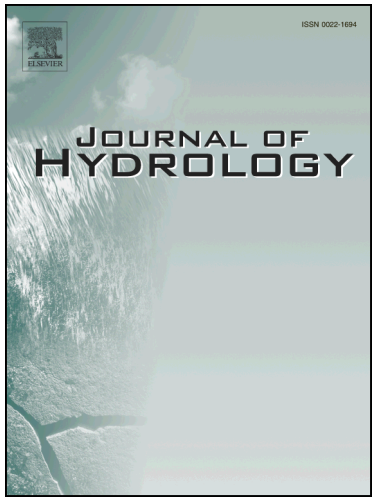

Research papers

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A Lagrangian analysis of the moisture budget over the Fertile Crescent during two intense drought episodes

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ABSTRACT

The Fertile Crescent (FC) region comprises the east coast of the Mediterranean Sea and the northern part of the Arabian Peninsula. The FC suffered two severe drought episodes separated by a 7-year period, in 1998 – 2000 and 2007 – 2009, which are considered the most severe episodes to hit the region in the last 50 years. A Lagrangian model (FLEXPART) and ERA-Interim data (with a 1ºx1º lat-long resolution) were used to identify for the first time the climatological sources of moisture for the FC and their characteristics. Variability and the source-receptor relationships, concerning their contribution to the precipitation, and the implications regarding the transport of moisture changes over the FC, during the wet season (October-May) from 1980 – 2014 were analysed. The main climatological moisture sources during this period were determined to be the FC itself, the eastern Mediterranean Sea, the Red Sea, the Persian Gulf, the Arabian Sea, the Caspian and Black Seas, and the central and western parts of the Mediterranean Sea.