



Winter Mediterranean temperature and precipitation back to 1750; the large-scale sea level pressure influence

E. Xoplaki (1,2), J. Luterbacher (1,2), M. Küttel (1,2), P.M. Della-Marta (3), J. González-Rouco (4), E. Zorita (5), H. Paeth (6), J. Jacobeit (7), R. Garcia-Herrera (4), and R. Allan (8)

(1) Oeschger Centre for Climate Change Research, University of Bern, Switzerland, (2) NCCR Climate and Institute of Geography, University of Bern, Switzerland, (3) Federal Office of Meteorology and Climatology MeteoSwiss, Zurich, Switzerland, (4) Facultad CC Fisicas, Universidad Complutense de Madrid, Spain, (5) Department of Paleoclimate, Institute for Coastal Research, GKSS Research Center, Germany, (6) Institute of Geography, University of Würzburg, Germany, (7) Institute of Geography, University of Augsburg, Germany, (8) Hadley Centre for Climate Prediction and Research, Met Office, Exeter, UK (xoplaki@giub.unibe.ch / Phone: +41 31 631 31 48)

The Mediterranean winter mean climate is to a large extent influenced by the atmospheric circulation variability over the northern North Atlantic and Eurasia. Statistical studies relating large scale sea level pressure and geopotential height fields to Mediterranean winter temperature and precipitation variability so far have been restricted to the last couple of decades. They clearly point to the fact that the NAO and other teleconnection patterns are important to account for a significant amount of climate variability in the area. Here we extend the analysis and study the influence of large-scale dynamics on the Mediterranean precipitation and temperature variability during the period covering the last 250 years. We use a new gridded sea level pressure dataset that blends station pressure series with ship log book information (see Küttel et al. 2008) for the last 250 years and apply SVD on independently reconstructed winter temperature and precipitation. Preliminary results indicate that the most important modes are the EA/WRUS and NAO with different climate impact on parts of the Mediterranean. The two modes contributed to the winter warming of the first part of the 20th century and to the winter warming and drying of the last part of the 20th century, respectively.

The influence of the main circulation modes on the Mediterranean winter climate was not stable during the last 250 years.