



A quantile-quantile approach for the adjustment of RCM outputs to local scales: application to Platja de Palma, Spain

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In the framework of the Consortium of Platja de Palma –an agreement signed by the Balearic Islands Government and the Ministry of Industry, Commerce and Tourism of the Spanish Government for the redesign and suitability to the needs of the 21st century of this important tourist resort–, we analyse the effects of climate change on this key socioeconomic settlement. The tourist activities developed in the System of Platja de Palma (SPdP) are very closely linked to its climate. Therefore, planning the socioeconomic opportunities in the mid- and long-term must necessarily take into account the possible evolution of the main atmospheric drivers. To this aim, daily observed series at the airport of Palma de Mallorca are analysed. For the future projections, daily data generated by the ensemble of regional climate models (RCMs) integrated in the European ENSEMBLES project were used. In order to adjust the RCM data to such local scale, a quantile-quantile correction has been applied to the regional projections. The method consists of detecting changes in the cumulative distribution functions between the recent past and successive time-slices of the simulated climate and apply changes, once they have been calibrated, to the recent past observed climate series. Once the RCM outputs have been downscaled to SPdP, we analyse the projected climate change signal. Results are discussed in terms of the changes in the annual and seasonal mean regimes of the analysed atmospheric variables and in the frequency of extreme events as well. With this methodology at hand, policymakers and the team of experts planning the urban, environmental and tourist future of SPdP can better respond to the problem of local adaptation to the new climate scenarios.