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# Abstracts



## Satellite imagery for the creation of hazard maps

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### Abstract:

A hazard map is a map that highlights areas that are affected by or are vulnerable to a particular hazard. With global warming, there is an increasing trend of forest fires in the world. Forest fires are among the most dangerous disasters in the world, causing not only inestimable loss of forest resources but also threatening people's life and property safety. When it comes to the occurrence, river floods represent the most frequent and expensive natural disaster that affects most countries around the world. Given the increase in natural hazard events in recent years, accurate flood and fire risk assessment is a critical component of flood and fire mitigation. The Republic of Croatia suffers the most hazardous damages from forest fires during the summer season and river floods during the winter season. This research aims to develop updated and accurate flood and fire hazard maps for the Republic of Croatia. The main emphasis of the paper is on open-source remote sensing (satellite) data as an effective hazard monitoring service.

The hazard maps use geographical information systems (GIS) and multi-criteria analysis to exclude parameters from remote sensing data along with meteorological attributes related to the hazard risk. The hazard maps were generated with Copernicus Land cover data together with slope, aspect, hydrology and elevation from the Digital Elevation Model (DEM) by the Shuttle Radar Topography Mission (SRTM) with a spatial resolution of 30 meters provided by the United States Geological Survey (USGS). SRTM is considered to be the most complete, highest resolution digital elevation model of the Earth.

Flood analysis also considers open-source precipitation data from the Center for Hydrometeorology and Remote Sensing (CHRS) Data Portal. The main tool used for analysis is ArcGIS Pro. The results are compared to the official flood and fire risk maps provided by Croatian State Administration for Protection and Rescue along with Croatian Waters Agency. The most important outcome of this research is that by using only open-source data such as digital elevation model, land use, and precipitation, it is possible to obtain a reliable flood and fire hazard map using a simplified method compared to more complex methods that are applied in official use. The developed flood and fire hazard maps by this research can be quickly shared among all agencies involved in an incident to enable timely and consistent response actions.