



# Maps and analysis for the situational awareness sector of the ERCC

Brussels 17 November 2022

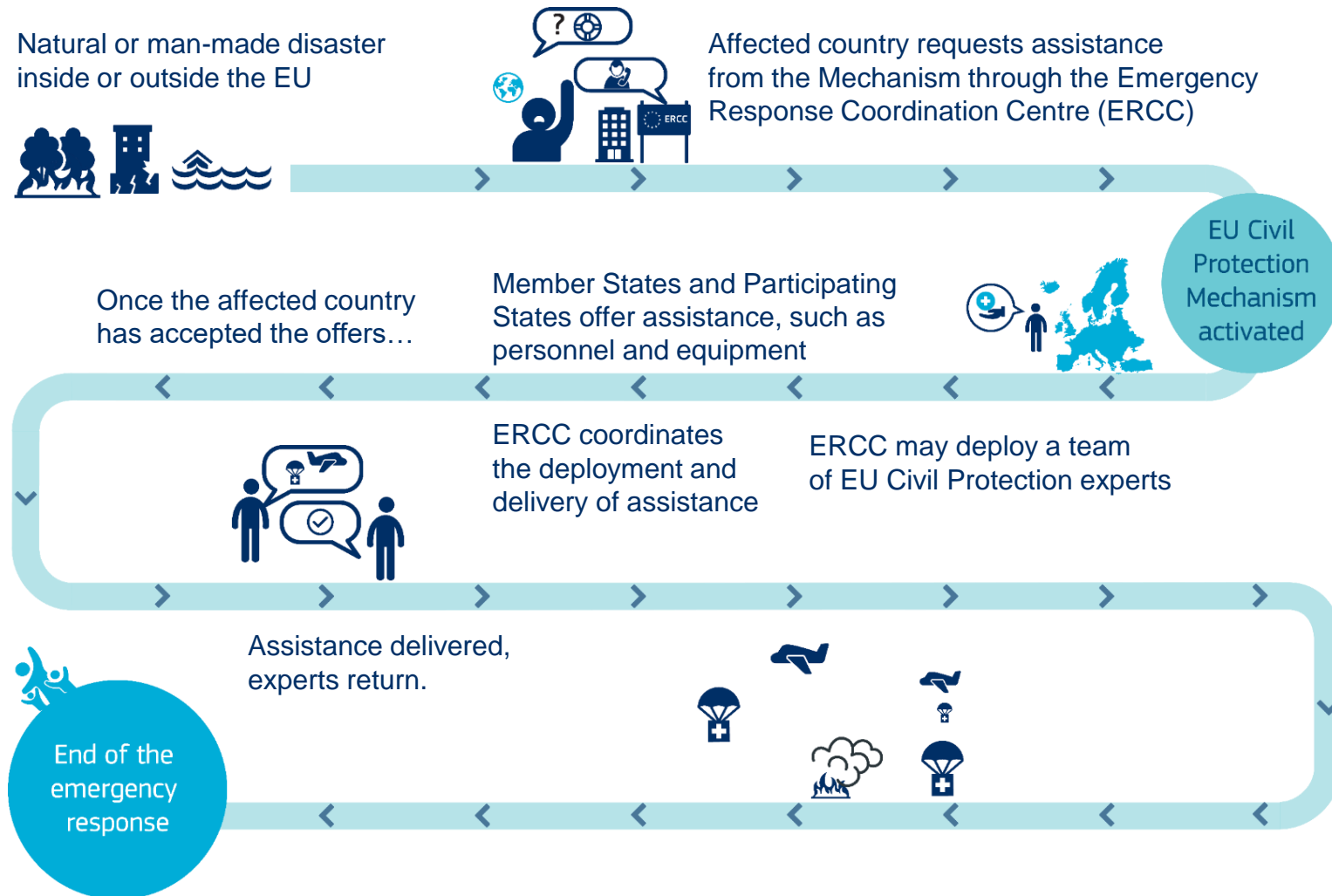
Nelles Scholiers

Situational Awareness Sector DG ECHO.A3

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- Mandate and Objectives of the Situational Awareness Sector (SAS)
- The workflow
- SAS in practice in case of emergency
- Main Sources of information:
  - Early Warning Systems
  - Copernicus Emergency Management Service
  - European Scientific Partnerships
- Case scenario: Pakistan – August floods and UCPM response

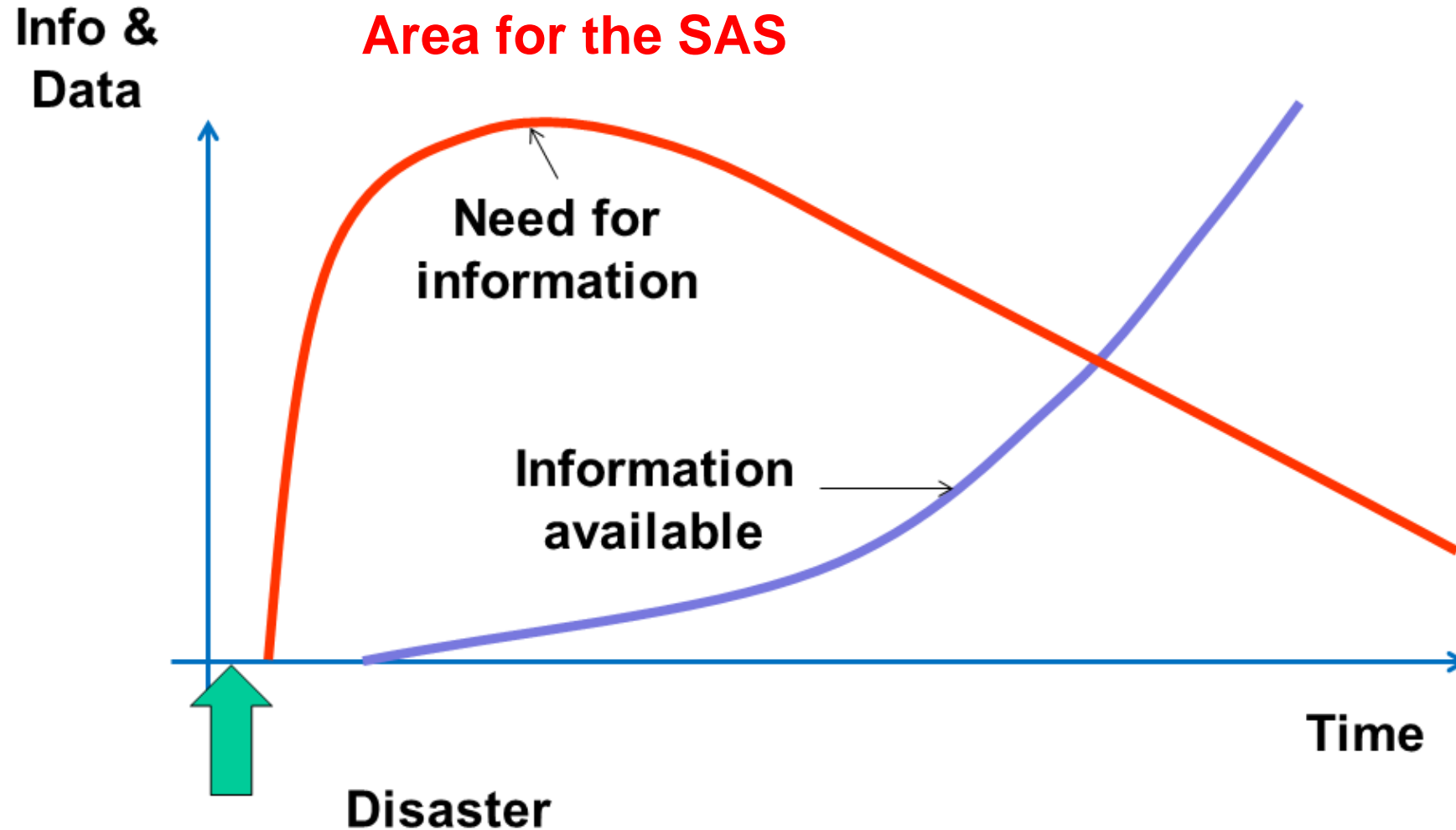
# How does the EU Civil Protection Mechanism (UCPM) work



