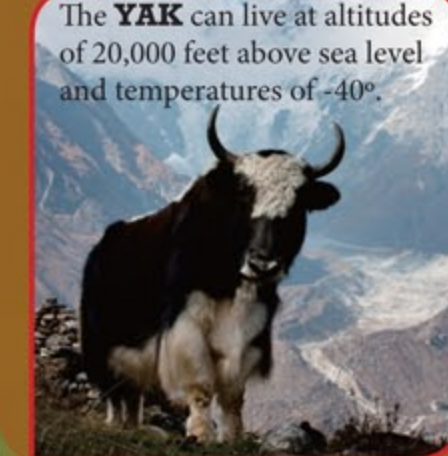


God's Water Cycle

1. In the cycle, vapor-laden air blows from the oceans to the land.
2. The water vapor condenses into tiny drops of water and forms clouds as the vapor cools.
3. Rain and snow fall on the land.
4. Some of this precipitation is re-evaporated and some is absorbed into the soil.
5. Eventually, streams and rivers take rain and melted snow back to the oceans.



[just] where
does lava come from?

Volcanoes

Magma comes from the mantle of the Earth where it is very hot. From there it takes the path of least resistance as it rises up through cracks and crevices. Magma is the name given molten or liquefied rock below the Earth's surface. Once it breaks through the crust of the Earth it is called **lava**. If it reaches the surface of the earth and hardens there, it is known as an extrusive rock. If it rises into the crust but hardens before it reaches the surface, it is known as an intrusive rock. If it goes into horizontal cracks between sedimentary layers, it forms a **sill**.

When a volcano suddenly erupts because of a build-up of steam and other gases, volcanic materials and rocks are ejected with great force. Volcanic ash and rocks have been known to be thrown out with so much force that they are shot several miles into the air. The temperature of a lava flow can reach 2,000° Fahrenheit. When **Mount St. Helens** erupted on May 18, 1980, the explosions were equal to the force of 33,000 atomic bombs.

Microbes

On the border of Argentina and Chile is a volcano surrounded by massive debris called Socompa. At over 19,000 feet, this barren waste is home to the world's highest known community of microbes. Microbes are tiny single-celled creatures.



Caves



Basic types of caves

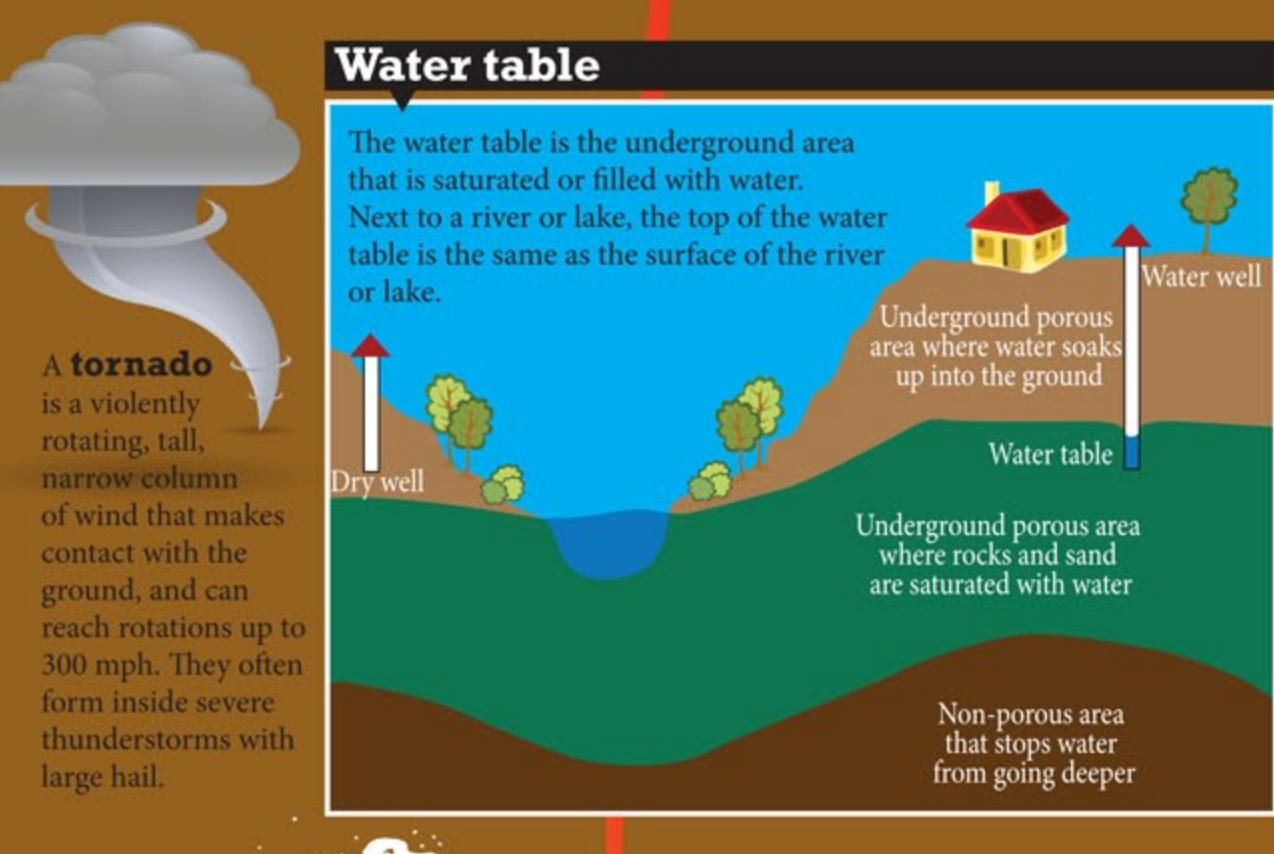
Active or live caves (caves which have a flowing stream in them)	Relict or those caves without a flowing stream, but may have ponds or dripping water.
Inflow caves are those into which a stream sinks and which are only partly accessible to humans.	Through caves are those crossed by a stream and accessible to humans too.
Outflow caves are those from which a stream emerges and which are partly accessible to humans.	

