



Dynamical downscaling inter-comparison for high resolution climate reconstruction

J. Ferreira (1), A. Rocha (1), J. M. Castanheira (1), and A. C. Carvalho (2)

(1) CESAM - Centre for Environmental and Marine Studies, Department of Physics, Aveiro, Portugal (juan@ua.pt), (2) CENSE, Department of Science Environmental Engineering, Universidade Nova de Lisboa, 2829-516 Caparica, Portugal

In the scope of the project: “High-resolution Rainfall EroSivity analysis and fORecasting – RESORT”, an evaluation of various methods of dynamic downscaling is presented. The methods evaluated range from the classic method of nesting a regional model results in a global model, in this case the ECMWF reanalysis, to more recently proposed methods, which consist in using Newtonian relaxation methods in order to nudge the results of the regional model to the reanalysis. The method with better results involves using a system of variational data assimilation to incorporate observational data with results from the regional model. The climatology of a simulation of 5 years using this method is tested against observations on mainland Portugal and the ocean in the area of the Portuguese Continental Shelf, which shows that the method developed is suitable for the reconstruction of high resolution climate over continental Portugal.