During the ALBION project, two moorings have been deployed from 2008 to 2010 in the Adelie Depression, on the East Antarctic continental shelf (140 E-147 E). The moored instruments monitored the winter formation and circulation of the dense shelf water in the Mertz Glacier Polyny. One mooring was located in Commonwealth Bay, a coastal bay where the dense shelf water is trapped by the topography in a deep separated from the main depression by a 400 m deep sill. The other mooring was deployed on the northeastern slope of the depression close to the Mertz Glacier Tongue.

In Commonwealth Bay, the temperature and salinity measured by three microcats distributed in the vertical allowed identifying the different phases of the annual cycle of destratification and restratification of the water column. There is clear evidence of bottom reaching convection. We present a comparative view of the annual cycles between 2008 and 2009. A strong contrast is identified between the two years with winter 2009 being more efficient in producing a high salinity shelf water. The influence of the atmospheric forcing and consequent brine rejection linked to sea ice formation in the polynya are investigated. The evolution of the hydrographical properties in Commonwealth Bay are compared with the evolution at the Mertz mooring where, by contrast, complete winter homogenisation of the water column seldom occurs while signatures of advection of surrounding water masses are observed.