

Ocean circulation in temperature and salinity coordinates.

Here we analyze the global ocean circulation, not in three dimensional coordinates, but in temperature and salinity coordinates. Because the ocean's temperature and salinity themselves, can change in time, we first provide new mathematical method to be able to do this. Once this is possible, we learn about the balance between mixing processes that change the ocean's temperature (T) and Salinity (S) and ocean-atmosphere interaction that also change the ocean's S&T. In the future, we can calculate these diagrams for different numerical models and from observations, which allows us to compare how these different processes that change the ocean's S&T are different between models and observation. This is important to improve our ability to understand and model the oceans large scale ocean circulation.