Record-breaking caves

- The longest underwater cave is Ox Bel Ha in Mexico at 83.264 miles.
- The deepest cave is Voronya Cave in the Republic of Georgia at 7,020 feet 11 inches.
- The longest cave is Mammoth Cave in Kentucky at 359.774 miles (so far!).



Water table

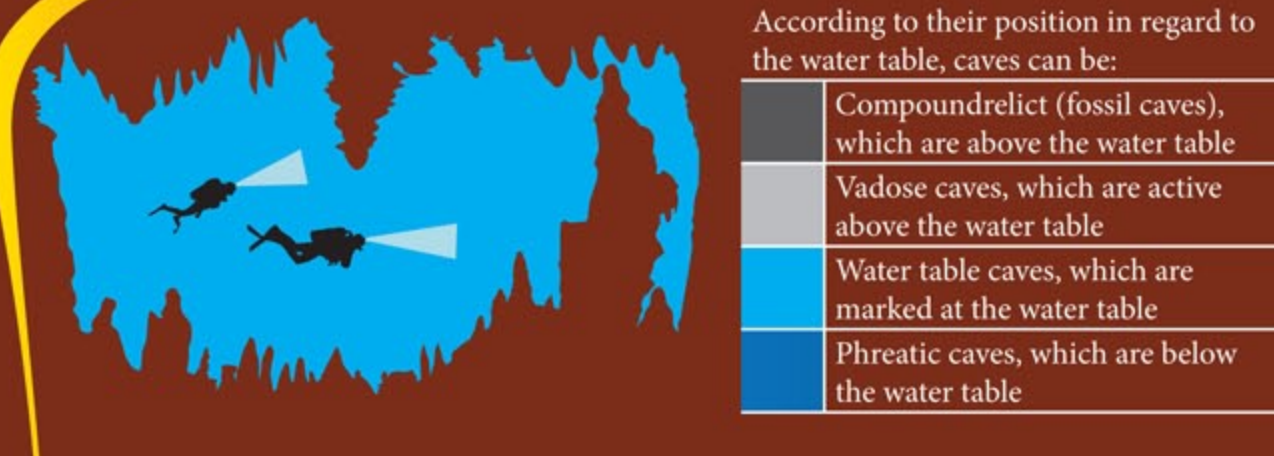


A **tornado** is a violently rotating, tall, narrow column of wind that makes contact with the ground, and can reach rotations up to 300 mph. They often form inside severe thunderstorms with large hail.

