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Probabilistic forecasts of South-Eastern France Heavy Precipitating Events from ensemble techniques

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During the fall season, High Precipitating Events (HPEs) may occur over South-Eastern France, and are often associated with some recurrent Large Scale Circulations (LSCs) related to synoptic dynamics. These LSCs have been emphasized during the CYPRIM Project and statistically characterised from ERA40 reanalyses dataset. Secondly, a multivariate discriminant analysis helped defining a subset of criterion built on LSCs and combined low level 2D moisture structures are shown to be discriminant of a quarter of the HPEs with a 70% score. This technique was designed for global change HPEs evolution study. