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Assignment #1

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Define the following:

**PART 1**

1. Ocean
2. Map
3. Globe
4. Seas
5. Lake
6. Rivers
7. Land
8. Country
9. Continent

**PART 2**

1. Pacific Ocean
2. Antartic Ocean
3. Arctic Ocean
4. Indian Ocean

**PART 3**

Masses Of the World

**PART 1**

1. **Ocean**
   1. the vast body of salt water that covers almost three fourths of the earth’s surface.
   2. any of the geographical divisions of this body, commonly given

as the Atlantic, Pacific, Indian, Arctic, and Antarctic oceans.

1. **Maps**
   1. a representation, usually on a flat surface, as of the features of an area of the earth or a portion of the heavens,showing them in their respective forms, sizes, and relationships

according to some convention of representation: *a map of Canada.*

1. **Globe**
   1. the planet Earth (usually preceded by *the*).
   2. a planet or other celestial body
   3. a sphere on [which](http://dictionary.reference.com/browse/which) is depicted a map of the earth **(terrestrial globe)**or of the heavens **(celestial globe).**
2. **Seas**
   1. the salt waters that cover the greater part of the earth'ssurface.
   2. a division of these waters, of considerable extent, more orless

[definitely](http://dictionary.reference.com/browse/definitely) marked off by land boundaries: *the North Sea*

* 1. one of the [seven seas](http://dictionary.reference.com/browse/seven+seas);ocean
  2. a large lake or landlocked body of water.
  3. the degree or amount of turbulence of the ocean or otherbody of water, as caused by the wind.

1. **LAKE**
   1. a body of fresh or salt water of considerable size,surrounded by land.
   2. any similar body or pool of other liquid, as oil.
2. **RIVERS**
   1. a natural stream of water of fairly large sizeflowing in a definite course or channel or series of diverging and converging channels.
   2. a similar stream of something other than water :*a river of lava; a river of ice.*

1. **LAND**
   1. any part of the earth's surface not covered by a body of water; the part of the earth's surface occupied by [continents](http://dictionary.reference.com/browse/continents) and islands: *Land was sighted from the crow's nest.*
   2. an area of ground with reference to its [nature](http://dictionary.reference.com/browse/nature) orcomposition
   3. an area of ground with specific boundaries rural or farming areas, as contrasted with urban areas
2. **Country**
   1. a state or a nation
   2. a territory of a nation
   3. the people of a district , state , or a nation
   4. the land of one’s birth or citizenship
3. **Continent**
   1. one of the main landmasses of the globe, usually reckoned as seven in number (Europe, Asia, Africa, North America,South America, Australia, and Antarctica)
   2. a comparable landmass on another planet.
   3. the mainland, as distinguished from islands or peninsulas.
   4. a continuous tract or extent, as of land.

**PART 2**

**Pacific Ocean**

Pacific Ocean, largest and deepest ocean, c.70,000,000 sq mi (181,300,000 sq km), occupying about one third of the earth's surface; named by the explorer Ferdinand Magellan; the southern part is also known as the South Sea.

**Physical Geography**

**Extent and Seas**

The Pacific Ocean extends from the arctic to antarctic regions between North and South America on the east and Asia and Australia on the west. The international date line passes through it. It is connected with the Arctic Ocean by the Bering Strait; with the Atlantic Ocean by the Drake Passage, Straits of Magellan, and the Panama Canal; and with the Indian Ocean by passages in the Malay Archipelago and between Australia and Antarctica. Its maximum length is c.9,000 mi (14,500 km), and its greatest width c.11,000 mi (17,700 km), between the Isthmus of Panama and the Malay Peninsula. The principal arms of the Pacific Ocean are (in the north) the Bering Sea; (in the east) the Gulf of California; (in the south) Ross Sea; and (in the west) the Sea of Okhotsk, the Sea of Japan, and the Yellow, East China, South China, Philippine, Coral, and Tasman seas. Few large rivers drain into the Pacific Ocean; the largest are the Columbia of North America and the Huang He and Chang (Yangtze) of China.

