

The Northern and the Eastern Adriatic Sea floods: Connecting the Extreme Sea-levels to Cyclone Pathways

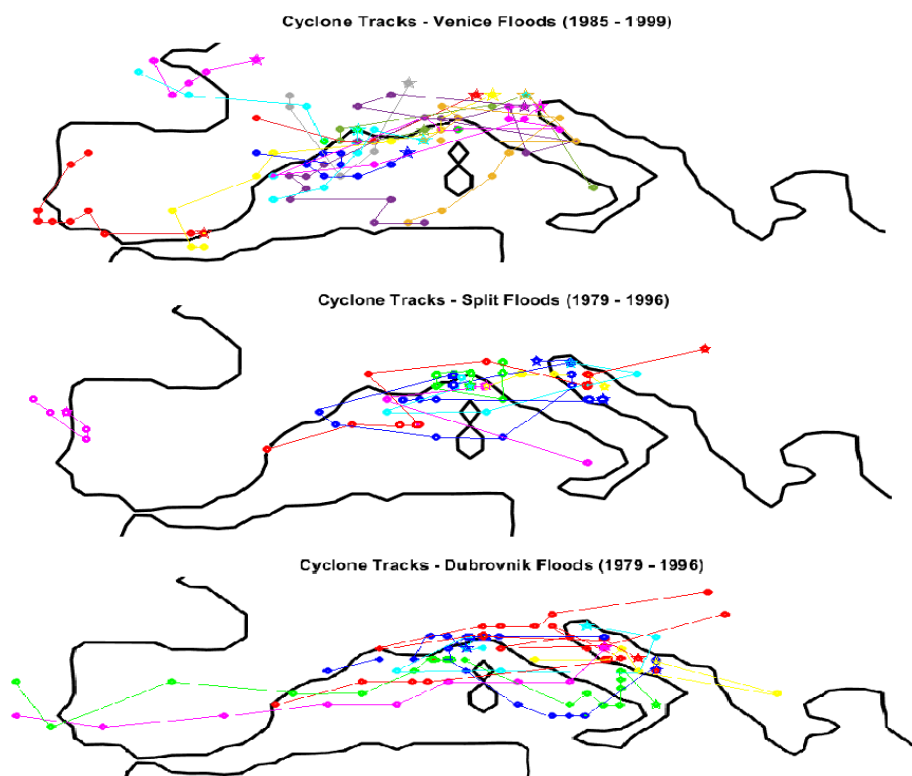
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Introduction

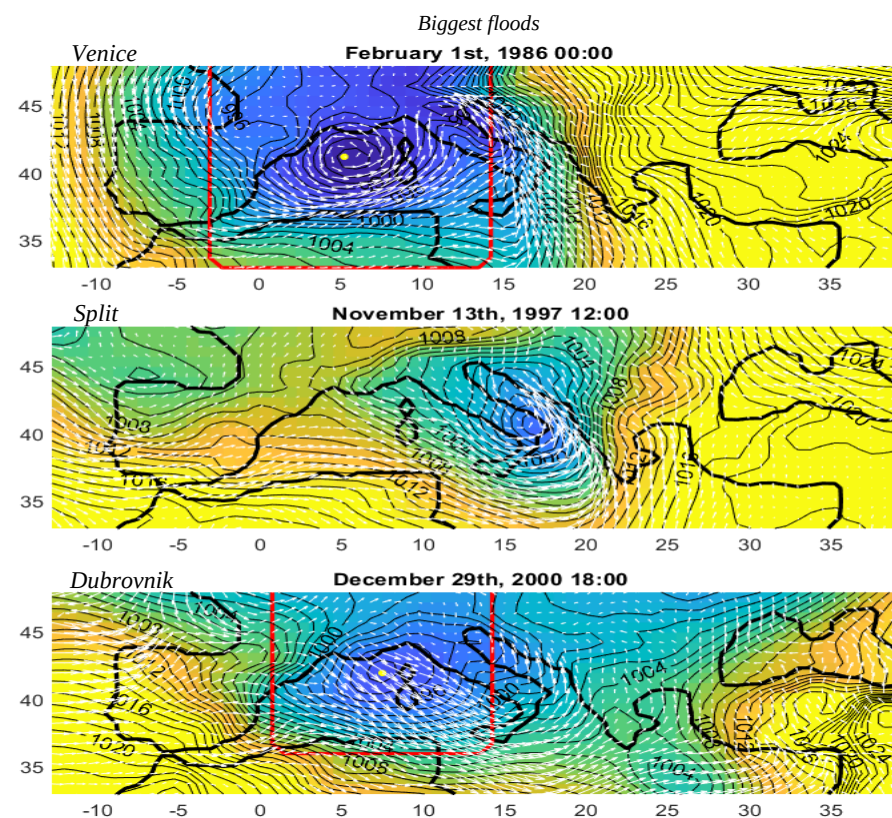
An objective method for tracking pathways of cyclone centers over Europe was developed and applied to the ERA-Interim reanalysis atmospheric data (1979-2014). The method was used to determine trajectories of those Mediterranean cyclones which generated extreme sea levels along the northern and the eastern Adriatic coast during the period from 1979 to 2014.

Results



Method

Extreme events were defined as periods during which sea level was above 99.95 percentile value of time series of hourly sea-level data measured at the Venice (94.12 cm), Split (69.69 cm) and Dubrovnik (55.43 cm) tide-gauge stations. The cyclone pathways were tracked backwards from the moment closest to the moment of maximum sea level up to the cyclone origin time, or at most, up to 72 hours prior the occurrence of the sea-level maximum.



Conclusion

The Adriatic extreme sea levels are caused by on-shore winds and:

- Venice: cyclones centered over the Genoa Bay and Alps
- Split: cyclones centered over both Genoa Bay and the Adriatic Sea
- Dubrovnik: cyclones centered over the Adriatic Sea