

## AC SAF NEWS BULLETIN 1/2023

*Latest news from EUMETSAT AC SAF for registered users.*

### Latest AC SAF product release:

**GOME-2 Level 3 daily and monthly products released on 21 April 2023.** This release included a group of atmospheric daily and monthly trace gas column products: total O<sub>3</sub>, total BrO, total NO<sub>2</sub>, tropospheric NO<sub>2</sub>, total HCHO, total SO<sub>2</sub>, and total H<sub>2</sub>O (TCWV). Data is available from DLR's AC SAF FTP server, see access instructions here:

[https://acsaf.org/offline\\_access.php](https://acsaf.org/offline_access.php).

Product info can be found at [https://acsaf.org/products/gome-2\\_level-3\\_monthly.php](https://acsaf.org/products/gome-2_level-3_monthly.php) and [https://acsaf.org/products/gome-2\\_level-3\\_daily.php](https://acsaf.org/products/gome-2_level-3_daily.php). With questions, contact AC SAF helpdesk.

### Demonstrational DLER product available:

Demonstrational Directional Lambertian-equivalent reflectivity product (v4.0) is available for interested users. The data amount compared to earlier official version is 1.8 times more leading to better accuracy. See more from: [https://acsaf.org/datarecords/ler\\_demo.php](https://acsaf.org/datarecords/ler_demo.php)

Demonstrational status means that the product is available to the users but it hasn't officially reviewed nor released and thus, the documentation and/or the full validation results may be missing. The user feedback, comments and evaluations **are highly appreciated** during the demonstrational period and that information will be used either in the further development of the product or directly in the final review and release processes if the product is mature enough from user point of view.

### Upcoming AC SAF product release:

**IASI Level 3 CO CDR and ICDR.** This release is planned for Q3 2023. It includes Climate data record (CDR) and Interim climate data record (ICDR) of monthly gridded IASI Level 3 CO. Data will be available via AC SAF FMI archive (<https://safserver.fmi.fi/>).

The CDR covers Metop-A/B IASI-CO data until December 2021. The dataset was processed with Forli v20151001 to make the whole time series of IASI-CO homogeneous for the first time. The "interim" climate data record, or ICDR, is used to account for all L3 CO products outside the CDR reprocessing exercise: the total time series of Metop-C IASI-CO (2019 onwards) and Metop-B from 01/2022 onwards. It's running with the latest version of Fast Optimal Retrievals on Layers for IASI CO (FORLI-CO) software.

## AC SAF and EUMETSAT EPS-SG/MTG missions:

**EUMETSAT Polar System-Second Generation and Meteosat Third Generation** are continuing and improving the records of meteorological observations made by the previous Metop and Meteosat satellite missions. AC SAF will develop satellite products and services for the upcoming instruments: **Sentinel 4, Sentinel 5, IASI-NG, IRS, and FCI.**

### Highlights of upcoming AC SAF products:

#### IRS NH<sub>3</sub>

High temporal and spatial variability will make it possible to monitor point sources of ammonia (mainly from agriculture and transportation) and unpredictable events, like volcanoes, fires, and industrial accidents. The IASI-NG NH<sub>3</sub> will be also available for global studies.

#### S4 & S5 HONO

HONO emission budget and formation mechanisms are currently poorly constrained with many uncertainties. Until recently, HONO measurements have been mostly using in-situ and spectroscopic techniques from ground-based instruments or onboard aircrafts. Detection and mapping of pyrogenic HONO will be possible with high resolution instruments like S4 and S5.

#### IASI-NG dust profile

Vertical profiling of mineral dust aerosols has been developed for the IASI instrument and will be soon available as an operational product. The same algorithm will be adapted to IASI-NG and tested for IRS. Dust profile product will be used to study climate forcing, sources, transport, and deposition of dust aerosols. This NRT product can be ingested to forecast, aviation and alert services.

#### S4 & S5 Total Column Water Vapour

The H<sub>2</sub>O column products will provide the best sensitivity and trade-off coverage over both land and oceans, compared to complementary sensing techniques. Finer spatial and higher temporal resolution will be useful for weather forecasts, advanced scientific products, air quality assessments, and downstream applications for environmental policy. In addition, the new products are a seamless extension of long-term data records, to be used in regional and global climate modeling.

#### S4 SO<sub>2</sub> altitude

A dedicated near-real time SO<sub>2</sub> Layer Height product is based on UV measurements. New machine learning techniques enable the retrieval of the SO<sub>2</sub> LH and thus the determination of the exact loading of SO<sub>2</sub> plumes. SO<sub>2</sub> altitude data offers valuable information from volcanic eruptions.

## Upcoming events with AC SAF contribution:

**EUMETSAT Meteorological Satellite Conference.** 11-15<sup>th</sup> September 2023, Malmö, Sweden.  
<https://www.eumetsat.int/eumetsat-meteorological-satellite-conference-2023>

**5th ESA/EUMETSAT/ECMWF Joint School on Atmospheric Composition.** 25-29<sup>th</sup> September 2023, Innsbruck, Austria. <https://atmostraining.info>

## EUMETSAT case study with AC SAF data:

<https://www.eumetsat.int/first-major-fire-events-high-latitudes>

AC SAF GOME-2 Absorbing Aerosol Index (AAI) data (both from Metop-B and -C) was used in this EUMETSAT case study to show the transportation of smoke plumes originating

from the intense wildfires in Canada. Especially in Alberta, unusually warm air temperatures with windy and dry weather conditions affected the early and intense start of the high-latitude fire season.

The record-setting wildfire season in Canada is still ongoing. Updated posts and data visualizations on the topic can be found on our Twitter, [@Atmospheric\\_SAF](#).