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Validation of MODIS and SEVIRI Active Fire Monitoring products over Western Romania. Case study: Arad County

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At the national level, the issue of wildfire monitoring represents a long debated topic. However, in the present situation, fire management requires various improvements in terms of detection, monitoring and post-fire analysis. The objectives of this study are to validate the data provided by MODIS (Terra and Aqua) Active Fire Monitoring and SEVIRI (MSG) FIR (Active Fire Monitoring) satellite products, with wildfires field data from The Romanian General Inspectorate for Emergency Situations (IGSU) (1), to chart the efficiency of satellite products in locating fires and study their strengths and weaknesses using a SWOT analysis (2). This is the initial step of a larger project that aims to implement an online Geographic Information System for fire management that will ease wildfire data manipulation and facilitate the decision making process. In order to do so, the current study objectives must be achieved.

Our general strategy is to determine the consistency of direct (field measurements) and indirect (satellite data) observations. Depending on the amount of field information, the fire characteristics (location, frequency, extension area, moment of occurrence, type of fire, and others) will be studied through a statistical analysis. The products show some peculiar restrictiveness like spatial and temporal resolution. Specifically, we will process and interpret satellite products to identify wildfires according to the data from IGSU using specialized software.

The case study for the application of these procedures is a set of fire events from Arad county - Romania, that occurred between 2007 and 2013. In order to do so, it is important to compare results from different sensors with field information through various methods and to use only consistent results.

The results will play an important role in achieving the above mentioned informational system, which will integrate field information, satellite data and values of parameters that influence the evolution of wildfires. In a future research we want to validate satellite data from Sentinel 3, which will implement the Risk Management Module (floods and fires) through the SLSTR sensor (Sea and Land Surface Temperature Radiometer). This step could be very useful to supplement the satellite information dataset with new parameters.