



ESA's Preparatory Activities for the Atmospheric Copernicus Sentinel Missions

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The European Copernicus (formerly GMES) programme includes 2 series of space instruments observing atmospheric composition: the Sentinel-4 mission will monitor regional air quality, in particular including its diurnal variation, from geostationary orbit using a UV-visible-near IR spectrometer (UVN), complemented by a thermal IR spectrometer and an imager; the Sentinel-5 mission will observe atmospheric composition in support of global air quality, climate assessments, stratospheric ozone and surface UV applications, exploiting a UV-visible-near IR-shortwave IR spectrometer (UVNS), in conjunction with a thermal IR spectrometer, a multispectral imager and a polarisation imager, from low Earth orbit. The dedicated Copernicus instruments UVN and UVNS will fly on Eumetsat's new meteorological platforms MTG-S and Metop-SG, allowing for synergistic exploitation of data from the co-flying spectrometers and imagers. To bridge the data gap with Envisat and EOS-Aura, Sentinel-5 will be preceded by a slightly simplified instrument ("Sentinel-5 precursor" S-5p), flying on a dedicated satellite in loose formation with NASA's Suomi-NPP.

Sentinel-4 and -5p are currently in the development phase; in parallel the ground segment algorithms and processors are being shaped. The algorithms for S-5p Level 2 products have been reviewed. Preparations for S-5p calibration and validation are starting, including an open call for proposals and some campaign activities. The S-4 Level 2 prototype development is being prepared. Science studies on aerosol profile and surface albedo retrieval are on-going, as well as an OSSE activity. Sentinel-5 is just starting the detailed design phase, and the observation requirements are being consolidated and finalised. Other scientific studies on S-5 performance assessment and synergies are planned.

This paper will provide an overview of the main characteristics and status of the atmospheric Sentinel missions and the on-going scientific preparatory activities.