



On the comparison of extreme climate indices from observed and simulated data in the eastern Mediterranean basin

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Accumulating evidence of a changing climate has increased interest in whether the intensity and frequency of extreme climate events are expected to change in the future. As a result, a large number of studies are undertaken focusing on climate extremes and their societal, ecological and economic impacts. Most of studies on potential impacts are using scenarios that involve gradual climate change. The EU-funded ENSEMBLES project developed an integrated set of models and simulations to reproduce present and future climate. In addition, a gridded observational dataset of daily precipitation and temperature has been developed on the basis of a European network of high quality station series. This study provides a contribution to an ongoing validation work on the accuracy of the ENSEMBLES datasets to reproduce climate extreme indices in the eastern Mediterranean region. The analysis is carried out for a number of climate indices which are useful for monitoring impacts on regional economies. The comparison is initially implemented between station and the nearest-gridded observed data at selected sites of the eastern Mediterranean, and then extended to data from several model outputs. Deviations were detected in locations with particularly complex topography, which often are not well represented by models. Therefore, in some cases it became necessary, to find and use an average of several neighbouring grid points in order to obtain better representation of the single-site climatic regime. The comparison was subsequently focused on several models' outputs. Extreme climate indices were calculated from ENSEMBLES regional models' data and their reliability was assessed against extreme gridded observational indices. Multi-ensemble projections were calculated and used to reduce uncertainty and finally weighting factors were applied to the different models to produce a weighted ensemble mean in an attempt to further minimise the errors.