Geophysical Research Abstracts
Vol. 21, EGU2019-8646, 2019
EGU General Assembly 2019

Validation of the Absorbing Aerosol Height product from GOME-2 using CALIOP data

Veerle De Bock (1), Irene Pardo Cantos (2), Quentin Laffineur (1), Alexander Mangold (1), Gijsbert Tilstra (3), Olaf Tuinder (3), Andy Delcloo (1,4)

(1) Royal Meteorological Institute, observations department, Uccle, Belgium , (2) Université de Liège, Groupe d'Astrophysique des Hautes Energies Dept A.G.O. - UR STAR, Liège, Belgium, (3) Koninklijk Nederlands Meteorologisch Instituut, De Bilt, The Netherlands, (4) Ghent University, Department of Physics and Astronomy, Ghent, Belgium

In the framework of aviation safety, it is important to have accurate knowledge about the height of volcanic ash layers in the atmosphere as flying through ash clouds can severely damage airplanes. Ash particles can be transported over large distances away from their source, so global monitoring is essential. Polar satellites such as the MetOp series offer the advantage of (near) global and daily coverage and instruments such as GOME-2 have already been used for aerosol detection.

The Absorbing Aerosol Height (AAH) is a new product for aerosol detection, developed by KNMI (Koninklijk Nederlands Meteorologisch Instituut) which uses the Absorbing Aerosol Index (AAI) (developed within the ACSAF, Tilstra et al. 2010). Part of the AAH algorithm code that derives the actual height of the absorbing aerosol layer using the O_2-A band is derived from the FRESCO (Fast Retrieval Scheme for Cloud Observables) cloud information algorithm (Wang et al. 2008).

For the validation of the AAH product, data from the CALIOP lidar instrument on-board the CALIPSO satellite is used. CALIOP can provide the height of one or more layers of cloud and/or aerosol particles in the troposphere and stratosphere and is able to distinguish between different aerosol types (such as marine aerosol, smoke, dust aerosol, volcanic ash, ...). It is an active instrument, so measurements can be performed on the day and night side of the Earth.

Previous validation attempts between GOME-2 and CALIOP were based on a qualitative comparison of CALIOP vertical profile images with GOME-2 AAH maps. Here we will present a new quantitative validation method where the extracted height from the different aerosol layers from CALIOP is compared to the AAH from GOME-2. The results from different case studies representing major volcanic eruptions will be presented. The biggest challenge of the validation is to find collocations both in time and space for both instruments.