

Rapid Mapping - A Federal Service for the Documentation and Management of Natural Disasters

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Abstract:

The talk will focus on how Rapid Mapping works, the challenges involved and our experiences with Rapid Mapping. Rapid Mapping is a 24/7 on-call service of the Swiss Federal Government for the timely collection and/or provision of geodata (e.g. aerial or satellite imagery) in the event of natural disasters for the purpose of event documentation and, in certain cases, event management. In cooperation with the National Emergency Operations Centre (NEOC), the Federal Office for the Environment (FOEN) coordinates the needs of federal and cantonal agencies and, if necessary, other stakeholders in the event of large-scale or significant events with a high degree of urgency for data collection. After a positive assessment, the FOEN instructs the Federal Office of Topography, swisstopo, to obtain the data.

swisstopo is Switzerland's geoinformation centre and is responsible for the provision of analysis-ready geodata before and after natural hazard events and supports various stakeholders (federal government, cantons, municipalities) in documenting natural hazard events. swisstopo makes data freely available within the framework of Open Government Data by offering newly collected data (post-disaster) and existing swisstopo geodata (pre-disaster) for comparison purposes.

Rapid Mapping offers a range of so-called base products. These include digital imagery from a variety of imaging platforms (satellites, aircraft, helicopters) and sensors, selected according to the task at hand and availability. As with all airborne or spaceborne imagery, there are limiting factors that make it impossible to guarantee rapid mapping products within a given timeframe. These include weather conditions (e.g. cloud cover), but also the general availability of specific resources (manpower, equipment, etc.) at the time of the event.

Of particular importance is the fact that swisstopo's flight service has been upgraded to the highest priority level for rapid mapping missions within the framework of national airspace usage priorities, thus recognising the benefits of this service and facilitating its use in crisis management. While swisstopo operates its own flight service in collaboration with the Swiss Air Force to produce aerial image data, satellite data is acquired and managed through the National Point of Contact for Satellite Images (NPOC, 2024), which is managed by swisstopo. Through this contact point, various additional satellite data - both free and commercial - can be obtained, such as products from the Copernicus Sentinel portfolio or very high resolution imagery. Access to analysis-ready rapid mapping products is provided through the Federal Geodata Infrastructure. The products are freely available in read-only formats at map.geo.admin.ch. Both pre- and post-disaster data are presented via this geodata infrastructure, together with a functionality that facilitates image comparison (Fig. 1).

The summer of 2024 was particularly challenging for the Rapid Mapping Service. Due to recurrent heavy rainfall, the service was activated four times in less than two weeks in different regions of Switzerland. Thanks to the various collection platforms, useful data was made available to the relevant authorities within the required timeframe in all four cases, making an important contribution to the management and documentation of the events and even to the situation.



Figure 1 Example of the Rapid Mapping Service comparing pre- and post-disaster data based on a debris flow, Miso, June 2024. Left: post-disaster situation: Quick orthophoto 22.06.2024. Source: swisstopo/FOEN (2024). Right: pre-disaster situation: SWISSIMAGE, 2022. Source: swisstopo (2024).

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