Verification results of a Two-Step Analog Method applied over the European ENSEMBLES 0.22ž rotated grid

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We present the verification results of a statistical downscaling methodology (SDSM) developed for the generation of future climate scenarios over Europe, which fulfill the requirements demanded for impact assessment and the planning of climate change adaptation activities in different sectors. These requirements are: local specificity, covering the whole XXI century, appropriate to feed impact assessment models (daily series instead of monthly or seasonal averages, trying properly represent internal variability extreme events, and not only mean values).

The SDSM is called "Two-Step Analog Method", to which a probabilistic approach has been added in order to account for the uncertainties related to downscaling. A brief methodology description will be presented, paying special attention to its physical and theoretical robustness (selection of predictors, approaches to avoid the stationarity problem, adaptation to General Circulation Models - GCM- characteristics and limitations).

The verification has been performed using ERA40 reanalysis fields as predictors. The predictands are daily maximum and minimum temperatures and precipitation obtained from the gridded dataset developed within ENSEMBLES.

This SDSM gave in the past good verification results for Spain, and was used to produce part of the official climate scenarios catalog coordinated by the Spanish Met office (INM), in the first phase of the “Programa Nacional de Generación de Escenarios”. Also good verification results of this SDSM were obtained within STARDEX (5th FP European Research Project, were NCEP/NCAR reanalysys was used). In both
cases the predictands were stations observations.

The main interest of this new verification analysis is that it has been performed following the verification procedure used in ENSEMBLES for RCMs: predictands were obtained from ENSEMBLES 0.22 rotated grid, and the ETCCDI 27 core indices were used for verification. Therefore, this verification has been performed in order to allow a rigorous and systematic intercomparison of this SDSM and ENSEMBLES RCMs verification results.

The verification results are presented, attending not only to averages, but also to extreme events and internal variability. The results are analyzed for different European regions and different seasons. Some comparative results with RCMs verification are also presented.