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# Employing State of the Art Model Ensembles for Impact Assessment of Air Pollution

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**Abstract:** Current annual global estimates of premature deaths from poor air quality are estimated in the range of 2.6-4.4 million, and 2050 projections are expected to double against 2010 levels. In Europe, annual economic burdens are estimated at around 750 bn €. Climate change will further exacerbate air pollution burdens; therefore, a better understanding of the economic impacts on human societies has become an area of intense investigation. European research efforts on the integration of Earth Observation data within modelling frameworks have been carried out within the Monitoring Atmospheric Composition & Climate (MACC) project series, running from 2005 till 2015. The outcome of this work has been integrated into a European capacity for Earth Observation, the Copernicus Atmospheric Monitoring Service (CAMS). The operational services of CAMS at the European scale contain seven chemical transport models as well as their ensemble results, where key pollutant concentrations are computed at a 10x10km<sup>2</sup> scale with meteorology driven by state of the art ECMWF weather forecasting. The project GLANCE (calculatinG heaLth impActs of atmospheric pollutioN in a Changing climatE) aims at exploiting this wealth of data by developing an integrated assessment model for calculating the health impacts and damage costs of air pollution at different physical scales. Based on the CAMS model ensemble, additional downscaling is applied using in-situ network measurements, which also allows to assess regional biases. Population weighted pollution concentrations are employed to assess the health impacts of air pollution on country and European scale as well as their economic burdens. First results first results for the years 2007 - 2012 will be presented and compared to previous assessments.

**Keywords:** air quality; health impacts; economics valuation