2,469 m
Glomma
Laagen
Dalalven
Gulf of Bothnia
Helsinki
Neva
Saint Petersburg
Gulf of Finland
Shetland Is. (GB)
GREENWICH MERIDIAN
SWEDEN
Tallinn
Nizhni Novgorod
Oslo
Stockholm
ESTONIA
Lake Peipus
Volga
Hebrides Is.
NORWAY
Lake Vanern
-694 m
Skagerrak
Moscow
Highlands
GRAMPIAN MOUNTAINS
Lake Vättern
LATVIA
Gotland (SE)
Riga
Central Russian Uplands
-3,151 m
Glasgow
North Sea
Kattegat
Öland
Jutland
LITHUANIA
Baltic Sea
DENMARK
Copenhagen
Sjælland
KALININGRADO (RU)
Vilnius
Minsk
IRELAND
Dublin
ISLE OF MAN (GB)
PENNINES
Leeds
Manchester
BELARUS
Hamburg
Germano-Polish Plain
CAMBRIAN MOUNTAINS
Birmingham
NETHERLANDS
Amsterdam
Berlin
Warsaw
UNITED KINGDOM
The Hague
Rotterdam
Weser
POLAND
Kiev
London
Cornwall
Elbe
Oder
Vistula
Dnieper
GERMANY
Brussels
Lille
BELGIUM
SUDETES
UKRAINE
English Channel
Rhine
Prague
GUERNSEY (GB)
JERSEY (GB)
LUXEMBOURG
Luxembourg
CZECH REP.
Gerlachovska, 2,655 m
CARPATHIANS
Dniester
NORTH ATLANTIC OCEAN
Seine
Paris
SLOVAKIA
MOLDOVA
Chisinau
Odessa
Loire
VOSGES
Munich
Vienna
Bratislava
7
FRANCE
Zurich
LIECHTENSTEIN
Vaduz
AUSTRIA
Budapest
HUNGARY
ROMANIA
Grossglockner, 3,798 m
Mount Moldoveanu, 2,543 m
Crêt de la Neige, 1,718 m
JURA
Bern
SWITZERLAND
Hungarian Basin
Puy de Sancy, 1,885 m
4
Lyon
Mount Cervin, 4,478 m
Ljubljana
SLOVENIA
Zagreb
CROATIA
TRANSYLVANIAN ALPS
Gulf of Gascogne
CENTRAL MASSIF
Milano
Mont Blanc, 4,807 m
Turin
Po
Bucharest
BOSNIA AND HERZEGOVINA
Belgrade
Garonne
Rhone
5
ALPS
DINARIC ALPS
Danube
SERBIA
Sarajevo
BULGARIA
CANTABRIAN MOUNTAINS
El Teleno, 2,183 m
MONACO
Monaco
SAN MARINO
San Marino
BALKAN
Sofia
Mount Botev, 2,376 m
Bosporus Strait
Aneto Peak, 3,404 m
PYRENEES
Marseille
Porto
Duero
Ebro
Moncayo, 2,313 m
6
ANDORRA
Andorra La Valla
-2,954 m
Monte Cinto, 2,706 m
ITALY
Corno Grande, 2,912 m
MONTENEGRO
Podgorica
KOSOVO
Jezerce, 2,694 m
Skopje
Musala Peak, 2,925 m
Istanbul
Sea of Marmara
Bursa
Adriatic Sea
Almanzor Peak, 2,592 m
CORSICA (FR)
VATICAN CITY
Rome
MACEDONIA
Tirana
Barcelona
PORTUGAL
Tage
Madrid
Lisbon
ALBANIA
Mount Olympus, 2,917 m
Lesbos (GR)
Naples
SPAIN
-2,962 m
SARDINIA (IT)
Thyrrenian Sea
Aegean Sea
Izmir
BALEARIC IS. (ES)
Guadalquivir
Euboea
GREECE
Athens
Ionian Sea
-3,741 m
SIERRA NEVADA
Peloponnese
Rhodes (GR)
Strait of Gibraltar
Mulhacén, 3,482 m
GIBRALTAR (GB)
Mediterranean Sea
SICILY (IT)
Etna, 3,323 m
-5,317 m
AFRICA
MALTA
Valletta
Crete (GR)

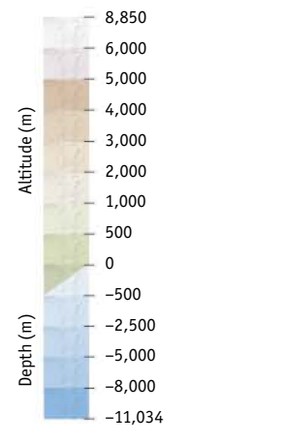
The western part of the huge Eurasian continental ensemble, Europe represents only 7% of the planet's landmass. Its territory, with very jagged coastlines, is tightly interwoven with the surrounding seas, including the Mediterranean Sea ❶, in which there are numerous islands. Europe is divided into four major zones: the old, low mountains of the northwest ❷, marked by glaciation; the broad northern plains ❸; old eroded mountains in the center (Massif Central, Urals ❹); and Alpine-Mediterranean Europe to the south, formed of high mountain ranges (Alps ❺, Pyrenees ❻ and Carpathians ❼). The warm waters of the Gulf Stream, the ocean current that crosses the North Atlantic from west to east, considerably moderates the climate of the Atlantic coast of the continent. Farther east, where the Gulf Stream's influence is not perceptible, continental climates dominate, with large spreads in temperature over the year. Finally, the southern part of the continent benefits from a generally warm, dry Mediterranean climate.



Rome, Italy
Powerful civilizations developed in Europe in antiquity, such as the one here in Rome.

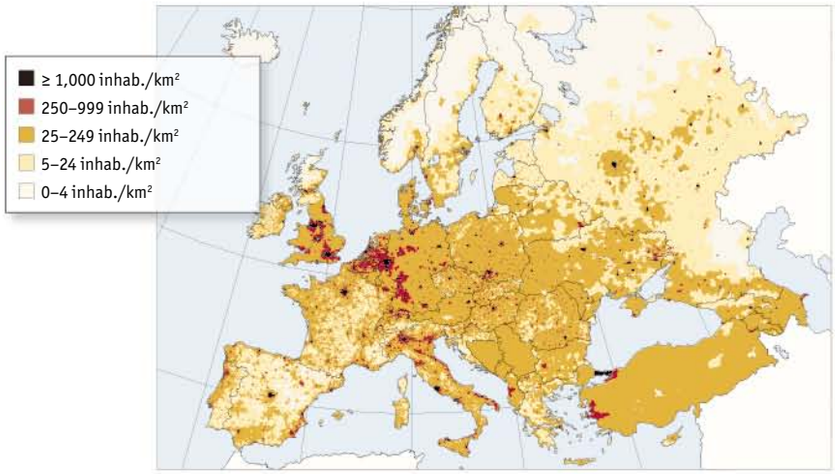
PHYSICAL MAP OF EUROPE

☆ Administrative capital
• City with a population of over 1 M inhab.



Sources: NIMA; NASA

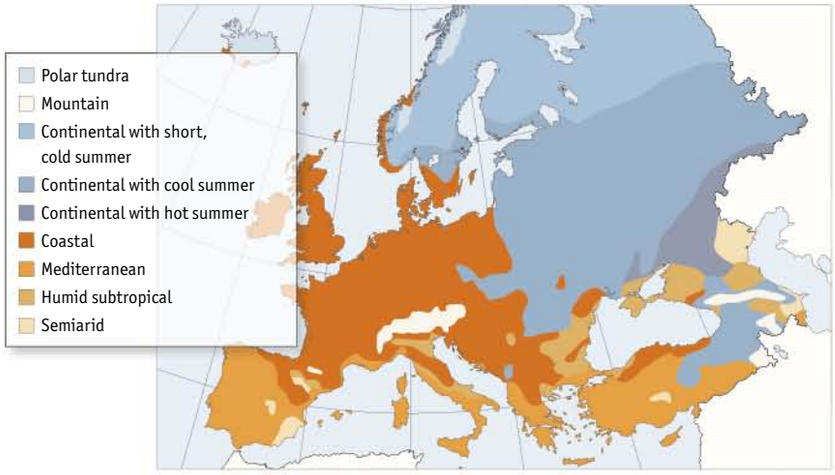
POPULATION DISTRIBUTION IN EUROPE



Source: SEDAC, Columbia University

Paris, France
Almost three-quarters of Europe's population live in cities.

THE CLIMATES OF EUROPE



Source: Kotter et al., World Map of the Köppen-Geiger climate classification updated

Crete, Mediterranean Sea
Crete is a Greek island that, like the rest of Greece, has a Mediterranean-type temperate climate, with hot, dry summers.

THE BIOMES OF EUROPE

Source: FAO

Seaside, Scotland
Outside of forests, Scotland has a vegetation of heaths and peat bogs, composed mainly of briars and graminaceous plants.

The Alps

With a length of 1,200 km, the Alps are the largest mountain system in western Europe. A huge natural barrier, the Alps block humid air masses and receive great quantities of precipitation. A number of Europe's rivers (Rhine, Rhone, Po) and their tributaries have their source in the Alpine massif.

Because temperature drops as altitude rises, the slopes of an Alpine valley present a succession of climates comparable to those that one finds as one travels toward the poles. In the Alps, the valley floors have a climate similar to those of the neighboring plains. Farther up, forests replace farming, and coniferous trees become increasingly dominant, as in boreal forests. At the alpine level, the climate is comparable to that in the Arctic tundra and trees give way to pastures. Finally, the highest land, permanently covered with snow, has the same kind of climate as the ice caps.

Mont Blanc Massif, seen from the Italian side
The highest point of the Alps is Mont Blanc (4,807 m), on the border between France and Italy.

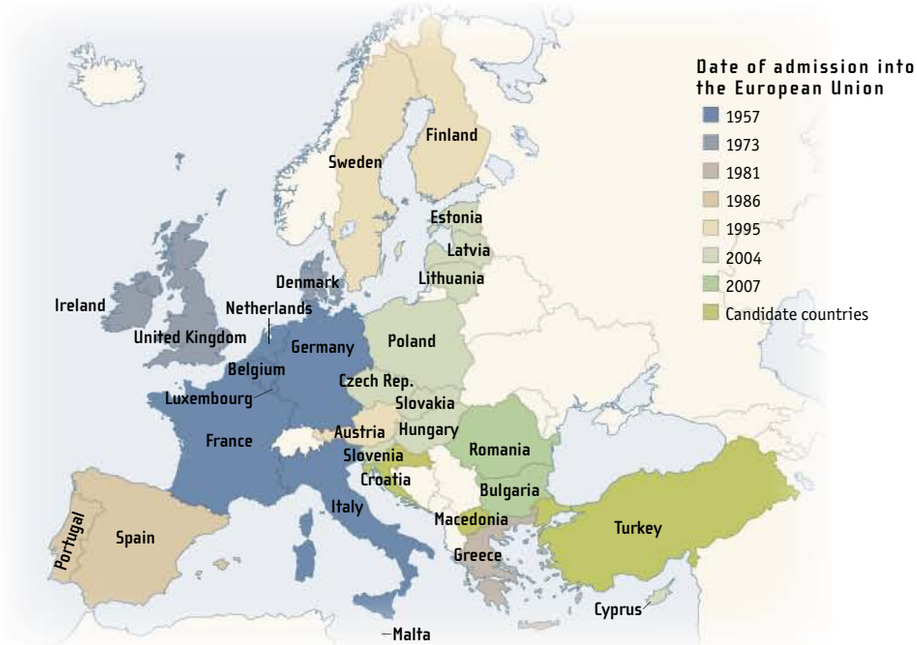
The European Union

The European Union is an international organization with 27 member European states. Its earliest version was formed in the 1950s, in the wake of World War II, with the objective of maintaining peace among the countries of Europe and improving the standard of living of Europeans.

