

The European Security and Defence Union

Disasters, conflicts and humanitarian crises

Europe's strategy to
protect and rescue
people worldwide



Essentials on European defence

Natalia Pouzyreff,
Member of the Assemblée
Nationale, France



Humanitarian aid on the ground

Babatunde Anthony Ojei,
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Copernicus satellite image showing the devastating floods in northern Italy at the beginning of May 2023

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No one can predict when disaster will strike, but science can help us prepare for the worst and to recover quickly and better. With ever more wildfires, droughts and floods in the EU and around the world, the victims of these disasters often rely on the EU's humanitarian aid. As the European Commission's in-house science service, the Joint Research Centre (JRC) provides independent science and know-how to help the EU act quickly when disaster is about to strike or has struck.

Supporting the EU's disaster response

When we are in emergency mode, the priority is to save as many lives as possible and protect critical infrastructure like energy plants, transport and communication systems, defence bases and healthcare facilities. Providing needs-based humanitarian assistance to victims of disasters is at the core of European values. The EU's response to disasters draws on JRC science to devise its civil protection and humanitarian actions. The JRC's geologists, meteorologists, hydrologists, among other scientists, have been trying to answer questions like: what can we do to anticipate damage and minimise its impact? Where is help (most) needed? How do we get it there? What must we prioritise? Our work is wide-ranging and encompasses disaster risk management and security as

well as related areas such as migration and demography. The sections below illustrate a few resources and tools managed by the JRC specifically in support of disaster risk management, in the EU and beyond.

The important role of Copernicus tools

Copernicus is the Earth observation component of the EU's space programme. It offers information services that combine satellite data with data collected on the ground. The Copernicus Emergency Management Service (CEMS) is one of Copernicus' six operational services and it is implemented by the JRC. It continuously monitors the state of the environment to anticipate crises and, when emergencies hit, it provides fast, reliable data and cutting-edge geospatial information to inform emergency responses.

Copernicus tools for emergency response

For over 10 years, CEMS has supported the EU's humanitarian and civil protection response to disasters by providing fast geospatial imagery from satellites, planes and drones, using this data to monitor the situation on the ground. This information is essential in prioritising response actions that ensure human safety and protect infrastructure. For instance, the data and the products delivered by CEMS guided the reconstruction of Beng-

hazi in Libya after the civil war (2017), tracked the impact of the explosion in the port of Beirut in Lebanon (2020), and created maps to monitor and help the authorities respond to the impacts of the wildfires in Chile (2022). In Europe,

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recent examples include helping to identify Covid-19 facilities in Italy in 2020 and analysing the volume and thickness of lava flows, soil erosion and landslide risk in areas affected by the volcanic eruption in La Palma, Spain, in 2022. And in 2023, CEMS has monitored wildfire activity across the continent and the extent of the recent floods and landslides in the Emilia-Romagna region of Italy.

In any situation, users may call on one or more CEMS tools and capabilities to support their emergency response. For instance, in the aftermath of the earthquakes in Türkiye and Syria earlier this year, CEMS delivered analyses of existing and potential damage to infrastructure such as buildings, dams, and oil and gas pipelines, identified locations for humanitarian camps at low risk of flooding, and monitored migration.

Thanks to its Global Human Settlements Layer¹, which combines satellite observations with census information, CEMS is also able to map exposure to disasters. In the earthquake's aftermath, CEMS used this capability to calculate building heights and the resulting volumes of debris to inform clean-up operations. Further, CEMS teams, in collaboration with other JRC teams, analysed misinformation, monitored the health situation, and deployed artificial intelligence to process more than a million messages on social media to identify and geolocate those in need.²

Finally, the EU's Emergency Response Coordination Centre, alongside JRC scientists, drew on CEMS data to produce daily maps³ of the impact of and response to the earthquake, regularly used to guide operations on the ground.

Copernicus tools to anticipate and monitor crises

The other main line of CEMS work is looking out for floods, forest fires and droughts at European and global level. This is done through several entities: the European (EFAS) and the Global Flood Awareness Systems (GloFAS) support flood risk management at national, regional and global levels. Further, the European Forest Fire Information System (EFFIS) monitors forest fire activity in near-real time for wildfire management at the national and regional level in the EU, the Middle East and north Africa. EFFIS also publishes assessments such as the recent report on forest fires in Europe, the Middle East and Africa 2022,⁴ which offers lessons learned and other information to help affected regions prepare for this year's wildfire season. Finally, the Drought Observatory supplies information and early warnings for Europe and beyond (eg East Africa, South America, China), and analytical and assessment reports⁵ to help the EU anticipate and plan for droughts.

The Disaster Risk Management Knowledge Centre

The Disaster Risk Management Knowledge Centre (DRMKC) is a forum that brings together practitioners from the EU Civil Protection Mechanism's members and participating states, as

¹ Global Human Settlements Layer <https://ghsl.jrc.ec.europa.eu/>

² Social Media for Disaster Risk Management <https://bit.ly/42MF0AG>

³ European Response Coordination Centre daily maps <https://bit.ly/42SyrfU>

⁴ Forest Fires in Europe, the Middle East and Africa 2022 <https://bit.ly/44YsKyR>

⁵ Drought assessment reports <https://bit.ly/43e7vYn>



More information on the JRC

Visit our websites:

JRC: <https://joint-research-centre.ec.europa.eu>

CEMS: <https://emergency.copernicus.eu>

DRMKC: <https://drmkc.jrc.ec.europa.eu>

Subscribe to our newsletters:

JRC newsletter: <https://bit.ly/30bcc00>

DRMKC newsletter: <https://bit.ly/3W7PwRO>

Find upcoming events on disaster risk management:

Copernicus events: <https://bit.ly/30960Go>

DRMKC events: <https://drmkc.jrc.ec.europa.eu>

JRC events: <https://bit.ly/304wzww>

Watch the events pages above to find out more our upcoming public events:

CEMS General Assembly (October 2023)

DRMKC Annual Event (November 2023)

well as from the wider disaster risk management community. It works to break barriers between disciplines, to connect science, operations and policy needs, and to foster dialogue across policy areas and emergency institutions. Its goal is to promote evidence-based decision-making and operations. The DRMKC delivers the scientific activities of the EU Civil Protection Knowledge Network, a tool first created to promote innovation and dialogue and to enhance cooperation between Member States' national civil protection authorities. In this regard, the DRMKC develops products and tools to support evidence-based EU policies on disaster risk management. Examples include the Risk Data Hub,⁶ the Global Conflict Risk Index,⁷ and INFORM.⁸ EU policies that drew on DRMKC resources include the recently adopted European Union Disaster Resilience Goals.

Prepared for the future

Effective disaster management depends on reliable data that will help the EU and its partners anticipate and monitor crises and respond to them effectively. The JRC is a key contributor of the cutting-edge science behind this. By hosting data, services, and other capabilities, and fostering dialogue, the JRC substantially strengthens the robustness and evidence-base of the EU's humanitarian aid and civil protection.



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⁶ Risk Data Hub <https://bit.ly/3layoEr>

⁷ Global Conflict Risk Index <https://bit.ly/3Mrvs8F>

⁸ INFORM <https://drmkc.jrc.ec.europa.eu/inform-index>