

## Hydrological observations

The European Flood Awareness System relies on hydro-meteorological observations numerical weather predictions and satellite images to produce, verify, calibrate and post-process the food forecasts

In this context we would like to share with you:

- 1 Which hydrological observations are of interest to EFAS
- 2 Information on the existing hydrological data collection
- 3 How you can share your data with EFASs i.e. the Copernicus Emergency Management System (EMS)

### 1 -Which hydrological observations are of interest to EFAS

In summary EFAS is interested in the collection of in-situ hydrological data with the following specifications:

- **variables:** Those available from: water level, discharge, reservoir inflow, reservoir outflow, volume
- **real-time data**
- **historic data:** Minimum 3 year-long historical data series
- **meta data:**
  - Coordinates (WGS84)
  - Elevation
  - Threshold levels
  - River / reservoir name (local and io English)
  - Catchment name (local and io English) and size (km2)
  - Variables measured and units (cm, m, m3/s)
  - Highest historical values registered
  - Lowest historical values registered
  - Timezones (UTCs daylight savings apply?)
  - Rating curves
- **temporal resolution:** aggregated values (start, middle, end of the interval), instantaneous values.
- EFAS needs historic and real-time in-situ hydrological data. The first are needed to calibrate the hydrological model as well as to compute long term statistics for the applied quality control procedures. Therefore observational data of minimum 3 years are required. Real-time observations are needed for post-processing of the initial conditions of the forecasts and hence improve the forecast itself.

Regarding temporal resolution we prefer to get the data at a high temporal resolution to be able to aggregate different totals, which can be used to run the hydrological model with a sub-daily time step. Also, high resolution data allow to compute minimums means and maximum over several periods and contribute to the robustness of the quality control.

Correct and accurate metadata are crucial as they determine the quality of the database and hence the hydrological predictions. Therefore we are collecting latitude and longitude with at least five decimals precision (preferable WGS84) and elevation with vertical reference system.



Figure 1. Data providers currently sharing their data with EFAS

We know that not all existing stations observe the above-mentioned variables and neither all at a high temporal resolution. However, the more comprehensive the in-situ data collection, the more reliable the forecasts will become.

## 2 -How you can share your data with EFAS i.e. EMS

The company SOOLOGIC **Technological Solutions** have been contracted by the European Commission to operate the EFAS **Hydrological Data Collection Centre** (EHDCC) for the Copernicus Emergency Management Service (EMS) With SOOLOGIC hosting the data bases quality control procedures and data transfer protocols in addition of to be in charge of hydrological operations as well as the review and improvement of the quality control procedures and technical contact point for data providers.

If you would like to share your data with EFAS/ Copernicus EMS, you may select one of the following transfer options that suit you best:

- 1 EHDCC can retrieve the data from a ftp-server operated by your service
- 2 You provide the data to a ftp-server operated by HDCC
- 3 You can send the data via email to a specified email address
- 4 EHDCC retrieves the data via web services / API (specific discussion and agreement required)

For the data provision and further utilization, the **“License agreement for the use of data and/or products for the Copernicus Services”** between the European Environment Agency (EEA) and EUMETNETs signed in December 2017s is applied.

(See

<https://efascom.smhi.se/coofueoce/display/E//EUMETNETdPublicdDatadLiceosedAgreemeotdwiththedCoperoicusdServices> )