The member states of the Union have set up common institutions. The Council of the European Union is the main decision-making body. It defines the orientations of member states in areas as diverse as energy, agriculture, the environment, and trade. It shares legislative power with the European Parliament, elected every five years by universal suffrage since 1979. Finally, the European Commission holds executive power. It implements policies, manages the budget, sees to the application of laws, and proposes legislation. These institutions function in no fewer than 20 official languages, in conformity with the Union's motto, "United in Diversity."

Twenty-four of the 27 countries of the European Union have formed a zone where people and goods move without restrictions, the Schengen area. In this zone, trade is facilitated and travelers do not have to present identification documents at borders.

EXPANSION OF THE EUROPEAN UNION



THE CONSTRUCTION OF EUROPE

The history of the European Union began in 1951, when Germany, Belgium, France, Italy, Luxembourg, and the Netherlands united within the European Coal and Steel Community. This successful integration led to the creation, in 1957, of the European Atomic Energy Commission (EAEC) and the European Economic Community (EEC). In 1967, these three communities merged within the EEC. In 1992, the Maastricht Treaty transformed the EEC into the European Union, with expanded mandate and responsibilities. Over the years, the six founding countries were joined by 21 other states. Bulgaria and Romania entered in January 2007. Turkey, Croatia, and Macedonia also wish to be admitted into the European Union. To do this, they must demonstrate that they have a stable democratic political system and an operational and competitive market economy. Since 2002, a new currency, the euro, replaced the national currencies of 15 countries of the European Union (Austria, Belgium, Cyprus, Germany, Finland, France, Greece, Ireland, Italy, Luxembourg, Malta the Netherlands, Portugal, Slovenia, Spain).

The European flag
On a sky-blue background, the stars symbolizing the peoples of Europe form a circle signifying a union. The unchanging number of stars is 12, symbol of perfection and plenty.

THE COUNTRIES OF EUROPE

FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)	FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)
	Russia	17,075,400*	142.49*		Lithuania	65,300	3.39
	Turkey	783,562	74.82		Latvia	64,600	2.28
	Ukraine	603,700	46.21		Croatia	56,538	4.54
	France	551,500	61.59		Bosnia and Herzegovina	51,197	3.93
	Spain	505,992	44.07		Slovakia	49,033	5.39
	Sweden	449,964	9.12		Estonia	45,100	1.34
	Norway	385,155	4.70		Denmark	43,094**	5.44
	Germany	357,022	82.54		Netherlands	41,528	16.40
	Finland	338,145	5.28		Switzerland	41,284	7.48
	Poland	323,250	38.08		Moldavia	33,851	3.81
	Italy	301,318	58.80		Belgium	30,528	10.45
	United Kingdom	242,900	60.75		Albania	28,748	3.19
	Romania	238,391	21.43		Macedonia	25,713	2.04
	Belarus	207,600	9.69		Slovenia	20,256	1.99
	Greece	131,957	11.15		Montenegro	13,812	0.605
	Bulgaria	110,912	7.63		Cyprus	9,251	0.854
	Iceland	103,000	0.30		Luxembourg	2,586	0.467
	Hungary	93,032	10.03		Andorra	468	0.073
	Portugal	91,982	10.61		Malta	316	0.406
	Serbia	88,361	9.89		Liechtenstein	160	0.035
	Austria	83,858	8.35		San Marino	61	0.030
	Czech Republic	78,866	10.19		Monaco	1	0.033
	Ireland	70,273	4.29		Vatican City***	0.4	0.001
	Georgia	69,700	4.40				

The countries whose names are underlined are members of the European Union.

** : Figures presented here factor in the European part and the Asian part of Russia.*

*** : Without Greenland*

**** : Vatican City is not a UN member but maintains a permanent observer mission at the organization's headquarters.*

Asia alone represents one-third of the planet's landmass, and 60% of the world's population lives there, half of them in China and India. Separated from Africa by the Red Sea ❶ and the Isthmus of Suez ❷, Asia encompasses the Indonesian ❸, Philippine ❹ , and Japanese ❺ archipelagos, situated to the south and east of the mainland. Asia and Europe belong to the same continental mass, Eurasia. Their common border has been fixed arbitrarily along the Ural Mountains ❻. Asia has a wide variety of relief features, from the plains and plateaus of Siberia, India, and Arabia to the imposing mountain ranges that cross the continent from west to east (Hindu Kush ❼, Himalayas ❽). Asia also presents a broad range of climates. Southeast Asia, irrigated by abundant monsoon rains, has a tropical climate. In Arabia and the interior of the continent, where mountains keep humidity from penetrating, there are immense arid and semiarid areas. In northern Asia, the Siberian anticyclone creates very contrasting climatic conditions, with severe winters and very hot summers.

PHYSICAL MAP OF ASIA

☆ Administrative capital
• City with more than 1 M inhab.

Altitude (m): 8,850 · 6,000 · 5,000 · 4,000 · 3,000 · 2,000 · 1,000 · 500 · 0

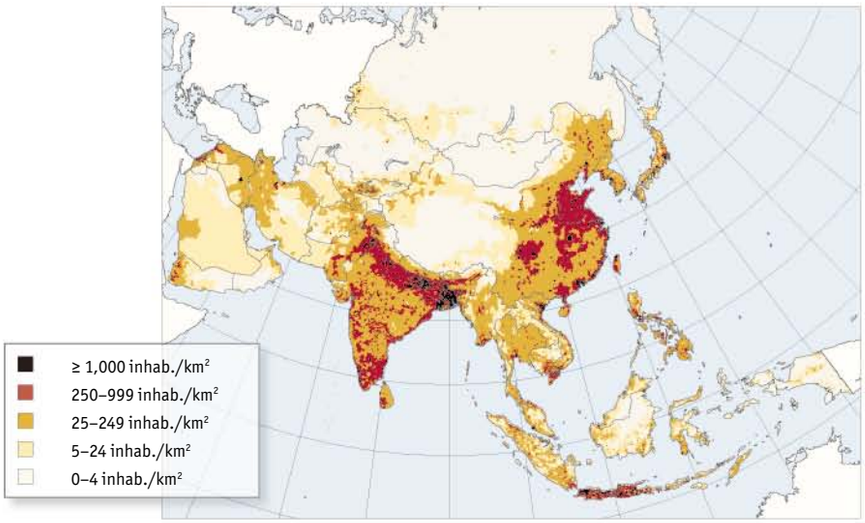
Depth (m): –500 · –2,500 · –5,000 · –8,000 · –11,034

Sources: NIMA; NASA

Siberia, Russia
Siberia has an area of more than 12 million km², from the Ural Mountains to the Pacific Ocean.

Shanghai, China
Chinese metropolises increasingly resemble Western cities.

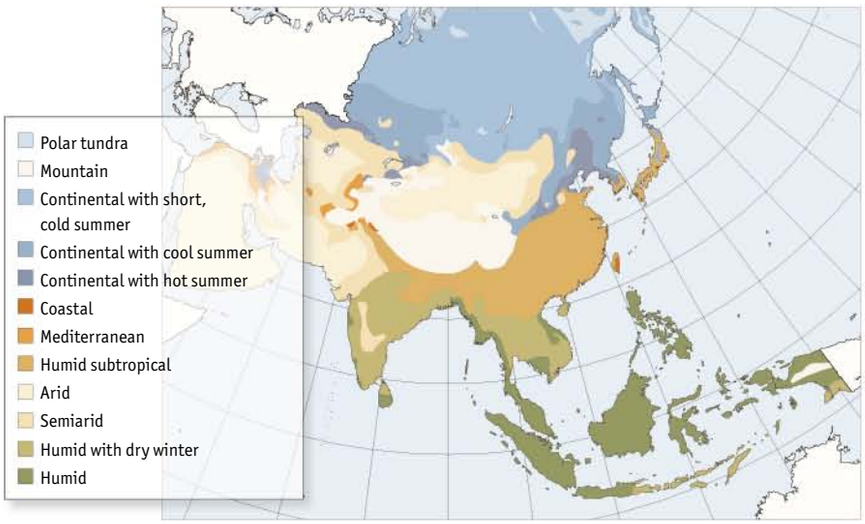
POPULATION DISTRIBUTION IN ASIA



Source: SEDAC, Columbia University

Tokyo, Japan
Tokyo is by far the most populous city in the world, with more than 35 million inhabitants.

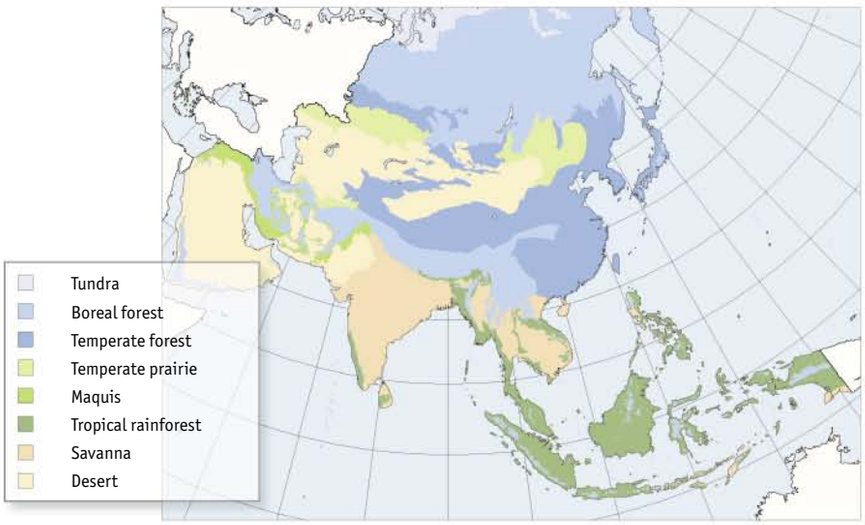
THE CLIMATES OF ASIA



Source: Kottek et al., World Map of the Köppen-Geiger climate classification updated

Yak caravan, Tibet
The vast Tibetan Plateau in western China is a high plateau with a dry, cold climate.

THE BIOMES OF ASIA

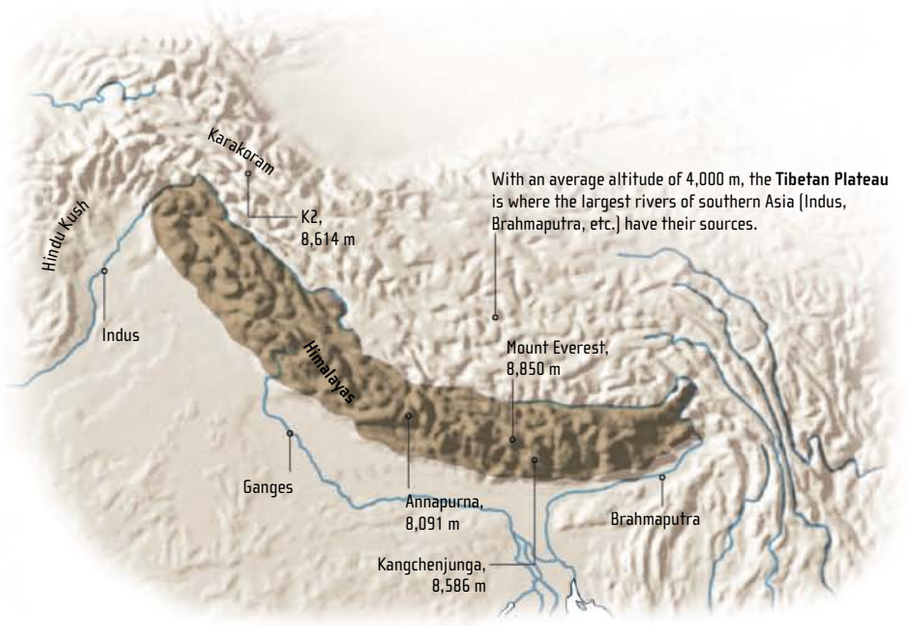


Source: FAO

The Chocolate Hills on the island of Bohol, Philippines
On Bohol, one of the 7,107 islands of the Philippine archipelago, many of the hills that rise above the rainforest turn brown in the summer.

