



Situational Awareness and Early Warning Systems

22 January 2025

Situational Awareness Sector
DG ECHO – Civil Protection and Humanitarian Aid Operations



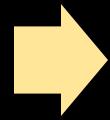
Mandate

- Ensuring situational awareness.
- Maintaining and further developing transnational early warning systems.
- Bridging the scientific and operational communities.
- Coordinating and drafting situational reports for MS on Ukraine and Gaza.

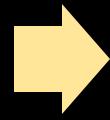
*“...developing the ERCC as the Commission’s cross-sectoral crisis hub for **joint situational awareness, early warning, anticipation, information exchange** and operational coordination, including between civilian and military stakeholders.”*

President of the European Commission, Ursula von der Leyen

Data input

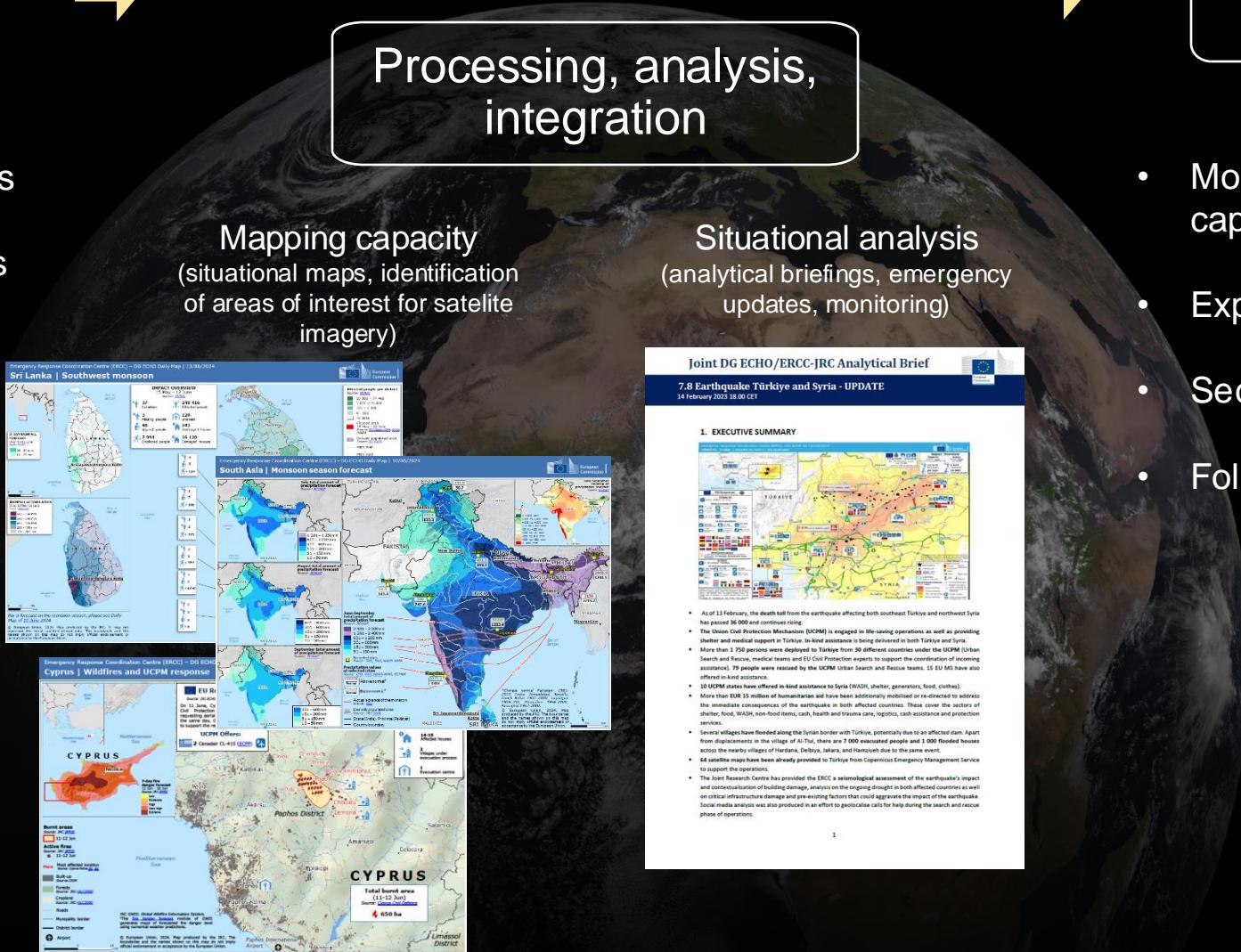


ANALYTICAL TEAM



Operational advice

- Early warning systems
- Scientific partnerships
- ECHO field
- ECHO partners
- EU DEL
- Satellite imagery
- Media



- Mobilisation of response capacities
- Expert deployment
- Security
- Follow-up activities

1. SCIENTIFIC PARTNERSHIPS



Natural hazards



Radiological and Nuclear hazards



EMSA Maritime safety

ANALYTICAL SERVICES IN THE ERCC

3. EARLY WARNING AND MONITORING SERVICES



Droughts and heatwaves



European (EDO) and Global (GDO) Drought Observatory



Wildfires



European Forest Fire (EFFIS) and Global Wildfire (GWIS) Information Systems



Floods



European (EFAS) and Global (GloFAS) Flood Awareness Systems

2. ON-DEMAND MAPPING SERVICES



Rapid Mapping service



Risk and Recovery



External and Security services



Volcanic activity, earthquakes, and tropical cyclones



Global Disaster Alert and Coordination System (GDACS)

Monitoring

Alert

A disaster just hit. How big? How bad?

Can we expect a request for assistance?



GDACS - Global Disaster Alert and Coordination System

A screenshot of the GDACS website. At the top, there is a search bar with filters for hazard types (Earthquakes, only Tsunamis, Floods, Cyclones, Volcanoes, Droughts, Forest Fires), date range (From 2022-02-28 to 2023-02-28), level (Orange), severity, and country. Below the search bar is a world map with numerous orange and red hazard icons. A callout box in the bottom right corner reads: "Multi Hazard Early Warning System (MHEWS) component" and "Resp. JRC".

