Implementation of IFS cycle 47r2

Description of upgrade

The CAMS IFS cycle 47R2 is based on ECMWF's IFS cycle 47R2 . This is a technical upgrade with a limited set of scientific contributions.

The page will be updated as required. It was last changed on 12 May 2021.

For a record of changes made to this page please refer to Document versions .

Further information and advice regarding the upgrade can be obtained from the Copernicus User Support.

Timetable for implementation

The planned timetable for the implementation of the cycle 47r2 is as follows:

Date	Event
15 March 2021	Announcement of expected implementation date
18 May 2021	Implementation

The timetable represents current expectations and may change in light of actual progress made.

Current Status

IFS cycle 47r2 is going through its final preparation phase.

Meteorological content of the new cycle

The meteorological changes can be found on the ECMWF IFS CY47R2 page.

The main change which impacts CAMS is the switch to running the forecasts (but not the analysis) using single-precision arithmetic for increased computational efficiency.

Atmospheric composition content of the new cycle

Assimilation

- None

Observations

- No other changes compared to the observations used in 47r1.

Emissions

- Reduced volcanic outgassing of SO2 from certain volcanoes based on recent observations.
- Implemented cap on anthropogenic primary organic matter (OM) emissions to reduce excesses in highly polluted regions.
- Increased numerical precision in prescribed emission fields to remove artefacts.

Other model changes

- Numerical improvements to the aerosol and chemistry schemes to accommodate running the forecasts in single precision as noted above.

Impact of the new cycle

A comprehensive evaluation report of the 47r2 e-suite has been prepared documenting all the changes and their impact on the forecasts. The changes of this upgrade were evaluated with independent observations for Q1 and Q3 of 2020:

- strong improvements for PM2.5 over China and India in both bias and RMSE because of reduced PM2.5 (the overall bias is now slightly negative)
- nearly neutral impact for PM2.5 and PM10 elsewhere. Where biases were increased, the RMSE was often improved
- small reduction in tropospheric and surface ozone, which is an improvement
- neutral results for CO

Technical details of the new cycle

New and discontinued parameters

There are no new or discontinued parameters in the disseminated data compared to 47r1.

Software

Availability of test data from the cycle 47r2 test suites

The CAMS operational FTP server (ECPDS) currently serves the most recent 3 days of test data in the directories "/DATA/CAMS_GLOBAL_TEST" and "/DATA/CAMS_EUROPE_BC_TEST" for global and regional boundary condition data, respectively. In addition, surface level fields (model level 137) are provided as individual files in the CAMS_GLOBAL_ADDITIONAL_TEST directory. Users wanting to access the output from the current test system for a longer period can access the data from 1 November 2020 onwards directly on MARS or through our WebAPI. However, please note that only the data after 5 January 2021 are based on the latest configuration. More details can be found here: Accessing CAMS 47r2 test data.

Document versions

Date	Reason for update
19 February 2021	Initial version
1 March 2021	Updated information about test data and implementation date
12 May 2021	Link to evaluation report