The Himalayas

The Himalayas have 10 peaks rising above 8,000 m (including Mount Everest, Kangchenjunga, and Annapurna), making them the highest mountain range in the world. With a length of 2,500 km and a width of 200 to 400 km, it stretches in an arc from the high Tibetan plateau to the north to the Ganges plain to the south. To the west, the high-altitude Indus Valley separates the Himalayas from the Hindu Kush and the Karakoram range, where the peak of K2 rises.



Mount Everest seen from the north, Tibet
The "roof of the world," reaching an altitude of 8,850 m, is situated in the heart of the Himalayas.

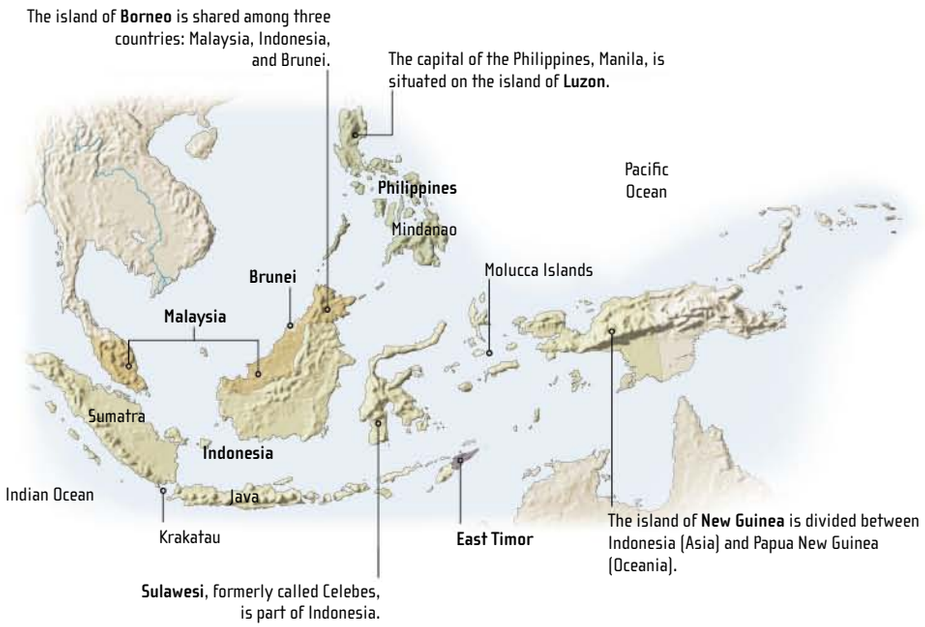
The Asian archipelagos

The Indonesian and Philippine archipelagos, which comprise more than 20,000 islands, form the zone most affected by volcanism on the planet. The explosion of the volcanic island of Krakatau, in 1883, was of unparalleled violence.

The Japanese archipelago includes four main islands (Hokkaido, Honshu, Kyushu, Shikoku) and more than 3,000 small islands, stretched over a distance of 3,000 km from north to south.

Bordered to the east by the deep Japan Trench (10,374 m), the archipelago is the result of the subduction of the Pacific Plate under the Philippine and Eurasian plates, and is part of the Pacific Ring of Fire. Volcanic activity is manifested by frequent earthquakes, such as those that destroyed Tokyo (1923) and Kobe (1995).

THE ARCHIPELAGOS OF SOUTHEAST ASIA



THE JAPANESE ARCHIPELAGO

Bromo Volcano, Indonesia
Situated in the eastern part of the island of Java, Mount Bromo is not very active, but it continuously emits a plume of white smoke. Its eruptions, though infrequent, pose a risk to the many tourists who venture to the summit.

THE COUNTRIES OF ASIA

FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)	FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)
	China	9,596,961	1,328.25		Syria	185,180	19.86
	India	3,287,263	1,167.77		Cambodia	181,035	14.45
	Kazakhstan	2,724,900	15.43		Nepal	147,181	28.17
	Saudi Arabia	2,149,690	24.68		Bangladesh	143,998	158.44
	Indonesia	1,904,569	231.34		Tajikistan	143,100	6.75
	Iran	1,648,195	71.31		North Korea	120,538	23.78
	Mongolia	1,566,500	2.63		South Korea	99,538	48.19
	Pakistan	796,095	163.95		Jordan	89,342	5.89
	Burma	676,578	48.79		Azerbaijan	86,600	8.4
	Afghanistan	652,090	27.03		United Arab Emirates	83,600	4.34
	Yemen	527,968	22.37		Sri Lanka	65,610	19.30
	Thailand	513,115	63.84		Bhutan	47,000	0.655
	Turkmenistan	488,100	4.96		Armenia	29,800	3.01
	Uzbekistan	447,400	27.36		Israel	22,145	6.92
	Iraq	438,317	29.04		Kuwait	17,818	2.83
	Japan	377,873	127.85		Timor Leste	14,874	1.14
	Vietnam	331,689	87.29		Qatar	11,000	0.83
	Malaysia	329,847	26.53		Lebanon	10,400	4.10
	Oman	309,500	2.61		Brunei	5,765	0.389
	Philippines	300,000	87.81		Bahrein	694	0.751
	Laos	236,800	5.86		Singapore	683	4.43
	Kyrghyzstan	199,900	5.32		Maldives	298	0.305

EUROPE
Mediterranean Sea
CEUTA (ES)
MELILLA (ES)
Algiers
Tunis
ATLAS
Rabat
Casablanca
Adrar Bou Nasser, 3,340 m
Chott Melrhir, -40 m
TUNISIA
Tripoli
Benghazi
Alexandria
Suez Canal
Cairo
SINAI
Sabkhat Ghuzayyil, -47 m
Qattara Depression, -133 m
MADEIRA (PT)
MOROCCO
Jebel Toubkal, 4,167 m
Oued Draa
CANARY IS. (ES)
Sebkha Tah, -55 m
ALGERIA
LIBYA
EGYPT
Red Sea
Nile
WESTERN SAHARA (MA)
TROPIC OF CANCER
AHAGGAR MASSIF
SAHARA DESERT
Djado Plateau
TIBESTI
NUBIAN DESERT
TÉNÉRÉ
Mount Koussi, 3,445 m
MAURITANIA
MALI
AÏR MASSIF
Nouakchott
Niger
NIGER
CHAD
ENNEDI
SUDAN
Khartoum
CAPE VERDE
Praia
Dakar
SENEGAL
Sénégal
Banjul
GAMBIA
Niamey
SAHEL
Lake Chad
Ndjamena
DARFUR
Blue Nile
GUINEA-BISSAU
Bissau
Bamako
Ouagadougou
BURKINA FASO
Kano
Jos Plateau
FOUTA DJALLON
Kaduna
GUINEA
BENIN
Conakry
GHANA
Abuja
Benue
CÔTE D'IVOIRE
TOGO
Freetown
SIERRA LEONE
Lake Volta
Ibadan
NIGERIA
ADAMAWA MASSIF
CENTRAL AFRICAN REPUBLIC
White Nile
Monrovia
Yamoussoukro
Kumasi
Lagos
Benin City
Cotonou
LIBERIA
Abidjan
Lome
Accra
Mount Cameroon, 4,070 m
CAMEROON
Lake Turkana
Malabo
Douala
Yaoundé
Bangui
Ubangi
Gulf of Guinea
Bioko (GQ)
Principe
EQUATORIAL GUINEA
Congo
Lake Albert
SAO TOME AND PRINCIPE
Sao Tome
Sao Tome
Libreville
Ogooué
Congo Basin
UGANDA
Mount Stanley, 5,109 m
Kampala
Lake Victoria
EQUATOR
-7,743 m
GABON
CONGO
RWANDA
Kigali
MITUMBA MOUNTAINS
Great Rift Valley
DEMOCRATIC REPUBLIC OF THE CONGO
BURUNDI
Bujumbura
Brazzaville
Kinshasa
TANZANIA
Lake Tanganyika
Lukuga
AGO
Mbuji-Mayi
Ascension Is. (GB)
SOUTH ATLANTIC OCEAN
GREENWICH MERIDIAN
Luapula
Lake Mweru
Dodoma
Luanda
Kwanza
Kolwezi
Lubumbashi
Lake Malawi
ANGOLA
MALAWI
Angola Plateau
Lilongwe
ZAMBIA
Lusaka
Zambezi
Chire
East Great Rift Valley
Kunene
Okavango
Harare
ZIMBABWE
MOZAMBIQUE
Okavango Basin
NAMIB DESERT
NAMIBIA
Windhoek
BOTSWANA
Limpopo
KALAHARI DESERT
Gaborone
Pretoria
Johannesburg
Ekurhuleni
Maputo
Mbabane
SWAZILAND
Vereeniging
Thabana Ntlenyana, 3,482 m
DRAKENSBERG
Orange
Maseru
LESOTHO
Durban
SOUTH AFRICA
Cape Town
Cape Agulhas
SAINT HELENA (GB)

PHYSICAL MAP OF AFRICA

☆ Administrative capital

● City with a population of over 1 M inhab.

Altitude (m) / Depth (m)

8,850
6,000
5,000
4,000
3,000
2,000
1,000
500
0
−500
−2,500
−5,000
−8,000
−11,034

Sources: NIMA; NASA

Oasis, Morocco
Permanent towns have been built in some oases in the Moroccan desert.

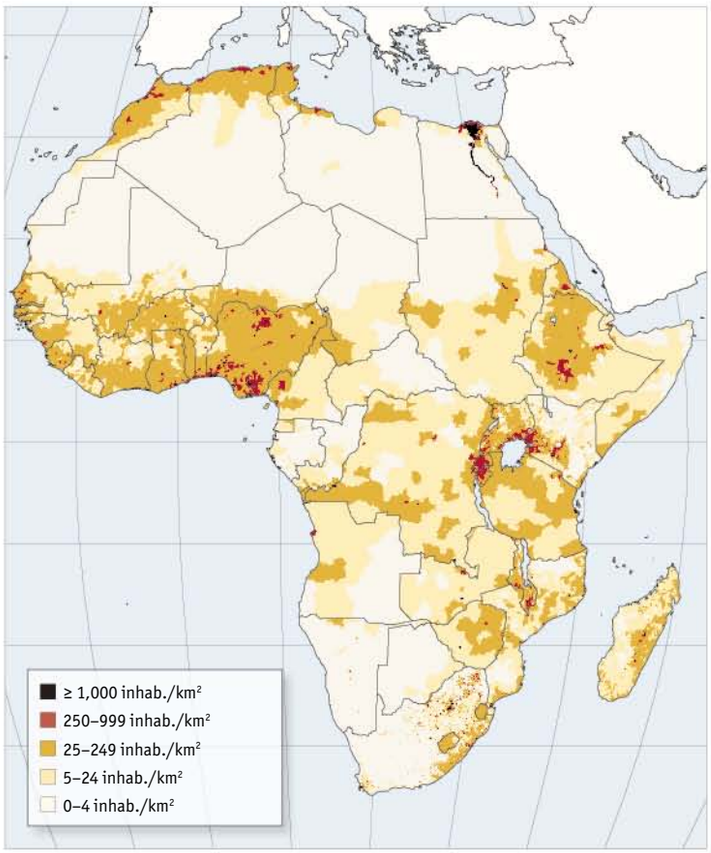
Bisected by the equator ❶, Africa has an area of 30,365,000 square kilometers, or 20% of the planet's landmass. It is formed mainly of very old bedrock. The mountains, modest in size, are concentrated in the northern part of the continent (Atlas ❷), the south (Drakensberg ❸), and especially in the east (Ethiopian Massif ❹), where they have been chiseled by a series of fault troughs, the Great Rift Valley, which includes the West Great Rift Valley ❺ and the East Great Rift Valley ❻. Although the regions situated at the northern and southern ends of the continent have warm temperate climates, most of Africa has tropical or desert climatic conditions. The intertropical zone, covered with forest and savanna, is irrigated by powerful rivers (Congo ❼, Niger ❽), while the regions adjacend to the tropics, where the deserts are found (Sahara ❾, Namib ❿, Kalahari ⓫), have almost none. The population is very unequally distributed in Africa. The desert regions are almost uninhabited, as opposed to high-density zones such as the northern Maghreb (Algeria, Morocco, Tunisia), the Nile River Valley, and the Great Rift Valley region.