# Mandate

- Ensure situational awareness and provide actionable information for evidence-based decision-making (e.g. operational preparedness, scenario building).
- Maintain and develop transnational early warning systems
- Develop European Scientific Partnerships providing scientific and technical expertise to UCPM, bridging the gap between science and operations
- Coordinating DG ECHO's contributions to the Integrated Situational Awareness report (ISAA report)
- Manage the Lessons Learnt process

# Objectives



Source: OCHA

# Workflow

## Input

Early warning and information systems

European Scientific Partnerships

Earth observation

Commission services  
EU DEL  
ECHO Field  
ECHO Partners

International organisations (United Nations, WHO, ...)

Academia, media, social media

## Processing/Analysis/Integration

**Analysis and Situational Awareness**  
(Analytical briefs, emergency briefs, monitoring and updates)

**Cartographic Analysis**  
(Situational maps, operational maps, effective use of Copernicus)

**Deployment Plans**  
(Potential needs and response options, deployment recommendations, operational and security advice)

**Crisis Support**  
(ARGUS/IPCR coordination, contingency plans, methodologies, foresight, scenario development and analysis)

**Operational Preparedness**  
(Decision support systems, trend analysis, operational scientific and technical partnerships)

## Output

Operations and deployments

Mobilization of response assets

ISAA coordination

Expert deployment

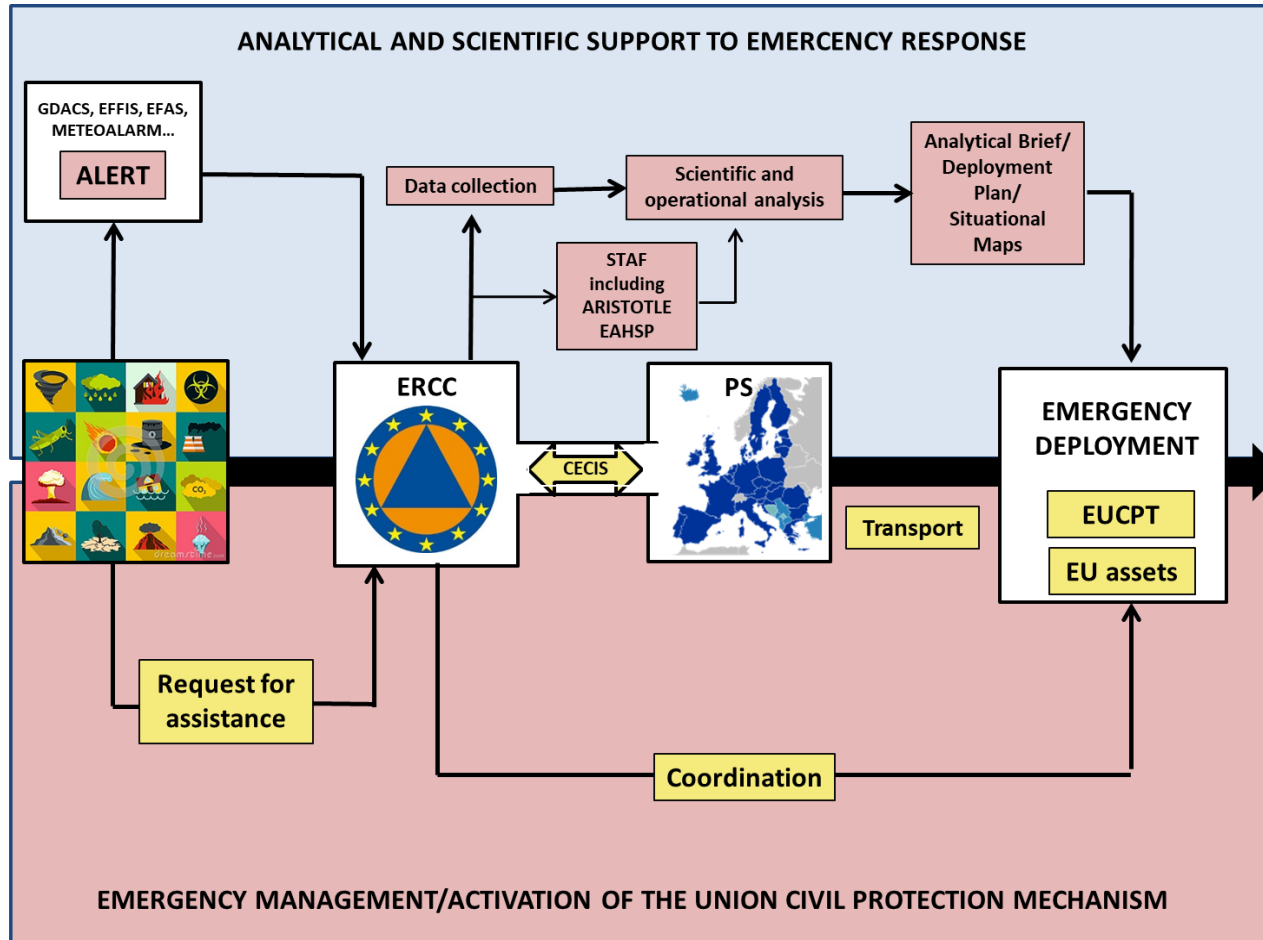
Emergency funding

Operational and security context

Lessons and good practices

Follow-up activities

# In practice



- Monitoring
- Collecting, comparing and analyzing reliable and timely data
- Producing Analytical Briefs, Deployment Plans, ISAA reports, etc.
- Producing situational maps
- Developing algorithms for emergency funding decisions
- Identifying Areas of Interest for Copernicus Emergency Management Service – Rapid Mapping



## **Novel coronavirus (COVID-19) outbreak** DG ECHO - ERCC Situational Awareness Team –15 April 2021 – 16:00 CET

	Total cases	(Weekly cases)	Total deaths	(Weekly deaths)
Global	136,508,474	(4,869,194)	2,944,827	(86,772)
EU	28,383,883	(977,616)	644,640	(17,969)

All figures come from ECDC update of 15 April at 11:00 CET providing weekly data up to 12 April.

