



Operational assimilation of dust optical depth

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Mineral (desert) dust has a large effect on radiation and visibility in certain regions and has impacts on human health and safety and aviation. Dust has been included in the operational Met Office global forecast model for almost two years - but without any assimilation. Various trials have been performed assimilating Aerosol Optical Depth (AOD) retrievals from the SEVIRI instrument on Meteosat Second Generation (MSG) and/or the MODIS instrument on the Aqua satellite. Currently (April 2013) final testing of a package of changes is underway and the dust assimilation should be operational very soon. This involves 4D-Var assimilation of MODIS retrievals over land areas where dust is expected to be the primary aerosol (in some areas discrimination of dust and other aerosol is problematic). Overall the results show an improved short range fit to satellite AOD and to the sparse AERONET network. By day five of the forecast the benefit has largely disappeared, this is expected given the relatively short residence time of dust in the atmosphere. The results and future development options will be discussed.