Feluccas on the Nile, Egypt
The Nile is the longest river in the world. Its source is in Burundi, and it flows into the Mediterranean Sea 6,670 km away.

Sahel region, Sudan
Large numbers of nomads still live in the arid lands of the Sahel.

Drakensberg Mountains, South Africa
The Blyde River Canyon stretches some 30 km in length and reaches a depth of 800 m in places.

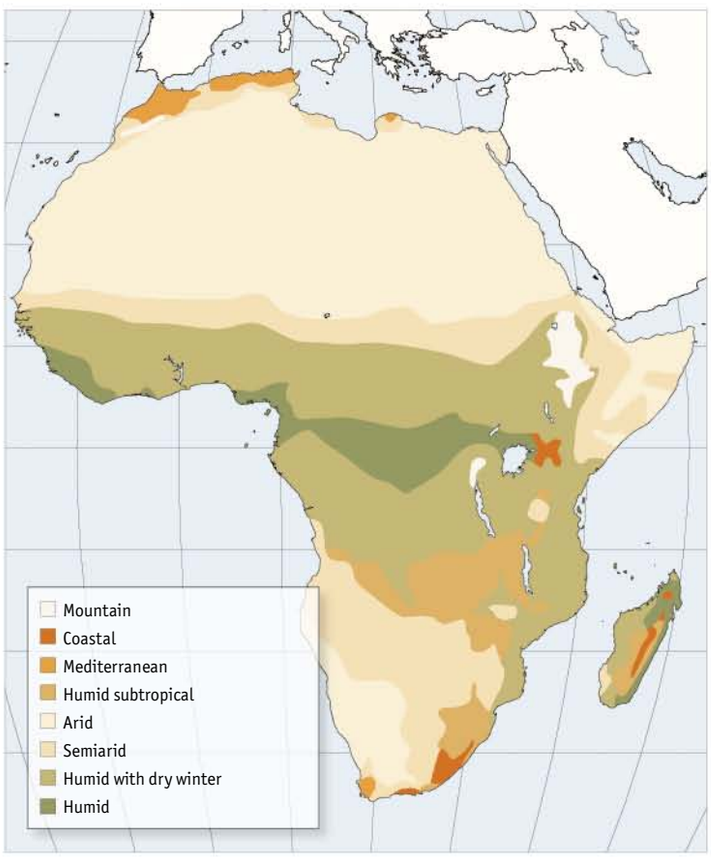
POPULATION DISTRIBUTION IN AFRICA



Source: SEDAC, Columbia University

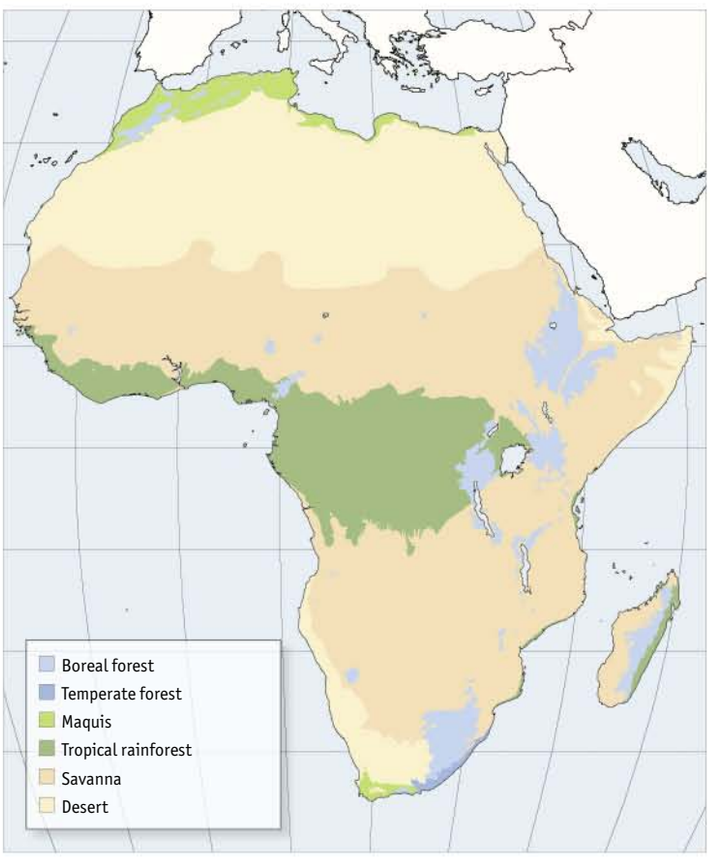
Cairo, Egypt
With a population of over 11 million inhabitants, Cairo is the largest city in Africa.

THE CLIMATES OF AFRICA



Source: Kottek et al., World Map of the Köppen-Geiger climate classification updated

THE BIOMES OF AFRICA

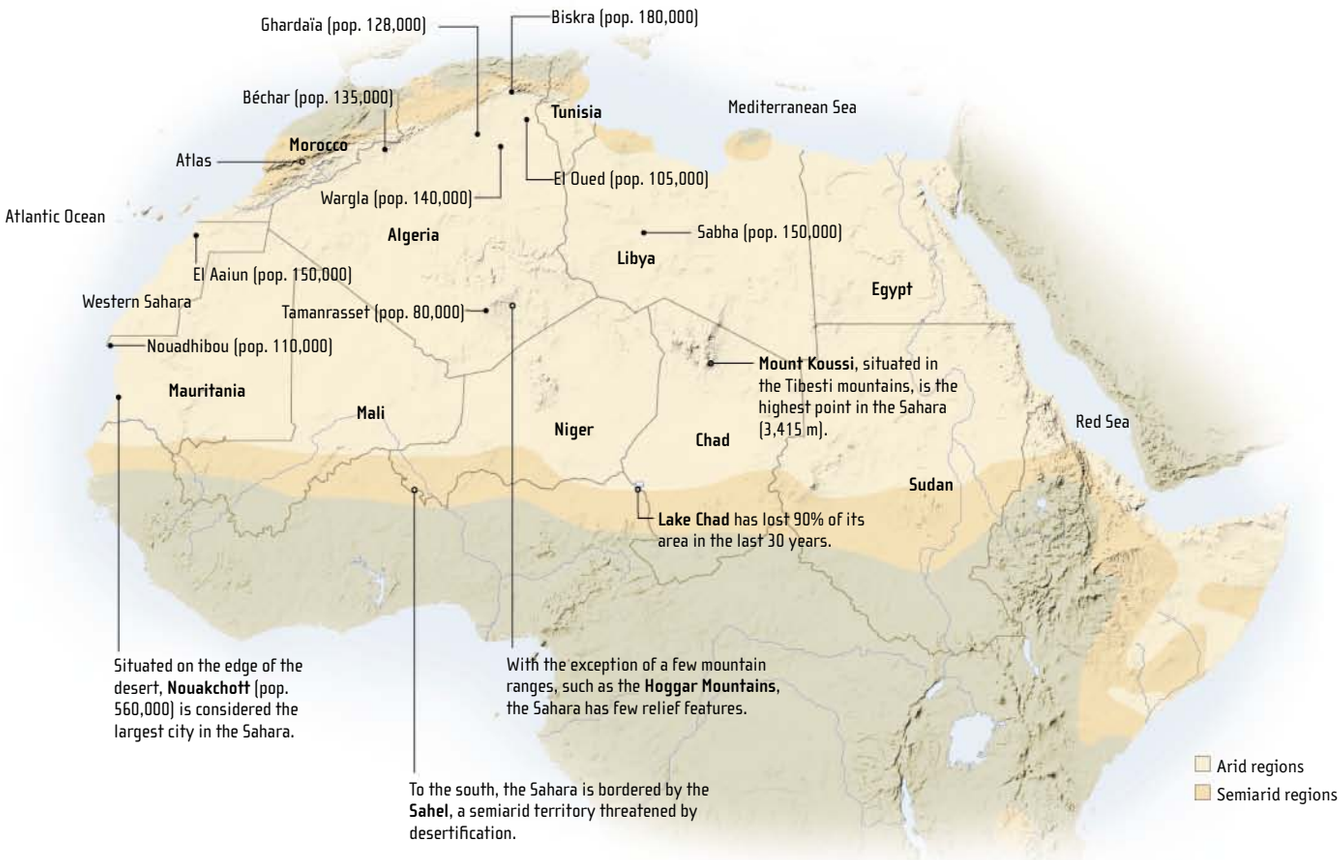


Source: FAO

The Sahara

With an area of more than 8 million km^2, the Sahara is the largest desert in the world. It extends from the Atlantic Ocean to the Red Sea and covers most of North Africa (Morocco, Algeria, Tunisia, Libya, Egypt, Mauritania, Mali, Niger, Chad, and Sudan). Fertile 4,000 years ago, the Sahara is now one of the most arid deserts in the world: southern Libya and Egypt receive less than 10 mm of rain per year.

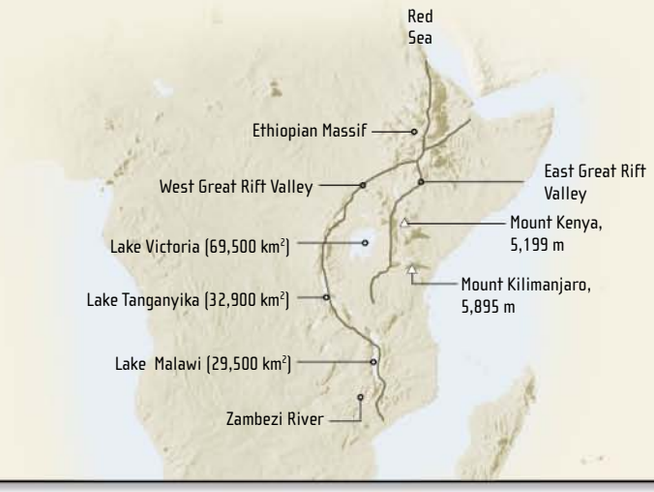
Humans have lived in the Sahara since prehistory. Today, despite its extremely arid environment, more than 5 million people live in the Sahara. This rapidly growing population is increasingly urbanized. The main peoples of the desert, originally nomadic (the Tuaregs in Algeria, Libya, Mali, and Niger; the Sahrawis in the western Sahara and Algeria; and the Tubus in Chad, Niger, and Libya), are becoming city dwellers. Most of the cities are situated in the Maghreb Sahara (Morocco, Algeria, Libya), where some urban areas have a population of over 100,000.



THE GREAT RIFT VALLEY

More than 4,000 km long, the Great Rift Valley tectonic fault, which includes the West and East Great Rift valleys, crosses eastern Africa from the Red Sea to the mouth of the Zambezi River. It results from the gradual separation of the Somalian lithospheric plate. This process is just beginning: in several million years, East Africa will detach itself to become an independent continent.

The intense volcanic activity in the region has led to the formation of the highest mountains in Africa, such as Mount Kilimanjaro and Mount Kenya. The largest lakes in Africa (Victoria, Tanganyika, Malawi), tectonic in origin, are also situated along the Great Rift Valley. Paleontologists think that the Great Rift region was the birthplace of the first human beings, more than 2 million years ago.



