



## **Linking atmospheric composition data across data types and national boundaries**

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The field of atmospheric composition research involves the management of data sources from various disciplines such as meteorology, chemistry, (radiation) physics, emission inventories, etc. The output from global and regional chemistry climate models, chemistry transport models, and air quality models presents considerable challenges due to the manifold variables of interest and the multitude of diagnostics needed in order to interpret the results. Furthermore, many observations of atmospheric composition exist from different platforms involving different geometries, time resolutions, size spectra, etc. Due to the fact that few observation networks are globally coordinated, various representations of data formats and metadata definitions exist. For example, there is no unique agreement on chemical species names and in many networks, national languages are used to document the data. We will present a summary of the issues involving global interoperability of atmospheric composition data including the aspects of data volume, data complexity and metadata standardisation, and we will demonstrate various activities carried out in Jülich and internationally to overcome these challenges. Specifically, we will describe the current implementation and plans for the Copernicus Atmosphere Monitoring Service boundary condition service (<http://ows-server.iek.fz-juelich.de>), the design of the JOIN web interface (<https://join.fz-juelich.de>), and the activities for building an ontology of atmospheric composition vocabulary (<https://ontology.geodab.eu/>).