

Recent progress in the assimilation of GPSRO at the Met Office

*Michael P. Rennie
Met Office, UK*

The status on the operational assimilation of GPSRO at the Met Office will be presented. Forecast impact experiment comparisons are made between GPSRO bending angle and refractivity data assimilation, using 1D observation operators, when assimilating all available GPSRO data (COSMIC, GRAS and GRACE-A) in the Met Office global model assimilation system. Some problems with the bending angle forward model were encountered in the tangent-linear approximation in cases where the background forecast approached super-refraction; however rejecting the observation data in such cases resolved the problem. Bending angle is shown to provide a generally small, but reproducible positive impact relative to refractivity assimilation; hence we aim to switch to assimilate bending angle in operations at the Met Office.

Various monitoring results will be presented, including monitoring of GPSRO refractivity against radiosondes, by forward modelling radiosonde temperature, dew point and pressure to refractivity as a function of geopotential height. This has provided some insight into the various biases of differing radiosondes, GPSRO processing techniques and the Met Office model biases.