### OVERVIEW OF CASES AND FATALITIES

- Globally, the number of new cases is trending upwards for a seventh consecutive week, with nearly 5 million new cases reported in the last week, which is an increase of 20% compared to previous week. The number of new deaths increased by 30% compared to last week, with on average over 12,400 deaths per day. Nearly 3 million deaths have been reported since the start of the crisis. Significant increases in case and fatality incidences were observed in Asia and America (see Fig. 1).
- In Europe, in the past week, the number of new cases (ca. +182,400/day) has decreased by 10% and the number of fatalities (ca. +3,710/day) has again increased by 8% compared to the previous week (see Fig. 1). The countries reporting the highest number of cases in the past week were France, Poland, Germany, Ukraine and Italy, with on average of more than 10,000 daily new cases. All these countries reported a decrease, except Germany and Ukraine. The case incidence in Switzerland and Liechtenstein has more than doubled in a one-week period. Croatia, North Macedonia, Bosnia and Herzegovina and Germany have reported a significant increase in fatalities (>30%) over the last week.
- In the Americas, the numbers of new cases (ca. +233,000/day) and fatalities (ca. +6,300/day) have significantly increased, by 33% and 37% respectively compared to the numbers reported a week earlier. The US reported an increase by 50% of its case and fatality incidences compared to those reported a week earlier. In Mexico the fatality incidence has more than doubled.
- In Asia, the numbers of new cases (ca. +268,800/day) and fatalities (ca. 2,100 per day) have increased by 43% and 66% respectively compared to the numbers reported a week earlier (see Fig. 1). India has seen its number of daily new cases increasing sixth fold in less than a month, from 22,300 to 134,000 daily new cases on average. Over the last week the case incidence in India increased by +71%. Turkey and Iran also reported significant increases (>30%).
- In Africa, the number of new cases (ca. +11,200/day) has decreased by 5% compared to a week earlier and the fatalities have stabilised at around 270 daily new cases (Fig. 1).

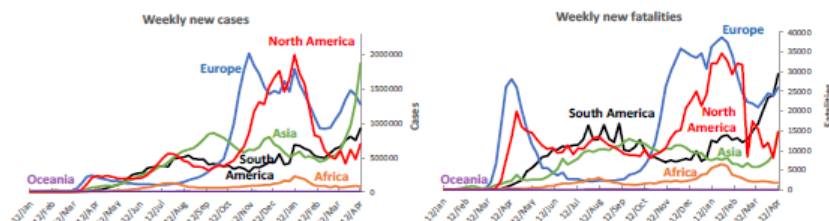


Figure 1: Weekly new cases (left) and fatalities (right) reported by continent.



## **Novel coronavirus (COVID-19) outbreak** DG ECHO - ERCC Situational Awareness Team –15 April 2021 – 16:00 CET

### OVERVIEW OF VACCINATION

- On 15 April, more than 120 million vaccine doses have been distributed to the EU/EEA countries, from which nearly 100 million have been administered (see Fig. 2). Nearly 20% of the adults have received a first vaccine dose and over 7% of the adults have received the second dose. On average over the different EU/EEA countries, more than half of the healthcare workers and nearly 50% of the persons aged 80 years and above are now fully vaccinated (source: [ECDC](#)).

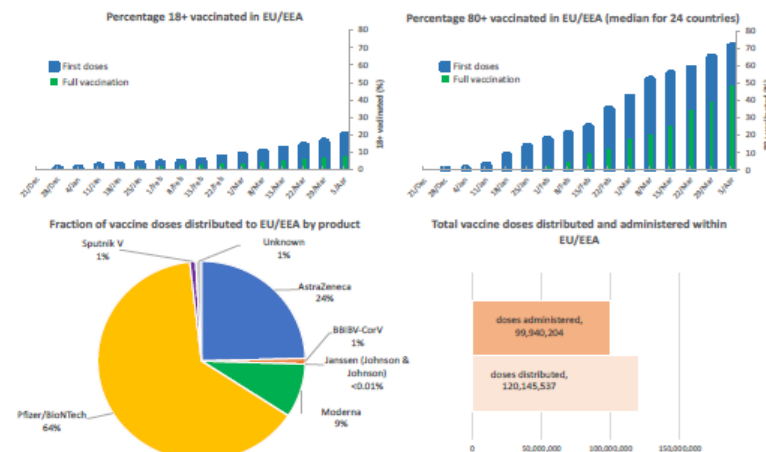


Figure 2: Progress of vaccine uptake by adults over 18 (top left) and over 80 years of age (top right) in EU/EEA countries, fraction of doses distributed to EU/EEA countries by product (bottom left) and total doses distributed and administered within EU/EEA (bottom right) (source: [ECDC](#)).

### LATEST DEVELOPMENTS IN COVID-19 MONITORING, RESEARCH AND RESPONSE

- On 8 April, ECDC published a [technical report](#) on the incidence of reinfection with SARS-CoV-2. In 2020, a total of 1 887 possible cases of reinfection were reported to be under investigation across 12 responding EU/EEA countries. According to scientific studies mentioned in this report, the reinfection rate fluctuates between 0.5% and 0.7%.





DG ECHO A3 - Situational Awareness Team – 02 September 2019

- DORIAN hit the Abaco and Grand Bahama islands of the Bahamas as a Category 5 Hurricane, starting in the afternoon of 1 September (NOAA). Its track is passing directly over the two islands. On 2 September 14:00 UTC its center was still over the Grand Bahama and it is expected to continue affecting the island at least until the morning of 3 September.
- The winds, storm surge and rain of DORIAN are characterised as catastrophic (NOAA). DORIAN is the strongest (in winds) landfalling Atlantic hurricane in history. Devastating damage is expected and reported in Abaco and Grand Bahama (CNN). Hurricanes hit the Bahamas regularly but DORIAN is by far the strongest one to hit the country, which means that the population is not accustomed to such severe consequences.
- The country's prime minister warned that 73,000 residents and 21,000 homes could be affected and urged residents of the Grand Bahama Island on Sunday to move to safer ground in the main city of Freeport (NYT).