GDACS is a cooperation framework between the United Nations, the European Commission and disaster managers worldwide to improve alerts, information exchange and coordination in the first phase after major sudden-onset disasters.

HOME ALERTS VIRTUAL OSOCC MAPS & SATELLITE IMAGERY KNOWLEDGE ABOUT

Search

From 2022-02-28 Level Orange

To 2023-02-28 Severity

Country

SEARCH

The SEARCH function returns at most 100 events

GDACS

Global Disaster Alert and Coordination System

Multi Hazard Early Warning System (MHEWS) component

Resp. JRC

A screenshot of the VIRTUAL OSOCC interface. At the top, it says "Turkiye: Earthquake M7.8, February 2023". Below this are tabs for "Simulator", "Training", and "Meetings". A sub-section titled "EMT Coordination Cell (EMTCC)" shows a "Situation" update from Lorena Dib Oliveira, OCHA on 25-Feb-2023 08:29 UTC+3. It states that the national EMT Coordination Cell has been established in the country with a physical presence set in Adana. A list of relevant contacts follows. A callout box in the bottom right corner reads: "VIRTUAL OSOCC – Virtual On-Site Operations Coordination Centre component" and "Resp. UN OCHA".

SOCC

Turkiye: Earthquake M7.8, February 2023

Update colour scheme: 1 hr, 1-3 hrs, 3-6 hrs, 6-12 hrs, 12+ hrs

Simulator Training Meetings

RELIEF ITEMS CONTACTS MAPS QUICK ACCESS LINKS SUBSCRIBE

EMT Coordination Cell (EMTCC) Add comment

Situation Lorena Dib Oliveira, OCHA on 25-Feb-2023 08:29 UTC+3

The national EMT Coordination Cell has been established in the country with a physical presence set in Adana. EMTCC

Relevant contacts:

- National EMT Coordinator: Yusuf Irmak (trncc@gmail.com)
- WHO Emergency Officer: Murat Simsek (simsek@who.int) +90 5054560379
- WHO EMT Regional Focal Point: Oleg Storozhenko (storozhenko@who.int) +4529746778
- WHO EMT Global Secretariat: Flavio Salio (salio@who.int) +41786780042; Chantal Claravall (claravall@who.int) +41786780042

The need for Type 2 and 3 EMTs able to work in extreme weather conditions has been identified in the Republic of Turkey. Expression of Interest (EOI) form available on the VO. EMTs must submit the accomplished EOI form to Murat Simsek, Global EMT Secretariat (salio@who.int; claravall@who.int) as soon as possible. Offers will be submitted to national and international partners. EMTs interested to deploy to northern Syria are requested to fill up and submit their Expression of Interest (EOI) form to Global EMT Secretariat (salio@who.int; claravall@who.int) as soon as possible. Offers will be submitted to the relevant partners.

VIRTUAL OSOCC – Virtual On-Site Operations Coordination Centre component

Resp. UN OCHA

A screenshot of the SMCS component. At the top, it shows a map of Turkey and Syria with a green line indicating a route or boundary. To the right, there is a "Coordination detail" section with a "ACTIVE" status and a "SMCS info" section stating "Event created from GDA". A callout box in the bottom right corner reads: "Satellite Mapping Coordination System (SMCS) component" and "Resp. UNOSAT".

SOCC MAPS & SATELLITE IMAGERY KNOWLEDGE ABOUT

ation System (SMCS)

Coordination System (SMCS) provides a communication and coordination platform where users can track, plan and coordinate mapping activities for ongoing emergencies.

Coordination detail

ACTIVE

SMCS info

Event created from GDA

Turkiye

Satellite Mapping Coordination System (SMCS) component

Resp. UNOSAT

Commission

term of use contact us register/login admin

GDACS
Global Disaster Alert and Coordination System

GDACS is a cooperation framework between the United Nations, the European Commission and disaster managers worldwide to improve alerts, information exchange and coordination in the first phase after major sudden-onset disasters.

HOME ALERTS VIRTUAL OSOCC MAPS & SATELLITE IMAGERY KNOWLEDGE ABOUT

Latest news → Register to GDACS alerts



Map of disaster alerts in the past 4 days. European Union, 2022. Map produced by EC-JRC. The designations employed and the presentation of material on the map do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The blurred events in the list below are the past events before last 4 days.

For drought alerts, all the events listed in the homepage are ongoing events. In bold: i) new events; ii) events where a significant worsening has been detected (+ 0.5 GDACS score or increase in the Alert Level); iii) events where new information products are available (Global Drought Observatory Report).

For Forest Fires alerts, the events are all the ongoing events of class Orange or Red plus the Green alerts with burned area exceeding 5k ha and population within 5 km exceeding 10k.

EARTHQUAKES	TROPICAL CYCLONES	FLOODS	VOLCANOES	DROUGHTS	FOREST FIRES
 Russian Federation (M 5.7) - 24 Apr 01:35	 JASMINE-22 (102 km/h) - 26 Apr 06:00	 Colombia - 24 Apr 01:00	 Krakatau (Indonesia) - 25 Apr 2022	 Hungary-2022 - 14 Weeks	 Sierra Leone (16682 ha) - 25 Apr 2022
 Bosnia and Herzegovina (M 5.7) - 22 Apr 21:07	 MALAKAS-22 (213 km/h) - 15 Apr 2022	 South Africa - 22 Apr 2022	 Manam (Papua New Guinea) - 20 Apr 2022	 Morocco Algeria Tunisia-2021 - 70 Weeks	 Sierra Leone (15596 ha) - 25 Apr 2022
 Nicaragua (M 6.7) - 21 Apr 2022	 MEGI-22 (74 km/h) - 11 Apr 2022	 Uzbekistan - 22 Apr 2022	 Ruiz, Nevado del (Colombia) - 04 Apr 2022	 Central South America-2019 - 122 Weeks	 Nepal (33816 ha) - 24 Apr 2022
 Philippines (M 6.0) - 20 Apr 2022	 FILI-22 (102 km/h) - 08 Apr 2022	 Jamaica - 20 Apr 2022	 Taal (Philippines) - 28 Mar 2022	 Madagascar-2020 - 79 Weeks	 India (27067 ha) - 24 Apr 2022

