



Mediterranean Cyclones and the occurrence of flooding in Venice

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Mediterranean cyclones affect the water levels as the flooding is mainly caused by high tides being blown into the Venice Lagoon by strong winds. In fact, intense surge events are associated with cyclones located over the north western Mediterranean Sea or north-western Europe, so that the atmospheric circulation is channelled along the Adriatic Sea and accumulates water at its closed northern shore.

In this paper we identify the cyclones responsible for flooding in Venice and analyze their properties. Their position and strength at the time of flooding is determined and the wind field associated with the cyclone analysed. We identify preferred regions of cyclogenesis, track paths and propagation speeds for these cyclones and investigate whether their frequency is influenced by large-scale teleconnection patterns. The characteristics of the cyclones responsible for flooding in Venice are compared to the characteristics of non-hazardous regional cyclones.