

# Havet at Stockholms Universitet

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## 1 Chapter 1

### 1.1 Oceans

Pacific Ocean:

- largest ocean
- more than half of ocean surface on Earth
- over one third of Earth's entire surface
- deepest ocean

Atlantic Ocean:

- about half the size of Pacific Ocean
- separates the Old World (Europe, Asia, Africa) from the New World (North and South America)
- named after Atlas, one of the Titans in Greek mythology

Indian Ocean:

- slightly smaller than Atlantic Ocean
- about same average depth as Atlantic
- mostly in the Southern Hemisphere

Arctic Ocean:

- about 7% size of the Pacific Ocean
- only a bit over one-quarter as deep as the rest of the oceans
- has a permanent layer of sea ice at the surface, but the ice is only a few meters thick

Southern or Antarctic Ocean:

- it is really the portions of Pacific, Atlantic and Indian oceans south of about 50 degrees south latitude

The average depth of the world's oceans is 3682 meters. The deepest depth in the oceans (the Challenger Deep region of the Mariana Trench) is 11022 meters below sea level.

The average height of the continents is only 840 meters.

### 1.2 History of Ocean exploration

- Pytheas in 325 B.C. sailed northward using a simple method for determining latitude in the Northern Hemisphere
- Eratosthenes used the shadow of a stick in a hole in the ground and elementary geometry to determine Earth's circumference to be 40000 km

- Claudius Ptolemy produced a map of the world in about 150 A.D. that represented the extent of Roman knowledge at that time
- late in the 10th century the Vikings colonized Iceland
- in about 981 A.D. Erik "the Red" Throvaldson sailed westward from Iceland and discovered Greenland
- Leif Eriksson, son of Erik the Red, found Vinland (Newfoundland, Canada) and spent the winter there
- 1492 to 1522 is known in Europe as *Age of Discovery*. Southern Europeans explored the continents of South and North America then.
- Captain James Cook blah blah

### 1.3 What is Oceanography

It is an **interdisciplinary science**

Geology:

- sea floor tectonics
- coastal processes
- sediments
- hydrologic cycle

Geography:

- wind belts
- weather
- coastal landforms
- world climate

Biology:

- fisheries
- ecological surveys
- microbiology
- marine adaptations

Chemistry:

- dissolved components
- temperature dependence
- stratification/density
- chemical tracers

Physics:

- currents
- waves
- sonar
- thermal properties of water

Astronomy:

- tidal forces
- oceans on other planets
- origin of water
- origin of life

## 1.4 Glossary of terms

- **oceans** –