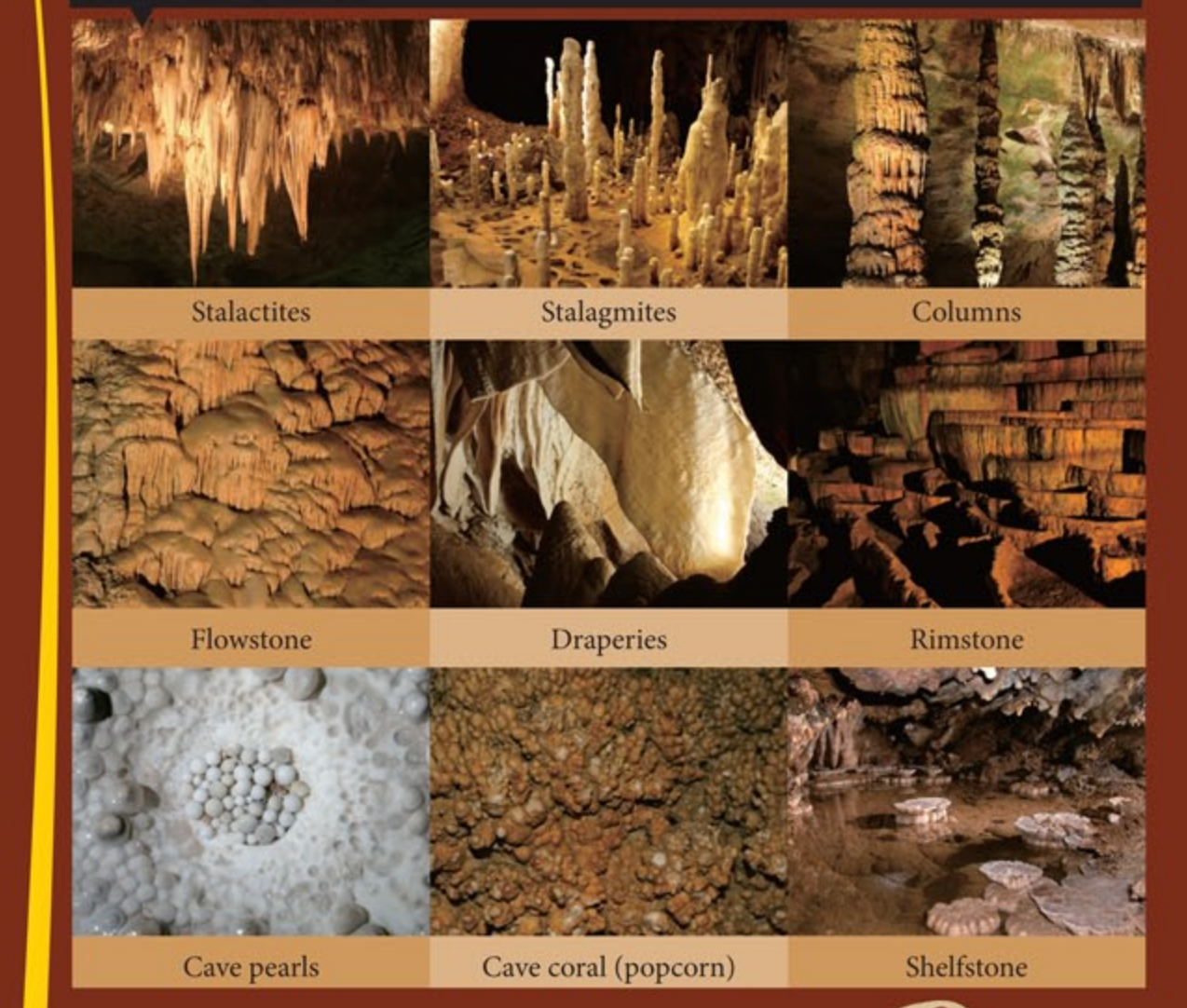
Cave creatures

Typical examples of cave creatures

Cave salamander (<i>Eurycea lucifuga</i>)	Cockroach	Long legged whip spider (<i>Amblypygi</i>)	Pseudo-scorpion



