

Home

Online Library

- Recent Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Book Reviews

Journal Metrics



IF 1.357



5-year IF 1.781

SCOPUS[®] SNIP 0.616

SCOPUS[®] SJR 0.067

Definitions

ARCHIVED IN



PORTICO

[Volumes and Issues](#) [Contents of Issue 7](#) [Spec](#)

Nat. Hazards Earth Syst. Sci., 10, 1379-1391, 2010

www.nat-hazards-earth-syst-sci.net/10/1379/2010/

doi: 10.5194/nhess-10-1379-2010

© Author(s) 2010. This work is distributed under the Creative Commons Attribution 3.0 License.

Cyclones causing wind storms in the Mediterranean: characteristics, trends and links to large-scale patterns

K. M. Nissen¹, G. C. Leckebusch¹, J. G. Pinto², D. Renggli¹, S. Ullrich¹ and U. Ulbrich¹

¹Institute for Meteorology, Freie Universität Berlin, Berlin, Germany

²Institute for Geophysics and Meteorology, University of Cologne, Cologne, Germany

Abstract. A climatology of cyclones with a focus on their relation to storm tracks in the Mediterranean region (MR) is presented. Trends in the frequency of cyclones and wind storms, as well as variations associated with the North Atlantic Oscillation (NAO), the East Atlantic/West Russian (EAWR) and the Scandinavian variability pattern (SCAND) are discussed.

The study is based on the ERA40 reanalysis dataset. Wind storms are identified by tracking clusters of adjacent grid boxes characterised by extremely high local wind speeds. The wind track is assigned to a storm track independently identified with an objective scheme.

Areas with high wind activity – quantified by extreme wind tracks – are typically located south of the Gulf of Genoa, south of Cyprus, south of Sicily and west of the Iberian Peninsula. About 69% of the wind storms caused by cyclones located in the Mediterranean region, while the remaining 31% can be attributed to North Atlantic or Northern European cyclones.

The North Atlantic Oscillation, the East Atlantic/West Russian pattern and the Scandinavian pattern all influence the amount and spatial distribution of wind-inducing cyclones and wind events in the MR. The strongest associations exist for the NAO and the EAWR pattern, which are both associated with an increase in the number of organised strong wind events in the MR during their positive phase. On the other hand, the storm number decreases over the western MR for the positive phase of the NAO and the central MR during the positive phase of the EAWR pattern. The negative phase of the Scandinavian pattern is associated with a decrease in the number of winter wind storms over most of the MR.

A third of the trends in the number of wind storms and wind-producing cyclones during the winter season of the ERA40 period may be attributed to the variability of the North Atlantic Oscillation.

[Full Article](#) (PDF, 1717 KB)

Citation: Nissen, K. M., Leckebusch, G. C., Pinto, J. G., Renggli, D.,

Ulbrich, S., and Ulbrich, U.: Cyclones causing wind storms in the Mediterranean: characteristics, trends and links to large-scale patt Nat. Hazards Earth Syst. Sci., 10, 1379-1391, doi:10.5194/nhess-10-1379-2010, 2010. [Bibtex](#) [EndNote](#) [Reference Manager](#) [XML](#)