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The H2020 AURORA project: Advanced Ultraviolet Radiation and Ozone Retrieval for Applications

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AURORA is a three years project supported by the European Union after evaluation of the proposal submitted in response to the call EO-2-2015 “Stimulating wider research use of Copernicus Sentinel Data” of the sub-programme Space in the frame of the Horizon 2020 framework programme.

The primary goal of AURORA is to exploit the complementary measurement capabilities of the instruments on board the Sentinel-4 and Sentinel-5 missions of Copernicus, operating on Low Earth Orbit (LEO) and on Geostationary Orbit (GEO) respectively, for near real-time monitoring of the ozone vertical profile with unprecedented accuracy. All the activities of the project will be conducted by using simulated data of Sentinel-4 and Sentinel-5.

Innovative scientific approaches and technological solutions will be applied to derive a unique geophysical product from the operational ozone data from independent datasets simultaneously acquired by observing the same air masses in different spectral regions and viewing geometries.

New data fusion techniques will combine the information associated to ozone products retrieved from the LEO simulated measurements in different spectral regions, as well as to the ones from the GEO simulated data. These fused ozone products will be further exploited within state-of-the-art data assimilation systems to produce global ozone analyses and short-term ozone forecasts.

Tropospheric ozone and UV radiation reaching the Earth’s surface will be also derived from the global ozone analyses and forecasts. These additional products could potentially be exploited in a variety of downstream applications. Two applications for UV dosimetry, and air quality prediction and monitoring in major cities and at regional scale are envisaged and will be developed within the project as demonstration of the potential usage of the AURORA products.

Furthermore, a dedicated technological infrastructure, exploiting virtual machine and cloud data sharing, will be created to implement the data processing chain, and to guarantee the most user-friendly access to the output products.