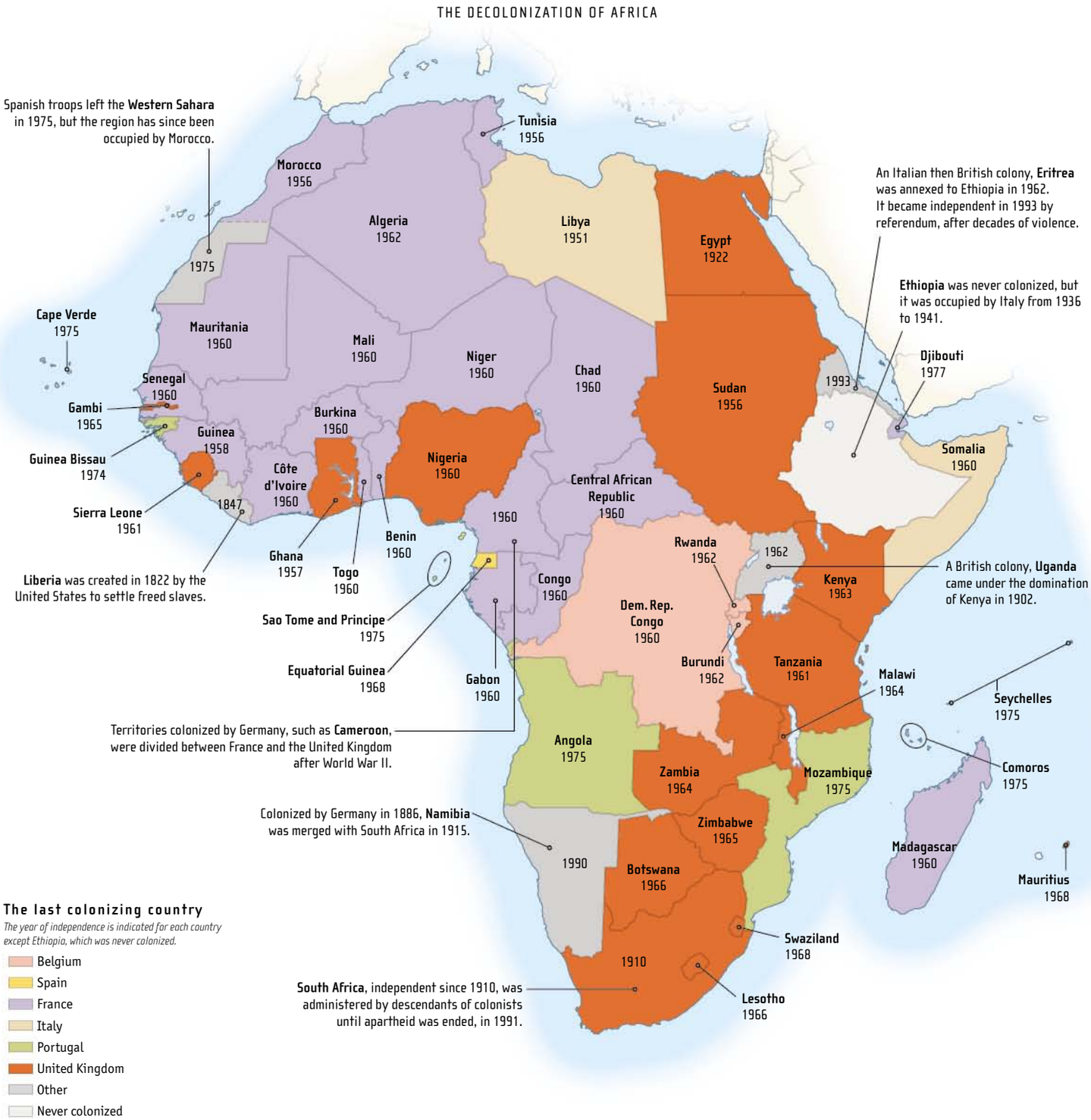
Independence of African states

Starting with the "great discoveries" of the 15th century, the European countries colonized all of Africa (with the exception of Ethiopia) to profit from its natural wealth. Exploitation of African natural resources and labor, often going as far as slavery, lasted until the 20th century.

The countries of Africa became emancipated one after another, between 1910 and 1993, under a wide variety of circumstances. Although some obtained their sovereignty in the 1960s without resistance, others won it after an insurrection or a full war of independence.

In 1963, African countries united to form a common front to deal with the problems facing the continent (political instability, human rights, public health, underdevelopment, etc.). Today, the African Union's membership extends to almost all of the continent's countries as members. In some cases, former colonizing countries maintain a strong economic grip on their former territories, a grip sometimes called neocolonialism.

THE DECOLONIZATION OF AFRICA



THE COUNTRIES OF AFRICA

FLAG	COUNTRY	AREA (km^2)	POPULATION (M inhab.)	FLAG	COUNTRY	AREA (km^2)	POPULATION (M inhab.)
	Sudan	2,505,813	38.56		Burkina Faso	274,000	14.75
	Algeria	2,381,741	33.85		Gabon	267,668	1.33
	Democratic Republic of the Congo	2,344,858	62.59		Guinea	245,857	9.40
	Libya	1,759,540	6.15		Uganda	241,038	30.85
	Chad	1,284,000	10.74		Ghana	238,533	23.44
	Niger	1,267,000	14.21		Senegal	196,722	12.36
	Angola	1,246,700	17.00		Tunisia	163,610	10.32
	Mali	1,240,192	12.32		Malawi	118,484	13.92
	South Africa	1,221,037	48.47		Erytrea	117,600	4.83
	Ethiopia	1,104,300	83.00		Benin	112,622	9.01
	Mauritania	1,025,520	3.12		Liberia	111,369	3.76
	Egypt	1,001,449	75.44		Sierra Leone	71,740	5.82
	Nigeria	923,768	147.85		Togo	56,785	6.57
	Tanzania	883,749	40.40		Guinea Bissau	36,125	1.69
	Namibia	824,292	2.07		Lesotho	30,355	2.01
	Mozambique	801,590	21.34		Equatorial Guinea	28,051	0.507
	Zambia	752,618	11.92		Burundi	27,834	8.48
	Somalia	637,657	8.68		Rwanda	26,338	9.75
	Central African Republic	622,984	4.35		Djibouti	23,200	0.832
	Madagascar	587,041	19.65		Swaziland	17,364	1.14
	Botswana	581,730	1.88		Gambia	11,295	1.70
	Kenya	580,367	37.51		Cape Verde	4,033	0.530
	Cameroon	475,442	18.51		Comoros	2,235	0.838
	Morocco	446,550	31.23		Mauritius	2,040	1.26
	Zimbabwe	390,757	13.37		Sao Tome and Principe	964	0.158
	Congo	342,000	3.76		Seychelles	455	0.086
	Côte d'Ivoire	322,463	19.28				

Ogasawara Gunto (JP)

Fiji
The some 300 islands that make up the Fiji archipelago have a total area of 18,274 km².

-7,519 m

Philippine Sea

Agrihan, 965 m

-8,767 m

NORTHERN MARIANA IS. (US)

GUAM (US)

-6,912 m

Mariana Trench, -11,034 m

MARSHALL ISLANDS

Caroline Is. arch.

Chuuk Is.

Palikir

Senyavin Is.

Dalap-Uliga-Dorrit

-10,164 m

Koror

PALAU

MICRONESIA

Bairiki

Gilbert Is.

-7,205 m

Yaren

NAURU

Admiralty Is.

Bismarck Sea

New Ireland

Mount Balbi, 2,715 m

ASIA

PAPUA NEW GUINEA

Sepik

MAOKE MOUNTAINS

Bougainville Is.

Choiseul

Mount Wilhelm, 4,509 m

New Britain

-8,930 m

Santa Isabel Is.

SOLOMON ISLANDS

Malaita

TUVALU

Vaiaku

New Guinea

Fly

Honiara

Guadalcanal

Port Moresby

Saint Croix Is.

-9,000 m

Arafura Sea

WALLIS AND FUTUNA (FR)

Melville Is.

VANUATU

Timor Sea

Gulf of Carpentaria

Coral Sea

Vanua Levu

FIJI

Port Vila

Viti Levu

Suva

Kimberley Plateau

Burdekin

Loyalty Is.

NEW CALEDONIA (FR)

Mount Ord, 937 m

AUSTRALIA

1 TROPIC OF CAPRICORN

-7,374 m

GREAT SANDY DESERT

MOUNT MCDONNELL

GREAT DIVIDING RANGE

Mount Meharry, 1,251 m

Mount Zeil, 1,531 m

SIMPSON DESERT

GIBSON DESERT

HAMERSLEY RANGE

Brisbane

NORFOLK IS. (AU)

-9,779 m

Kermadec Is. (NZ)

Lake Eyre, -12 m

GREAT VICTORIA DESERT

St. Mary's Peak, 1,165 m

FLINDERS RANGES

Darling

AUSTRALIAN

Nullarbor Plain

Great Australian Bight

Sydney

Murray

Canberra

Adelaide

Mount Kosciusko, 2,228 m

Auckland

Perth

Kangaroo Is.

AUSTRALIA

Melbourne

NEW ZEALAND

North Is.

Mount Ruapehu, 2,797 m

Bass Strait

Tasmanian Sea

Wellington

Cook Strait

Mount Ossa, 1,617 m

Tasmania

Mount Cook, 3,764 m

NEW ZEALAND ALPS

Chatham Is.

South Is.

Stewart Is.

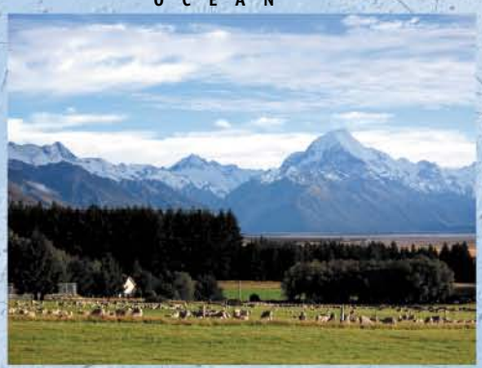
Antipodes Is. (NZ)

1 2 3 4 5 6 7 8

A B C D E F G H

Oceania represents 6% of the planet's landmass and has 33 million inhabitants. Unlike other continents, Oceania consists not of a landmass surrounded by seas, but of a large number of islands sprinkled in the Pacific Ocean. With an area of 7,740,000 square kilometers, Australia is the true continent of Oceania. Among the continent's thousands of other islands, fewer than 10 have an area over 10,000 square kilometers. Although they have some climatic and geographic features in common, the islands of Oceania do not form a homogeneous grouping. Bisected by the Tropic of Capricorn ❶, Australia has a number of climatic zones. The north part of the island, with its monsoon rains, has a tropical climate, while the south and east coasts have a warm temperate climate. In the center, desert conditions dominate. The archipelagos, except for New Zealand, have high temperatures and abundant precipitation all year round. They are frequently swept by cyclones during the austral winter.

TROPIC OF CANCER
Kauai
Oahu
Maui
HAWAII ARCH. (US)
Mauna Kea, 4,205 m
Hawaii
JOHNSTON ATOLL (US)
N O R T H P A C I F I C O C E A N
Palmyra Atoll
HOWLAND IS. (US)
BAKER IS. (US)
Tabuaeran Is.
Kiritimati Is.
JARVIS IS. (US)
-8,071 m
EQUATOR
Phoenix Is.
Gardner Is.
K I R I B A T I
TOKELAU (NZ)
Caroline Is.
SAMOA
Apia
AMERICAN SAMOA (US)
COOK IS. (NZ)
Palmerston Atoll
NIUE (NZ)
TONGA
Nuku' alofa
Tonga Trench, -10,719 m
F R E N C H P O L Y N E S I A (F R)
Society Is.
Mount Orohena, 2,241 m
Tahiti
Tuamotu Arch.
Tubuai Is.
Mururoa
S O U T H P A C I F I C O C E A N
Gambier Is.
PITCAIRN IS. (GB)
INTERNATIONAL DATE LINE



Mount Cook, New Zealand
New Zealand's South Island has 18 peaks with an altitude of more than 3,000 m. The tallest one, Mount Cook, has an altitude of 3,764 m.