- **WIND:** During landfall at Abaco Island near the town of Marsh Harbour the 1-min sustained winds were **296 km/h (Category 5)**. At 09.00 UTC on 2 September the winds were still at Category 5 level, close to **270 km/h (GDACS)**. The minimum wind resistance of buildings in the [Bahamas building code](#) is 120km/h; the maximum is [reported](#) to be 240 km/h. A large percentage of the houses, particularly in Abaco, can therefore be very severely damaged or completely destroyed.
- **STORM SURGE:** A storm surge of **at least 2.3m (GDACS)** and possibly up to **7m (NOAA)** is expected to affect the NW Bahamas. Given that the two main population centres, Marsh Harbour in Abaco (pop ca. 10,000, see below) and Freeport in Grand Bahama (pop. ca. 50,000) are at elevations between 2 and 8m, floodwaters are expected to inundate these cities to a very large extent.
- **RAIN:** Rainfall of more than 500mm is expected to fall over the NW Bahamas, further exacerbating the already very severe coastal flooding. Heavy rainfall has also fallen over the other islands of the Archipelago, like Andros and the capital Nassau.
- All the above phenomena are made more persistent by the slow movement of DORIAN (2-5 km/h).

- Impact: Severe to destructive damage to houses by winds and storm surge; severe damage to public buildings such as hospitals and schools; severe damage or destruction of roads and ports; possible inundation of the Freeport and Marsh Harbour airports; prolonged power cuts; lack of potable water; communication blackout.
- Local [media](#) reports, photos and videos indicate widespread destruction from wind and floods.
- Needs: Search and Rescue by boats, shelter, WASH, medical equipment, water pumps, emergency food rations.

- The Bahamas is one of the richest countries in the Americas with a GNI per capita of more than 30,000 USD. However, damage to communications, power, ports and airports can severely hamper the provision of assistance and keep the affected population in very difficult circumstances for a long period.
- A few thousand people in Marsh Harbour live in vulnerable conditions (a shantytown) that might sustain even heavier damage ([Nassau Guardian](#)).

DG ECHO A3 - Situational Awareness Team – 02 September 2019

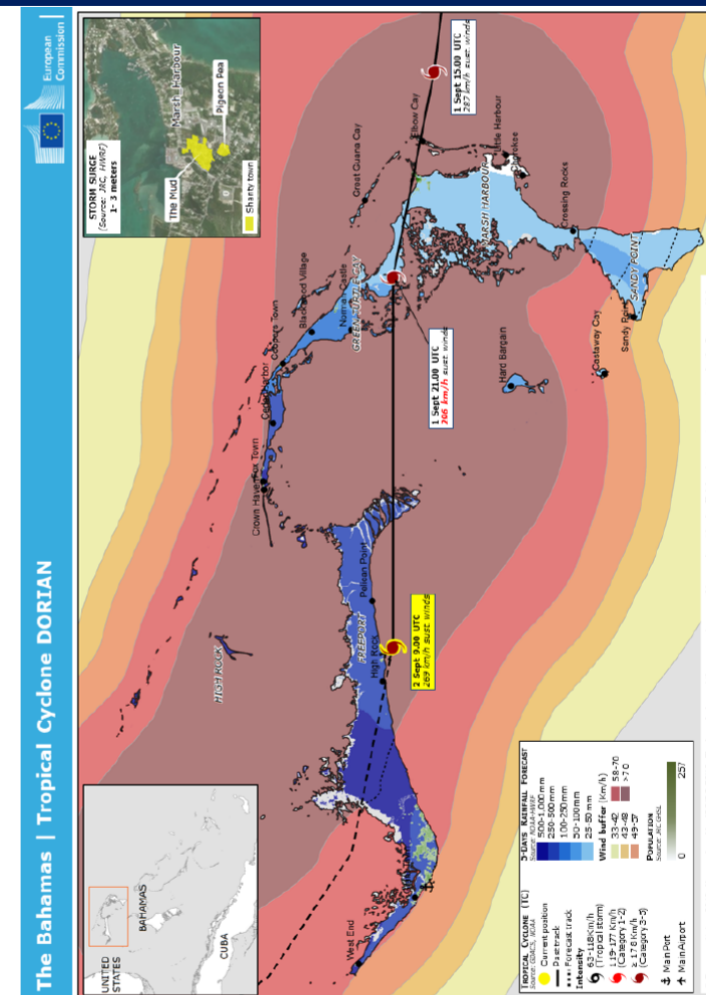


Figure 1: Map of the track, winds and rainfall of DORIAN over the NW Bahamas. Map created by the Joint Research Centre.









## RUSSIA'S WAR ON UKRAINE - MEDEVAC - UCPM OPERATIONS DASHBOARD

1754

Requests for Medevac

1483

Completed

40

In transit \*

18

Destination countries

Patient % by Status of evacuation



\*In transit: From acceptance of medevac offer to the arrival of the patient in the hosting hospital.

