

GloFAS v3.1



This is a description of GloFAS v3.1. For an overview of other GloFAS releases, please see: [GloFAS versioning system](#)

Summary

GloFAS version 3.1 was implemented with a major change of the modelling system and also with update of all the related GloFAS products and datasets. Here is a summary of the main changes:

- New modelling system based on the full configuration of the LISFLOOD model. This replaces the coupled setup of the HTESSEL land surface scheme and the simplified version of LISFLOOD to simulate the groundwater processes and the river routing.
- Calibration of LISFLOOD model over 1226 river catchments with a total drainage area of 51 million km² globally.
- Enhancement of the web reporting points with additional points (e.g. Morocco, Tunisia, Israel, and The Philippines) and quality checked observational datasets.
- New hydrological modelling performance layer for the web reporting points with sufficient available daily observations:
 - Colour-coded reporting points based on the modified Kling Gupta Efficiency KGE'.
 - Pop-up windows showing the evaluation metric KGE' and its components, river discharge monthly climatology and daily time series.
- New GloFAS Seasonal headline forecast skill layer for web reporting points:
 - Pop-up window shows the Continuous Ranked Probability Score (CRPS) and skill scores (CRPSS) against a climatology benchmark forecast.
- improvement of the Rapid Risk Assessment products and computation:
 - Rapid Flood Mapping showing inundation extent based on 'no flood defence' worst-case scenario (instead of using estimated flood defence as done before).
 - Rapid Impact Assessment layer polygons coloured according to GDACS population exposure categories (<https://www.gdacs.org/alerts/>).
 - Reduce running time by implementing own functionalities and dropping external python packages dependencies. Major impact in exposure layers processing time.
 - Upgrade version of python, gdal and pcraster.
 - Add support for geojson output format.

Additionally, the GloFAS web and data services were upgraded:

- Introduction of a stage web interface providing access to GloFAS v3.1 forecasts from the pre-release date, so that users can monitor in real-time GloFAS v3.1 behaviour. In addition, v3.1 forecasts have also been produced retrospectively (for dates before the pre-release date) and provided on the stage web interface from 1 January 2020. This allows the users to compare the new v3.1 version with the old model system over a long period. N.B. The GloFAS stage web interface is not maintained operationally, with new products and functionalities made available progressively and not all available from the pre-release date.
- GloFAS 3.1 datasets made available through the Copernicus Climate Data Store (CDS) (<https://cds.climate.copernicus.eu/#/search?text=glofas>) at the pre-release date as an additional 'pre-operational' datasets in complement to the operational version. This intended to help users conduct any necessary preparatory work ahead of the major modelling upgrade.
- File size request limit updated to ~15 GB. Requests through CDS API are more manageable as users don't need anymore to split a request by step/lead time.
- The previous GloFAS version (v2.1/v2.2) will continue running for some time as a legacy system, with the data and forecasts still available after the operational implementation. While the CDS provides the data as a 'legacy version' for both the reanalysis and real time forecasts, the forecast products will be available on the stage web interface from 26 May 2021.

GloFAS forecasts on the web	globalfloods.eu	stage.globalfloods.eu
1 Jan 2020 - 25 May 2021	v2.1/v2.2	v3.1
26 May 2021 -	v3.1	v2.2

GloFAS v3.1 Evaluation Results

- [GloFAS v3.1 hydrological performance](#)
- [GloFAS v3.1 hydrological performance comparison with GloFAS v2.1](#)
- [GloFAS v3.1 flood thresholds and comparison with GloFAS 2.1](#)
- [GloFAS v3.1 forecast skill](#)
- [GloFAS Seasonal v3.1 forecast skill](#)

Technical details

Pre-release date	2021-04-15
Release date	2021-05-26

In test suite	2021-02-14
GloFAS internal number	004
Archiving of data	ECFS, MARS, CDS
Reference climatology (for thresholds/ anomalies)	1979-01-01 to 2020-07-31
GloFAS historical	1979-01-01 to near real-time
Reforecasts	GloFAS : 1999-01-03 to 2018-12-30. GloFAS Seasonal : 1981-01-01 to 2016-01-01
Horizontal projection	EPSG4326
Horizontal resolution	0.1 x 0.1°
Temporal resolution	GloFAS: 24 hours