0 500 1,000 km

I J K L M

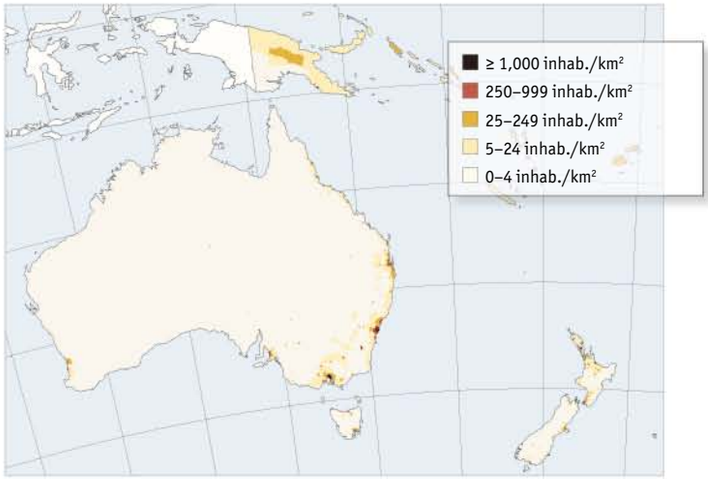
PHYSICAL MAP OF OCEANIA

☆ Administrative capital
• City with more than 1 M inhab.

Altitude (m): 8,850 · 6,000 · 5,000 · 4,000 · 3,000 · 2,000 · 1,000 · 500 · 0
Depth (m): -500 · -2,500 · -5,000 · -8,000 · -11,034

Sources: NIMA; NASA

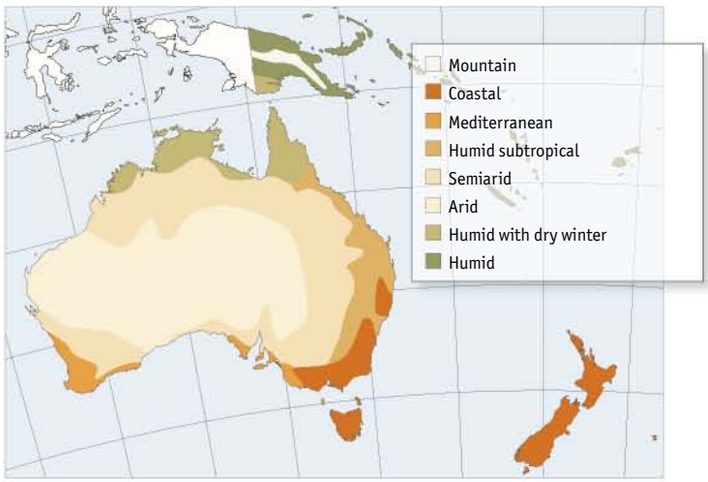
POPULATION DISTRIBUTION IN OCEANIA



Source: SEDAC, Columbia University

Sydney, Australia
Australia's largest city, Sydney, has a population of over 4.2 million inhabitants.

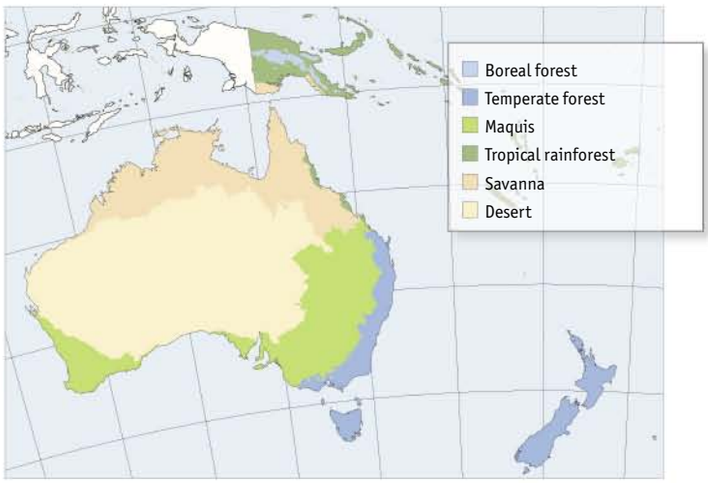
THE CLIMATES OF OCEANIA



Source: Kottek et al., World Map of the Köppen-Geiger climate classification updated

Lake Wanaka, New Zealand
The islands of New Zealand have a coastal climate, moderated by the Pacific Ocean.

THE BIOMES OF OCEANIA



Source: FAO

Great Barrier Reef, Australia
The Great Barrier Reef, a coral reef stretching along the northeast coast of Australia, is an extraordinary marine biome. It is about 2,500 km long and is home to almost 1,500 species of fish, 4,000 species of mollusks, and 400 species of coral.

Australian biodiversity

Situated in the center of a lithospheric plate, Australia has remained isolated from the other continents for more than 100 million years. This isolation explains the large number of plant and animal species endemic to Australia—that is, found nowhere else in the world.

The kangaroo, Australia's emblematic animal, belongs to the group of mammals called marsupials, whose females raise their young in a stomach pouch. Almost all marsupials come from Australia, Tasmania, and New Guinea. The koala and the wallaby are also marsupials. Among the other animals native to Australia are the duckbill platypus, an archaic mammal species that reproduces by laying eggs.

The Australian flora is composed of species adapted to the extreme climatic conditions that reign in a large part of the country. Eucalyptus is one of the species originating on the island.

SOME AUSTRALIAN ANIMALS

There are 50 species of kangaroos, among them the **grey kangaroo**.

Parry wallabies are very sociable and live in groups of 30 to 50 individuals.

The **duckbill platypus** is an amphibian mammal with a beak resembling a duck's.

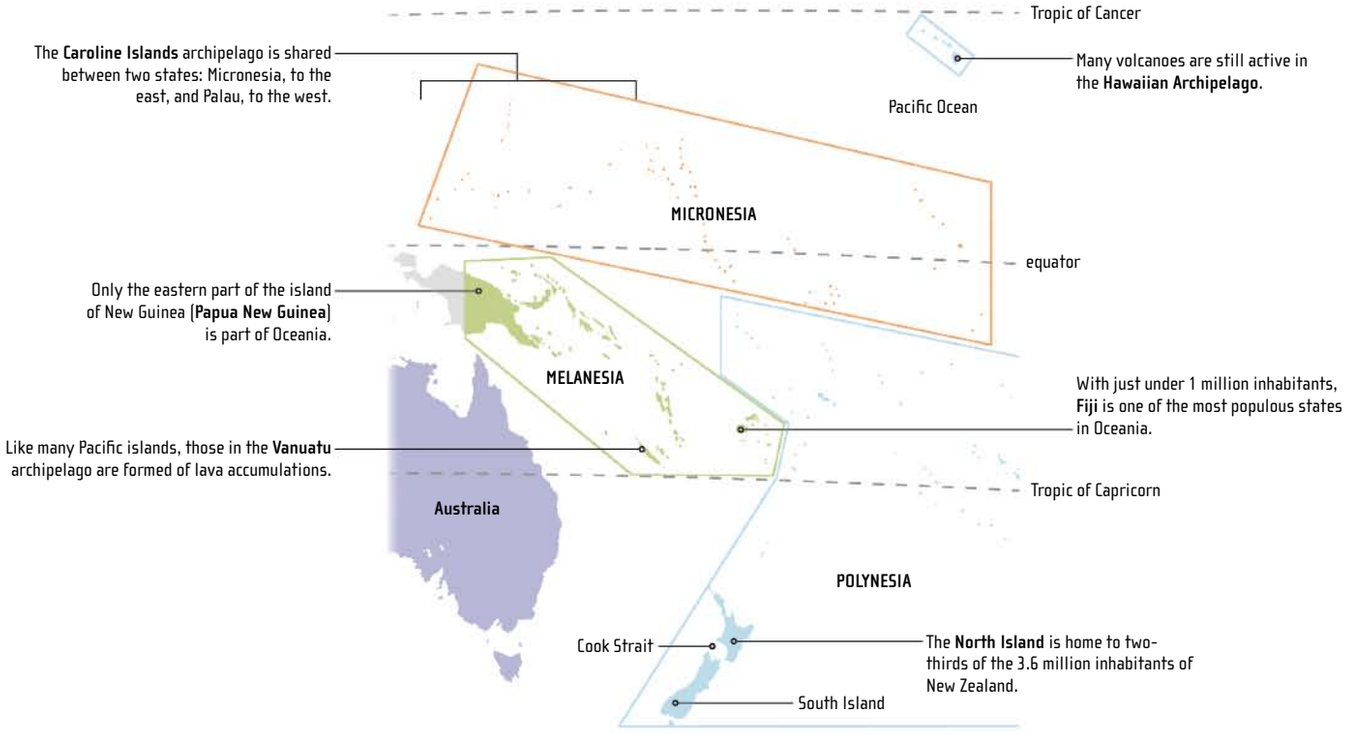
The **red kangaroo** is the largest (up to 1.5 m in height) and most common kangaroo.

The Australian forest has 600 species of **eucalyptus**.

Koalas eat eucalyptus leaves, ingesting from 500 g to 1 kg each day.

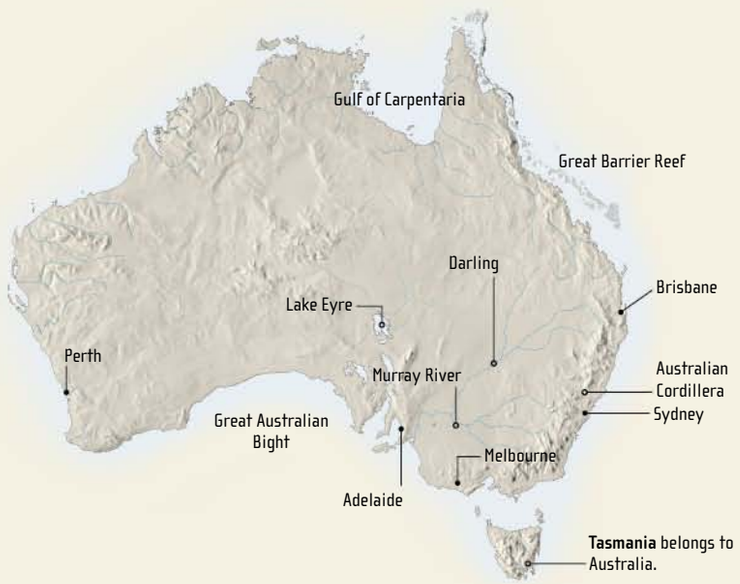
The islands of Oceania

The 7,500 islands in the Pacific, about 500 of which are inhabited, are divided into three regional groupings, determined essentially by geographic, ethnic, and cultural factors. Melanesia includes the largest and highest islands. Because these islands are of volcanic origin, many of them are fertile and mineral-rich. Micronesia and Polynesia, on the other hand, are tiny islands that generally rise barely above sea level. New Zealand, in Polynesia, is an exception; its two mountainous islands are separated by Cook Strait. The North Island has volcanic activity, while the South Island is crossed by the New Zealand Alps.



AUSTRALIA

Australia is a gigantic island, often considered the true continent of Oceania. It has a fairly uniform geologic profile: most of its territory is composed of a plateau 300 to 600 m in altitude. The landscapes of eastern Australia are more varied. Along the east coast is a mountain range, the Australian Cordillera. Finally, the center of the island, from the Gulf of Carpentaria, in the north, to the mouth of the Murray River, in the south, is marked by low-altitude watersheds (lakes Eyre, Darling, Murray). Five major Australian cities (Sydney, Melbourne, Brisbane, Perth, Adelaide) contain one-third of the population of Oceania, while the interior of Australia is almost uninhabited.



Auckland, New Zealand>
Auckland is the most populated city and the largest port of New Zealand. It is situated on the North Island.