Patients by Requesting country



Patients by Destination country

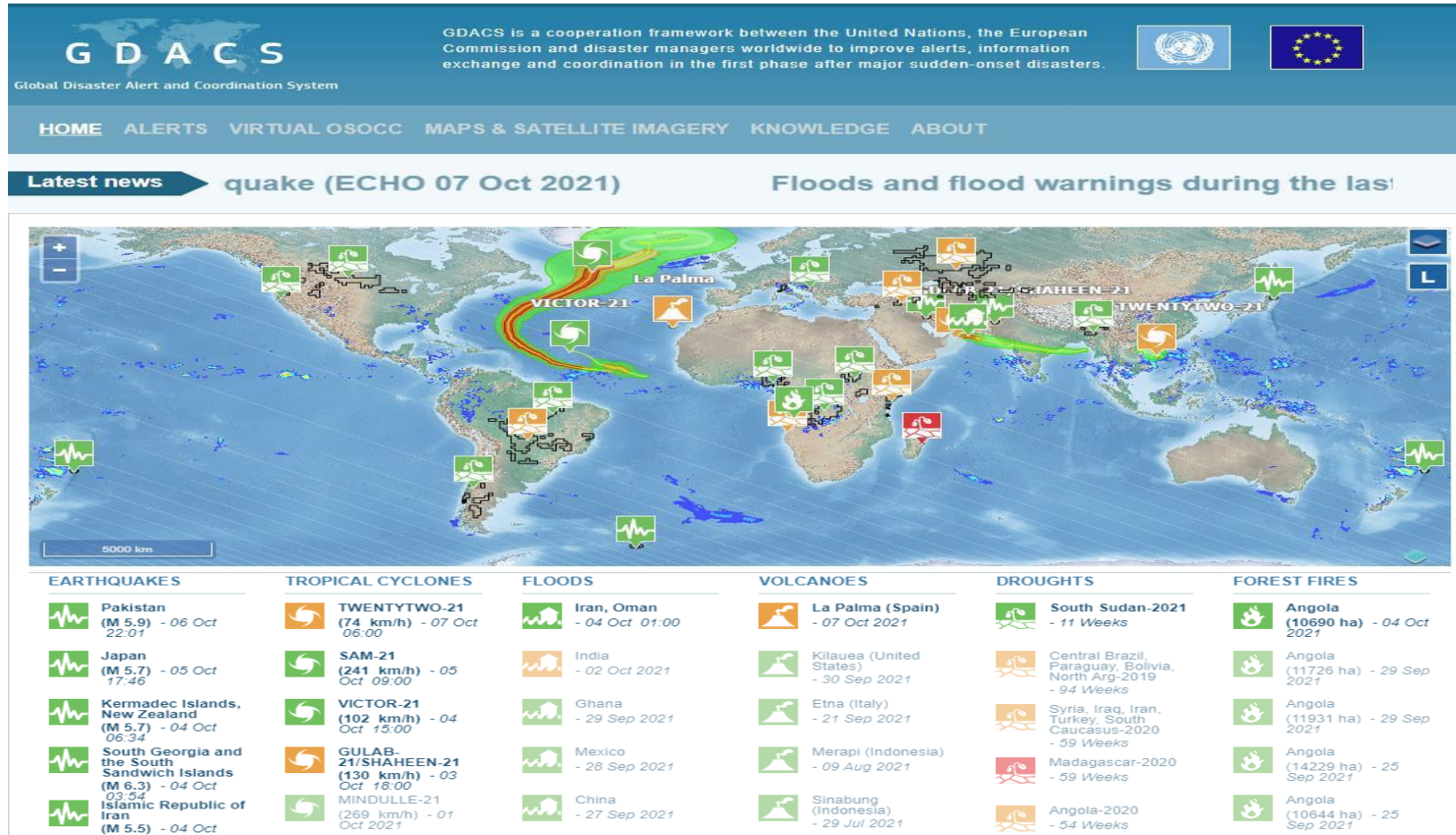


Destination country



European  
Commission

# Sources: the Global Disaster Alert Coordination System (GDACS)



# Source: Copernicus Programme

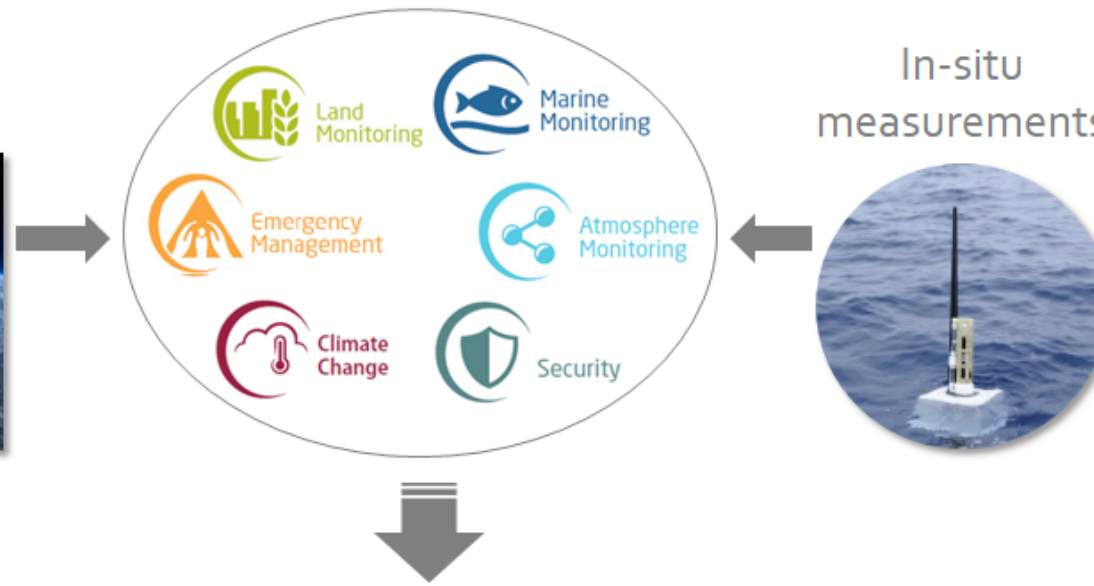
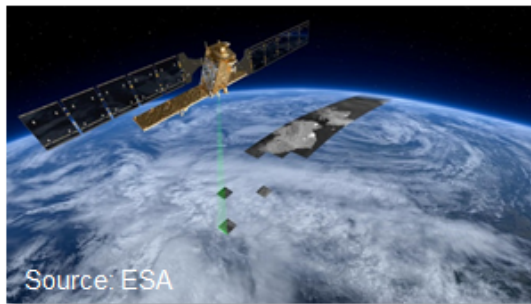


EU's Earth Observation Programme

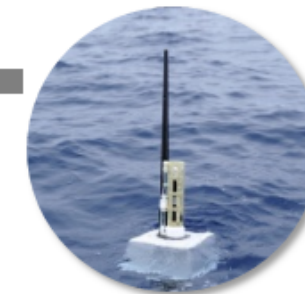


6 services use Earth Observation data to deliver ...

Satellites: Sentinels & Contributing Missions



In-situ measurements



... added value products





# THE COPERNICUS EMERGENCY MANAGEMENT SERVICE

On-demand  
mapping



Rapid  
Mapping



Risk & Recovery  
Mapping

Early warning  
and monitoring



Floods



Fires



Droughts

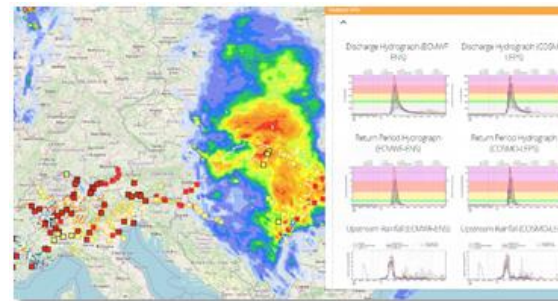
Exposure  
Mapping



Population



Built-up  
areas



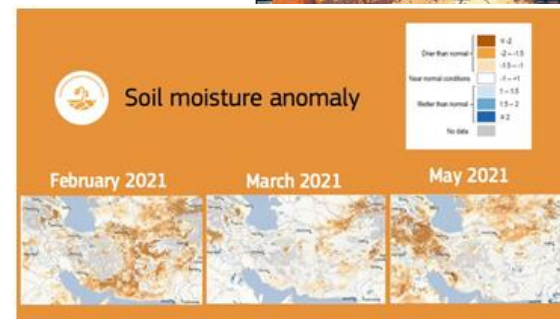
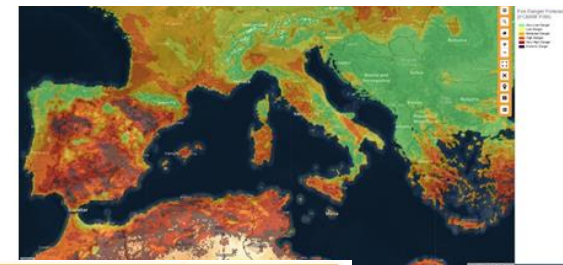
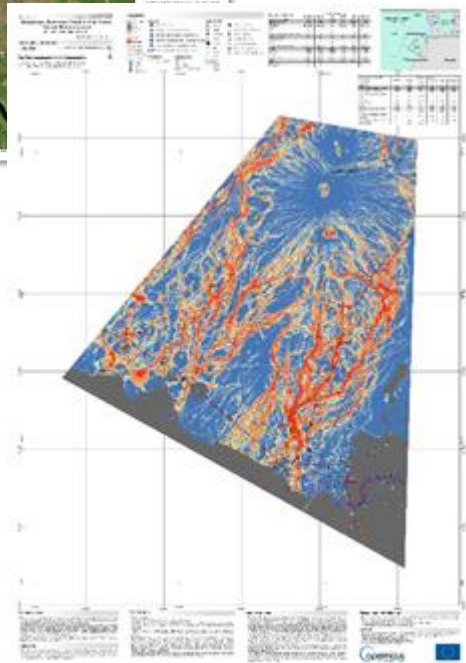
[www.efas.eu](http://www.efas.eu)

