



## EFFECTIVE CRISIS RESPONSE THROUGH MAPPING PREPAREDNESS

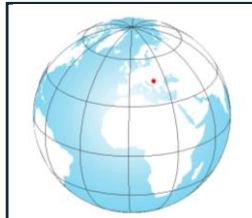
### CASE STUDY: SERBIA FLOODING 2014 *Communicating the Common Operational Picture*

The few days following a disaster are critical for the affected population. Responders need to know where the affected area is, who is affected, what infrastructure is damaged, and what relief efforts are occurring or needed. MapAction has been helping relief agencies since 2004 to gather this crucial information, and are helping to pass on their experience to national disaster agencies, NGOs and Red Cross/Red Crescent Movement.

MapAction has many valuable lessons that can help these agencies be prepared for emergency response mapping in turn decreasing suffering of affected populations and increasing their resilience for the future. These include:

- Having a good set of basemaps and information shared amongst responders before disaster strikes,
- Having local skills in mapping and information management,
- Using templates and standard procedures speeds up the ability to make good maps,
- **Maps help responders make a common picture of a disaster, the area affected and where relief efforts exist.**

This is one of a series of case studies to show why these learning points help organisations become more resilient in emergency preparedness.



AREA: Balkans, Europe

DISASTER: Heavy Flooding

YEAR: 2014



Areas most heavily affected by flooding are along the Sava and Danube. [© Alan Mills MapAction]

Heavy rainfall began on 13 May, as a result of a low-pressure area (Yvette internationally, Tamara in the Balkans) that formed over the Adriatic Sea due to polar air from Central Europe meeting with humid subtropical air in the Mediterranean basin. After the rainfall ceased several rivers including the Danube (Europe's second longest river after the Volga), Sava, Kolubara, Drina, Mlava and Velika Morav, continued to rise.

The effects of the rainfall were spread across Croatia, Bosnia and Herzegovina and Serbia, resulting in flash flooding events in places such as Obrenovac, and slow onset flooding and groundwater saturation in the plains. The rainfall and associated flooding seriously impacted livestocking and cropping, and led to numerous landslides in the hills of the southern Sava basin.

#### Impacts included:

- collapsed bridges and blocked roads
- evacuation of towns and villages resulting in displaced populations
- loss of two major power stations supplying approximately half of Serbia's electricity
- chemical spills from existing and decommissioned industrial facilities
- flooding of coal mines and breaches in levees and chemical containment dams.



