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The influence of synoptic weather patterns over Antarctica and their influence on boundary layer structure and chemistry at the South Pole during summer

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As summarized by Neff (1999, JGR) surface wind speed, direction and inversion strength are very closely controlled by the orientation of winds aloft (e.g. 300 hPa) during late Fall through early spring. Here we examine the role of winds aloft on boundary layer behavior during the late spring through summer months in combination with surface nitric oxide concentrations [NO]. In general, high [NO] arises when the boundary layer is shallow and vice-versa. We use [NO] data gathered during the summers of 1998, 2000, 2003, and 2006 as part of the ANTCI program to identify high concentration periods and then examine the prevailing meteorology.