[www.globalfloods.eu](http://www.globalfloods.eu)



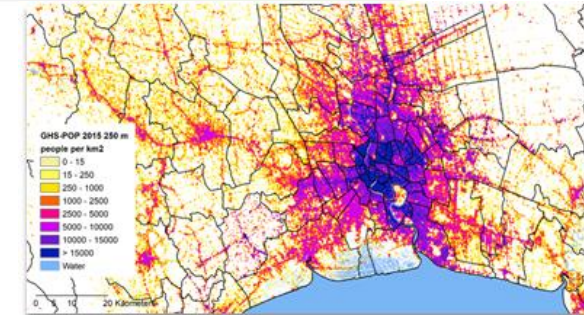
<http://effis.jrc.ec.europa.eu>

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



<http://edo.jrc.ec.europa.eu>

<http://edo.jrc.ec.europa.eu/gdo>



# European Natural Hazard Scientific Partnership

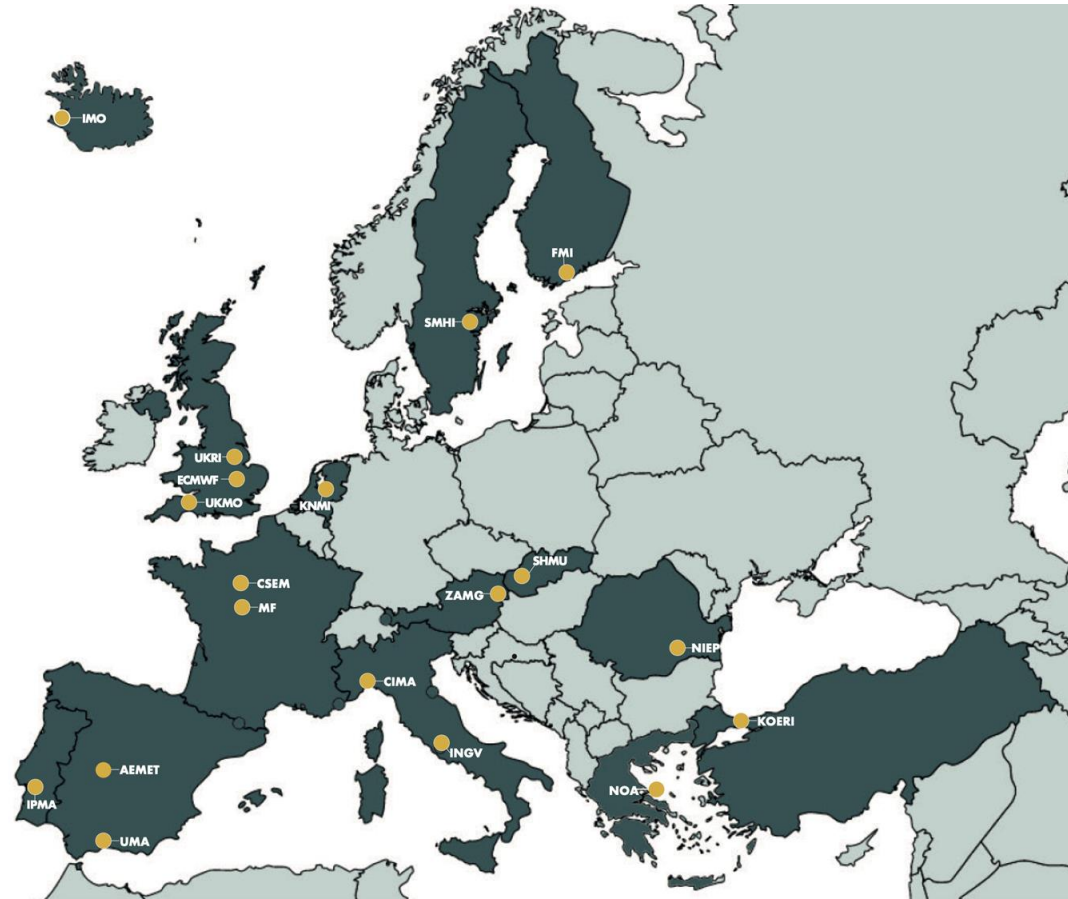
**Delivers scientific expert advice service to the ERCC**

- **24/7**
- **multi-hazard**
- operated by **17 national** and **2 international institutions** (most institutions have a national mandate)
- Two main services: **Emergency Reporting and Monitoring reports 3x/week**
- **NEW SERVICE UNDER TESTING** > STAF mechanism (Scientific Technical Assistance Facility)



**ARISTOTLE ENHSP**  
*enhanced European Natural Hazard  
Scientific Partnership*

# The ARISTOTLE-eENHSP Consortium





# European Anthropogenic Scientific Partnership Radiological and Nuclear pillar (EAHSP-RN)

- Scientific & technical support in case of radiological emergencies
  - 24/7 duty cycle
  - Provide the EU with technical/scientific information on continuous basis
- Organization of annual exercise
- Training of emergency management staff
- Development of radiological emergency scenario
- Ad hoc technical/scientific support

