

## **Stratospheric Data Assimilation at the Met Office**

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### **Brief Abstract:**

Since 1991 daily stratospheric analyses have been produced at the Met Office using a data assimilation system based on a low resolution configuration of the Unified Model that extends from the surface to the lower mesosphere. The stratospheric analyses are currently produced using a 3D variational data assimilation scheme that includes the assimilation of radiances from ATOVS and AIRS satellite instruments.

One major focus of current work is the development of an ozone assimilation scheme. Ozone observations from HIRS, SBUV and Envisat have been assimilated. Here, the sensitivity of the ozone analyses to the specification of ozone background error covariances is investigated, and the impact of the interaction between analysed ozone and radiative heating on temperature analyses and forecasts is also presented.

Another important area of current work is the development of a model with 60 levels extending to about 84 km, around 20 km higher than the upper boundary of the current, 50 level, model. This change may improve temperature analyses near the stratopause, where currently there is a large warm bias. This in turn may lead to better use of satellite soundings and potential improvements in analyses at lower levels. Background error covariances for the 60 level model were calculated using the Canadian Quick Covariance method (Rochon et al), and their performance is compared to that of the current operational covariances, which are calculated using the NMC method.