GDACS MHEWS

www.gdacs.org



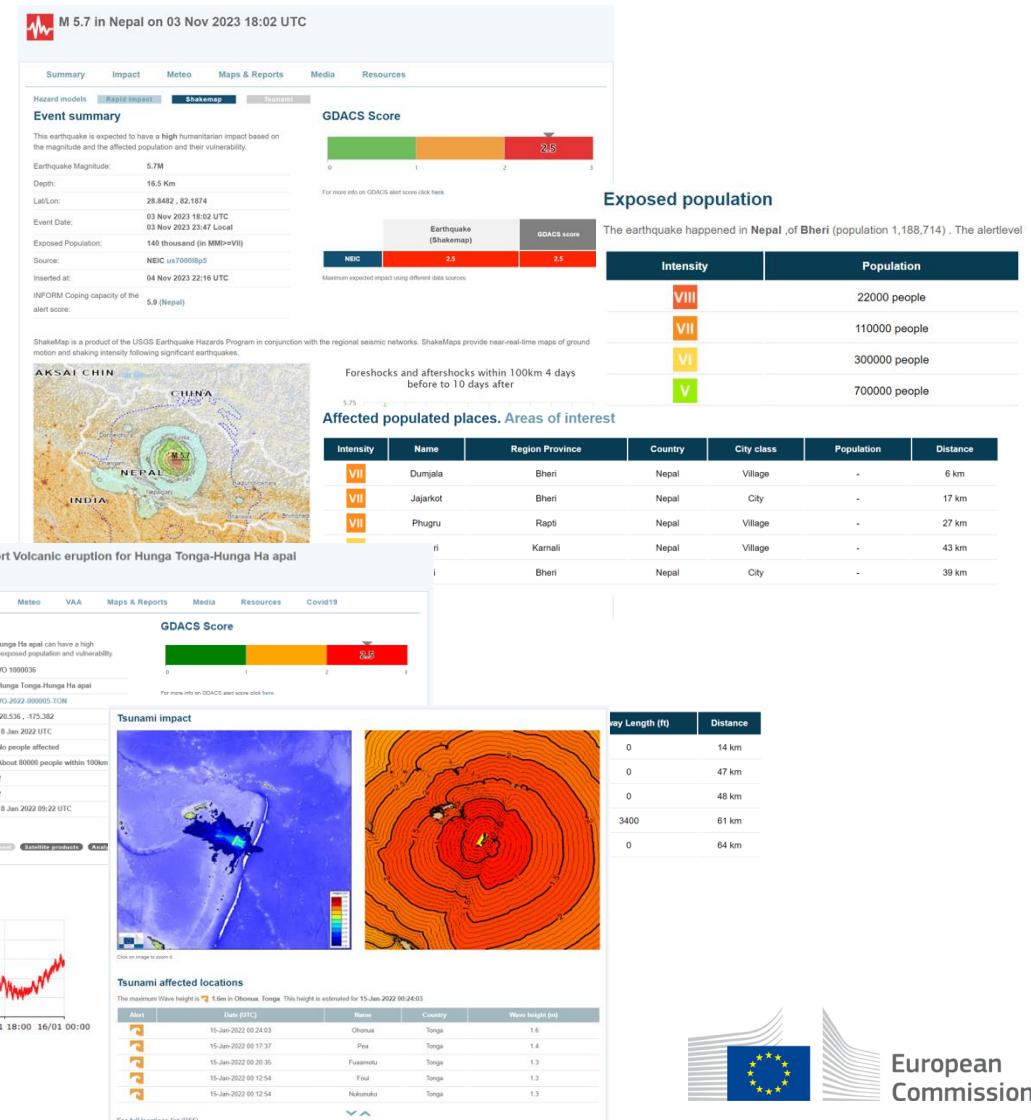
- GDACS Disaster Alerts based on automatic estimates and risk analysis are issued and disseminated to some 40,000 subscribers following sudden-onset disasters.
- Alert level (green/orange/red) refers to likelihood that external assistance (e.g. humanitarian) may be needed.
- GDACS alerts are not in competition with official alerts from the local or national designated authorities, which always prevail.
- The site also acts as an information aggregator, gathering EC maps, reports and media analyses, weather forecasts...

GDACS for Earthquakes and Tsunami



Earthquake:

- Automatic alerts based on population exposed to strong shaking intensity.
- Alerts issued within 30 min of the earthquake, updated if new USGS Shakemap is published.



Tsunami:

- Not accessible from main site, only for potentially tsunamigenic earthquakes and some volcanos.
- Automatic alerts based on simulated tsunami.
- Alerts issued within 30 min of the trigger, updated if sea-level observations reported higher than simulation.



