



## **Evaluation of dynamical downscaling of ERA-40 reanalysis using LMDZ regional climate model**

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The Mediterranean region features a near closed sea surrounded by very urbanized littorals and very complex orography. This results in a lot of interactions and feedbacks between oceanic-atmospheric-continental surfaces processes that frequently cause extreme events (e.g. heavy precipitation and flash-flooding, strong winds, droughts) and produce heavy damages and human losses. The ability to predict such dramatic events remains weak because of the contribution of fine-scale processes and their non-linear interactions with the larger scale processes. In addition, climate modelling is still until now, restricted to global climate models (GCM) that have in general spatial resolution larger than the regional sources of flow perturbation (orography and convection). This work aims to evaluate uncertainties in climate modelling with GCMs over the Mediterranean basin. It consists on evaluating the performance of climate model LMDZ forced with ERA-40 reanalysis in simulating surface temperature, precipitation and wind from 1960 to 2001. This is done by comparing modelled data to observations from CRU dataset and from 30 meteorological stations in southern France, and allows us to determining the behaviour of this GCM in simulating the daily mean surface meteorological variables (wind, temperature, humidity and precipitation), their variability and trends as well as their distribution.