Geophysical Research Abstracts
Vol. 20, EGU2018-16787, 2018
EGU General Assembly 2018

Operational cloud products from Sentinel-5 Precursor

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Accurate trace gas and aerosol retrievals for the atmospheric composition Sentinel missions requires a precise knowledge of cloud properties in the UV/VIS/NIR/SWIR spectral region.
Furthermore, cloud information from spectrometers, such as TROPOMI/S5P, is complementary to the information retrieved using sensors operating in the thermal IR.
In this work we present the operational cloud products (cloud fraction, cloud optical depth, and cloud-top height) from the Sentinel-5 Precursor mission and their initial validation using satellite and ground-based data.
The cloud products are generated using the latest version of the OCRA (Optical Cloud Recognition Algorithm) and ROCINN (Retrieval of Cloud Information using Neural Networks) algorithms that have been successfully applied to the operational processing of GOME/ERS-2 and GOME-2 MetOp-A/B data.
The ROCINN algorithm retrieves cloud height, cloud optical thickness and cloud albedo from NIR measurements in and around the oxygen A-band ($\sim$760nm) taking as input the cloud fraction computed with the OCRA algorithm based on a broad-band UV/VIS color space approach. Two approaches which treat the clouds differently are implemented to the ROCINN algorithm. The first approach called Clouds-as-Reflecting-Boundaries (CRB) assume that the cloud is a reflecting surface whereas the second and more realistic model called Clouds-as-Layers (CAL) represents the cloud as a homogeneous cluster of scattering spherical particles.