



## **Catagories of Mediterranean cyclones in the ERA40 dataset - characteristics, trends and links to large-scale patterns.**

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Cyclones play an important role for the Mediterranean climate. Extreme cyclones can cause serious damage due to strong winds and heavy rainfall. In order to predict the effects of climate change in the Mediterranean it is therefore necessary to examine changes in cyclone activity.

For this study we have identified and tracked cyclones in the Mediterranean region using the mean sea level pressure field of the ERA40 dataset. It is well known that due to orographic effects and the land-sea temperature contrast in the Mediterranean preferred locations for cyclogenesis exist. Cyclones originating in different areas of the Mediterranean will have different characteristics and might exhibit different trends. We identify regions of preferred cyclogenesis resolved by the ERA40 dataset and categorize the cyclones according to the location of their origin. For each category we determine trends, seasonality, mean duration and mean strength of the systems, as well as the number and frequency of extreme events.

We identify synoptic situations favouring the generation of cyclones in the different locations and investigate if those can be linked to large-scale patterns. As the capability of climate models to capture large-scale patterns is better than their ability to reproduce the small-scale cyclone distribution, such links are necessary to use climate model scenario runs for meaningful predictions of the future Mediterranean climate.