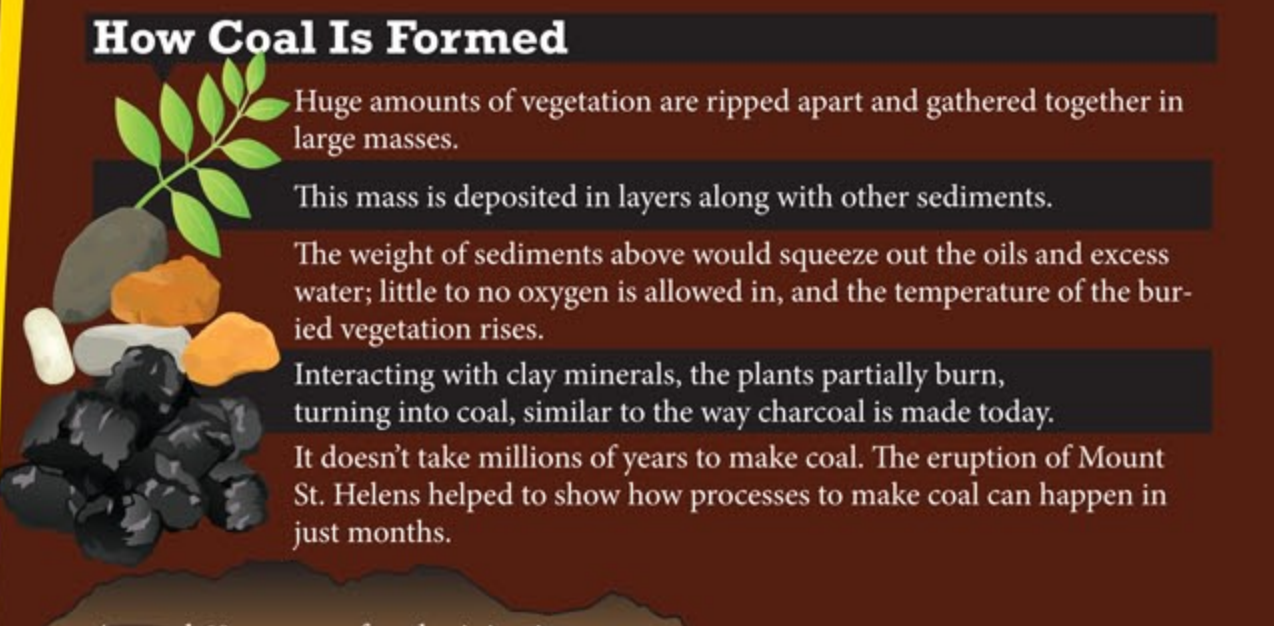
Stuff in Caves



Can Fossils Be Fuel?

Coal is called a fossil fuel because it is the crushed and fossilized remains of plants and vegetation like tree bark buried in sediments from catastrophes like the great Flood, which occurred over 4,000 years ago. The vastness of some coal beds suggest this huge event which had to have formed them. The Bible tells us about Noah's Flood in Genesis chapters 6 through 9. Fossil fuels like coal and crude oil can be mined or extracted to be burned in order to heat homes or power machines.

