



ENSO and the west Antarctic Peninsula

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The west Antarctic Peninsula (WAP) has experienced marked climatic warming over the past ~50 years. Atmospheric and cryospheric changes have impacted on the ocean, with profound implications for marine life, both on the biologically-rich WAP and potentially at localities downstream in the Antarctic Circumpolar Current (ACC). It is therefore vital that we understand the region's changing climate, and its associated oceanographic effects. Climatic reanalyses and global sea surface temperature products are used to address this, and show that the ocean here is coupled to the El Niño-Southern Oscillation (ENSO) phenomenon, although the mechanisms connecting the WAP to the equatorial (ENSO source) regions differ between the shelf and open-ocean domains. Nine years of oceanographic data from the Rothera Time Series (RaTS) of CTD casts from northern Marguerite Bay reveal the short-term sensitivity of the region to the ENSO cycle and provide information on the response of the subsurface ocean to this climatic forcing. Remote forcing from ENSO is joined by local forcing from variability in the flow of the sub-surface Circumpolar Deep Water (CDW). The combination of climatic and in situ oceanographic data provides insight into the forcing and response of one of the most rapidly changing regions in the world.