GDACS for Tropical Cyclones and Volcanoes



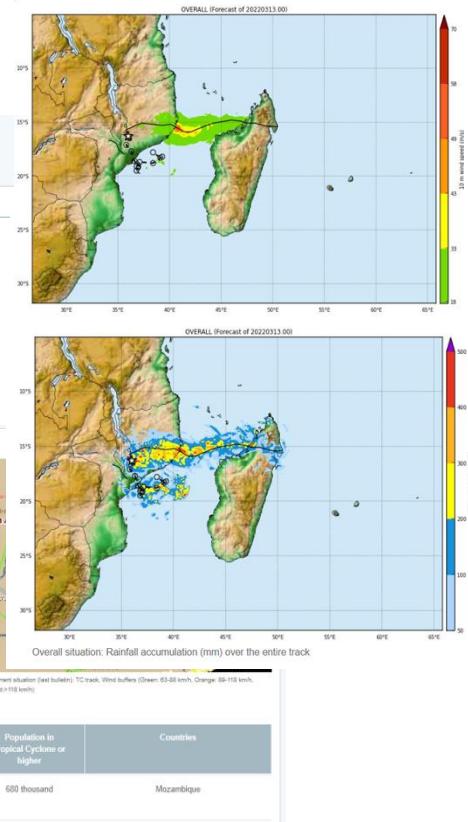
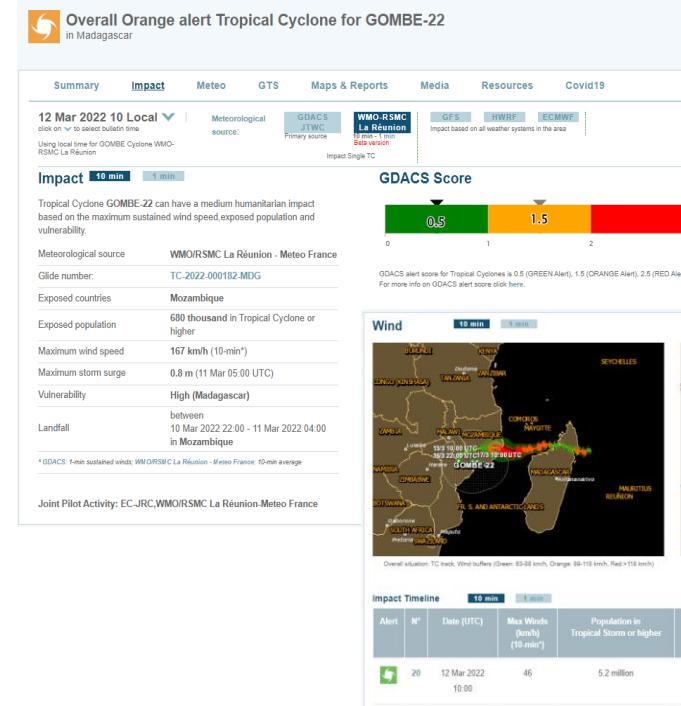
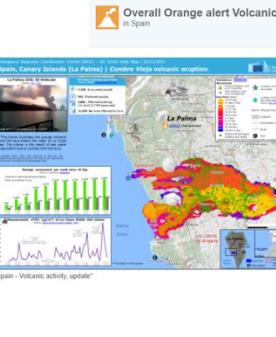
Tropical Cyclones:

- Automatic alerts based on population exposure to wind (Saffir-Simpson scale).
- Alerts issued within 30 min of the source update, at 3-6 hour intervals
- Precipitation and (simulated) storm surge population exposure also evaluated.



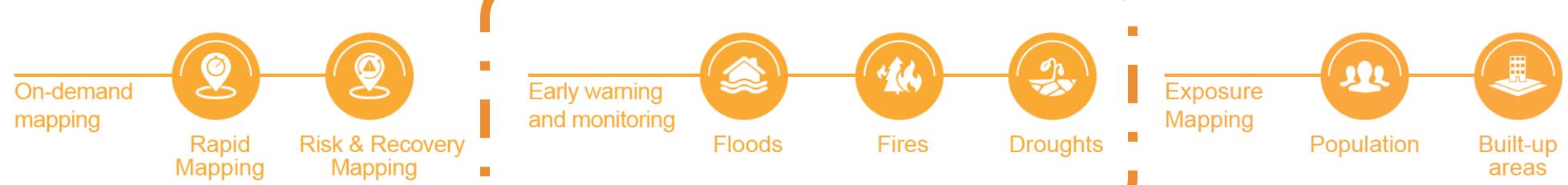
Volcanos

- Manual alerts based on expert opinion.
- Automatic updating of Volcanic Ash Advisories.

