

The Atlantic Ocean

Where is it?

The Atlantic Ocean occupies an elongated, S-shaped basin extending between the Americas to the west, and Eurasia and Africa to the east. In the north and north-east, it is separated from the Arctic Ocean by the Canadian Arctic Archipelago, Greenland, Iceland, Jan Mayen, Svalbard, and mainland Europe.

Boundaries to the east of the ocean are: Europe, the Strait of Gibraltar and Africa. In the southeast, the Atlantic merges into the Indian Ocean, the border being defined by the 20° East meridian, running south from Cape Agulhas to Antarctica.

It is connected in the north to the Arctic Ocean (which is sometimes considered a sea of the Atlantic), to the Pacific Ocean in the southwest, the Indian Ocean in the southeast, and the Southern Ocean in the south.

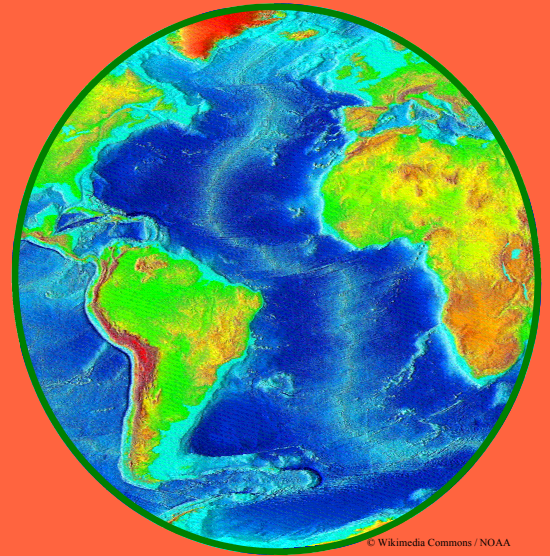
The equator subdivides it into the North Atlantic Ocean and South Atlantic Ocean.

In Greek mythology,

the Atlantic refers to an Atlas.

The oldest known mention of the Atlantic Ocean is contained in *The Histories* of Herodotus around 450 BC .

Before Europeans discovered other oceans, the term "ocean" was synonymous with the waters beyond Western Europe that we now know as the Atlantic and which the Greeks had believed to be a **gigantic river encircling**



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The Atlantic Ocean in numbers

- It covers approximately **one-fifth** (approx. 22%) of the Earth's surface
- 82,400,000 square km (31,800,000 sq mi)
- The volume of the Atlantic Ocean is 323,600,000 cubic km (77,640,000 cu mi)
- The average depths with its adjacent seas, is 3,339 meters (10,936 ft); without them it is 3,926 meters (12,881 ft)
- The width varies from 2,848 kilometers (1,770 mi) between Brazil and Sierra Leone to over 6,400 km (4,000 mi) in the south.
- The **greatest depth, 8,605 meters** (28,232 ft), is in the Puerto Rico Trench.
- The lowest point is Milwaukee Deep in the Puerto Rico Trench -8,605 meters (-28,232 ft)

The **Climate** of the Atlantic Ocean and adjacent land areas is influenced by the temperatures of the surface waters, water currents and winds.

Because of the ocean's great capacity for retaining heat, maritime climates are more moderate and much less variable through the year than inland climates.

Climatic zones vary with latitude; the warmest climatic zones stretch across the Atlantic north of the equator. The coldest zones are in the high latitudes, with the coldest regions - areas covered by sea ice.

Ocean currents are climatic controllers by transporting warm and cold waters to other regions. Adjacent land areas are under strong influence of the winds which blow over these currents. The Gulf Stream and its northern extension towards Europe, i.e. the North Atlantic Drift, warms the atmosphere of Britain, Ireland and north-western Europe.



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Water conditions

On average, the Atlantic is the saltiest of the world's major oceans; the salinity of the surface waters in the open ocean ranges from 33 to 37 parts per thousand (3.3 - 3.7%) by mass and varies with latitude and season.

Surface salinity values are influenced by evaporation, precipitation, river inflow, and melting of sea ice. Although the minimum salinity values are found just north of the equator (because of heavy tropical rainfall), in general the lowest values are in the high latitudes and along coasts where large rivers flow into the ocean. Maximum salinity values occur at about 25° north and south of the equator, in subtropical regions with low rainfall and high evaporation.

Surface water temperatures, which vary with latitude, current systems, and season and reflect the latitudinal distribution of solar energy, range from less than -2 °C to 29 °C (28 °F to 84 °F).



