
MMM **SEMINAR** *NCAR*

Recent Advances in Satellite Data Assimilation at The Met Office

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In the last 3 years advances in satellite data assimilation have resulted in significant improvements to the accuracy of operational Met Office forecasts both at global and regional scales. This talk will summarise these changes which include assimilating data from new instruments, improvements to the assumed observation errors, optimised thinning procedures, more accurate observation operators and improved pre-processing of the data. Headline verification results show that each of these incremental changes results in a small benefit to forecast accuracy but when they are put together as a package the improvements are significant.

One such change which had a reasonably large impact was the introduction of the treatment of correlated observation errors for IASI. The observation errors are diagnosed using a posteriori methods, the diagnosed matrix is then adjusted to make it suitable for use and then passed to the assimilation scheme. The use of correlated errors allows the data to be given adaptive weights depending on the inter-channel structure of the first guess departures. Generally more weight is given to the observations which means the data is being used more effectively. Results from assimilation trials which show that this change leads to improved forecast accuracy will be shown.

Another recent change is the introduction of the assimilation of IASI data into the UKV, the operational convective scale model which is run at the Met Office to provide high resolution short-range forecasts over the UK and surrounding area. The assimilation of this data results in small but consistent improvements to short-range surface temperature and precipitation forecasts.

Future work will include the implementation of a variational bias correction scheme, use of reconstructed radiances derived from principal components, use of data from the Chinese FY-3 series of satellites, and better use of radiances over different surface types and in cloudy conditions. As a first step in researching the use of IR radiances in cloudy conditions a simple Ensemble Kalman Filter cloud analysis scheme has been developed and initial results from this system will be shown.

*This seminar will be webcast live at:
<http://www.fin.ucar.edu/it/mms/fl-live.htm>*

*Recorded seminar link can be viewed here:
<https://www.mmm.ucar.edu/events/seminars>*

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Refreshments 3:15 PM

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