

# Change log for GHG forecast o-suite CY43R1 (gqpe)

The CAMS GHG forecast o-suite (experiment **gqpe**) was started on 22 June 2017 for the 20170101 cycle based on IFS CY43R1 to couple the new GHG analysis o-suite (gqiq) running 4-days behind real time and the high resolution cyclic forecast run. This new suite benefits from an upgrade in the tracer mass fixer and new tagged tracers (see Diamantakis and Agusti-Panareda (2017) ECMWF Tech Memo 819. The suite caught up with real-time on 10 October 2017 and has been labelled o-suite on 1 November 2017.

Main features are:

- The suite was initialized from the GHG analysis experiment gqiq.
- The coupling with the analysis is done by merging the 4-day forecast from GHG delayed analysis experiment and the cyclic high resolution forecast.
- Resolution: Tco1279 (9km) and 137 vertical levels
- 5-day forecast from 00UTC
- IFS cycle 43R1
- Coupled to CTESSEL Net Ecosystem Exchange surface fluxes.
- EDGARv4.2FT2010 anthropogenic emissions - scaled from 2011 with estimated and climatological trends for CO2.
- GFASv1.2 fire emissions
- Takahashi et al. (2009) CO2 air-sea CO2 flux climatology.
- IFS model resolution Tco1279L137
- operational meteorological analysis resolution
- time period 20170101 - current
- branch: paf\_CY43R1\_CAMS\_GHG\_esuite\_an\_fc
- New tracer mass fixer: Diamantakis and Agusti-Panareda (2017) with BETA value of 2.

## Changes introduced during production affecting the quality of the products

real date	exp date	description of change
20180524	20180523	Change of python version from 2.7.9-01 to new default version 2.7.12-01 (no impact on quality of forecast expected).
20180524	20180523	Archiving of 3-hourly data up to T+120 (previously only up to T+24 and then 6-hourly) to facilitate web plots
20180526	20180525 to 20180610	Re-initialise experiment with previous 24-hour forecast because GHG analysis was not available (failure over weekend). This will be in place until the GHG analysis experiment (gqiq) catches up to 4-days behind real time.
20180612	20180611	Resume initialisation from GHG analysis (gqiq).
20180628	20180628	Change of GFAS experiment to new esuite (expver=9601,class=mc) under ecfw. This should give better fire emissions because of a problem with the sms experiment where MODIS data were not reaching experiment on time (from 20180623).
20181001	20180930	Re-initialise experiment with previous 24-hour forecast because GHG analysis was not available (failure over weekend). This will be in place until the GHG analysis experiment (gqiq) catches up to 4-days behind real time.
20181005	20181005	Resume initialisation from GHG analysis (gqiq).

## Flux updates

real date	expdate	description of change
20180815	20180815	Bug fix in CH4 fluxes associated with temporal interpolation of monthly mean fluxes affecting the second half of December.