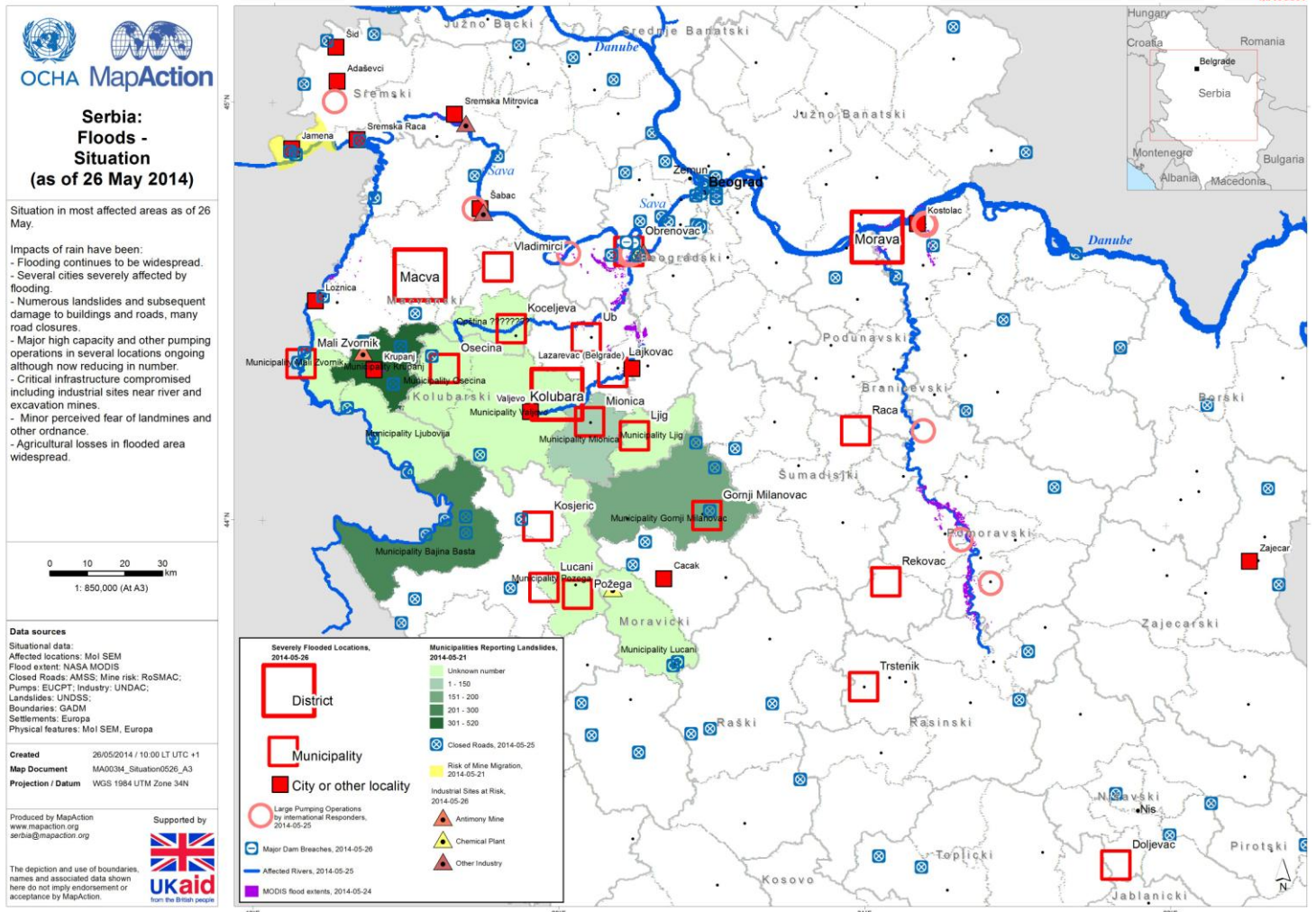
# MapAction



1-2m of sandbagging along the main road between Belgrade and Obrenovac  
[© Alan Mills MapAction]

MapAction deployed to Serbia with laptops loaded with relevant spatial and specialist GIS software which could be used for effective and efficient map making. Baseline data from the Sector of Emergency Management (SEM), EU Copernicus satellite data and situational updates from the EU's Civil Protection Team (EUCPT), the UN Department for Safety and Security and the Mine Action Center, amongst others, meant that this was a data rich mission.

MapAction's task was to support the Information Management (IM) role and to provide a mapping capacity to the UNDAC experts. Primarily, this meant defining a Common Operational Picture (COP) through mapping the affected area and providing overall situation information for the Resident Coordinator (RC) and the UN agencies to assist the flood affected population.



Daily situation map showing an overview of flood affected rivers, landslide zones, reported affected municipalities/cities/districts overlain with major effects – pumping operations/road closures/areas with landmines and environmental hazards. [© MapAction]



