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Can a Multimodel SuperEnsemble technique be used for precipitation forecasts?

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The Multimodel SuperEnsemble technique (Krishnamurti et al., Science 285, 1548–1550, 1999) is a post-processing method for the estimation of weather forecast parameters reducing direct model output errors.
It differs from other ensemble analysis techniques by the use of an adequate weighting of the input forecast models to obtain a combined estimation of meteorological parameters. Weights are calculated by least-square minimization of the difference between the model and the observed field during a so-called training period.
Although it can be applied successfully on the continuous parameters like temperature, humidity, wind speed and mean sea level pressure (Cane and Milelli, Meteorologische Zeitschrift, 15, 2, 2006), the Multimodel SuperEnsemble gives good results also when applied on the precipitation, a parameter quite difficult to handle with standard post-processing methods.
Here we present our methodology for the Multimodel precipitation forecasts applied on a wide spectrum of results over Piemonte very dense non-GTS weather station network. We will focus particularly on an accurate statistical method for bias correction and on the evaluation of the ensemble characteristics via a multimodel multi-sampling bootstrapping.
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