How Coal Is Formed



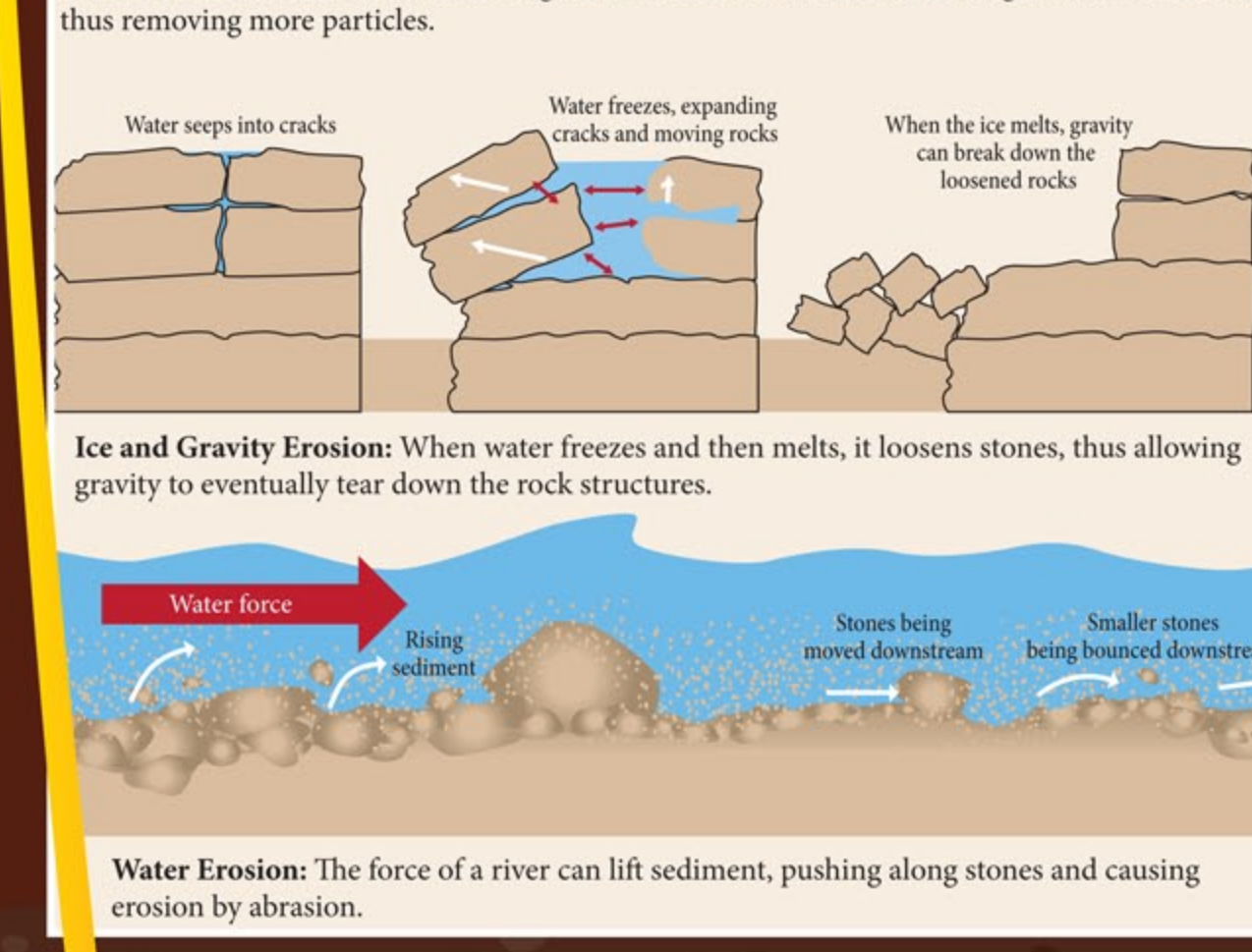
Oil

Did you know that oil is a common form of stored energy for people, animals, plants, and even microscopic creatures? Some of the oil found today has always been here and may have come from algae or plankton. Large amounts of once-living things were buried under layers of sediments during and following the Flood to produce pools of oil and natural gas.

Oil's well that ends well

The cost of deep sea drilling for oil or natural gas is much higher than that of land-based drilling. Some of these costs can unfortunately be clean-up efforts if explosions or leaks occur that damage the environment like the 2010 oil spill in the Gulf of Mexico. Some offshore drilling platforms have been sunk to form artificial reefs that are ecologically beneficial.

How erosion works



just who
gave the clouds their scientific names?

[just] where
does lava come from?



Cloud classifications

High-level clouds are 20,000 feet and up and are made of ice crystal. Their names start with cirro or cirrus (meaning curly).

Medium-level clouds are between 6,000 and 20,000 feet. They are made up of water drops and ice crystals and their names start with alto (meaning high).

Low-level clouds range between ground level and 6,000 feet and are the strato clouds made of water drops.

Luke Howard gave the clouds their scientific names in 1803! This British chemist who also enjoyed meteorology gave the names to clouds that we know today: cumulus, stratocumulus, stratus, cirrostratus, and cirrus.