**Coastline and Islands**

Along the E Pacific shore, generally, the coast rises abruptly from a deep seafloor to mountain heights on land, and there is a narrow continental shelf. The Asian coast is generally low and indented and is fringed with islands rising from a wide continental shelf. A series of volcanoes, the Circum-Pacific Ring of Fire, rims the Pacific basin.

The approximately 20,000 islands in the Pacific Ocean are concentrated in the south and west. Most of the larger islands are structurally part of the continent and rise from the continental shelf; these include the Japanese island arc, the Malay Archipelago, and the islands of NW North America and SW South America. Scattered around the Pacific and rising from the ocean floor are high volcanic islands (such as the Hawaiian Islands) and low coral islands (such as those of Oceania).

**Ocean Floor**

The floor of the Pacific Ocean, which has an average depth of c.14,000 ft (4,300 m), is largely a deep-sea plain. The greatest known depth (35,798.6 ft/10,911.5 m) is in the Challenger Deep in the Marianas trench c.250 mi (400 km) SW of Guam. Rising from the plain are swells (many of which are volcanic), seamounts, and guyots; the extensive Albatross Plateau covers most of the SE and E central Pacific basin.

**Currents**

Huge whirls, formed by the major ocean currents, are found roughly north and south of the equator; the Equatorial Counter Current separates them. The northern whirl is formed by the North Equatorial Current, Japan Current, North Pacific Drift, and California Current; the southern whirl is formed by the South Equatorial Current, East Australian Current, West Wind Drift, and Peruvian (or Humboldt) Current. There are many branch and feeder currents that help to constantly circulate ocean water of differing temperatures and salinities.

**Commerce and Shipping**

The principal commercial fishing areas in the Pacific are found in the shallower waters of the continental shelf; salmon, halibut, herring, sardines, and tuna are the chief catch. Most of the transpacific sea-lanes pass through the Hawaiian Islands; the chief Pacific ports are San Francisco, Los Angeles, Seattle, Tokyo-Yokohama, Guangzhou, Hong Kong, Shanghai, Manila, and Sydney. Since the 1950s many of the South Pacific islands have become tourist centers.

**Exploration and Settlement**

The Pacific islands of the south and west were populated by Asian migrants who crossed long distances of open sea in primitive boats. European travelers including Marco Polo had reported an ocean off Asia, and in the late 15th cent. trading ships had sailed around Africa to the western rim of the Pacific, but recognition of the Pacific as distinct from the Atlantic Ocean dates from Balboa's sighting of its eastern shore (1513). Magellan's crossing of the Philippines (1520-21) initiated a series of explorations, including those of Drake, Tasman, Dampier, Cook, Bering, and Vancouver, which by the end of the 18th cent. had disclosed the coastline and the major islands. In the 16th cent. supremacy in the Pacific area was shared by Spain and Portugal. The English and the Dutch established footholds in the 17th cent., France and Russia in the 18th, and Germany, Japan, and the United States in the 19th. Sealers and whalers sailed the Pacific from the late 18th cent., and Yankee clippers entered Pacific trade in the early 19th cent.

**Bibliography**

See G. Soule, The Greatest Depths (1970); E. S. Dodge, Beyond the Capes (1971); J. Gilbert, Charting the Vast Pacific (1971); V. S. Gorshkov, ed., Pacific Ocean (1976).

**Atlantic Ocean**

**Atlantic Ocean** [Lat.,=of Atlas], second largest ocean (c.31,800,000 sq mi/82,362,000 sq km; c.36,000,000 sq mi/93,240,000 sq km with marginal seas).