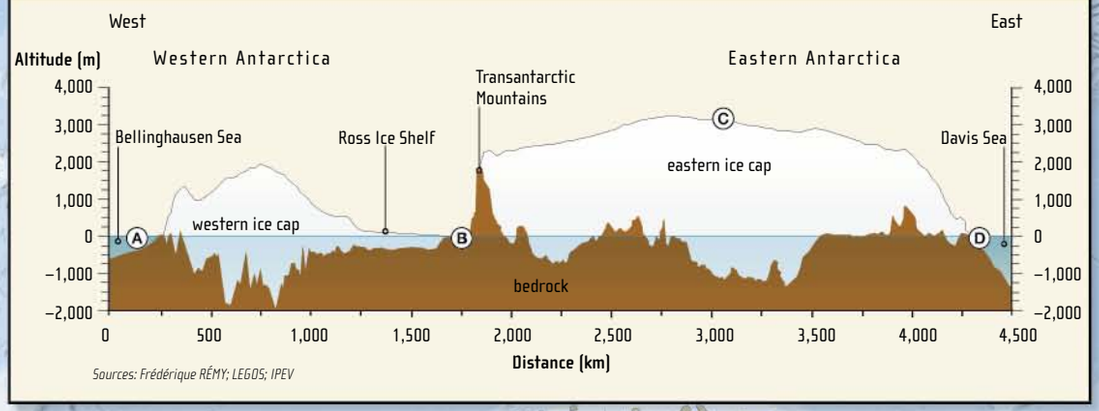
THE COUNTRIES OF OCEANIA

FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)	FLAG	COUNTRY	AREA (km²)	POPULATION (M inhab.)
	Australia	7,741,220	20.72		Kiribati	726	0.092
	Papua New Guinea	462,840	6.32		Micronesia	702	0.111
	New Zealand	270,534	4.17		Tonga	650	0.100
	Solomon Islands	28,896	0.494		Palau	459	0.020
	Fiji	18,274	0.838		Marshall Islands	181	0.057
	Vanuatu	12,189	0.225		Tuvalu	26	0.010
	Samoa	2,831	0.187		Nauru	21	0.010

THE TERRITORIES OF OCEANIA

TERRITORY	AREA (km²)	POPULATION (M inhab.)	SOVEREIGN COUNTRY	TERRITORY	AREA (km²)	POPULATION (M inhab.)	SOVEREIGN
New Caledonia	18,575	0.241	France	Tokelau Islands	12	0.001	New Zealand
French Polynesia	4,000	0.263	France	Wake Island	6.5	uninhabited	United States
Guam	549	0.173	United States	Midway Islands	6.2	40 inhab.	United States
Northern Mariana Islands	464	0.080	United States	Pitcairn Island	5.0	48 inhab.	United Kingdom
Niue	260	0.002	New Zealand	Jarvis Island	4.5	uninhabited	United States
Cook Islands	236	0.014	New Zealand	Johnston Atoll	2.8	uninhabited	United States
Wallis and Futuna	200	0.015	France	Howland Island	1.6	uninhabited	United States
American Samoa	199	0.064	United States	Baker Island	1.4	uninhabited	United States
Norfolk Island	36	0.002	Australia				

SECTION OF ANTARCTICA



Sources: Frédérique RÉMY; LEGOS; IPEV

SOUTH ATLANTIC OCEAN

SOUTH PACIFIC OCEAN

Orcadas (AR)
South Orkney Is.
Comandante Ferraz (BR)
Arctowski (PL)
Jubany (AR)
King Sejong (KR)
Artigas (UY)
Presidente Frei (CL)
Bellingshausen (RU)
Great Wall (CN)
Arturo Prat (CL)
St. Kliment Ohridski (BG)
South Shetland Is.
Esperanza (AR)
Marambio (AR)
Bernardo O'Higgins (CL)
GRAHAM LAND
Palmer (US)
Vernadsky (UA)
LARSEN ICE SHELF
San Martín (AR)
Rothera (GB)
PALMER LAND
Alexander Is.
Weddell Sea
RONNE ICE SHELF
Halley (GB)
Belgrano II (AR)
FILCHNER ICE SHELF
Berkner Is.
Neumayer (NO)
SANAE IV (ZA)
Maitri (IN)
Novolazarevskaja (RU)
Troll (NO)
QUEEN MAUD LAND
Princesse Elisabeth (BE)
Syowa (JP)
Molodezhnaya (RU)
ENDERBY LAND
Dome Fuji (JP)
MAC. ROBERTSON LAND
AMERY ICE SHELF
LAMBERT GLACIER
GREENWICH MERIDIAN
ELLSWORTH LAND
Bellingshausen Sea
Peter I Is (NO)
Vinson Massif, 4,897m
Mount Tyree, 4,965m
Dome Argus, 4,000 m
Amundsen-Scott (US)
South Geographic Pole
Bentley Subglacial Trench, -2,540 m
TRANSANTARCTIC MOUNTAINS
Vostok (RU)
MARIE BYRD LAND
Mount Kirkpatrick, 4,528m
ROSS ICE SHELF
WILKES LAND
Concordia (FR/IT)
McMurdo (US)
Scott (NZ)
Mount Erebus, 3,795 m
ANTARCTIC POLAR CIRCLE
Amundsen Sea
Ross Sea
VICTORIA LAND
ADÉLIE LAND
Dumont d'Urville (FR)
South Magnetic Pole

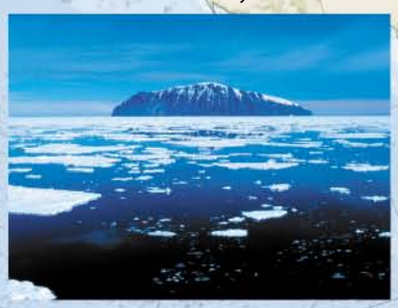
PHYSICAL MAP OF ANTARCTICA

- Research station (operating country)
- Cut line across Antarctica
- Ice shelf

Altitude (m) / Depth (m)
8,850
6,000
5,000
4,000
3,000
2,000
1,000
500
0
-500
-2,500
-5,000
-8,000
-11,034

Sources: NIMA; NASA

Transantarctic Mountains
The Transantarctic Mountains, which reach an altitude of more than 4,800 m, separate Western Antarctica from Eastern Antarctica.



Beaufort Island
On this small island, with an area of 22 km², in the Ross Sea, the fauna and flora are protected.

0 500 1,000 km

The icebreaker Nathaniel B. Palmer
This American research ship, built to sail through ice, can navigate off the shores of Antarctica throughout the year.

Antarctica is the only continent that is not inhabited on a permanent basis and it is also the coldest continent. Its total area of 14,200,000 square kilometers is 98% covered with an ice cap that is up to 4,000 meters thick in some places. Its high relief profile (an average of 2,300 meters altitude) contributes to the severity of the climate. Powerful winds sweep down the mountain slopes and cool the atmosphere. The temperature drops below –70°C in the center of the continent in the winter, and it does not rise above 0°C in summer, except on the coasts. The air is very dry and most of the continent receives less than 100 millimeters of precipitation per year.

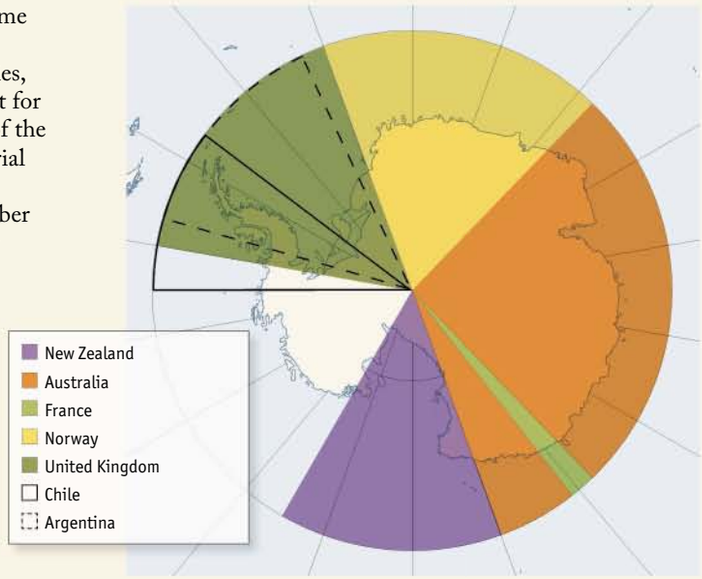
An uninhabited continent

The inhospitable climatic conditions prevent permanent population settlement in Antarctica. The only inhabitants of the continent are several thousand researchers in scientific stations. They are there temporarily, as long as it takes to fulfill their missions. Scientific research in Antarctica has led to important discoveries, notably that of the reduction of the ozone layer. Antarctica also offers a privileged site for studying the climate and the effects of global warming.

For the past 10 years, other visitors have been arriving on the southernmost continent: tourists. Almost 28,000 of them, mostly from the United States, the United Kingdom, Germany, and Australia, came in 2004–2005 to wander across the ice cap or tour the continent by boat. The main tourist attractions are the fauna and the scientific stations. Some 30 companies throughout the world offer trips to Antarctica. In spite of the precautions that they take, the growth of the tourism industry may disrupt the environment and the scientific research on the continent.

THE TERRITORIAL CLAIMS

Once it was discovered, in the 19th century, Antarctica quickly became the subject of territorial claims by many countries. Neighboring countries, such as Chile and Australia, as well as very distant countries, such as France and Norway, tried to carve out a part of the continent for themselves. The Antarctic Treaty, signed in 1959 to avoid partition of the territory, gives the continent international status. It suspends territorial claims, proscribes military activities, and provides for international cooperation with regard to scientific research. Over the years, a number of international agreements have been added to the treaty to protect fauna (seals, whales) and impose a 50-year moratorium on exploitation of mineral resources (starting in 1998). Today, however, in spite of the legal arsenal that protects Antarctica, the debate continues. A number of countries maintain their claims and some are trying to keep the door open to exploitation of natural resources. Others would like the continent to become a vast ecological reserve.



Source: Australian Antarctic Data Centre

Arabian Desert
The wind sweeps through some high grasses that have taken root in a sand dune.

A

affluent
Watercourse that flows into another watercourse.

alluvia
Rocks and other debris carried and deposited by a watercourse.

altitude
Vertical distance of a point in relation to a reference level, generally sea level.

amphibian
That which lives or moves as well on ground as in the water.

anemometer
Instrument that measures wind speed.

anthropogenic
Caused by human beings.

anticyclone
Zone of high atmospheric pressure.

apartheid
Regime in South Africa that imposed racial segregation against blacks in favor of the white minority.

arable
Relating to land that can be cultivated.

archipelago
Group of islands.

artificial satellite
Device placed in orbit around a celestial body.

ascent
Action of climbing a mountain to its peak.

asteroid
Small celestial body in orbit around the Sun.

atmosphere
Gaseous layer that surrounds certain celestial bodies, including Earth.

atmospheric pressure
The force that air exerts by pressing on a given area.

B

bay
A body of water partially enclosed by land and open to the sea. A bay is generally smaller than a gulf.

bedrock
Ancient eroded land on which volcanic or sedimentary rock rests.

biodiversity
The variety of living species that populate a given environment.

birth rate
Number of births in a population over a given period, usually one year.

C

chronic disease
A disease of long duration, the symptoms of which are minor at first but may evolve into serious complications.

conifer
Tree whose leaves, in the form of needles or scales, generally persist through the winter, and whose fruits are cones.

container
Metallic crate of standardized size, used for shipping merchandise.

continent
Large landmass surrounded by water.

coral
Primitive animal usually living in arborescent colonies that form reefs.

cordillera
Long, narrow mountain range.

D

deciduous tree
Tree in the flowering plants group whose leaves are wide, as opposed to the narrow needles of conifers.

demographer
Expert in the study of populations.

depression
A part of a landmass that is sunk below its surroundings. Meteorology: low-pressure zone.

detergent
Cleaning product.

development
Improvement in the situation of a region or a population, usually from an economic standpoint.

domestic
Relating to life in the home.

dominant wind
Wind that blows in a constant direction in a region, such as the trade winds.

