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Preliminary results from the STABLEDC field experiment and RMO measurements

S. Argentini and/for STABLEDC-RMO Team
ISAC-CNR, Roma, Italy

A large atmospheric field experiment STABLEDC (Study of the STABLE boundary layer at Dome C) was held at the French-Italian station of Concordia located on the Antarctic plateau at Dome C (Lat 75˚ 06.06 S, Long 123˚ 20.74 E, 3250 m a.s.l.) during 2004-2005. During the same period the RMO (Routine Measurements Observations) programme was also started. This was the first overwintering at Concordia.

In the first part of this talk, a brief illustration of the field experiment and the instrumentation utilised for routine measurements, is given. In the second part of the talk, we will show the time behaviour of some meteorological parameters during the year. During the austral winter the ground-based inversion strength in the first 100 m oscillated between 5˚C and 35˚C, the strength of the inversion increasing with decreasing temperature (0˚C-5C˚ at -35C˚, 35C˚ at -70˚C). The inversion depth ranged between 100 m and 200 m.

Up to 15 km in altitude, the wind origin was mostly in the sector centred around 180˚ (wind velocities mostly around $2ms^{-1}$). In the upper levels (above 15 km), winds occurred from 220˚ to 360˚ with wind speeds greater than $40ms^{-1}$. The largest standard deviation in wind velocity was observed during the winter, in August.

The air temperature oscillated between -80˚C and -20C˚. The lowest temperatures were reached during the spring and autumn. Strong warming events were observed during the winter with temperatures reaching the summer values.

Typical values for the vertical velocity ranged between -0.4 ms^{-1} and +0.3ms^{-1}. The largest subsidence values were reached for temperatures below - 40˚C.

Net radiation, mostly negative during the winter (-40 Wm^{-2}), reached 70 Wm^{-2} during the summer.