**Physical Geography**

**Extent and Seas**

The Atlantic Ocean extends in an S shape from the arctic to the antarctic regions between North and South America on the west and Europe and Africa on the east. It is connected with the Arctic Ocean by the Greenland Sea and Smith Sound; with the Pacific Ocean by Drake Passage, the Straits of Magellan, and the Panama Canal; and with the Indian Ocean by the Suez Canal and the expanse between Africa and Antarctica. The shortest distance across the Atlantic Ocean (c.1,600 mi/2,575 km) is between SW Senegal, W Africa, and NE Brazil, E South America. The principal arms of the Atlantic Ocean are Hudson and Baffin bays, the Gulf of Mexico, and the Caribbean Sea in the west; the Baltic, North, Mediterranean, and Black seas in the east; and the Weddell Sea in the south. More large rivers, including the Mississippi, the Congo, and the Amazon, drain into the Atlantic than into any other ocean.

**Islands**

The Atlantic has relatively few islands, with the greatest concentration found in the Caribbean region. Most of the islands are structurally part of the continents, such as the British Isles, Falkland Islands, Canary Islands, and Newfoundland. Iceland, the Azores, the islands of Cape Verde, Ascension, the South Sandwich Islands, the West Indies, and Bermuda are exposed tops of submarine ridges. The Bahamas are low coral islands that sit on the Blake Plateau, while the Madeiras are high volcanic islands.

**Ocean Floor**

The floor of the Atlantic has an average depth of c.12,000 ft (3,660 m). It is separated from that of the Arctic Ocean by a submarine ridge extending from SE Greenland to N Scotland; part of the floor (c.3,000 ft/910 m deep) is known as "telegraph plateau" because of the network of cables laid there. A shallow submarine ridge across the Strait of Gibraltar separates the Mediterranean basin from the Atlantic and limits the exchange of water between the two bodies. The Mid-Atlantic Ridge (c.300-600 mi/480-970 km wide), a submarine mountain range extending c.10,000 mi (16,100 km) from Iceland to near the Antarctic Circle, generally follows the trend of the coastlines of the continents. It rises to an average height of c.10,000 ft (3,050 m), and a few peaks emerge as islands. The ridge, which is the center of volcanic activity and earthquakes, has a great rift that is constantly widening (see seafloor spreading) and filling with molten rock from the earth's interior. As a result the Western Hemisphere and Europe and Africa are moving away from each other. The Mid-Atlantic Ridge divides the floor of the Atlantic Ocean into eastern and western sections that are composed of a series of deep-sea basins (abyssal plains). The greatest depth (c.28,000 ft/8,530 m) is the Milwaukee Deep, in the Puerto Rico Trench, N of Puerto Rico. Scientific knowledge of the ocean floor dates from the Challenger expedition (1872-76).

**Currents**

Because of its shape, the Atlantic may be divided into two basins—North Atlantic Ocean and South Atlantic Ocean—each with a distinct circulation system. The clockwise-moving currents of the North Atlantic (North Equatorial Current, Antilles Current, Gulf Stream, North Atlantic Drift, Canaries Current) and the counterclockwise-moving currents of the South Atlantic (South Equatorial Current, Brazil Current, West Wind Drift, Benguela Current) are separated from each other by the Equatorial Counter Current; the Guinea Current off W Africa is a link between the two systems. At the Grand Banks off Newfoundland heavy fogs form along the front where the warm Gulf Stream meets the cold Labrador Current. The surface waters in the Atlantic's trade wind belts attain the highest salinity known in ocean water.

**Commerce and Shipping**

The North Atlantic Ocean has some of the world's busiest shipping lanes; the northern lanes are patrolled for icebergs. Commerce between the Mediterranean Sea and the NE Atlantic Ocean was initiated by the Carthaginians. From the 7th cent. A.D. , Scandinavians navigated the Atlantic; they probably reached North America c.1000. Trade routes along the coast of Africa were opened by Portugal in the 15th cent. and to the Western Hemisphere by Spain after the voyages of Columbus. The Grand Banks have traditionally contained some of the world's best commercial fishing grounds, but by the early 1990s the area had been overfished, and many species were depleted.

**Bibliography**

See V. H. Cassidy, The Sea Around Them: The Atlantic Ocean, A.D. 1250 (1968); K. F. George, The Atlantic Ocean (1977); K. O. Emery and E. Uchupi, The Geology of the Atlantic Ocean (1984).

