



The low frequency Western Mediterranean summer variability: relevance, feedbacks and predictability.

Ortizbevia Maria Jose (1), Ruizdeelvira Antonio (1), Alvarez-Garcia Francisco Jose (1), and Tasambay-Salazar Miguel (2)

(1) University of Alcalá, Physics, Alcalá, Spain (mjose.ortiz@uah.es), (2) Escuela Superior Politecnica del Chimborazo, Riobamba, Ecuador

In a recent study, OrtizBeviá et al. (2012) have defined a seasonal index, the Western Mediterranean Index, in order to characterize the Western Mediterranean summer variability. They have found there a statistically significant feedback between the Mediterranean and the North Pacific variability, characterized by the Pacific North America Mode Index. They have detected also a feedback between the Western Mediterranean in summer and the variability of some areas of the North Atlantic basin. Based on these statistical linear relationship they proposed a model to forecast the part of the Western Mediterranean variability represented by the Western Mediterranean Index in summer and autumn and validate it through some hindcast experiments, with a moderate, but significant skill.

OrtizBeviá et al.(2012) presented also the evidence of the existence of a low frequency, multidecadal component in the Western Mediterranean summer variability. In the work to be presented here we extend the previous one, focusing on the long term variability. We perform similar statistical analysis on selected data fields that span more than 100 years. We add a second index to the characterisation of the Western Mediterranean variability and are then able to show the relevance of the Western Mediterranean summer variability for european air temperature and precipitation seasonal anomalies. Our analyses show that the variability represented by two North Atlantic Indexes play a key role in the Western Mediterranean summer variability. They also proof the existence of a feedback between this variability and that of the Pacific North America Mode, for an extended period of more than 140 years. The performance of the different predictive models built on the basis of those linear relationships are tested in a series of hindcast experiments.

References

Ortiz Beviá, M. J.; Alvarez Garc[í]a, F. J.; Ruiz de Elvira Serra, A.. Liguori , G.; Carretero, J. H. The Western Mediterranean Summer Variability and its Feedbacks. *Climate Dynamics*. 2012, 39, p. 167-180. doi: 10.1007/s00382-012-14092.

Ortiz Beviá, M. J.; Ruiz de Elvira Serra, A.; Alvarez Garc[í]a, F. J.; Tasambay-Salazar M. The Multi-decadal component of the Western Mediterranean Variability (submitted).