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Strategy of quality assessment of satellite data from atmospheric sensors in the ESA's Earthnet Data Assessment Pilot Project

Alessandro Piro (1), Stefano Casadio (1), Clement Albinet (2), Angelika Dehn (2), Philippe Goryl (2), and Rubinder Mannan (3)

(1) SERCO ITALIA SPA, EARTH OBSERVATION, Italy (alessandro.piro@serco.com), (2) ESA (European Space Agency), (3) Telespazio-Vega

The ESA Earthnet Programme provides the framework for integrating non-ESA missions (Third Party Mission) in the overall ESA Earth Observation (EO) strategy, allowing data access and supporting the development of new research and applications. The space panorama and in particular the EO sector is very dynamically evolving thanks to the active role of new and competitive space actors. The proposed new missions seem to be very interesting and promising in terms of performances and data. In this scenario, ESA is covering the role to assess the quality and the suitability of these missions

This work presents the strategy of the quality assessment adopted for the Atmospheric missions: the proposed approach has been defined considering the variety and complexity of potential atmospheric domain activities. For atmospheric sensors, the nature and potential variety of products makes it difficult to define a single set of Fiducial Reference Measurements (FRM) or 'test-sites' for all missions, as spatial resolution and parameters play a strong role. Where possible, FRM consistent methods and stations, are used or direct comparisons between similar missions are adopted. The added value is the proposed use of the Maturity Matrix concept as an effective driver in all steps of the quality assessment.

The mission evaluation and the overall data quality assessment process are focused on the following production steps for the specific satellite data:

1) Calibration of the instrument and Level 1 quality (procedures and results);
2) Implemented Level 2 algorithms, including strengths and limitations of the adopted scientific approach;
3) Data availability, formatting and content (including physical units and naming for the selected parameters);
4) Validation procedures and results, including adopted protocols;
5) Fitness for purpose of the mission of interest.