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An observational and numerical study of a flash flood event in Eastern Marmara Region.

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Warm season cut-off cyclones over North-western Anatolia frequently triggers storms with heavy precipitation over Marmara and Western Black Sea Region. Since the area is highly urbanized with a deficiency in substructure, an important percentage of these storms result in flash floods, producing severe damage and fatalities.

A heavy precipitation case from 5th to 9th of June, 2010 is studied. With the large scale circulation of the cut-off low, the storm system over Northern Anatolia moved Black Sea, and after getting richer in moisture, turned back to land over Eastern Marmara Region resulting more than 100 mm of precipitation in 24 hours. A peak of 77 mm in 6 hours is observed at Istanbul Sabiha Gokcen Airport on 7th of June, 2010. Damage in some buildings and one death occured related with the flash flood.

In addition to synoptic charts, satellite data, surface and upper air observations, numerical simulation with WRF-ARW is used to make a mesoscale analysis of the meteorological conditions. Heavy rain ingredients such as conditionally unstability, low level jet and high moisture exist over the region according to the model output. Precipitable water and storm relative helicity values are mature and CAPE is moderate.