

# **Rainfall analysis of flood cases over Albania, using Meteosat imagery, ground rain measurements and passive microwave rain rate**

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The Mediterranean area is quite frequently affected by sudden events of extreme weather, often producing high social impacts. The geography of the region makes the Mediterranean especially sensitive to the impact of weather phenomena, mainly in case of heavy rain events and strong winds. These extreme cases of the weather are a major problem in the Albanian area as well, which is frequently attended by heavy rain events and strong winds. Heavy rain events are an important climatic feature of this region that usually, takes place during the summer and autumn. In some cases, the precipitation reaches one or several hundreds millimeters in 24 hours or worse, in a few hours. Such extreme events, that often cause the flooding of the western lowland and a lot of regions around, and the lack of meteorological radars covering conveniently our territory, make essential the develop of remote sensing methods to estimate rain rates in real time with a maximum accuracy as possible. In the present research two satellite rainfall calibration methods are performed. On one hand an Infrared-rain power law curve as shown by Vicente et al (1998) for the auto-estimator, made over land using Meteosat-7 and 8 infrared temperatures and ground rain measurements. On the other hand, a histogram matching technique infrared-rain curve over the Mediterranean Sea near to our shores, combining the Meteosat infrared band with satellite passive microwave rainfall derived from the SSMI and AMSR sensors. Land and Sea curves are compared and used to estimate precipitation. Estimated rainfall images are modified by moisture, cloud growth rate, parallax and orographic correction factors and later, compared with the ground rain measurements.