Atmospheric Mission Data Packaging (AMiDA)

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The scientific and industrial communities are handling continuously increasing amounts of data from Earth Observation (EO) satellite missions and related instruments. This is in particular the case for the atmospheric sciences communities, with the recently launched Copernicus Sentinel-5 Precursor, the upcoming Sentinel-4, -5, and ESA's Earth Explorers scientific satellites ADM-Aeolus and EarthCARE, but also heritage missions such as ENVISAT, MetOp and OMI Aura. However, the challenge is not only to manage the large volume of data generated by each mission / sensor, but also to manage the data variety. Tools are needed to be able to rapidly and trustfully identify, from all available datasets of a specific region for a specific timeframe, all available products for a selected field (e.g. ozone, trace gases) and prepare these data into a format that is ready to be extracted and used /analyzed (Analysis-Ready Data, ARD). Exploiting potential synergies to maximise the use of data from various sources will be key to harness the full potential of the available information. In summary, there is a need of an “intelligent” packaging of subsets of the available data tailored to the users’ needs.

The scope of the “Atmospheric Mission Data Packaging” (AMiDA) project is to design, implement, and demonstrate the functionalities of an infrastructure for access and distribution of a wide variety of EO data in the field of atmospheric sciences: heritage, current, and future missions will be managed by the platform, to allow the users accessing, visualizing, and downloading a meaningful subset of this growing data stream.

AMiDA (https://amida.adamplatform.eu/en/) makes use of the baseline functionalities provided by the TOP platform (http://top-platform.eu/) that already allows accessing and manipulating a large variety of satellite, model, and non-satellite remotely sensed data. TOP is empowered with spatial and temporal homogenization and packaging capabilities to create, from heterogeneous data sources (e.g., \textsuperscript{SO}_2 total column data from different satellites and numerical models) a single data structure (local data cube) for simultaneous exploitation of various data sources. The data cube can be exploited through the TOP tools (web application, Jupyter notebook and APIs) and
A comprehensive demonstration campaign will be performed through five main use cases to demonstrate the capability of AMiDA.

AMiDA is currently in its final development phase, thus the scope of the contribution is to present the initiative, preliminary results, and stimulate the discussion with potential users, analyzing their needs and see if and how they can use AMiDA to facilitate their everyday professional life.