

## Three dimensional potential vorticity structure in the Indian Ocean

MC McCarthy and LD Talley, 1998.

Eos Trans. AGU, 79(1), Ocean Sciences Meeting, Abstract OS21J-03 1998.

The three dimensional potential vorticity structure of the Indian Ocean is examined using WOCE and NOAA CTD data and historical bottle data. The distribution of the potential vorticity is set by the Indian Ocean's source waters and their circulation inside the basin. The lower thermocline has a high potential vorticity signal from the Indonesian Throughflow in the east and a low signal from the Subantarctic Mode Water in the south. The Antarctic Intermediate Water inflow dominates potential vorticity at intermediate depths, below which the field becomes beta dominated indicating a weaker meridional circulation and weaker sources. Isopleths tilt strongly away from latitude lines in the deep and abyssal waters as the Antarctic Bottom Water fills the basins in deep western boundary currents. Several pools of homogenized potential vorticity appear in the upper 2000 m of the Southern Ocean where gyres have previously been identified.