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The Atlantic Ocean has **irregular coasts** indented by numerous bays, gulfs, seas and a number of islands.



Manatee

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What lives there?

The Atlantic Ocean is a home for many endangered marine species of flora and fauna. Sea grass, turtles, fish (i.e. cod, sharks, rays), mammals: manatee, seals, sea lions and whales and many many more ... are living here and waiting to be saved from extinction.

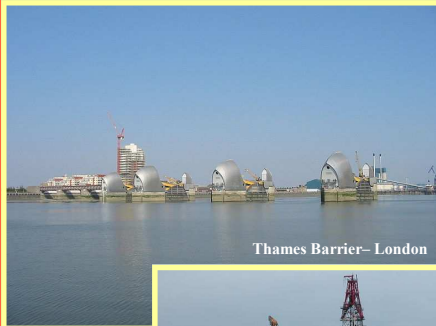
Threats to the Atlantic Ocean!

Threats include: **sludge pollution** off the eastern United States, southern Brazil, and eastern Argentina; **oil pollution** in the Caribbean Sea, Gulf of Mexico, Lake Maracaibo, Mediterranean Sea, and North Sea; and **industrial waste** and **sewage pollution** in the Baltic Sea, North Sea, and Mediterranean Sea; **tourism**, **ship pollution**, **overfishing** and **by-catch**, **alien species** and finally **climate change**...

The future of the Atlantic Ocean and its inhabitants is ultimately decided by the course of action we take with regard to these threats.



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Thames Barrier— London



Oil platform

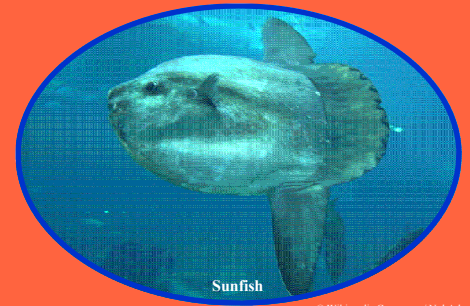
Ships can pollute the oceans in several ways: noise, spills from oil tankers and chemical tankers, ejection of sulfur dioxide, nitrogen dioxide and carbon dioxide gases into the atmosphere from exhaust fumes, discharge of cargo residue from bulk carriers.

Ballast waters are source of invasive species and also oil pollution. Discharges into coastal waters along with other sources of marine pollution have the potential to be toxic to marine plants, animals, and microorganisms causing alterations such as changes in growth, disruption of hormone cycles, birth defects, suppression of the immune system, and disorders resulting in cancer, tumors, and genetic abnormalities or even death. They may also have the opposite affect upon some marine life stimulating growth and providing a source of food.

Increasing trade and transportation has become another serious threat to the world's oceans and waterways as globalization continues. It is expected that, "...shipping traffic to and from the USA is projected to double by 2020."

Did you know?

"In one week, a typical cruise ship (up to 5000 people) generates 210,000 gallons of black water (sewage), 1,000,000 gallons of gray water (shower, sink, dishwashing water), 37,000 gallons of oily bilge water, more than eight tons of solid waste, millions of gallons of ballast water containing potential invasive species, and toxic wastes from dry cleaning and photo processing laboratories."



Sunfish

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Marine Invasive species

The comb jellyfish *Mnemiopsis leidyi* is believed to be one of the worst invasive species. It inhabits estuaries from the United States to the Valdés peninsula in Argentina along the Atlantic coast. It was first introduced in 1982, and thought to have been transported to the Black and Caspian Seas in a ship's ballast water. Its dynamic extension caused significant falls in the fish stocks haven exhausted the zooplankton, including fish larvae, so their numbers have fallen dramatically.



Bottlenose Dolphin

Climate change

The Atlantic Heat Conveyor (which includes the Gulf Stream) helps to maintain relatively mild temperatures in north-west Europe. Some observations suggest that the Atlantic Heat Conveyor has reduced in strength by up to 30% since the early 1990s. It is possible that the Atlantic Heat Conveyor will slow during this century, but not sufficiently to completely offset warming across the UK and Ireland. However more data is needed to distinguish this trend from natural variability, which has recently been shown to be large on a day-to-day basis.

Do you know what MARPOL 73/78 is?

MARPOL 73/78 is the International Convention for the Prevention of Pollution From Ships established in 1973 and modified by the Protocol of 1978. ("Marpol" is short for marine pollution and 73/78 short for the years 1973 and 1978.)

The future of the oceans and seas is in our hands.