# All-hazards early warning through the Global Situation System (GSS)



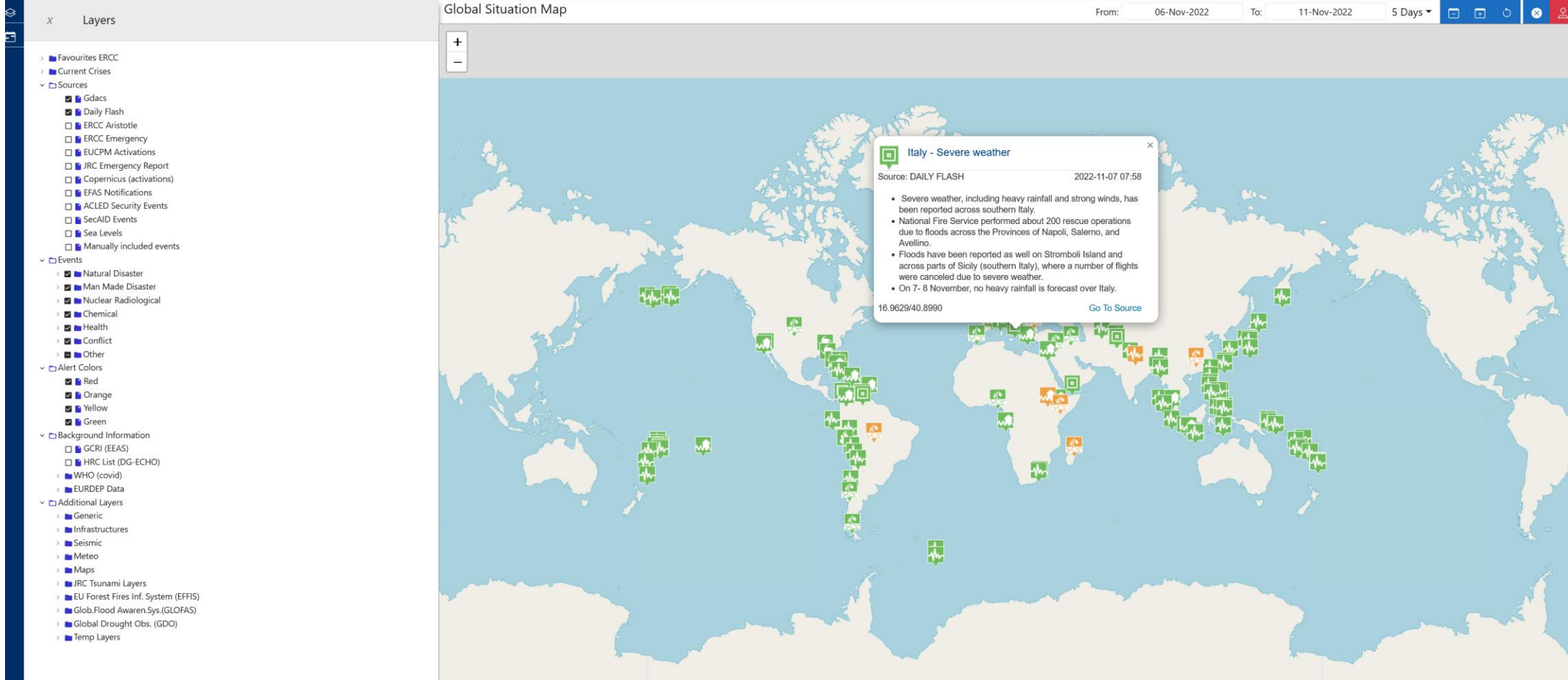
EUROPEAN CIVIL PROTECTION AND HUMANITARIAN AID OPERATIONS

Emergency Response Coordination Centre (ERCC)

Global Situation System [Map](#) [Dashboard](#) [Details](#) [Data Entry](#) [Logout scholne](#)

Orange M 5.6 Earthquake in Nepal at: 08 Nov 2022 20:27:23.

2 of 3



# Pakistan – August floods and UCPM activation

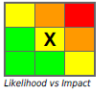
## – Monitoring the situation

- [Daily Flash](#) – first flash published 6 July on the monsoon rains
- [Gdacs alert](#)
- Activation of [ARISTOTLE](#) on 22 August
- [Daily map 26 August](#)
- Analytical brief: 29 August
- Activation of [Copernicus EMS](#)
- [Dynamic map](#) giving overview of detected flood by Satellite image

#### 4: Heavy monsoon rainfall - Northern India, Pakistan and parts of Afghanistan

##### Description

A monsoon low-pressure system is traveling from Bay of Bengal across northern parts of India to over Pakistan and Afghanistan during the next several days. Tropical moisture and heavy rainfall potential will move along with this low system and the expected rainfall totals can reach from 100 mm to 250 mm. Additionally, stronger-than average Arabian Monsoon flow will feed rainfall amounts especially over Indian/Pakistan border. During the past month, several monsoon low-pressure systems have brought periods of heavy rainfall in these areas causing flash flooding.



##### Impacts

Flash flooding likely. Landslides within the mountainous areas and possibly disruption to power supplies.

The Flood Forecasting Division of Pakistan is observing levels at normal or low stage along the Indus river and its tributary River Chenab. One station indicates a medium flood near Gujrat along the Chenab river. According to GloFAS, most of south Pakistan rivers (including the Indus) are anticipated to rise in the coming days, with possible peaks above the 1-in-20 years RP expected towards the end of the week potentially posing at risk ~700,000 people. However, there is some associated uncertainty with the forecasts and peaks are expected >3 days.

The Central Water Commission of India reports an extreme flood level for Dudhi river at Panagar (Base) station in Medhya Pradesh state, although this flood signal is not captured in GloFAS.

#### DG ECHO ERCC Analytical Brief

Floods in Pakistan  
DG ECHO A3 - Situational Awareness Team - 29 August 2022

##### 1. Executive Summary

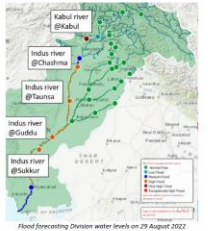
- Very high flood levels are still observed along the Indus and Kabul rivers and will remain so throughout this week. In some places the flood levels reached beyond the 100-year return period. However, the floods have peaked and are starting to recede along the smaller rivers. Along the Indus, flows might fall below the 20-year level in the coming few days.
- Rains are subsiding in most of the country – no significant precipitations are forecast in the next few days in the most affected regions of Pakistan.
- In a historical context, the current floods have affected a higher number of people than those of 2010, even though the floods of 2010 inundated a larger area and destroyed a higher number of houses. The cost of 2010 was close to 10 billion USD including reconstruction and of the current floods could be comparable to that.

##### 2. Current situation and forecast

- As of 29 August, the National Disaster Management Authority (NDMA) of Pakistan reported that at least 1,130 people died and 1,634 people were injured due to flooding since 14 June. The Sindh province is the most affected province in terms of human impacts, followed by Khyber Pakhtunkhwa (KP) and Balochistan. More than 1 million houses have been reported damaged, mainly in the Sindh province.
- The government authorities indicate that around 33 million people have been affected up to now (NDMA).
- On 29 August, the UCPM was activated upon request of the Pakistan Ministry of Economic Affairs, for assistance for non-food items, health items, relief machinery and veterinary items.
- The European Commission's Copernicus Emergency Management Service was activated (DG ECHO) to provide satellite maps on the areas around the cities of Lahore (around 300,000 people), Shikarpur (200,000) and Jacobabad (200,000), all in the Sindh province.
- DG ECHO and the IRC are mapping the floods' extent in the largest part of the country with the Global Flood Monitoring System using Sentinel radar data; a final product is expected by 30 August.
- The national weather service has no warnings issued for today. The weather will be partly cloudy with rain and thunderstorms at isolated places in Kashmir, northeast Punjab, upper KP, Gilgit Baltistan and north Balochistan.
- The Flood Forecasting Division in Pakistan (FFD) is observing very high flood levels in Kabul river, a tributary of Indus River. As shown in the figure below, the Indus River present high flood levels between the cities of Islamabad and Hyderabad.

