



Monash Weather and Climate seminar series

SPECIAL SEMINAR: Monday 31st August

Atmospheric Boundary Layers, Weather and Climate

Bert Holtslag
(Wageningen University, NL)

In the presentation a motivation is given for atmospheric boundary layer research in the context of weather and climate modelling. In addition an overview is given of results achieved within the GEWEX Atmospheric Boundary study (GABLS). This program aims to improve the understanding and representation of the atmospheric boundary layer in weather-forecast and climate models on regional to global scales, which should also benefit atmospheric chemistry and earth system studies as well as the estimation of wind energy potential. The first study (GABLS1) covered a simplified case for a stable boundary layer with moderate geo-strophic forcing and prescribed surface temperature over ice, in which single column models were compared with an ensemble of Large Eddy Simulation models. The second single column model inter-comparison case (GABLS2) dealt with the diurnal cycle over land and is based on observations of CASES-99 using a prescribed surface temperature and simplified Geostrophic wind forcing. From this we learned that models in this set up produce very different results in all parameters and that they all differ substantially from the observations of CASES99.

The previous GABLS achievements and experiences led to the set up of the third inter-comparison case using data gathered by the Royal Netherlands Meteorological Institute (KNMI) at the Cabauw tower. The Cabauw site with its 200 m meteorological tower is situated in a flat environment dominated by grassland. On many nights a low level jet (LLJ) develops due to decoupling and inertial oscillation. The focus of GABLS3 is on how well models can deal with the representation of the diurnal cycle for surface fluxes and mean variables, as well as the development of a LLJ. Particular emphasis is given to the morning and evening transitions. As such a relatively ideal, baroclinic night (July 1, 2006) was selected from the multi-year data archive of Cabauw. Detailed dynamic forcings and surface conditions are prescribed on the basis of local observations. In the presentation, the setup and initial results of the GABLS3 intercomparison case for single column models. Overall it is found that models show significant deviations from the observations.

Seminars held in Room 345, Building 28, 1-2pm

All Welcome!

For more information, contact Laura Davies or Jo Brown
(room 215, 9902 0110)