



Monitoring Gaziantep's Floods by TRMM

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Despite Gaziantep is located in a semi-arid region in Turkey, it is occasionally flooded. These floods not only cause property damage but also more importantly, they can be fatal. Recently, in May 2014, a lady trapped in flood waters could not be rescued and dead. Challenge in prediction, detection and mitigation of flash floods arise from the fact that they develop in short time which limits any remediation action. Development of flash floods in short time reduce its predictability by numerical weather forecasts also. In this study, Tropical Rainfall Measuring Mission (TRMM) Multi Satellite Precipitation Analysis (TMPA) Real Time (RT) 3B42RT data are assessed from flash flood prediction point over Gaziantep. During 2000-2014 period 6 floods are observed over Gaziantep. 3 hourly 3B42RT indicated high rain rates in flood observed months. Besides, daily rainfall distribution was also well represented. Three different indices, namely, Constant threshold (CT), Cumulative Distribution Functions (CDF) and Gaziantep Flood Index (GAFI) are developed and tested in here. CT, CDF and GAFI captured 2, 4 and 4 out of observed 6 floods. For the detection, 10mm/h for CT , 95% and 97.5% for CDF and values ranging from 1 to 2.94 for GAFI were used. CT detected events in October and December 2010. CDF indicated August 2005, June 2007, October 2010 and December 2010 events. For the missed two cases, 24 May 2014 and 4 August 2002, 3B42RT did not indicate any rainfall. Although CDF and GAFI indicated similar detection numbers, generally CDF gave higher false warnings. Among various flood triggering factors such as rainfall rates, soil moisture and topography, only rainfall rates are considered in here. Nevertheless, the results are promising. Moreover, presented methodology is simple and it can be easily implemented in TRMM follow up missions such as Global Precipitation Measurement Mission (GPM).