

## **Air mass variability on the Antarctic plateau**

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A knowledge of atmospheric conditions on the Antarctic plateau is essential in order to interpret correctly the climate signals locked into ice cores. The limited number of in-situ meteorological observations show that the variability of surface temperature is larger than at the coastal stations on a range of timescales as a result of the rapid changes of air mass that can occur. The reanalysis fields show that surface temperatures here are strongly dependent on long wave activity around the Antarctic, with periods of amplified long waves feeding warm maritime air masses onto the highest parts of the plateau. Such episodes are also important for giving snowfall rather than the ubiquitous diamond dust. Inter-annual variability of temperature is strongly dependent on the amplitude of the long waves, with small amplitudes resulting in longer periods of isolation from maritime air masses and therefore lower temperatures.

Since the development of the ozone hole in the early 1980s the Southern Annular Mode has become more positive with implications for conditions on the plateau. There has been a drop in surface temperatures as the area has become more isolated from more northerly latitudes. The drop in temperature at Amundsen-Scott station has been attributed to fewer intrusions of maritime air from the Weddell Sea sector.