**Arctic Ocean**

**Arctic Ocean**,

the smallest ocean, c.5,400,000 sq mi (13,986,000 sq km), located entirely within the Arctic Circle and occupying the region around the North Pole.

**Oceanography and Environment**

Nearly landlocked, the Arctic Ocean is bordered by Greenland, Canada, Alaska, Russia, and Norway. The Bering Strait connects it with the Pacific Ocean and the Greenland Sea is the chief link with the Atlantic Ocean. The principal arms of the Arctic Ocean are the Beaufort, Chukchi, East Siberian, Laptev, Kara, Barents, and Greenland seas. The floor of the Arctic Ocean is divided by three submarine ridges—Alpha Ridge, Lomonosov Ridge, and the Arctic Mid-Oceanic Ridge; other submarine ridges, such as the Faeroe-Icelandic Ridge, act to separate the Arctic Ocean from the Atlantic.

**The Arctic Ocean** has the widest continental shelf of all the oceans; it extends c.750 mi (1,210 km) seaward from Siberia. From the shelf rise numerous islands, including the Arctic Archipelago, Novaya Zemlya, the New Siberian Islands, and Wrangel Island. The continental shelf encloses a deep oval basin (average depth 12,000 ft/3,658 m) that stretches between Svalbard and Alaska; E of Greenland the ring of the continental shelf is broken by the Greenland Sea. The greatest depth (17,850 ft/5,441 m) in the Arctic Ocean is found just N of the Chukchi Sea. Since the Arctic's connection with the Pacific Ocean is narrow and very shallow, its principal exchange of water is with the Atlantic Ocean through the Greenland Sea. Even there, though surface waters communicate freely and a strong subsurface current brings warm water from the Atlantic into the Arctic basin, exchange of deeper waters is barred by submarine ridges. Thus a near stagnant pool of very cold water is found at the bottom of the Arctic basin.

Because several major rivers in Siberia (Lena, Yenisei, Ob) and Canada (Mackenzie) bring in much water, and because evaporation is only slight, the outflow through the Greenland Sea is important. It creates the cold East Greenland Current, which flows south along the coast of E Greenland. A weaker current goes through Smith Sound and Baffin Bay and is known as the Labrador Current. Another weak current flows out of Bering Strait. The water that does not flow out by the Greenland Sea seems to be deflected by N Greenland and forms the current that gives rise to a circular current in the Arctic basin itself. This circular current causes the relatively light ice of the Siberian seas, which contrasts with the heavy-pressure ice phenomenon off Greenland and Ellesmere Island (in the Arctic Archipelago). The drift of ice southward and westward has been noted and utilized by explorers.

Once called the Frozen Ocean, the Arctic Ocean is covered with ice (2-14 ft/.6-4 m thick) throughout the year in most of its central and western portions. Since the 1980s, however, the extent of the summer ice has been significantly reduced, and most researchers expect that, due to global warming, the ocean will become ice-free during the summer sometime between 2030 and 2070. Some of the ice pack remains in the Arctic basin, and some, carried out by the East Greenland Current, melts before going far enough south to reach the regular Atlantic shipping lanes; the icebergs that harass ships are generally brought from the fjords of W Greenland by the Labrador Current. It was long thought that no non-oceanic life could exist in the Arctic; however, despite drifting ice, ice packs, vast ice floes, and winter temperatures to -60°F; (-51°C;), there are hares, polar bears, seals, gulls, and guillemots as far north as 88°.

The cold Arctic currents give the shores of NE North America and NE Asia a much colder climate than the northwest shores of Europe and North America, which are warmed by the North Atlantic Drift and the Japan Current. The Arctic currents are also less saline and lighter than these warmer currents, and therefore the Arctic water is at the surface and the Atlantic current beneath, where they are exchanged in the Greenland Sea.

