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A new insight to daily precipitation estimation using different interpolation methods

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The gridded interpolated daily precipitation data has a vast application in hydrometeorology. The fine resolution gridded precipitation gained terrestrial measurements is a tool to evaluate satellite, reanalysis, and radar-based gridded products. In this study, the daily time series of 1561 rain gauges over Iran for the period of 2003-20010 is used to compute 1 km * 1 km interpolated maps. The nearest neighborhood, Inverse Distance Weighting (IDW), Ordinary Kriging (OK), External Drift Kriging (EDK), and Quantile Kriging (QK) interpolation methods are applied to compare their performance. Due to the large size of the interpolated region and different climates, six clusters for estimating the variogram function are determined. The distinct interpolation methods lead to different daily precipitation estimates, however in the same spatial resolution, OK is showed slightly better results with the mean RMSE and correlation equal to 2.355 and 0.766, respectively. Also, the spatially aggregated gridded maps illustrated that the interpolation methods only play a significant role in the fine resolutions than the coarser ones.