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An overview of observations and mesoscale synoptics during the OFCAP field project

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It is thought that more frequent and stronger westerly flow, correlated with an increasingly positive Southern Annular Mode (SAM), has reduced the blocking capacity of the Peninsula. Resultant 'flow over' regimes have caused an increase in the frequency and intensity of Föhn and downslope wind events on the eastern side of the orography. We hypothesise that it is these events that are responsible for rapid temperature increases observed on the eastern side of the Antarctic Peninsula during summer in recent decades.

During the Austral summer of 2011, the field phase of Orographic Flows and the Climate of the Antarctic Peninsula (OFCAP) took place to investigate the hypothesis above and how large-scale flow controls the surface climate of the Peninsula region at around 67°S. Airborne capability was provided by a Twin Otter aircraft measuring all standard meteorological variables, broad-band radiation, turbulence, and cloud properties, and two radiosonde stations. The first was located west of the Peninsula at the British Antarctic Survey's Rothera research base and the second was on the Larsen C ice shelf. Ground-based observations were made by a transect of four Automatic Weather Stations located west, on the summit, east of the Peninsula and near to the edge of the Larsen C ice shelf at about 67°S. High resolution modelling using the Weather Research and Forecasting (WRF) numerical model provided forecasts for flight planning.

This study will give an overview of the field activities and introduce case studies of Föhn, downslope wind, gravity wave and barrier jet events.