



Validation of reactive gases and aerosols in the MACC global analysis and forecast system

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The European MACC (Monitoring Atmospheric Composition and Climate) project is building the pre-operational Atmosphere Monitoring Service of the European Copernicus Programme. In this project data assimilation techniques are applied to combine in-situ and remote sensing observations with global and European-scale models of atmospheric reactive gases, aerosols and greenhouse gases. The global component is based on the Integrated Forecast System of the ECMWF. This global service has a dedicated validation activity to document the quality of the atmospheric composition products. In our contribution we discuss the validation approach as has been developed over the past years during MACC-II and MACC-III, including the validation requirements, the operational aspects, the upgrade procedure, the validation reports and scoring methods, the measurement data sets, and the model configurations and assimilation systems validated. Of special concern are the forecasts of high pollution concentration events. A brief summary is provided of the validation results for the MACC daily global analysis and forecasts.