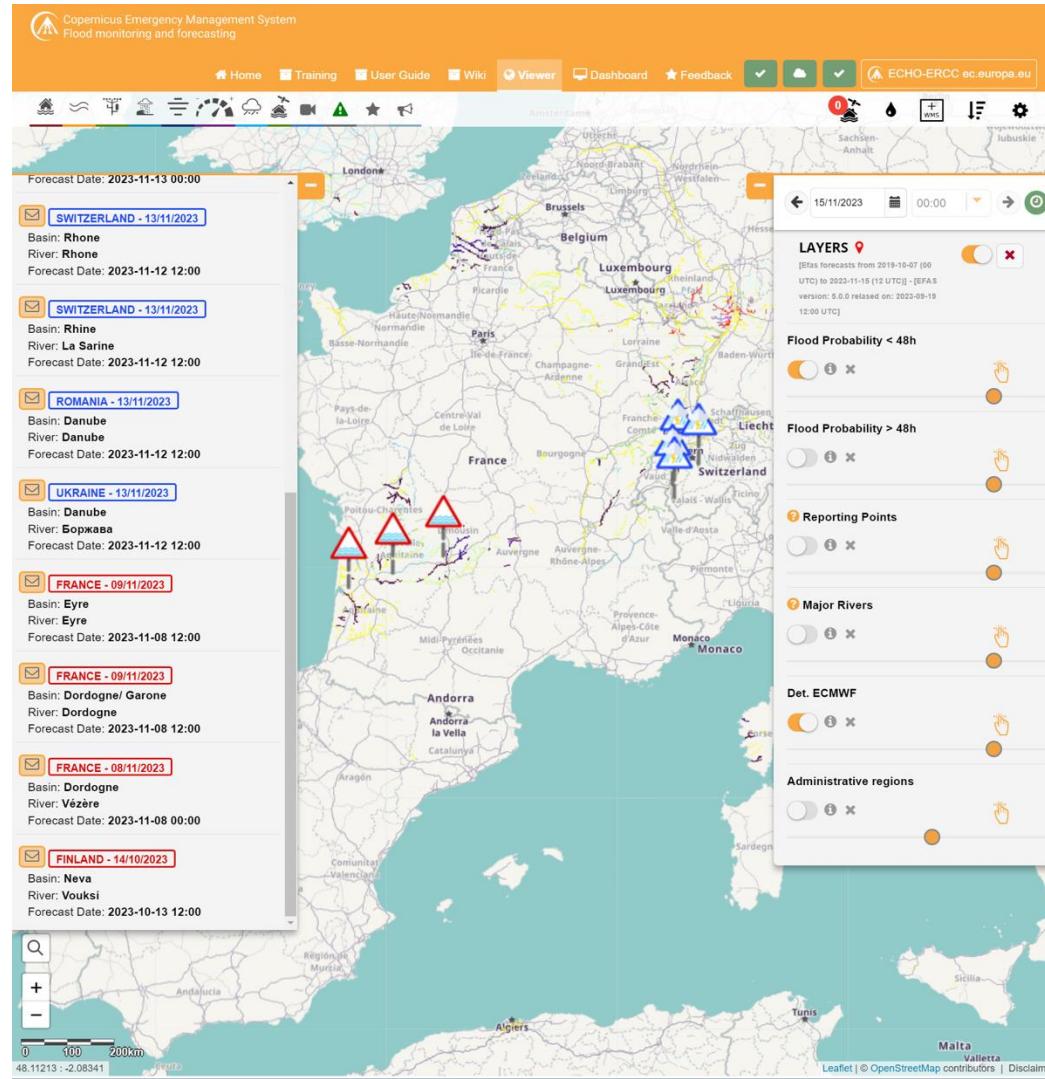


European
Commission

Copernicus EMS Monitoring Systems



EFAS – European Flood Awareness System



<https://european-flood.emergency.copernicus.eu/>

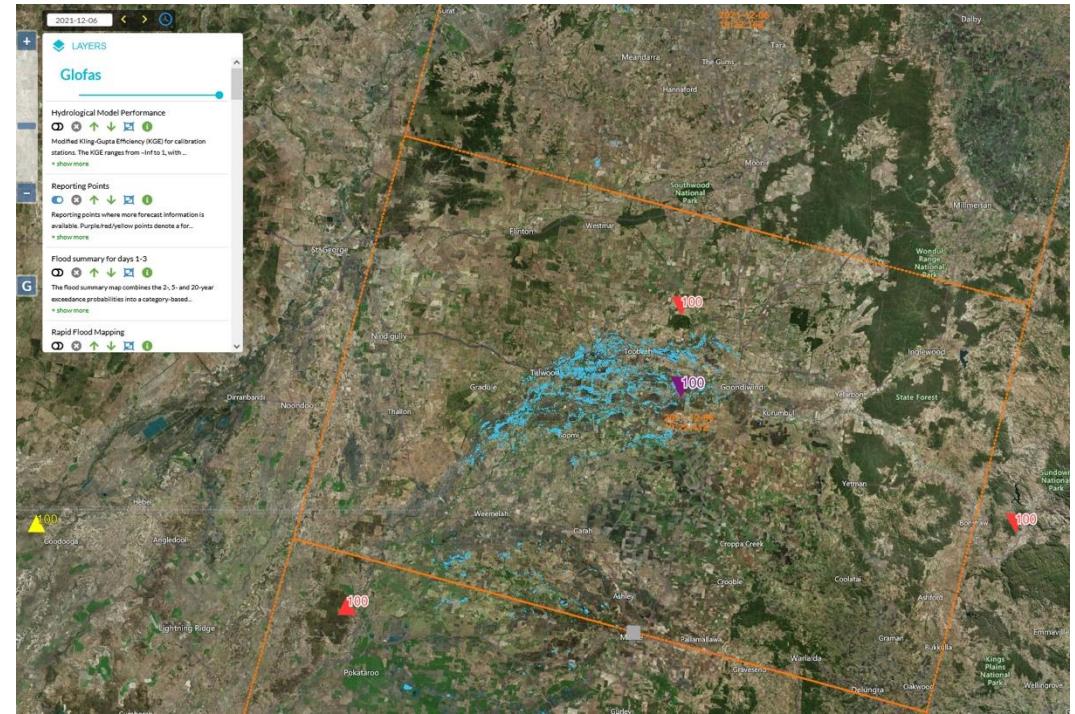
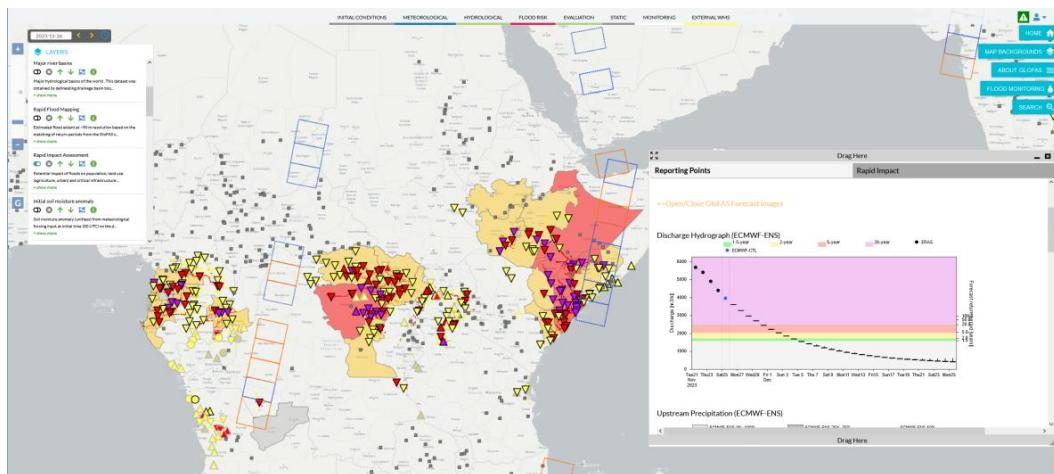
- EFAS provides flood forecasts **up to 10 days in advance** to the National/Regional Hydrological Services, to civil protection authorities that are **EFAS partners** and to the Emergency Response Coordination Centre (ERCC).
- The hydrological model LISFLOOD is used for medium- and seasonal-range forecasts, whilst conceptual hydrological algorithms are used for the flash flood indicators.



