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Measurements of Surface Ozone at Belgrano Antarctic Station (78ºS, 35ºW)

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Surface ozone measurements from three years (2007 - 2009) at the Antarctic station Belgrano (78ºS, 35ºW) are analysed and shown. Belgrano is a coastal station lying approximately 20 km from the Weddell Sea coast and located 256 m above the sea level. A UV photometric ozone analyzer TEI 49C, was deployed with the double purpose of, quality control of ozonesounde launching at that site and, for background ozone monitoring in a long term basis.
The data analysis shows the annual surface ozone cycle lagged by one month with respect to the solstices. Ozone maximum is reached in July, while the minimum is attained in January, in opposition of typical mid-latitude continental observatories, but in agreement with other coastal stations in Antarctica. Daily mean maximum recorded during the three years data peaked at 36.5 ppbv while minimum value was found to be 6.9 ppbv.
A higher day to day variation was observed after the polar night, during the Antarctic spring and summer. Several depleted ozone events have been recorded during the Austral spring (October-December) season, attributable to photochemical catalyzed ozone depletion from halogen chemistry. During those days, the ozone mixing ratio dropped until only a few ppbv in a short period of time (within a few hours). BrO observation from the satellite instrument SCIAMACHY showed large patterns of enhancements of BrO in the Weddell Sea during those days and calculated HYSPLIT trajectories indicated that air masses with low ozone come from an area of high BrO concentration.
Surface ozone data from the ozononesoundings launched at the same site during the three years period reported have been compared with surface ozone analyzer data. In spite of systematic differences during the winter months, a good agreement is observed between both types of instruments. In particular, low ozone episodes are captured by both techniques showing the genuine character of the events.