



GABLS4: a model intercomparison study in extremely stable conditions

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In polar regions and under stable stratifications, models presents large biases that are dependent upon the parametrizations used for the surface and boundary layers (Holtslag et al., 2013). The GABLS4 inter-comparison, launched in summer 2014, aims to study the diurnal cycles over the Antarctic Plateau, focussing on the boundary layer characteristics and the coupling with the surface in strong stability. For this, the observation site of Dome C on the Antarctic Plateau was chosen mainly for two reasons: the availability of the on-site measurements from a 45-m tower and a homogeneous surface with a low conductivity such as snow on a flat topography.

The inter-comparison will consist of 3 inter-comparisons : Single Column Model (SCM), Large Eddy Simulation (LES) and land-snow model (LSM). It is organized in two steps.

The first one is dedicated to the LSM and the SCM with an interactive surface (snow) scheme. Then, in the second one, the observed surface temperature will be prescribed in the SCM and in the LES models.

A large variability in surface fluxes was highlighted in all types of simulations with variations about 30W/m² during daytime and night-time which is about 100% of the ensemble mean value.

After a rapid overview of the setup, we will focus on the SCM results and how the results are sensitive to the surface characteristics and the vertical resolution.