The Argo floats measure temperature and salinity to a depth of 2000m. The floats were designed to work with the Jason altimeter (left). Satellite altimeters measure the distance to the sea surface (calculated from the time it takes for a radar signal to return to the satellite). From this we can calculate sea level, which is related to the flow of ocean currents. Current measurements from space allow us to see how the flow of ocean water varies in space and time, week after week, year after year.

In Greek mythology, Jason sailed on his ship the Argo in search of the golden fleece. The modern Argo floats are seeking another treasure - detailed knowledge of ocean currents, temperature and salinity, which are used in oceanography and climate research.

The Nordic Seas between Greenland, Iceland, and Norway is an important region for deep water formation. Warm Atlantic water meets cold polar water, and this cools in winter and ices. There are clear seasonal cycles in the temperature time series.

In the tropics and subtropics, strong solar heating creates a layer of warm surface water that is several 100m deep. Evaporation from the surface also raises salinity, but because the surface water is so warm, the higher salinity is not enough to make it sink. Occasional periods of rainfall will sometimes dilute the uppermost layer.

Polar waters are freezing - often below zero, because salt water freezes at a lower temperature than fresh water. Ice melt in summer makes surface waters less salty, but the extreme cold means that this fresh layer stays at the surface.