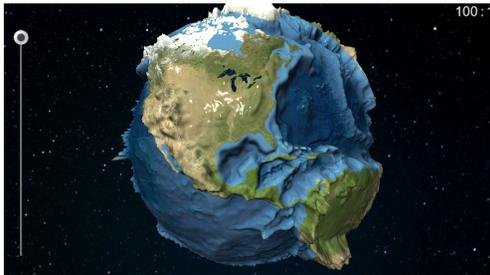


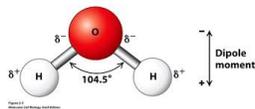
chemical oceanography

The ocean is the dominant physical feature on Earth. It covers 70% of the planet's surface. There is one ocean with many ocean basins

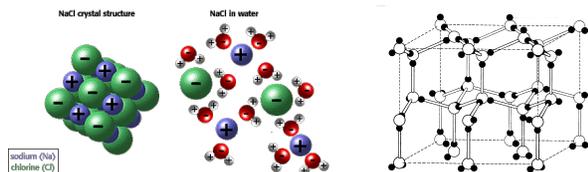
North Pacific, South Pacific, North Atlantic, South Atlantic, Indian Ocean, Arctic Ocean and the Southern sea



Properties of water



- Water is a molecule that is made up of two oxygens and one hydrogen
- The molecule is held together by polar covalent bonds
- molecules of water are attracted together by hydrogen bonds
- When water molecules cool they form a lattice structure as it solidifies, allows for open space which is why ice is less dense than liquid water



Water expands as it freezes so Ice takes up more volume than liquid water even though liquid water is more dense. This is why ice floats, less dense.

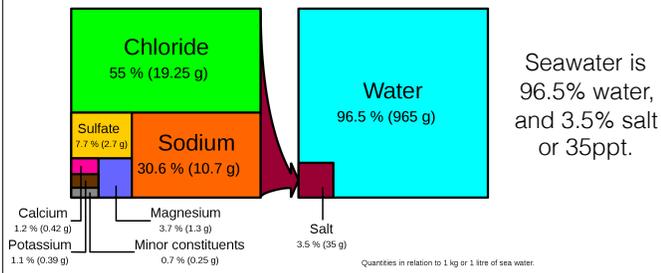


Salinity

How salty is the ocean.

Sea salts

Sea water



Seawater is 96.5% water, and 3.5% salt or 35ppt.

Seawater typically has a salinity of 35 ppt

(Parts per thousand)

97% of Earth's water is in the ocean.

It can vary... where?

Why does salinity matter?



Where to find most answers to questions of salinity, temp, density, depth

<http://marinebio.org/oceans/temperature/>

Osmotic conformers and regulators

Some marine inverts cannot withstand large changes in salinity these are conformers. They conform to whatever the salinity is of the water they are in.

Salinity regulators can regulate the amount of salt their cells take in. Some predatory fish, marine mammals and birds do this.



this.



Halocline

salt boundary or change in salinity layering in the ocean

Temperature effects

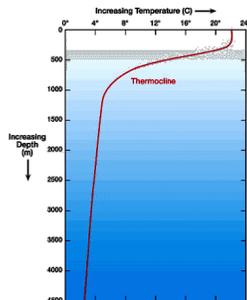
Most surface waters average a temperature of about 20-27 degrees C.

Can be up to 30 degrees C in tropical areas

At the poles seawater can be -1.9 degrees C.

Temp. will decrease with depth too.

There is a point of rapid temperature decline. This is called a thermocline.



Tropical fish need to be at a warmer temperature to survive.

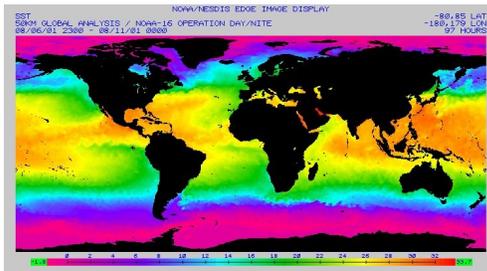


Arctic Cod have an antifreeze protein that keeps their blood from creating ice crystals and freezing

Human Induced Global Climate Change

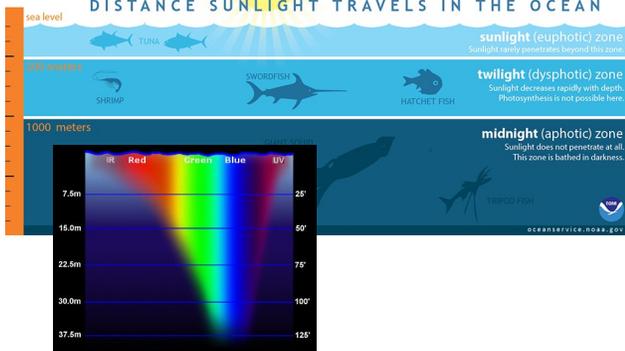
Increase of greenhouse gases leads to an increase in atmospheric temperature and an increase in Ocean temperatures.

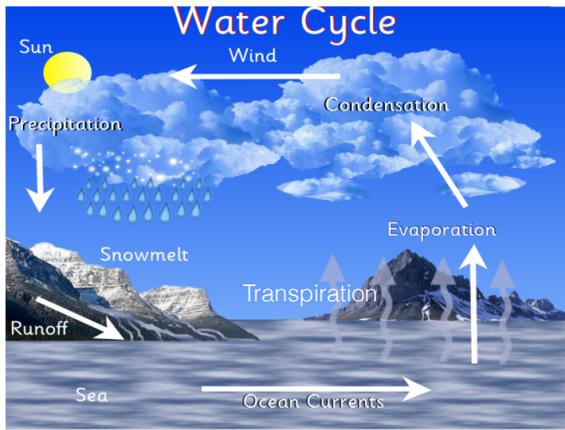
What effects will this have on currents and organisms?



Light

DISTANCE SUNLIGHT TRAVELS IN THE OCEAN





Carbon Dioxide and Acidification

