

Abstract of Contribution 166**ID: 166****Abstract Submission for ACVE 2016****No preference***Topics:* Methods and instruments for validation, Air Quality, GHG*Keywords:* Copernicus, atmospheric Sentinels, Ozone, UV surface radiation, data synergy**Aurora Project: Simulation And Validation Of Synergistic Products From Sentinel-4 And Sentinel-5(p)****Ugo Cortesi¹, Arno Keppens², Jean-Christopher Lambert², Antti Arola³, William Wandji³, Samuele Del Bianco¹, Marco Gai¹, Rossana Dragani⁴, Ronald van der A⁵, Marco Morelli⁶, Marc Bonazountas⁷, André Bos⁸, Koen Verberne⁹**

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AURORA (Advanced Ultraviolet Radiation and Ozone Retrieval for Applications) is a three-year project supported by the European Union in the frame of its H2020 Call (EO-2-2015) for "Stimulating wider research use of Copernicus Sentinel Data". The overarching objective of AURORA is to simulate the provision of synergistic data products, having unprecedented accuracy, for the vertical profile of atmospheric ozone and to assess their quality with respect to the one expected for the operational products of the geostationary mission Sentinel-4 and of the Low Earth Orbit missions Sentinel-5p and Sentinel-5. The project data cover the lower layers of the atmosphere over Europe, North Africa and the Middle East, where ozone acts as a pollutant and as a greenhouse gas.

This work provides a brief overview of the project, highlighting its first priority scientific and technological objectives, along with the envisaged impact strongly oriented towards pre-market activities and applications. The main scientific purpose of AURORA is to investigate the potential of synergistic exploitation of complementary measurements of ozone acquired in different spectral regions – from the UV to the visible to the thermal infrared - through the assimilation of fused GEO and LEO ozone profile products resulting from application of the innovative method of complete data fusion. A technological infrastructure, based on virtual machines, cloud data sharing, a geo-database, and web-services for data access, will be developed to implement the full AURORA data processing chain. This infrastructure represents a best practice that plays a key role in ensuring the wider use of Copernicus Sentinel data for academia and industry. Such broad combination will stimulate the development of innovative downstream applications with high commercial potential, mainly exploiting derived tropospheric ozone and UV radiation data.

A pivotal role in the AURORA project will be played by QA/validation activities, which are elucidated secondly: Before being used in operational applications, the fitness-for-purpose of the AURORA ozone profile, tropospheric ozone, and UV radiation data products must be warily verified and documented by means of in-depth QA/validation studies. To that purpose, an extensive ozone product validation system has been developed on the heritage of various validation activities. The end-to-end approach of this system combines data content studies, information content studies, information-content based co-location procedures, and data harmonization, to conclude with the more traditional data comparisons with respect to reference measurements acquired by ground-based networks of ozonesonde and lidar stations (NDACC, SHADOZ, WMO GAW). The validation of surface UV on the other hand has been well established during almost two decades of satellite-based UV product quality assessment. The validation requires the use of ground-based spectral measurements, which are of better quality than the more widely used broadband instruments. There are several databases available for this activity, e.g. EUVDB hosted by FMI and NSF's UV Network. These spectral data form the backbone for the UV radiation validation, while the broadband data from FMI's COST UV Index Database are also considered.

The status and future evolution of AURORA can be followed on the official web site of the project at <http://www.aurora-copernicus.eu/>.