



## **Mediterranean cyclone characteristics during the past millennium - implications for the hydrological cycle**

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The Mediterranean is suggested to be one of the regions strongly affected by future climate change, in particular the hydrological cycle. In this region, winter cyclone activity is the major source of precipitation. Thus, in order to gain a better understanding of changes in the hydrological cycle, processes which cause variations in cyclone statistics need to be assessed in more details.

In this respect we broaden the view to the past millennium, which is a testbed to show imprints of natural and anthropogenic forcing on cyclone characteristics of the Mediterranean. In doing so, an ensemble of transient simulations for the last millennium, performed with the Community Climate System model (version 3, CCSM3), is used. Cyclones are characterized by classical methods, like the storm track, but are also individually identified by a detection and tracking method.

The analysis focus on cyclones and their connection to the hydrological cycle, in particular precipitation and the behavior of the glaciers. In a first attempt, a clear connection between glacier growth and the storm track being shifted over the Mediterranean is found during phases of the 'Little Ice Age'. However, the reaction of the western and eastern part of the Mediterranean is not simultaneous. The connection and the different behavior of the sub-parts are resembled by proxy evidence of alpine glaciers.