Using Information Obtained from Sar Data to Assess Flood Affected Areas in the Area of Bregovo, Bulgaria

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SUMMARY

Flash flood events are type events that are difficult to predict, can develop rapidly and last for a short period of time. In the last years this type of incidents was observed in several areas of Bulgaria affecting human lives as well as infrastructure and landscape. This proves the need to have operational information about the extent of the damages caused by them delivered to the local authorities that could be used to mitigate the consequences and improve the decision making. In order to produce this information several prerequisites are needed such as updated data concerning the state of the impacted territories before and after the flood, a good DTM, the amount of the rain, etc. At present large parts of this data are obtained routinely by the instruments onboard the satellites of the Copernicus program e.g. Sentinel 1 and 2, and are being freely distributed by ESA. Based on the said data the real situation of the land cover/land use, the soil moisture, the area of the water reservoirs is produced.

In this paper we present results evidencing the flood event that took place during the first and second decade of March 2018. The flooding started on March 5th caused by fast snow melting in the mountainous region close to the Bregovo village located in the Northwest part of Bulgaria. The results are based on SAR data from Sentinel-1 mission having VV polarization and distributed in GRD format. During the processing data for elevation and land cover have been used too. After classification of the resulting data we obtained information regarding the observed area before and few days after the peak of the event. The total inundated areas was estimated to be about 700 ha. Besides those areas the results allowed the authors to estimate the level of soil moisture several weeks after with ground resolution of 20 x 20 m.