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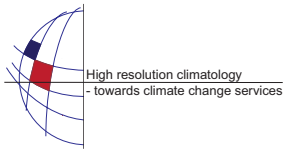

A high spatial resolution precipitation dataset for Andalusia (Southern Spain) based on residual kriging

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We present a high spatial resolution (1 km) precipitation map developed for Andalusia (Southern Spain) based on the application of the residual kriging method. A data set of daily values of precipitation measured at 358 stations along the period 1970-2000 was used. In a first part, a set of external variables, derived from a Digital Elevation Models (DEM), were identified to be used in the residual kriging procedure. In a second part, the residual kriging procedure was applied to obtain seasonal and annual precipitation maps. The ordinary kriging method was also applied for benchmarking. Overall, the ordinary kriging methodology was found to provide fair estimates of the precipitation values, with RMSE values ranging from 11.71 mm (44%) in summer to 138 mm (24.97%) in the annual case. By the inclusion of external information in the interpolation procedure, the residual kriging estimates showed considerable lower errors. Particularly, relative improvement ranges from 19% in autumn to 26% in spring season. These improvements are mainly related to a better estimation of the precipitation in mountain areas (maximum values), but also due to a better estimation of the minimum values in the eastern area of the study region.