Tallest buildings in the world

Burj Khalifa in Dubai	2,717 ft
Makah Royal Clock Tower Hotel in Mecca	1,971 ft
Taipei 101 in Taipei	1,670 ft
Shanghai World Financial Center in Shanghai	1,614 ft
International Commerce Centre in Hong Kong	1,588 ft

High and low tides

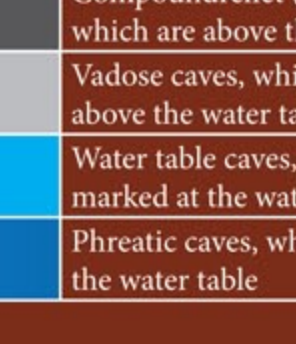
High and low tides are caused by a raising and lowering of water in the oceans and seas caused by the gravitational pull of the moon.

Since the 1890s, companies have used drilling platforms and other technology to access remote underwater oil reservoirs around the globe.

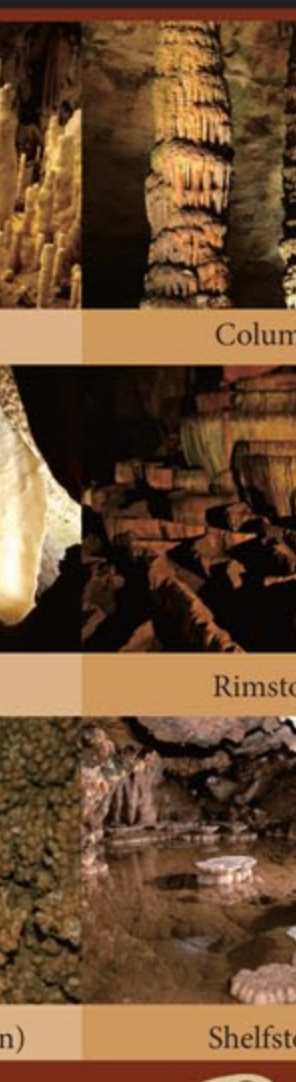
just how deep can you go underwater?

Depth	Deep Diving
30 feet / 9 meters	Average limit for casual surface diving.
100 feet / 30 meters	Recommended recreational diving limit for divers. Average depth at which nitrogen narcosis (drunk on air) symptoms begin to appear in adults.
218 feet / 65 meters	Depth at which compressed air results in an unacceptable risk of oxygen toxicity (oxygen starts to damage body cells).
660 feet / 200 meters	Absolute limit for surface light penetration sufficient for plant growth.
2,000 feet / 610 meters	Navy diver in Atmospheric Diving System (ADS) suit.

just what percentage of water on Earth is fresh or "sweet"?



Distribution of Earth's Water



Fresh Water

We use fresh water, for drinking, watering crops, for factories, recreation, and more, yet of all the water on Earth only about 3 percent is fresh or "sweet" water. This can be found in places like ponds, rivers, and lakes above ground, frozen in ice caps or glaciers, or underground in cave springs and streams as well. The rest of the water accessible is salt water and unusable for most purposes unless it goes through expensive salt or saline removal processes.

just what are the four types of algae named by color?

The eyes of the giant squid are the largest in the animal kingdom, ranging from 10 to 15 inches across.

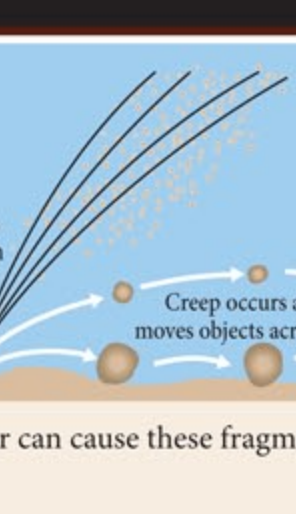
just why can't we drink the water in the ocean?

Elements of the Oceans (per cubic mile of water)

Oxygen	4,037,000,000 tons
Hydrogen	2,018,500,000 tons
Chlorine	89,500,000 tons
Sodium	49,500,000 tons
Magnesium	6,125,000 tons
Sulfur	4,420,000 tons
Calcium	1,880,000 tons
Potassium	1,790,000 tons
Bromine	306,000 tons
Carbon	132,000 tons
Other*	>100,000 tons

*less than 100,000 tons (including gold, which is only 38 pounds per cubic mile of water)

Oceans



Algae

There are four basic types of algae found in the sea, and named by their color:

- Yellow algae may well be the most abundant form of life on Earth.
- Red algae are found along rocky coasts of subtropical seas.
- Almost all of the brown algae found in the sea are found along the shores of temperate zones, some growing over 200 feet long.
- Green algae, the most diverse group of algae, grow along seashores.