GloFAS – Global Flood Awareness System

<https://global-flood.emergency.copernicus.eu/>

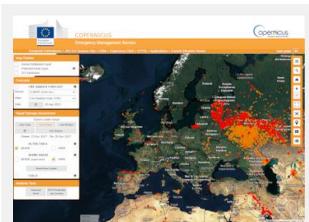
- GloFAS is a **global** hydrological forecast and monitoring system independent of administrative and political boundaries.
- Its continental scale set-up provides **downstream countries** with information on upstream river conditions as well as continental and global overviews.
- River-based hydrological model can forecast up to **30 days** in advance



Global Flood Monitoring (GFM): automated, global, satellite-based monitoring of floods in near real-time based on the automated processing of Copernicus Sentinel-1 Synthetic Aperture Radar (SAR) satellite data.

EFFIS – European Forest Fire Info System

EFFIS applications



Current Situation Viewer

The most up to date information on the current fire season in Europe and in the Mediterranean area.

[Read more >](#)



Current Statistics Portal

Statistics are provided at national level and also for 3 groups of countries, EU, European non-EU countries, and Middle East and North Africa countries.

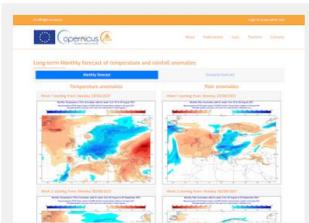
[Read more >](#)



Firenews

Fire news is an application that collects, geo-locates and stores in a database fire news published in the internet in all the EU and other languages, allowing the user to filter the news on the basis of geographical scope, keywords, etc.

[Read more >](#)



Long-term fire weather forecast

Monthly and seasonal forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas.

[Read more >](#)



Wildfire Risk Viewer

Wildfire Risk index for the pan-European Scale. This includes two main groups of components by considering the fire danger and the vulnerability on three categories: people, ecological, and economic values.

[Read more >](#)



Data request

Request for country totals (burnt areas & number of fires) per year, as published in the Forest Fires in Europe, North Africa and Middle East reports, and more.

[Read more >](#)

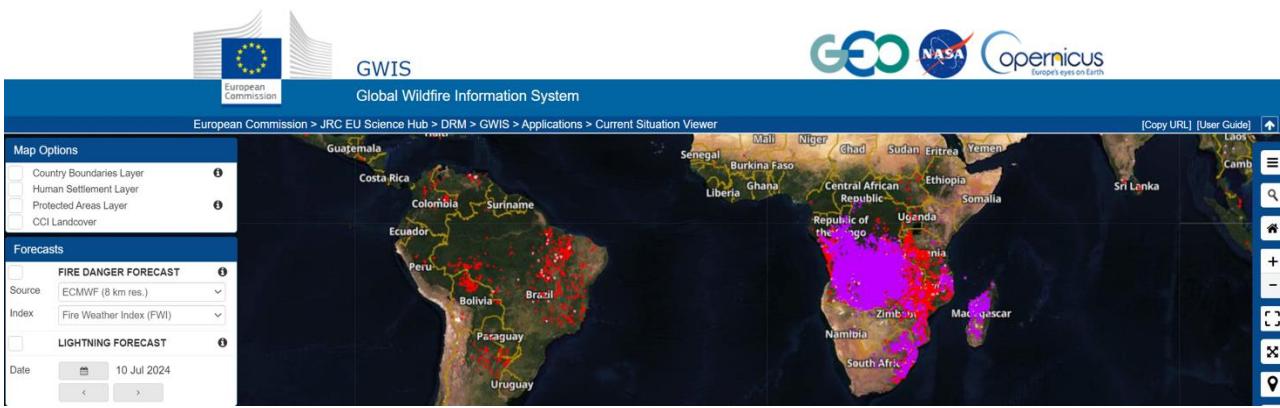
- EFFIS supports the forest protection services in the EU and neighbour countries and provides the European Commission and Parliament with **updated and reliable information on wildland fires in Europe**.
- EFFIS is supported by a network of national experts called the **Expert Group on Forest Fires**. Currently, this group consists of experts from 43 countries in European, Middle East and North African countries.



GWIS – Global Wildfire Information System

<https://gwis.jrc.ec.europa.eu/>

- GWIS brings together existing information sources at regional and national levels in order to provide a comprehensive view and evaluation of **fire regimes** and **fire effects** at global level.
- GWIS builds on EFFIS, the Global Terrestrial Observing System (GTOS) Global Observation of Forest Cover- Global Observation of Land Dynamics (GOFC-GOLD) Fire Implementation Team (GOFC Fire IT), and the associated Regional Networks.
- The Global Wildfire Information System (GWIS) is a joint initiative of the GEO and the Copernicus Work Programs.



European Commission > JRC EU Science Hub > DRM > GWIS > Applications > Current Situation Viewer

Map Options

- Country Boundaries Layer
- Human Settlement Layer
- Protected Areas Layer
- CCI Landcover

Forecasts

- FIRE DANGER FORECAST**
Source: ECMWF (8 km res.)
Index: Fire Weather Index (FWI)
- LIGHTNING FORECAST**

10 Jul 2024

GWIS applications



Current Situation Viewer

Provides fire danger forecast up to 10 days in advance, 1-day lightning forecast and near-real time information on active fires...