E

Earth's crust
Solid layer on the surface of Earth.

emigration
Departure of individuals from their country of origin to move to another country.

endemic
Relating to a species that lives only in a given region.

epidemic
Sudden, rapid propagation of a transmissible disease.

equator
Imaginary line that circles Earth midway between the poles.

estuary
Mouth of a river where the current meets the tides, forming an indentation in the coastline that may be more or less wide and more or less deep.

extinction
Complete and irreversible disappearance.

F

fault
Fracture in Earth's crust that causes a horizontal or vertical movement in relation to the other.

fauna
All of the animal species that live in a given region.

fertilizer
Organic or mineral product that is introduced into the soil to increase its capacity to support plant growth.

flood
Sudden rise in the level of a watercourse due to heavy precipitation or snow melting.

flora
All of the plant species that live in a given region.

fossil fuel
Fuel that was formed millions of years ago from the remains of plants and animals buried in rock (oil, coal, natural gas).

freight
Transportation of goods.

freshwater
Water containing very low amounts of mineral salts.

G

geographic
Relating to geography, the science that describes and explains the existing physical and human aspects of Earth's surface.

geographic pole
Each of the two points (North Pole and South Pole) of Earth's surface through which Earth's axis of rotation passes.

geological
Relating to geology, the science that studies the Earth, the materials that compose it, and the forces and processes that shape and transform it.

government
Political system of a nation or group of individuals who administer the nation, usually called ministers.

graben
Wide, elongated depression with steep sides, formed by the subsidence of a block of terrain between two faults.

Graminaceous plants
Family of plants that includes the high grasses that dominate savannahs.

gulf
A large area of sea partially enclosed by land, more or less open to the sea. A gulf is generally larger and more enclosed than a bay.

H

heavy metals
Metals such as lead and mercury, which have special chemical properties and many of which are toxic to humans and the environment.

hemisphere
One of the two halves of the globe, defined by the equator (Northern and Southern hemispheres) or by the Greenwich meridian (Western and Eastern hemispheres).

humidity
Water vapor contained in the air, the result of transpiration of plants and evaporation from the oceans, rivers and lakes.

hydrocarbons
Substances formed solely of carbon and hydrogen molecules, present in crude oil and natural gas.

hydroelectricity
Electricity produced from the force of water.

I

ice cap
Mass of continental ice that permanently covers the polar regions, also called inlandsis.

ice shelf
Thick layer of floating ice that borders some parts of Antarctica, distinct from the pack ice and ice cap.

immigration
The arrival of people from another country who are moving to the new host country.

intensive farming
Agriculture that consumes more resources (water, fertilizer, etc.) in order to increase the yield of cultivated land.

irrigation
Artificial watering of farmland.

isthmus
Narrow band of land between two stretches of water, connecting two larger landmasses.

L

labor force
The total mass of workers.

latitude
Coordinate of a point on Earth's surface that indicates, in degrees, the angular distance of this point from the equator.

lightning
Brief, intense flash of light caused by an electrical discharge between two clouds or between a cloud and the ground during a storm.

lithospheric plates
Immense portions of the lithosphere that slide on top of the asthenosphere and whose movements shape Earth's relief features.

longitude
Coordinate of a point on Earth's surface that indicates, in degrees, the angular distance of this point from the Greenwich meridian.

M

magma
Very viscous liquid formed of molten rocks from the depths of Earth.

malnutrition
Pathologic state cased by poor nutrition, usually due to an insufficient or incomplete diet.

manufactured
Produced industrially.

mass
The amount of matter contained in a body, expressed in grams.

megalopolis
Extremely large urban area.

meridian
Imaginary line from pole to pole, perpendicular to the equator.

meteorite
Fragment of rock originating in space, which is not completely consumed as it passes through the atmosphere and lands on Earth.

metropolis
The largest city in a given region.

monarch
Head of state who is a hereditary member of royalty.

monsoon
Seasonal wind that brings heavy precipitation in some tropical regions.

moraine
Rocks or other debris carried and deposited by a glacier.

moratorium
Voluntary suspension of a decision to allow time to study its consequences.

mortality
Number of deaths in a population over a given period, usually one year.

mouth
Place where a watercourse flows into the sea or into a lake.

N

natural satellite
Celestial body in orbit around a planet or another celestial body.

net migration
Difference between the number of immigrants and the number of emigrants.

nomadic
Relating to a migratory people that are constantly moving.

nuclear
Relating to atoms and their energy.

O

oasis
Region of a desert made fertile by the presence of water.

ocean current
Movement of great masses of seawater along a stable path at a regular speed.

orbit
Trajectory described by one celestial body circling around another due to the effects of gravity.

organic
Relating to living beings and the materials derived from them.

P

pack ice
Vast layer of ice floating on the sea in polar regions.

parallel
Imaginary circle whose plane is parallel to the equator.

pasture
Land where livestock may graze.

peninsula
Portion of land surrounded by the sea on all sides but one, where an isthmus that may be wide or narrow connects it to the mainland.

pesticides
Products that destroy harmful organisms.

phytoplankton
All of the plants that live in suspension in seawater and are moved from place to place by sea currents.

planisphere
Map that portrays both hemispheres of Earth.

polar circle
Imaginary line situated at latitude 66° 34' north (Arctic polar circle) or south (Antarctic polar circle). It designates the edge of the polar zone in which the day lasts 24 hours at the summer solstice and the Sun does not appear at all at the winter solstice.

polytheist
Said of religions in which a number of gods are worshipped, as opposed to monotheist religions.

population growth
Increase in the total population of a region taking account of the number of births, deaths, and migrations. The population growth rate may be positive or negative.

precipitation
All of the liquid and solid forms in which water contained in the atmosphere reaches Earth's surface (rain, snow, sleet, fog, dew, etc.).

propaganda
All of the actions orchestrated to manipulate public opinion.

Q

quota
Quantitative limit to be reached or not to be passed.

R

radioactive
Said of the property to spontaneously emit electromagnetic particles or rays that are often dangerous.

referendum
Consultation of all of the citizens regarding a specific question.

relief features
All of the differences in ground level (depressions and elevations) of the surface of a region.

renewable energy
Energy whose source can regenerate naturally.

rural
Relating to the countryside, as opposed to the city.

S

sanitary
Relating to health.

sediment
Solid mineral material (rocks, sand, mud) that has been weathered away from its original surroundings by an erosion agent, carried by water, ice, or wind, and deposited in another place. Organic material may also form sediment.

seismic wave
Vibration generated by an earthquake that propagates in all directions and causes the surface of Earth to shake.

shield
Large territory composed of eroded primary rock.

slope
Each of the sides of a mountain.

speaker
An individual who speaks a given language.

strait
Natural, relatively narrow maritime passage between two coasts.

subduction
Phenomenon through which one oceanic plate slides under another lithospheric plate.

T

tectonic
Relating to Earth's crust, its formation, and its deformations.

territory
In the political sense, region under the jurisdiction of a nation that is more or less distant from it.

tide
Daily rise and fall in the level of the ocean, due mainly to the gravitational pull of the Sun and the Moon.

toponym
Proper name that designates a place.

trade wind
Constant wind blowing from east to west in the intertropical zone, notably over the Pacific and Atlantic oceans.

tributary
See **affluent**.

tropics
Parallels situated at 26° 23' north latitude (Tropic of Cancer) and south latitude (Tropic of Capricorn). They correspond to the latitudes at which the Sun is at its zenith at the solstices.

U

universal suffrage
Electoral system in which all citizens who have reached the age of majority have the right to vote.

urban
Relating to the city, as opposed to the countryside.

urban area
Large urban concentration composed of a city and its suburbs.

urban dweller
Individual who lives in a city.

W

waterfall
Almost-vertical drop of a watercourse due to a sudden change in the level of its bed.

watershed
Area trained by a watercourse or by all of its tributaries.

water table
Vast stretch of underground water formed by infiltration of rainwater into the ground. It feeds springs.

wave
Undulation at the surface of a sea or lake caused by the wind.

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World Bank
World Health Organisation (WHO)
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ISO CODE ELEMENTS* USED IN THE ATLAS

Country names:

AGO	Angola
ALB	Albania
AND	Andorra
AZE	Azerbaijan
BEL	Belgium
BGR	Bulgaria
BIH	Bosnia and Herzegovina
HRV	Croatia
KNA	Saint Kitts and Nevis
LIE	Liechtenstein
LUX	Luxembourg
MCO	Monaco
MKD	Macedonia
MNE	Montenegro
NLD	Netherlands
SMR	San Marino
SRB	Serbia
SVK	Slovakia
SVN	Slovenia
TLS	Timor Leste
VAT	Vatican City
VCT	Saint Vincent and the Grenadines

Sovereign countries of territories:

AR	Argentina
AU	Australia
BE	Belgium
BG	Bulgaria
BR	Brazil
CL	Chile
CN	China
DK	Denmark
EC	Ecuador
ES	Spain
FR	France
GB	United Kingdom
GQ	Equatorial Guinea
GR	Greece
IN	India
IT	Italy
JP	Japan
KR	South Korea
MA	Morocco
NL	Netherlands
NO	Norway
NZ	New Zealand
PL	Poland
PT	Portugal
RU	Russia
SE	Sweden
UA	Ukraine
US	United States
UY	Uruguay
ZA	South Africa

Abbreviations

mount. range: mountain range
res. sta.: research station
terr.: nonindependent territory
Countries are indicated in **bold characters**.

A

B

H

IJ

K

L

M

N

T

U V W

XYZ

Main subjects are in bold.

F

G

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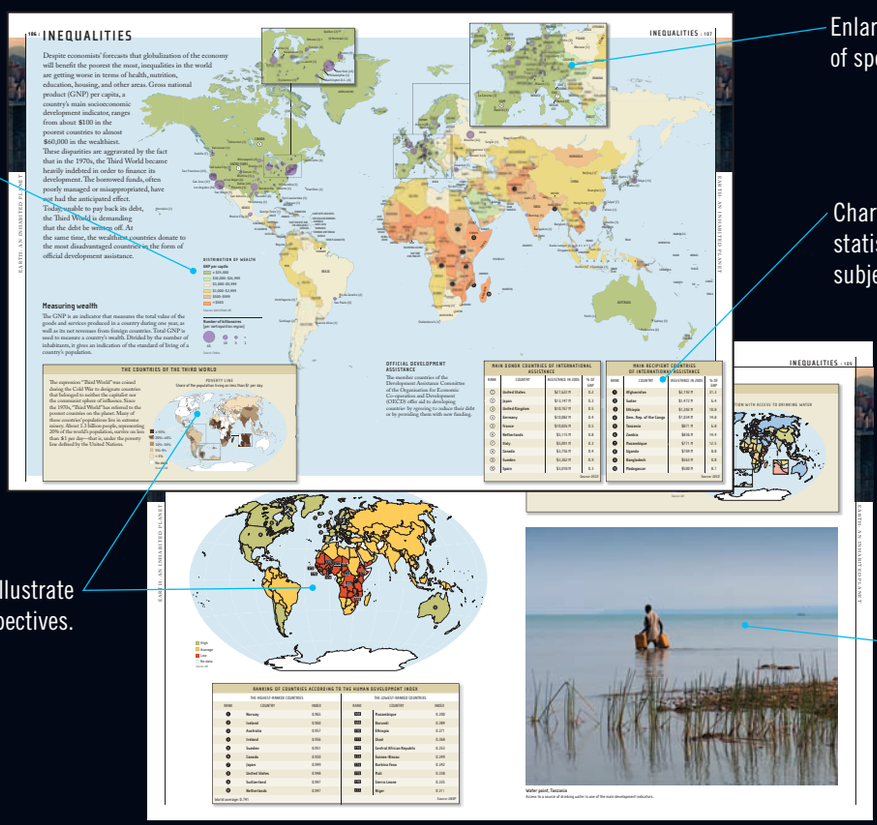

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