

## **How does forming Antarctic Intermediate Water form?**

The density of the ocean depends on temperature (T), salinity (S) and pressure in a nonlinear way. Sometimes, water with a different T&S can have the same density. When these two waters mix at constant pressure, the new T&S of the new mixture determines the new density. This density however, can be denser than the original density of both water parcels, due to the nonlinear dependence of density on T&S. This “densification upon mixing” is also called Cabbeling. The denser water will sink and can form new water masses and transport with it, any dissolved material.

In this study we find that Cabbeling is a key process in forming Antarctic Intermediate Water, an important water mass for the climate system.