



21st Century Projections of Precipitation Extremes in the Mediterranean from a medium resolution GCM

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Results from a medium resolution GCM (INMCM3.0) as to inter-annual and decadal climate modes, atmospheric circulation patterns and the associated precipitation extremes are analyzed for the Mediterranean region. Key climate modes (ENSO, NAO and AMO) that are known to influence regional precipitation are identified and their spectral structure analyzed. The teleconnections of these modes to regional precipitation extremes through synoptic circulation patterns are identified, and compared with those obtained by using the ECA&D archive data. A structured analysis of the low frequency variability in the control and forced (corresponding to the IPCC scenarios) model runs and is performed to identify how both the low frequency indices, and the teleconnection pattern frequencies change across the scenarios. These changes are connected in turn to spatio-temporal changes in the precipitation extremes over the region. The differences between the expression of the low frequency modes in the control run of the model and the observations from the 20th century are then used to highlight potential issues with diagnosing trends from observations vs potential decadal and inter-annual variability in extremes that may be due to natural causes as demonstrated in the 20th century record.