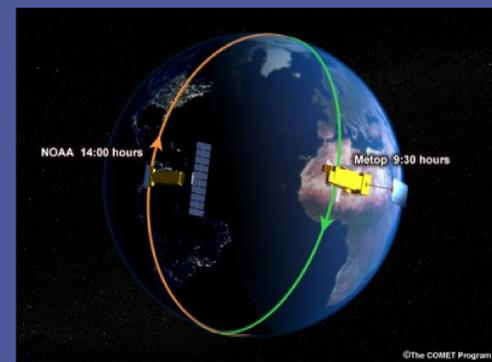


The Concordiasi project over Antarctica during IPY



Florence Rabier
A. Bouchard, V. Guidard, F. Karbou,
V.-H. Peuch, N. Semane
Météo-France/CNRS

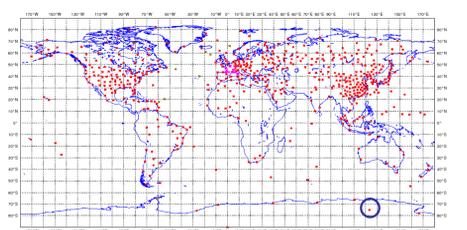
Ch. Genthon, G. Picard (LGGE)
F. Vial, A. Hertzog (LMD)
Ph. Cocquerez (CNES),
D. Parsons, D. Barker, J. Powers, T. Hock (NCAR)



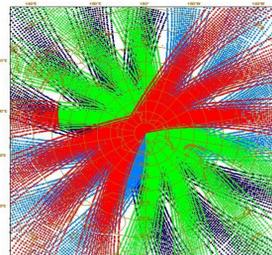
The Context

The Concordiasi Experiment
A joint French-US initiative
With International collaborations
BBelongs to the THORPEX-IPY
cluster (N° 121 in IPY)

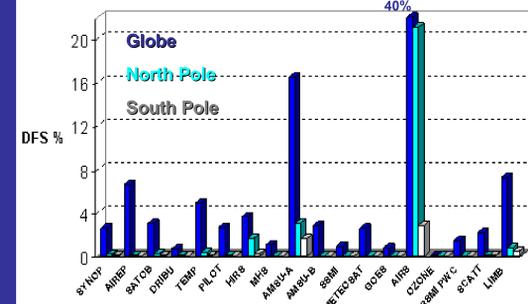
Scarcity of conventional data over the poles
Concordia: new French-Italian station in Antarctica



MetOp launch in October 2006.
Very good satellite data coverage over the polar areas



Large impact of satellite data over the polar areas



Courtesy ECMWF

Goal and Field campaign

Validate the assimilation of IASI and other
sounder data over Antarctica

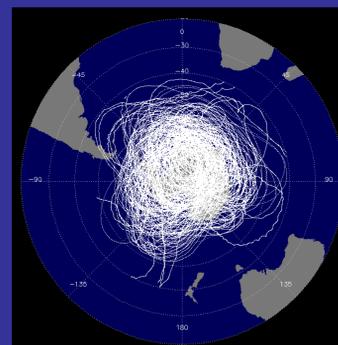
Field campaign in Sept-Nov 2008

- * Extra radiosoundings over Concordia
- * Driftsondes from CNES balloons
- * Extra stratospheric measurements (aerosols, gravity-wave activity, ozone) to better understand stratospheric clouds and chemistry processes.

Long-duration balloons drifting at 20kms from
CNES, driftsonde system from NCAR
Aiming for 10 to 12 balloons, 500 to 700 droppondes



Trajectories during previous Vorcore
campaign (2005)



Concordia: Ideally located to
validate analyses inland



Scientific plans

Issues for an optimal assimilation of IASI

- * Cloud detection
- * Bias correction

To better assimilate microwave
observations over snow-covered areas

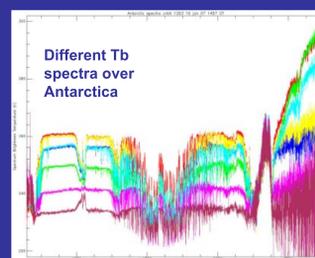
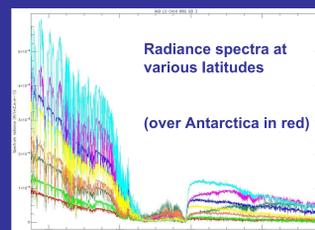
Work on microwave surface emissivity

- * Retrieval from data
- * Modelling using a snow model

Evaluate impact of improvements on
local forecasts, chemical-transport
models and lower latitudes.

IASI signal weaker over Antarctica

But signal clearly visible



Courtesy CNES

Temperature profiles very different from
other latitudes can cause problems

Clouds over very cold surfaces can often
appear warmer compared to the
underlying surface. This is the opposite
signal many cloud detection schemes are
looking for.

Similar difficulties to detect the possible
presence of Polar Stratospheric clouds

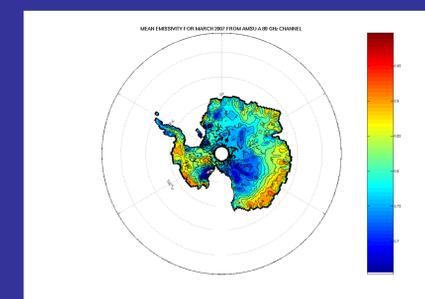
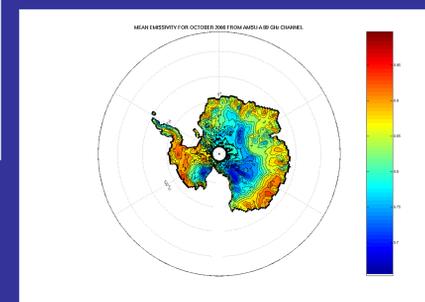
11 micron infrared image from MODIS

warm cloud

cold surface



Microwave emissivity highly variable in
space and time



<http://www.cnrm.meteo.fr/concordiasi/>

NCAR, U. Wyoming, Purdue U., UMBC/GMAO, LASP USA
CNES, IPEV, LGGE, LMD, Météo-France France
ENEA, PNRA, CNR Italy
ECMWF International
Bureau of Meteorology Research Centre Australia



METEO FRANCE
Toujours un temps d'avance