



Using satellite data to constrain gravity wave drag parametrizations

H. Wells (1), S.B. Vosper (1), X. Yan (2), and N.F. Arnold (2)

(1) Met Office, Exeter, U.K. (helen.wells@metoffice.gov.uk), (2) Earth Observation Science Group, Space Research Centre, Department of Physics and Astronomy, University of Leicester, UK

For many years gravity wave drag parametrizations have been a necessary component of weather forecast and climate models. Historically these parametrizations have been relatively ill-constrained since observations (e.g. radiosonde/aircraft data) have been limited in terms of spatial and temporal coverage. However, recent advances in the spatial resolution of satellite data have now made global validation of these gravity wave drag schemes possible. Here we compare gravity wave signatures seen in HIRDLS (High Resolution Dynamics Limb Sounder) temperature data with those predicted by the orographic gravity wave drag parametrization in the Met Office global forecast model (the Unified Model).

We focus our analysis on a region over the southern Andes, where orographic gravity waves are particularly dominant, and perform some high resolution Unified Model simulations of some large amplitude wave cases (identified from the HIRDLS data) which fully resolve the gravity wave motion. The simulations are used to better understand the reasons for some of the differences between the parametrization and the satellite observations.