Geophysical Research Abstracts
Vol. 19, EGU2017-7352, 2017
EGU General Assembly 2017

JADDS – towards a tailored global atmospheric composition data service for CAMS forecasts and reanalysis

Olaf Stein (1), Martin G. Schultz (2), Michael Rambadt (1), Rajveer Saini (1), Lars Hoffmann (1), and Daniel Mallmann (1)

(1) Forschungszentrum Jülich GmbH, JSC, Jülich, Germany (o.stein@fz-juelich.de), (2) Forschungszentrum Jülich GmbH, IEK-8, Jülich, Germany

Global model data of atmospheric composition produced by the Copernicus Atmospheric Monitoring Service (CAMS) is collected since 2010 at FZ Jülich and serves as boundary condition for use by Regional Air Quality (RAQ) modellers world-wide. RAQ models need time-resolved meteorological as well as chemical lateral boundary conditions for their individual model domains. While the meteorological data usually come from well-established global forecast systems, the chemical boundary conditions are not always well defined. In the past, many models used 'climatic' boundary conditions for the tracer concentrations, which can lead to significant concentration biases, particularly for tracers with longer lifetimes which can be transported over long distances (e.g. over the whole northern hemisphere) with the mean wind. The Copernicus approach utilizes extensive near-realtime data assimilation of atmospheric composition data observed from space which gives additional reliability to the global modelling data and is well received by the RAQ communities.
An existing Web Coverage Service (WCS) for sharing these individually tailored model results is currently being re-engineered to make use of a modern, scalable database technology in order to improve performance, enhance flexibility, and allow the operation of catalogue services. The new Jülich Atmospheric Data Distributions Server (JADDS) adheres to the Web Coverage Service WCS2.0 standard as defined by the Open Geospatial Consortium OGC. This enables the user groups to flexibly define datasets they need by selecting a subset of chemical species or restricting geographical boundaries or the length of the time series. The data is made available in the form of different catalogues stored locally on our server. In addition, the Jülich OWS Interface (JOIN) provides interoperable web services allowing for easy download and visualization of datasets delivered from WCS servers via the internet.
We will present the prototype JADDS server and address the major issues identified when relocating large four-dimensional datasets into a RASDAMAN raster array database. So far the RASDAMAN support for data available in netCDF format is limited with respect to metadata related to variables and axes. For community-wide accepted solutions, selected data coverages shall result in downloadable netCDF files including metadata complying with the netCDF CF Metadata Conventions standard (http://cfconventions.org/). This can be achieved by adding custom metadata elements for RASDAMAN bands (model levels) on data ingestion. Furthermore, an optimization strategy for ingestion of several TB of 4D model output data will be outlined.