

**The Monitoring Atmospheric Composition and Climate project**

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The goal of the MACC (Monitoring Atmospheric Composition and Climate) project is to operate and improve data-analysis and modeling systems for a range of atmospheric constituents. MACC provides data records on atmospheric composition for recent years, data for monitoring present conditions and forecasts of the distribution of key constituents for a few days ahead. MACC combines state-of-the-art atmospheric modeling with Earth observation data to monitor the global distributions and long-range transport of greenhouse gases such as carbon dioxide and methane, aerosols that result from both natural processes and human activities, and reactive gases in both the troposphere and the stratosphere. It evaluates how these constituents influence climate and estimates their sources and sinks. MACC also provides regional air quality forecasts for Europe and retrospective assessments of air quality. MACC is funded by the European Union and provides the pre-operational atmospheric environmental service of the European Global Monitoring for Environment and Security (GMES). This service complements the weather analysis and forecasting services provided by European and national organizations by addressing the composition of the atmosphere. We will describe the components of the project, the products currently delivered within MACC, and how the scientific community can have access to these products. We will discuss the results of evaluation of the products, such as the emissions resulting from anthropogenic and biomass burning sources, and the global distribution of different species such as aerosols, carbon monoxide, nitrogen dioxide and ozone from both forecasting and reanalysis products. We will also discuss the assessment of the air quality products for Europe, i.e. 3-day air quality forecasts from an ensemble of models, and re-analysed air pollutant concentration fields.