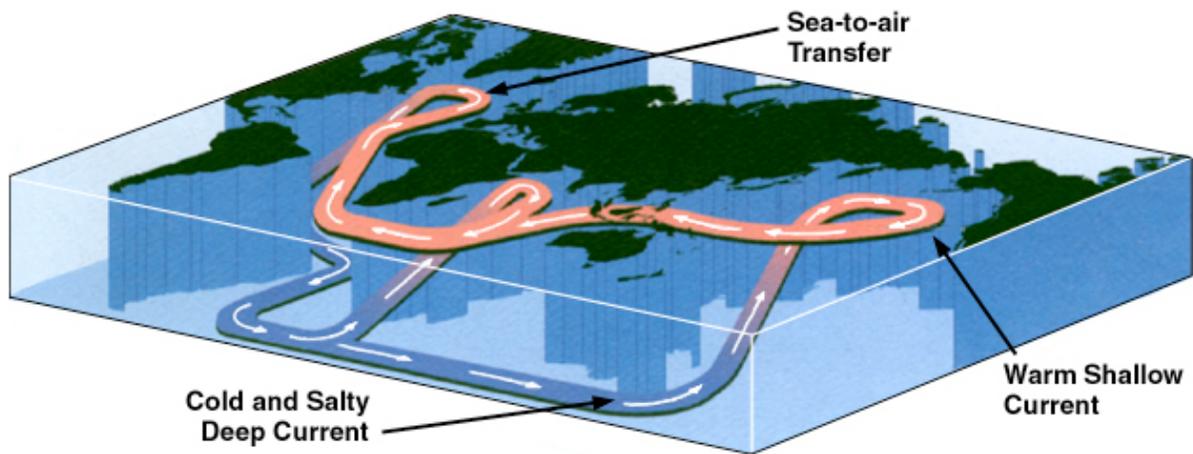


The Deep Waters of the Ocean

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

Have you ever taken a vacation near an [ocean](#)? Maybe you went swimming or snorkeling in the water, maybe you went fishing or on a sailboat ride. These activities all take place in [the surface waters](#) of the ocean. But did you know that most of the water in the ocean (90% by volume) is actually found below the surface layer of the ocean? Most people will never see the deep waters of the ocean...they are just too deep! The [pycnocline](#) (meaning rapid change of density) separates the surface layer of the ocean from the deep ocean. Deep ocean water has a [temperature](#) of about 3 degrees Celsius and a [salinity](#) measuring about 34-35 [psu](#).

So, where do these deep waters of the ocean come from? The biggest source of deep water is surface water that sinks in the North Atlantic Ocean. Here, ocean water can become very cold and very salty. This cold, salty water can be dense enough to sink into the depths of the ocean. Remember, the saltier and colder water is, the more [dense](#) it is! And more dense material will sink below less dense material!



So the dense ocean surface water in the North Atlantic sinks slowly downward until it reaches a level of equal density. If the water is more dense (colder and/or saltier) than any other water in the deep ocean, it will sink all the way to the sea floor. Once the water reaches a level of equal density, the water spreads out. In this way, the deep ocean is broken into

horizontal layers, with each deeper layer having more dense water in it. The water that sinks in the North Atlantic flows all the way past the equator into the Southern Hemisphere. The water then flows past Antarctica and into the Pacific and Indian Oceans. Here, some of the deep waters are warmed and so rise again to the surface.

This cycle of ocean water circulation from the surface to the depths of the ocean back to the surface again is referred to as conveyor belt cycling (pictured above). This is a simplification of the real global ocean circulation. Still, it helps to show the basic idea of ocean water circulation.