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Relationship between forecast precipitation relative errors and skill scores: the case of rare event frequencies

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Abstract. This paper addresses the problem of the relationship between skill scores and forecast rainfall relative errors. The problem is approached by using synthetic time series of rainfall data representing the observations. It is assumed that the magnitude of the relative error is known. The forecasts are constructed by adding errors to the observations. We use a threshold to dichotomise forecasts and observations to obtain the skill scores. We perform 1000 simulations for each error magnitude in order to obtain the mean values and uncertainties of the scores.

We consider two different precipitation regimes, and we show the influence of these regimes on the precipitation. We find that the relationship between forecast errors and skill scores is strongly influenced by the event frequencies, which in turn depend on the precipitation regime. We find that only when the event frequency of the two regimes is made similar by changing the threshold, the relationship between the scores and relative errors is similar. This suggests that a comparison between two forecast precipitation datasets should account for the difference (if any) in precipitation regimes.

Full Article in PDF (PDF, 489 KB)

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