[Read more >](#)



Current Statistics Portal

Statistics are provided at national level and for regions of interest, such as the "Brazilian Legal Amazon" and the Arctic Monitoring and Assessment Program (AMAP).
[Read more >](#)



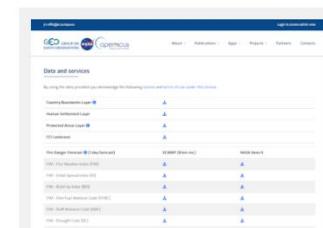
Country Profile

Provides historical overviews of fire regimes at country and sub-country level for the period 2002-2019.
[Read more >](#)



Long-term fire weather forecast

Monthly and seasonal forecast of temperature and rainfall anomalies that are expected to prevail over the world. [Read more >](#)



Data & Services

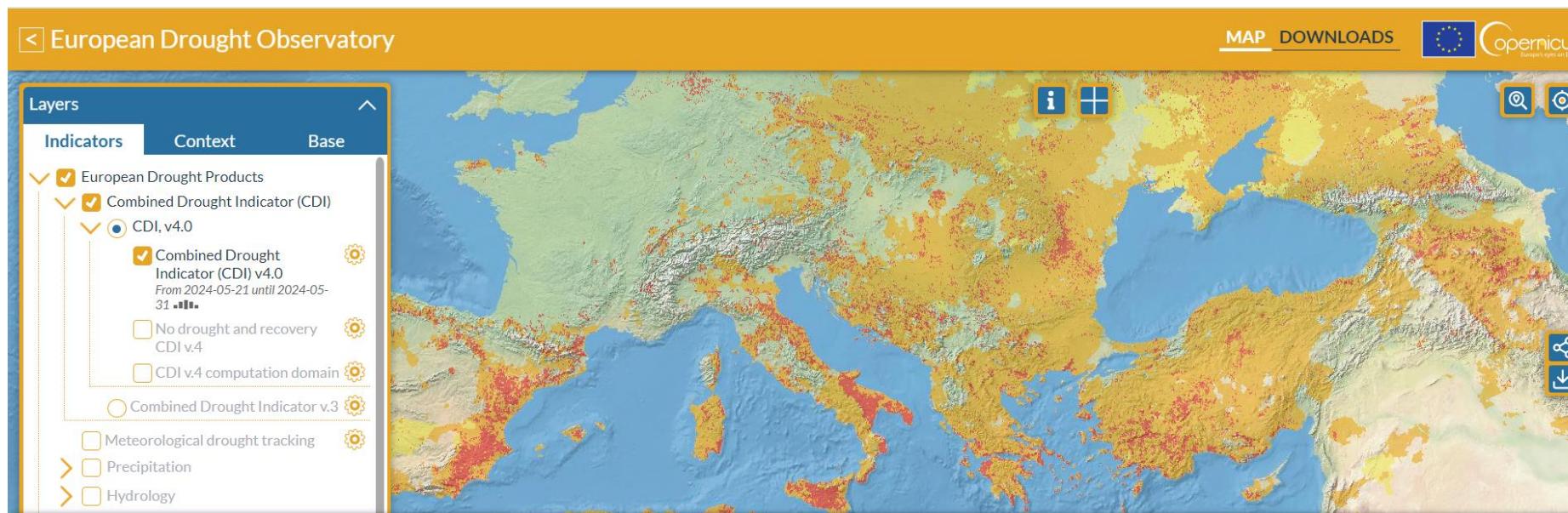
Provides access to the data used in the GWIS applications. Data from the Current Situation Viewer are provided from the WMS.
[Read more >](#)



EDO – European Drought Observatory

<https://drought.emergency.copernicus.eu/tumbo/edo/map/>

- EDO produces a suite of indicators that aims to provide a complete overview of ongoing and past drought in Europe.
- The system computes simple and combined indicators assessing anomalies affecting precipitation, temperature, soil moisture, vegetation condition, etc.
- It also offers a **drought tracking tool** based on SPI-3 (Standardized Precipitation Index, meteorological drought); seasonal predictions of unusually wet and dry areas.



GDO – Global Drought Observatory

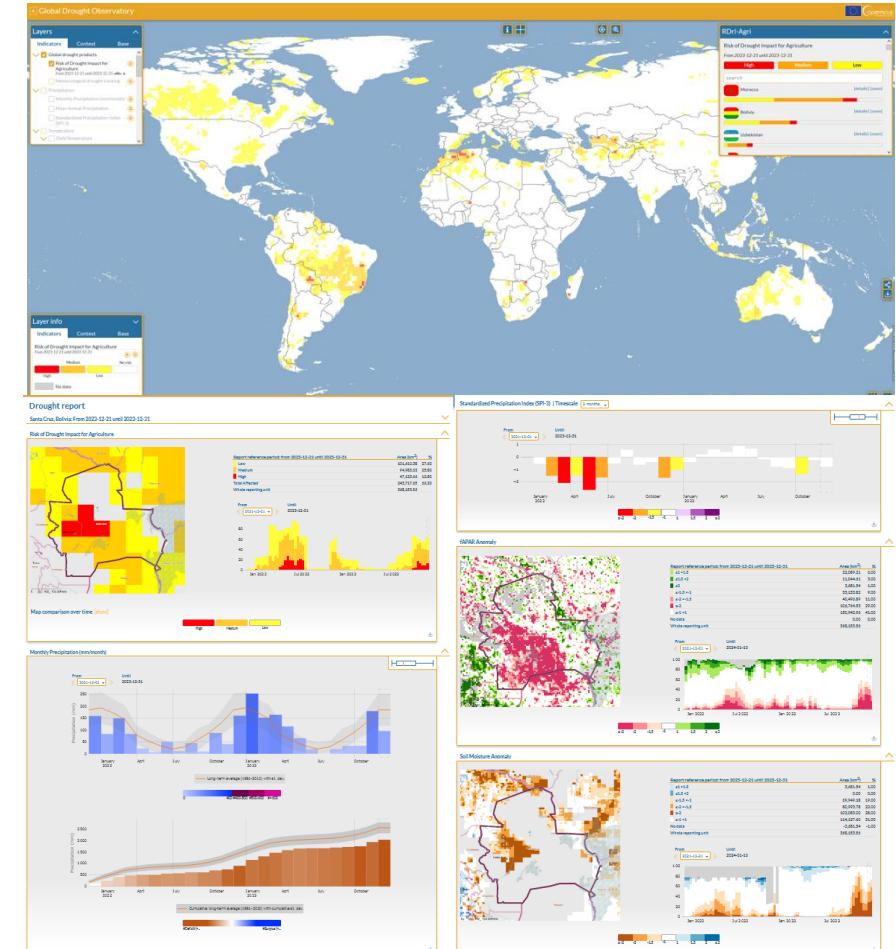
<https://drought.emergency.copernicus.eu/tumbo/gdo/map/>

