# Circulation changes off West Antarctica

March 18 2016

The Amundsen Sea Low (ASL) is a climatological low pressure system located over the southern Pacific Ocean, off the coast of West Antarctica. Atmospheric variability in this region is larger than anywhere else in the Southern Hemisphere. Previous studies have shown that the ASL plays a significant role in climate variability of West Antarctica and the adjacent oceanic environment. The primary aim of this paper was to answer the question "How will the ASL change in the future?"

To address this, researchers developed a new and robust method for detecting the ASL location with the help of a 'peak finding' algorithm used within the solar physics community. They identified 11 global climate models which reliably simulated the ASL and used them to

assess changes in wind patterns over the second half of the 21st century. They found that the future ASL will likely migrate poleward in summer and autumn, and eastward in autumn and winter.

As a result the autumn-winter changes would drive colder southerly winds over the Ross Sea and warmer northerly winds toward the Antarctic Peninsula. These are consistent with recent trends in observed winds (1979-2014) and reconstructed temperature (1957-2006), suggesting that the impact of anthropogenic forcing on the ASL, and subsequently West Antarctic climate, may have already started.

**More information:** A new ASL index based on reanalysis data has also been created from this method. More information can be found on the Climate Data Guide page: climatedataguide.ucar.edu/clim … dsen-sea-low-indices

J. Scott Hosking et al. Future circulation changes off West Antarctica: Sensitivity of the Amundsen Sea Low to projected anthropogenic forcing, *Geophysical Research Letters* (2016). DOI: 10.1002/2015GL067143

Provided by British Antarctic Survey