



Multidecadal Modulation of the interannual rainfall variability over the Euro-Mediterranean region

Jorge López-Parages and Belén Rodríguez-Fonseca

Universidad Complutense de Madrid, Geofísica y Meteorología, Madrid, Spain (parages@fis.ucm.es)

The role of Natural Multidecadal Variability and Global Warming (GW) Sea Surface Temperature (SST) signatures in the modulation of the late Euro-Mediterranean winter and spring interannual precipitation variability modes is examined along the XXth century. As representative of the natural multidecadal variability, we have chosen the Atlantic Multidecadal Oscillation (AMO) and the Pacific Decadal Oscillation (PDO) defined as the leading EOF of SST anomalies for the Atlantic and North Pacific basins.

To this aim, a Gram-Schmidt orthogonalization methodology has been developed to generate an orthogonal base able to discriminate the independent features of the AMO, PDO, and GW SST signatures. Next, Principal Component Analysis (PCA) of the interannual rainfall variability is performed considering or not the projection on each of the elements of the base.

The results show an important natural multidecadal modulation of the interannual ENSO influence on the precipitation, which is affected by GW in the last decades of the century. This modulation influences on the atmospheric variability, with changes in the Sea Level Pressure (SLP) regression maps, from zonally-symmetric dipolar NAO-like pattern to undulatory pattern.