GDO produces continuously updated drought indicators at global scale:

- Sector-specific risk of drought impact (RDRI for Agriculture)
- Meteorological drought based on precipitation (standardized precipitation index)
- Agricultural drought (soil moisture & vegetation greenness)
- Hydrological drought (low river flows, groundwater)
- Forecast of extreme precipitation

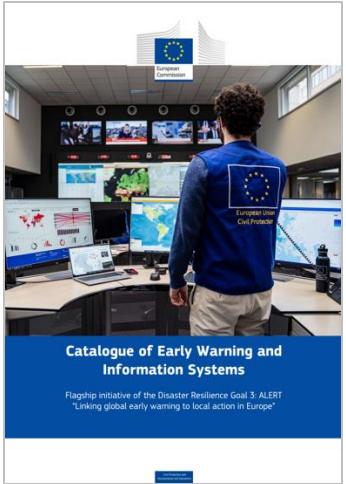
Plus other specialized tools and products:

- Interactive map-viewer to explore in space and time indicators for drought assessment.
- Analytical drought reports of relevant drought events.
- A global database of meteorological droughts (1950-2019) with more than 7000 events from country to global scale, based on SPI and SPEI. Each event is assigned duration, severity, intensity, and area.
- A tool for self-generating reports for an administrative region.

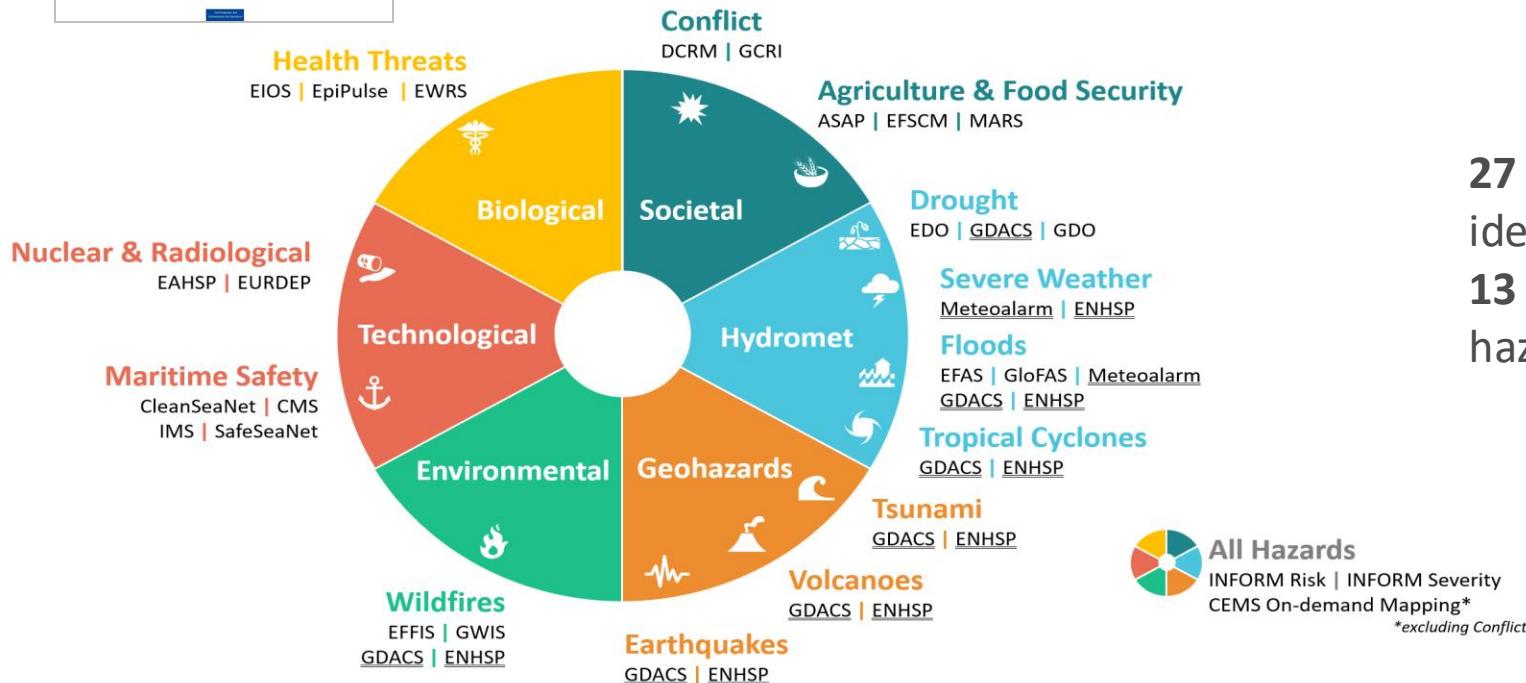


European
Commission

Catalogue of Early Warning Systems and Services



- **What it is:** A catalogue of early warning and situational awareness systems and services that can be integrated in the civil protection and related activities of UPCM states
- **Goal:** The goal is to raise awareness about these services, so UPCM states can more easily benefit from the information
- **Policy context:** Deliverable of DRG 3 – “Alert”: Linking global early warning to local action in Europe



27 systems and services
identified and included
13 hazard types (plus multi-hazard)

The Global Situation System

<https://gss-ecml.azurewebsites.net/>



- **What it is:** A data aggregation and visualization portal, providing access to Commission EWS and other datasets for situational awareness.
- **What it is not:** An EWS (GSS does not emit any kind of alerts, and the information is not real-time).
- **Policy context:** Deliverable of DRG 3 – “Alert”: Linking global early warning to local action in Europe

Thank you

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