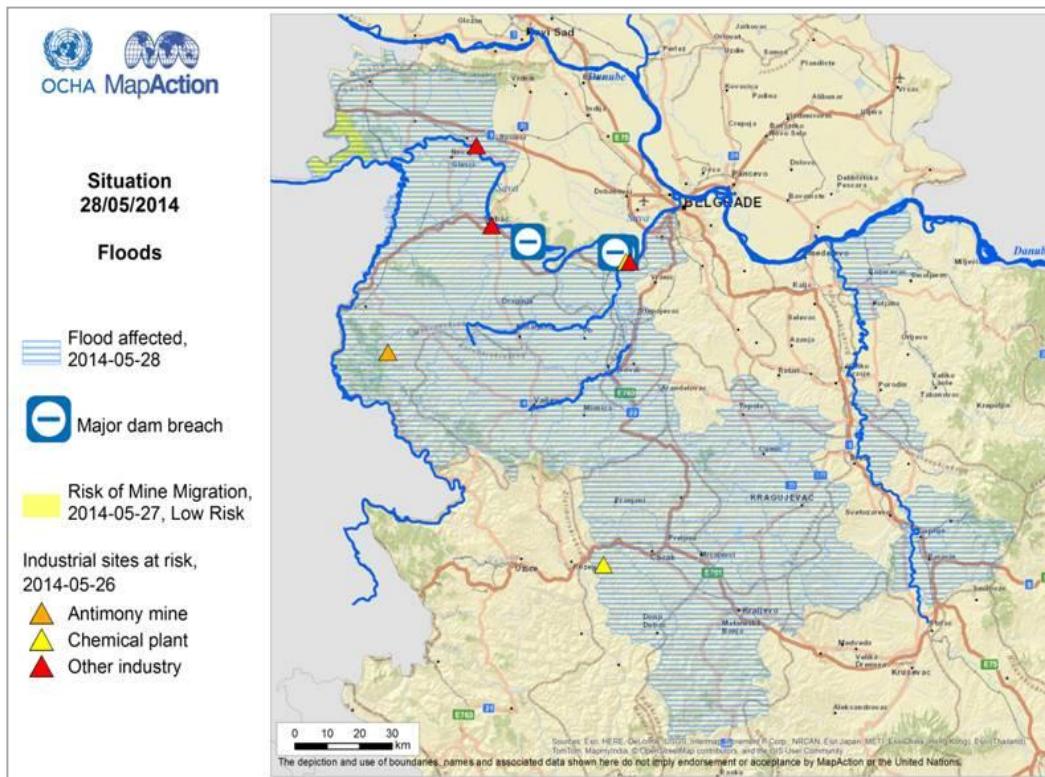


The mission moved through a number of stages, in which MapAction played a critical role helping to define and update the common operational picture. In the first instance it was necessary to collate reports of affected areas. This included integrating reports showing the location of flooded areas on the flood plain, where pumping operations were occurring and where roads were closed due to landslides in the western hills. Potential flood management issues which could cause additional effects were also identified. These included environmental problems caused by polluted waters from industrial sites, bridges closed by weakened infrastructure, and also the potential threat of landmines left over from the Balkan conflict migrating with the floodwaters from near the border with Bosnia.



