

Atlantic Ocean

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Atlantic Ocean

The *Atlantic Ocean* is the body of water bordered by the American continents, Greenland, Europe, Africa, and the Antarctic region. It is connected to the Indian Ocean south of Africa and to the Pacific Ocean south of South America by a continuous current (Antarctic Circumpolar Current) that flows eastward around Antarctica and to the Arctic Ocean through passages across the ridge stretching from Greenland to the UK (*see Ocean Circulation*, Volume 1). The average depth of the Atlantic is around 4000 m. Its maximum depth is 8648 m, in the Puerto Rico Trench. The Reykjanes Ridge and Mid-Atlantic Ridge are significant topographic features that separate the western and eastern portions of the Atlantic throughout its length. Three marginal seas impact the water properties of the Atlantic Ocean: the Mediterranean Sea through its high salinity, the Inter-American Seas (Caribbean region) as a conduit for part of the Gulf Stream, and the Arctic Ocean through its production of very dense water. Some areas that are part of the open North Atlantic Ocean have specific geographical

names: the Labrador Sea between Labrador and Greenland, the Irminger Sea between Greenland and the Reykjanes Ridge, and the Sargasso Sea south and east of the Gulf Stream and west of the Mid-Atlantic Ridge.

The Atlantic is the most saline of the three major oceans, as a result of higher net evaporation rates over a large area (*see Salinity Patterns in the Ocean*, Volume 1). The northern North Atlantic is one of the two global sites for deep-water formation, the other being around Antarctica. Deep waters in the northern North Atlantic are approximately 20 years old, compared with 500 years for the deep North Pacific where there is no deep-water source. Through ocean–atmosphere coupling, the tropical Atlantic provides a major inter-annual climate signal that impacts the neighboring regions. Coupling with the atmosphere in the North Atlantic and Arctic provide decadal climate signals called the *North Atlantic* and the *Arctic Oscillations* (*see Arctic Oscillation*, Volume 1; *North Atlantic Oscillation*, Volume 1), which impacts weather and especially precipitation in Europe and eastern North America.

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