



Copernicus Emergency Management Service

Overview

UN-SPIDER / ZFL Regional Virtual Expert Meeting for Southern Africa Peter Salamon and E.1 colleagues 14 July 2021



CEMS mapping product overview

OPERION EU's Earth Observation Programme

Emergency

Management



Operational since 2012

Managed directly by the Joint Research Centre (JRC) of the European Commission

Provides disaster information on the impact of natural & manmade disasters

Supports all phases of the disaster management cycle:

- Warnings & risk assessments
- Information on the impact of natural and man-made disasters







- Complementary information
- Provides earth-observation, model & in-situ based disaster management information
- Two main components: **On-demand mapping** and **Early Warning and Monitoring**





On Demand Mapping : Overview

Check three major goals of your request to select the best product serving your needs:





Workflow for On-Demand Mapping

Emergency Management

- Direct activation only by **Authorised Users** (Civil Protection):
 - 31 focal points: 27 EU MS + Norway + Iceland + UK + EC Services + EEAS
- Not-authorised users incl. international users can activate through the EU's Emergency Response Coordination Centre (ERCC)



https://emergency.copernicus.eu/mapping/ems/how-use-service

European

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Rapid Mapping Product Portfolio

Emergency

Management





Rapid Mapping Examples

Emergency Management

Tropical Cyclone Eloise 22-23 January 2021, Mozambique (https://emergency.copernicus.eu/ mapping/list-ofcomponents/EMSR495)

Nyiragongo volcano 22 May 2021, Congo, Rwanda (https://emergency.copernicus.eu/ma pping/list-of-components/EMSR513)



Volcanic activity tuation as of 29/05/2021 - 30/05/2021 ading MON T02 - Overview map 31 Alizabia Mil 1776 Statificar Miran makes was

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Risk & Recovery Portfolio

Emergency Management

- **Production** during working hours
- Supports preparedness & recovery activities
- **Delivery** in days (standard products) or 1-2 month (tailored studies)
- Uses satellite imagery and other data

Standard Products (examples)

- Digital Surface Model
- Modelled flood extent for major events
- Temporal analyses of occurred flood events
- Reconstruction monitoring
- □ Ground deformation analyses
- □ Impact assessment/exposure analysis for assets & population
- Post-disaster soil erosion risk assessment
- Post-disaster landslide risk assessment
- Population displacement location







Example

Emergency Management

Post-event analysis tropical cyclone Eloise

- Two areas of interest (proximity of Beira)
- DG ECHO/African Risk Capacity Agency
- <u>https://emergency.coperni</u> <u>cus.eu/mapping/list-of-</u> <u>components/EMSN086</u>







Overview

















Early Warning & Monitoring – Floods

Emergency Management

What is GloFAS?

- GloFAS couples NWP and Hydrological modelling to produce global flood forecasts Complementary information to National Hydrological and Meteorological Services (NHMS) and CP
- Freely available, across the world
- Riverine flood forecasting only, for large catchments (>2000km2).
- Under development: Sentinel-1 flood monitoring of all flood types

What does GloFAS provide?:

- Global hydrological ensemble forecasts updated daily
- Global, SAR-based, flood monitoring with timeliness of >8hours and revisit frequency of 3-12 days at 20m resolution (under dev.)
- Map products and datasets through dedicated web and data services
- Highlights of expected flooding and associated flood risk level over next 30 days
- Seasonal hydrological outlook showing wet/dry anomalies over next 16 weeks
- Additional information as hydrographs, initial condition maps and forecast table to help interpret results https://www.globalfloods.eu/

Short Lead time (1-3 days) Medium Lead tim

Long Lead tim

Exposure Informatio

Population affected [No. of people] Population within floodolain affected [%

Cities affected [% area affected]









Early Warning & Monitoring – Droughts

Emergency Management

- <u>Why</u>? Droughts are ...
- Increasing in frequency and severity in many parts of the world, likely to aggravate in the future.
- A global hazard with significant economic, societal and environmental impacts (e.g. 9 billion Euros/year in EU+UK).

• <u>What</u>?

- Early warning, monitoring and forecasting of droughts and their likely impacts, based on satellite data, hydrometeorological modelling and in-situ observations.
- Based on a conceptual model of drought risk
- For Whom?
 - European Emergency Response Coordination Centre (ERCC)
 - Global Disaster Alert and Coordination System (GDACS)
 - International aid organizations, EEAS, UNCCD











Forest Fire Information System

- **Emergency** Joint initiative between GEO, NASA and JRC
- Management Not yet fully operational in CEMS (integration ongoing)
 - provide a comprehensive view and evaluation of fire regimes and fire effects at global level
 - provide tools to support operational wildfire management from national to global scales.
 - Complements national fire information systems through the provision of harmonised data, methods and standards
 - Users: EC DGs and Services, EP, national/regional forest fire and civil protection services, FAO, UNECE, UNISDR



Main outputs

Fire danger forecast

Fire danger forecast up to 10 days in advance on the bases of the Canadian Fire Weather Index (FWI)
Active fire detection (MODIS, VIIRS)
Near real time burnt areas (MODIS, VIIRS)
Country profiles (fire regimes)



