



## **Influence of the upper-level Mediterranean Oscillation on the temperature variability in the Mediterranean basin**

Darío Redolat (1,2), Robert Monjo (1), Joan A. Lopez-Bustins (3), Javier Martin-Vide (3), and Laia Arbiol-Roca (3)

(1) Climate Research Foundation (FIC), Madrid, Spain (dario@ficlima.org), (2) Faculty of Physics, Universidad Complutense de Madrid (UCM), Madrid, Spain, (3) Climatology Group, Department of Geography, University of Barcelona (UB), Barcelona, Spain

Research in climatic teleconnections is driven by the need of seasonal forecasts. Because of the large variability of the Mediterranean climate and the orographic complexity of the Mediterranean basin, it presents a greater difficulty in predicting climate anomalies. This work reviews teleconnection indices commonly used for the Mediterranean Basin and explores possible extensions of one of them, the Mediterranean Oscillation index (MOi). Anomalies of the geopotential height field at 500 hPa are analyzed using segmentation of the basin in seven windows: three at eastern and four at western. Namely, different versions of a new Upper-Level Mediterranean Oscillation index (ULMOi) are calculated, and the variability of monthly and annual temperature is analyzed for 42 observatories throughout the Mediterranean basin from 1950 to 2015. Best versions are selected according to the Pearson correlation coefficient, its related p-value, and two measures of standardized error. The combination of Gibraltar Strait and Egypt windows is found to be the best for temperature variability. The correlation between ULMOi and MOi is significant, but not between the Western Mediterranean Oscillation index (WeMOi) and ULMOi. This no dependence results in a good modeling (mean error between 15% and 25%) of temperature for most of studied area.