



Integrated greenhouse gas monitoring system for Germany

Andrea K. Kaiser-Weiss (1), Buhalqem Mamtimin (1), and Christian Plass-Dülmer (2)

(1) Deutscher Wetterdienst (DWD), Climate Monitoring, Offenbach, Germany (andrea.kaiser-weiss@dwd.de), (2) Deutscher Wetterdienst (DWD), Meteorologisches Observatorium Hohenpeissenberg, Germany

Climate change is calling for a responsible management of greenhouse gas (GHG) emissions. The respective international agreements and national GHG reduction measures are based on standardized national emission reports which are informed by economic data and emission modelling. Within the Integrated Global Greenhouse Gas Information System (IG3IS) it is outlined how independent science, based on atmospheric monitoring, can help to improve the general knowledge about the GHG budgets and can demonstrate the effectiveness of GHG reduction measures. Here we show how IG3IS can put into practice for Germany by employing the numerical weather prediction model ICON of the German weather service DWD, with the Copernicus atmospheric monitoring service CAMS as boundary condition. We make use of atmospheric concentration measurements of CH₄, CO₂, N₂O performed operationally at ICOS towers, as well as column information inferred from remote sensing, preparing for future satellites, and incorporate GHG sources and sinks modelling. The challenge is to combine efforts from different branches of atmospheric sciences into an operational service (Integrated greenhouse gas monitoring system for Germany) to assist economic sectors, e.g., industry, traffic and agriculture, to manage their GHG emissions in Germany.