



AC SAF Open Call for proposals: Visiting/Associated Scientist Activity on AC SAF GOME-2 Level 3 product validation

Research Fields: Atmospheric chemistry, atmospheric monitoring

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Background of AC SAF:

Satellite Application Facilities (SAFs) are dedicated centres of excellence for processing satellite data and form an integral part of the distributed EUMETSAT Application Ground Segment. AC SAF consortium members develop radiative transfer calculation methods and other algorithms for creating atmospheric remote sensing data from polar-orbiting satellites Metop-A, Metop-B and Metop-C with its GOME-2 and IASI sensors. We also validate the data products and provide associated dissemination and user services.

AC SAF produces near real-time data products including total ozone, minor trace gas total columns (NO₂, SO₂, HCHO), tropospheric NO₂, high-resolution ozone profiles, absorbing aerosol index, absorbing aerosol height and solar noon UV index.

Data is also archived for later access. This offline data includes total and tropospheric ozone, minor trace gas total columns (NO₂, SO₂, BrO, HCHO, H₂O, OCIO, CO), tropospheric O₃ and NO₂, high-resolution ozone profiles, absorbing aerosol index, absorbing aerosol height and surface UV variables.

The present development has focused on developing global daily and monthly gridded products (Level 3) based on the orbital products disseminated in Near Real Time. This open call gives an opportunity to participate into this validation work in preparation for the product releases.

The QA4EO QA4EO (<http://qa4eo.org/>) Quality Assurance framework for Earth Observation applicable in its principles to any EO data set requires that all data and derived products have associated with them a set of traceable Quality Indicators enabling users to readily evaluate the fitness-for-purpose of the data (<http://qa4eo.org/>). Several Quality Indicators can be determined through validation, which is the process of assessing, by independent means, the quality of the data products. Classically, the validation of geophysical data involves comparisons with independent correlative measurements, preferably from quality-controlled ground-based instruments mimicking the satellite measurement, completed by a careful selection of validated satellite data to extend ground-based validation to the global domain and detect features not accessible by point-like observations.

Work description:

The Level 2 data products, like NRT data which is delivered in Product Data Units (about 3 minutes of data) and offline data which is delivered as orbits around Earth have already been validated during the relevant review processes before the release of the products. However, the L3 data products, that are under development and are based on those L2 products, should be validated before the final review can be taken in later 2021. The Level 3 products are in the form of daily and monthly global grids / maps in the NetCDF data format. The available data cover the period 2007-2020. The products that should be validated are the following:

- Gridded Level-3 daily NO₂, tropospheric NO₂, SO₂, BrO, HCHO and H₂O columns
- Gridded Level-3 monthly NO₂, tropospheric NO₂, SO₂, BrO, HCHO and H₂O columns

All of these products are available using observations from the GOME-2 A (2007-2020), B (2012-2020) and C (2019-2020) instruments.

The validation may be done using ground-based data and/or with other satellite data and with comparison to L2 data. The purpose of the validation is to estimate the quality of the data and provide statistics of relevant quality indicators like bias, RMS and possible trends in those.

Due to the corona situation, it is expected that the scientist(s) will work in his/her own institute. Thus, this will be recognized as Associated Scientist (AS) project. The work may be done one single scientist or group of scientists and this should be defined in the proposal.

The work should be finished and the validation report ready before the end of December 2021.

Financial compensation:

Due to the ongoing covid-19 situation, the work shall be done in the premises of the scientist(s) home institute and thus, will be considered as EUMETSAT Associated Scientist activity (AS).

The relevant home institute shall receive a compensation following the EUMETSAT AS rules.

The total cost of the activity will depend by the work plan proposed by the attender and it cannot exceed 55 000 €.

What we are looking for

We are seeking a candidate with knowledge on atmospheric constituents and expertise in product validation. Evidence of published research in these areas will be a plus.

The candidate should be able to work with the NetCDF data, have knowledge on L3 validation and access to external validation data sources. The candidate should be able to write a validation report as the final outcome of the work. The work will be done in close co-operation with the institutes developing the products and with the AC SAF project management.

It would be best if all of the identified products can be validated under the selected proposal. However, if this is not possible, you should specify which products are covered in your proposal.

The candidate must have good-quality written and oral communication skills in English.

Conditions of international mobility of researchers: If the international travel restrictions due to COVID-19 are lifted and travel of scientists is considered reasonable again, then Scientist are encouraged to consider visits to the relevant AC SAF institutes. This should be taken into account in the proposal and its budget. For this kind of visits, the travel costs and EUMETSAT daily allowance are available.

The proposal should include the following items (in an PDF document):

- Proposal for the validation work including:
 - Description of the validation methods and reference data.
 - Description of the external data sources
 - Proposed schedule
- Requested financial compensation including possible travel to AC SAF institute(s)
- CV of the candidate (if a small team, CV of all of the candidates)

Applications has to be sent using the helpdesk@acsaf.org e-mail address by 19 March 2021.

The selection process will be ready before 31 March 2021 and the outcome will be communicated to the applicants immediately. The work may be started as soon as the contract is accepted and signed by both parties.

The work will give a great possibility to work with the product developers and you will get insight to GOME-2 Level-3 data. If the travel restrictions are removed, there will be a possibility to visit in DLR which is one of the AC SAF entities.