



The MACC data assimilation system for chemically reactive gases

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A data assimilation system for chemically reactive gases was developed at the European Centre for Medium-Range Weather Forecasts (ECMWF) for the FP6 funded "Global and regional Earth-system Monitoring using Satellite and in-situ data" (GEMS) project. This system is now used in a pre-operational way in the FP7 funded MACC (Monitoring Atmospheric Composition and Climate) project to provide near real time analyses and retrospect reanalyses of atmospheric composition. Here, we describe the assimilation system for the reactive gases ozone, carbon monoxide, nitrogen oxides, formaldehyde and sulphur dioxide that is used in MACC. We describe the background error statistics and bias correction scheme, and show examples of the assimilation of the five species from various satellite sensors.