World Geography Academy

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Our Five Oceans: Exquisite, Essential, and Endangered Part 1

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http://oceanleadership.org/the-oceans-sos/

The five oceans of the world – the Arctic, Atlantic, Indian, Pacific, and Southern – are derived from a single body of water.

https://www.cia.gov/library/publications/the-world-factbook/docs/refmaps.html

The oceans are the reason that life exists on Planet Earth.

http://www.worldoceanobservatory.org/files/OceanHealth.jpg

Play Our Marvelous Oceans: Ocean Wonders by Marine Conservation Institute (5:14)

http://youtu.be/OkpEn9_wSDE?list=PLB36AC5BA247CDAC9

The **Pacific Ocean** is the largest of Earth's oceans. At 63.8 million square miles, it covers about 46% of Earth's water surface. It is larger than all of Earth's land area combined.

http://en.wikipedia.org/wiki/Pacific_Ocean#mediaviewer/File:Pacific_Ocean_-_en.png

http://en.wikipedia.org/wiki/Pacific_Ocean#mediaviewer/File:Pacific_elevation.jpg

The **Pacific Ocean** is ringed by many volcanoes and oceanic trenches (convergent plate boundaries).

http://en.wikipedia.org/wiki/Pacific_Ocean#mediaviewer/File:Pacific_elevation.jpg

Oceanic-oceanic convergence

http://en.wikipedia.org/wiki/Convergent_boundary#mediaviewer/File:Oceanic-oceanic_convergence_Fig21oceanocean.gif

The **Pacific Ocean** is ringed by many volcanoes and oceanic trenches (convergent plate boundaries).

http://en.wikipedia.org/wiki/Atlantic_Ocean#mediaviewer/File:Atlantic_Ocean_-_en.png

The **Atlantic Ocean** is Earth's 2nd largest ocean. At 41,100,000 square miles, it covers 20% of Earth's surface.

http://en.wikipedia.org/wiki/Atlantic_Ocean#mediaviewer/File:Atlantic_Ocean_-_en.png

http://www.iesfuentenueva.net/proyecto/images/stories/Atlantico.gif

The Mid-Atlantic Ridge, seen in this satellite view, is an underwater mountain range resulting from divergent tectonic plates (two tectonic plates that are moving away from each other).

http://en.wikipedia.org/wiki/Indian_Ocean#mediaviewer/File:Indian_Ocean-CIA_WFB_Map.png

http://en.wikipedia.org/wiki/Indian_Ocean#mediaviewer/File:Indian_Ocean_bathymetry_srtm.png

The Indian Ocean is Earth's 3rd largest ocean, covering about 20% of the water on Earth's surface.

The calmer waters of the Indian Ocean sparked trade earlier in history than the Atlantic and Pacific Oceans.

When the Silk Road (red) and spice trade (blue) routes were blocked by the Ottoman Empire in 1453, explorers found new sea routes around Africa, triggering the Age of Discovery (European global exploration).

http://en.wikipedia.org/wiki/Age_of_Discovery#mediaviewer/File:Viajes_de_colon_en.svg

The four voyages of Christopher Columbus

Climate change is believed to be melting the ice in the **Arctic Ocean**. This creates new economic opportunities, such as oil and gas exploration, and new shorter routes for transporting goods between countries.

https://www.cia.gov/library/publications/the-world-factbook/docs/refmaps.html

http://www.lib.utexas.edu/maps/cia14/arctic_ocean_sm_2014.gif

http://3.bp.blogspot.com/_8mZd057kA74/TKfGx54ai6I/AAAAAAAAAbo/FdhbUL81FcE/s1600/Ice+Breaker+Arctic+Ocean.png

http://go.hrw.com/atlas/norm_map/southocean.gif

In 2000, the International Hydrographic Organization decided to "create" the **Southern Ocean** from southern portions of the Atlantic, Pacific, and Indian Oceans. It completely surrounds Antarctica.

http://oceanexplorer.noaa.gov/explorations/05sounds/logs/dec07/media/livingstonisland_600.jpg

http://images.nationalgeographic.com/wpf/media-live/photos/000/003/cache/southern-ocean-waves_386_600x450

The **Southern Ocean** can become very stormy.

Play Cruising the Southern Ocean on the National Geographic Explorer (2:05)

http://youtu.be/5JyGe7Maz5o

Major ocean surface currents

http://upload.wikimedia.org/wikipedia/commons/c/cc/Ocean_surface_currents.jpg

Oceans connect the planet.

https://askabiologist.asu.edu/sites/default/files/resources/articles/plankton/food_web.jpg

http://www.sldint.com/uploads/tea/seafood.jpg

http://globevisions.files.wordpress.com/2011/12/kor_seo11set_-261.jpg?w=640

Oceans provide food for us.

Corals & Sponges

Natural Cures

A number of marine creatures have been used successfully in medical research and testing.

- A Caribbean sponge has been discovered to generate compounds used in AZT (zidovudine, *Retrovir*), which is used to fight the AIDS virus.
- Caribbean gorgonian (a soft coral) produces a group of compounds with anti-inflammatory properties, which are also included in an anti-wrinkle cream.
- A tentacled aquatic organism, called bryozoan *Bugula neritina*, yields a compound being tested as a cancer drug.
- Skates (a flat fish shaped like a kite) have provided clues used in treating vision loss.
- Corals and mollusks are used to make orthopedic and cosmetic surgical implants.
- Horseshoe crabs are commonly used to test for bacterial contamination.
- Microalgae are used in vitamins and other nutritional supplements.
- Bone grafts from coral skeletons, pain relievers from sea snail venom, and infection-fighting agents from shark skin are all under study.

Skate.

High resolution (Credit: NOAA)

Oceans provide medicines and other resources necessary for life.

All Photos & Info this page:
http://www.noaa.gov/features/economic_0309/medicines.html

Oceans sustain Planet Earth by transferring heat around the world.

Sea surface temperatures. Pink and purple are coolest (starting near 0° C). Orange and red are warmest (up to around 32° C).
Credit: Image courtesy NOAA.

http://www.windows2universe.org/earth/Water/ocean_heat_storage_transfer.html

Contact

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