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The HAMSTRAD programme at DOME C (CONCORDIA STATION, ANTARCTICA) for monitoring tropospheric water vapour and temperature

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The HAMSTRAD (H_2O Antarctica Microwave Stratospheric and Tropospheric Radiometers) microwave instrument operating at 60 and 183 GHz and measuring temperature and water vapor, respectively from 0 to 10 km altitude with a time resolution of 7 minutes has been successfully deployed at Dome C (Concordia Station), Antarctica (DC, 75˚06'S, 123˚21'E, 3233 m asml) during the first summertime campaign for 12 days in January-February 2009. It is continuously and nominally running from January 2010 to date, after the second summertime campaign hosted within a dedicated shelter. Measurements and internal calibration are automated, transfer of data are performed on a daily and automated basis. External Liquid Nitrogen calibration is performed twice per year. We have already used the very first sets of HAMSTRAD data recorded when the instrument was outdoor and indoor to assess its potentiality to sound the troposphere over DC, from the Planetary Boundary Layer (PBL) up to the tropopause, via the free troposphere. We have compared the HAMSTRAD measurements to several sets of measurements performed at the DC station or in its vicinity: meteorological radiosondings (RS), in situ PT100 and Humicap sondes along a 45-m high tower, meteorological sensor attached to the HAMSTRAD instrument, analyses from the European Centre for Medium-Range Weather Forecasts (ECMWF) and the spaceborne Infrared Atmospheric Sounding Interferometer (IASI) instrument.