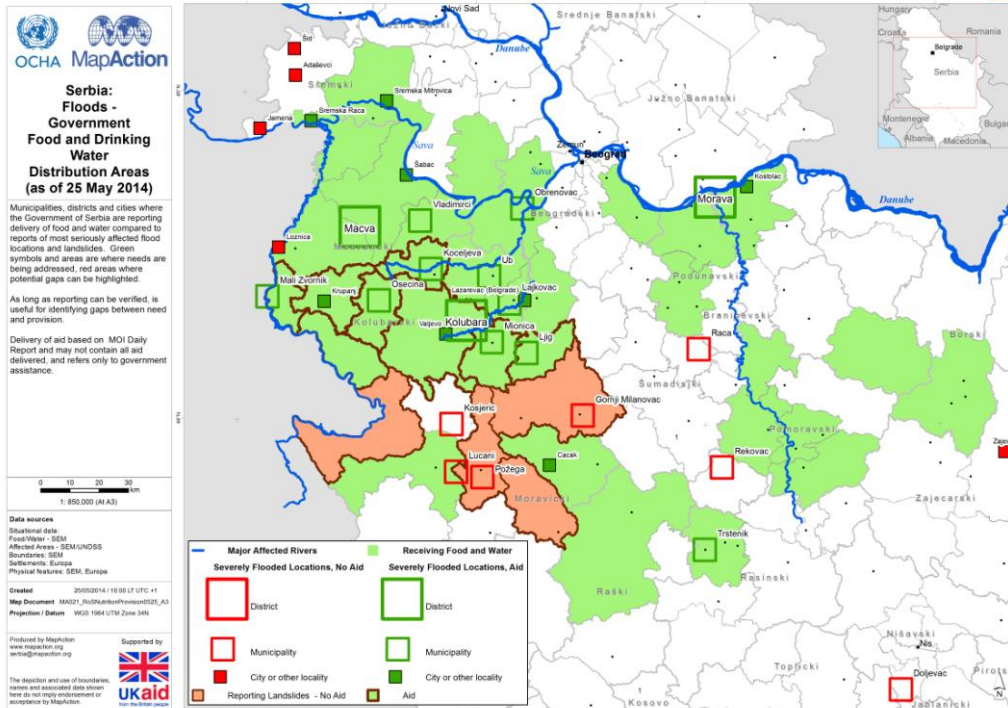
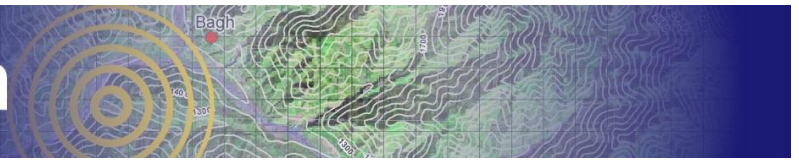
*Crews clearing blockages from high capacity pumping hoses in Obrenovac [© Alan Mills MapAction]*

Drawing this information together into a daily situation map of the affected area presented a clear picture of the operational need and the spatial distribution of the different types of problems faced across the region. The map made it possible to look at the details of the situation, including the fact that road closures associated with landslides were largely restricted to the western, hilly region of the affected area, while flooding in the Sava and Danube flood plains covered a far wider geographical extent. In addition to these widespread issues, it was also possible to pull out detailed information regarding the very specific environmental and mine-related issues which occurred in locations such as Požega, Mali Zvornik, Šabac and Jamena, near the border with Bosnia.



*Simplified overall affected area map used for the final United Nations Disaster Assessment and Coordination (UNDAC) report and UNDAC presentation. [©MapAction]*

The level of detail provided by the situation maps allowed information to be scaled up when being used for decision-making or by the expert assessment teams, and summarised with more general information when being presented to the public. This helps to improve efficiency of the humanitarian response and allows the COP to be disseminated in a variety of ways so that everyone can see the information. For example, the maps were made available in UN and EU reports and were also disseminated through extensive posting to the Virtual OSOCC (On-Site Operations Coordination Centre), as well as other websites such as ReliefWeb and AlertNet.



Analytical map showing where food and water have been distributed against the zones reported by government as affected. [©MapAction]

## Key Learning Lessons:

- Integrating the reported affected areas including: the flood and landslide distribution; the environmental and mine-related knock-on effects of the floodwaters and where operations and relief were being sent, into a map is a key part of sharing a COP with everyone
- The level of detail of a COP can be scaled up to show every important location for key decision-makers, or summarised for more general public consumption or presentations
- Distributing the map in a timely fashion, whether it be through circulated reports, handed out at meetings or uploaded to a website, is essential so that all the agencies involved with assessment and relief have the same picture of the emergency
- Distribution of a COP can allow agencies or individuals to feedback any errors or omissions to the coordinating agencies - meaning the following COP can be more accurate and useful
- The use of COP information can allow for better analysis of whether the response efforts are going to the right place and if there are any gaps to be addressed.

## Partner Organisations

Sector for Emergency Management (SEM)

EU's Civil Protection Team (EUCPT)

United Nations Disaster Assessment and Coordination (UNDAC)

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