#### DG ECHO ERCC Analytical Brief

Floods in Pakistan  
DG ECHO A3 - Situational Awareness Team - 29 August 2022



- The ARISTOTLE team forecasts no wide rain for most of Pakistan in the coming week, although some showers could bring accumulations of up to 15 mm in the north-eastern part of the country, which is not likely to affect the flooding situation further.
- As reported by ARISTOTLE, the flow of the Indus river and its tributaries have peaked and are now receding rather quickly. The flows will remain high for the coming week, generally above the 20-year return period, as rivers were at extraordinary high levels (some reporting points peaked far beyond the 100-year return period). As shown in the figure below, the highest flows are forecasted along the Kalachi river between Balochistan and Sindh regions.
- GloFAS assesses that around 1.45 million people are potentially at risk due to floods in the next 3 days.

#### DG ECHO ERCC Analytical Brief

Floods in Pakistan  
DG ECHO A3 - Situational Awareness Team - 29 August 2022



GloFAS Flood forecast from 29 August 2022. The green balloon indicates the reporting points with high levels at the Kalachi river.

# Pakistan – August floods and UCPM activation

## EU Response

- 28 August, the European Commission mobilised EUR 2.35 million in initial emergency humanitarian funding to address the most urgent needs of the affected population.
- Activation of the UCPM : 29 August
  - Request from government of Pakistan with list of the needs including items related to shelter, hygiene and health, food and veterinary medicines, as well as heavy machinery – Later the list was updated with rescue teams
  - Mobilisation of EUCPT team to support with planning and assessments as well as logistical arrangements in order to ensure a coordinated and efficient deployment of MS/PS assistance. Deployed on 6 September

# Pakistan floods emergency timeline initial response



Heavy monsoon rainfall and floods affecting Pakistan since mid-June.



On 29 August, UCPM activated by Pakistani authorities via the EU DEL in Islamabad.

Copernicus Emergency Management Service activated (EMSR629).



1 September, FR offers 8 doctors, 4 water pump-technicians, in-kind assistance and one bailey bridge.

BE assistance arrives.



6-7 September, EUCPT deploys to Islamabad.



8 September, AT offered shelter items.



10 September, Copernicus EMS activated for DK WP (EMSR631).



On 28 August, the EC mobilized EUR 2.35 million in emergency humanitarian funding.



30 August, BE and SE offer 300 tents each.



2 September, DK offers WP team.

Part of FR assistance arrives.

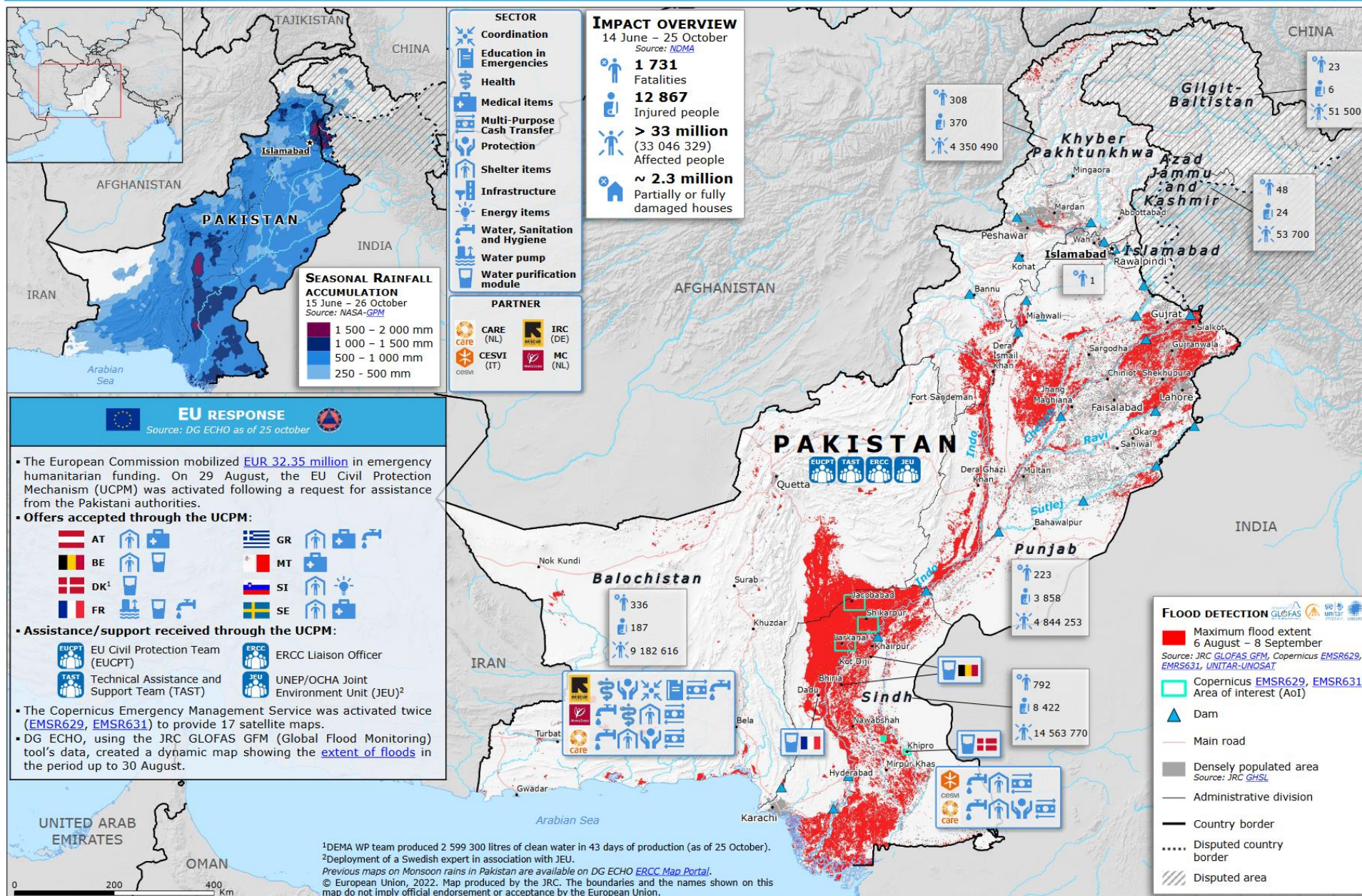


7-9 September, DK WP team and equipment arrive in Pakistan.





## Pakistan | Monsoon rains - Civil protection and humanitarian response update



# Thank you



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