**Exploration and Scientific Research**

The Arctic basin was almost wholly unexplored until the Amundsen-Ellsworth flight over it in 1926. Arctic research was stimulated when it was recognized that the shortest air routes between the great cities of the Northern Hemisphere cross the Arctic Ocean. Improved technology has also facilitated research, with the development of aerial and satellite photography and photogrammetry for precise mapping, the sonic echo sounder for measuring ocean depths, and radio to maintain contact with the rest of the world. Detailed knowledge of drifts and ice floes, water depths, and the ocean floor has vastly increased. Soviet polar scientists investigated (1948-49) the Lomonosov Ridge, an undersea mountain range that influences the pattern of ice drift and the circulation and exchange of water in the Arctic Ocean. American scientists in 1959 discovered the existence of a submarine plateau rising 8,100 ft (2,469 m) from the ocean floor. In 1995 the U.S. navy agreed to lend its force of nuclear attack submarines for a series of civilian expeditions to the Arctic.

One fact of great potential importance is now being studied—the Arctic Ocean is warming. Recorded temperatures, glacial regressions, and the appearance of observed species of fish in larger numbers, at higher latitudes, at earlier seasons, and for long periods prove that over the decades a "climatic improvement" has taken place. Similar changes have been reported in sub-Arctic latitudes. Whether the warming is a phase in a cycle or a permanent development cannot yet be said. The warming may be affecting wind patterns above the region, amplifying the depletion of the ozone layer and possibly increasing precipitation. The area of the Arctic Ocean covered by year-round ice has decreased since the late 1970s, and an increased amount of fresh water is entering the ocean from bordering rivers.

**Indian Ocean**

**Indian Ocean**, third largest ocean, c.28,350,000 sq mi (73,427,000 sq km), extending from S Asia to Antarctica and from E Africa to SE Australia; it is c.4,000 mi (6,400 km) wide at the equator. It constitutes about 20% of the world's total ocean area. The Indian Ocean is connected with the Pacific Ocean by passages through the Malay Archipelago and between Australia and Antarctica; and with the Atlantic Ocean by the expanse between Africa and Antarctica and by the Suez Canal. Its chief arms are the Arabian Sea (with the Red Sea, the Gulf of Aden, and the Persian Gulf), the Bay of Bengal, and the Andaman Sea. The continental shelf of the Indian Ocean is narrow. Madagascar and Sri Lanka, the largest islands in the ocean, are structurally parts of the continents as are Socotra, the Andaman Islands, and the Nicobar Islands; the Seychelles and the Kerguelen Islands are exposed tops of submerged ridges. The Laccadives, the Maldives, and the Chagos are low coral islands, and Mauritius and Réunion are high volcanic cones. The floor of the Indian Ocean has an average depth of c.11,000 ft (3,400 m). The Mid-Oceanic Ridge, a broad submarine mountain range extending from Asia to Antarctica, divides the Indian Ocean into three major sections—the African, Antardis, and Australasian. The ridge rises to an average height of c.10,000 ft (3,000 m), and a few peaks emerge as islands. A large rift, an extension of the eastern branch of the Great Rift Valley that runs through the Gulf of Aden, extends along most of its length (see seafloor spreading). The Mid-Oceanic Ridge, along with other submarine ridges, encloses a series of deep-sea basins (abyssal plains). The greatest depth (25,344 ft/7,725 m) is in the Java Trench, S of Java, Indonesia. The Indian Ocean receives the waters of the Zambezi, Tigris-Euphrates, Indus, Ganges-Brahmaputra, and Irrawady rivers. The surface waters of the ocean are generally warm, although close to Antarctica pack ice and icebergs are found. The Indian Ocean has two water circulation systems—a regular counterclockwise southern system (South Equatorial Current, Mozambique Current, West Wind Drift, West Australian Current) and a northern system, the Monsoon Drift, whose currents are directly related to the seasonal shift of monsoon winds. The southwest monsoon draws moisture from the Indian Ocean and drops heavy rainfall on the Indian subcontinent and Southeast Asia.

**PART 3**

**MASSES OF THE WORLD**