

# 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](#).

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## 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 SO<sub>2</sub> 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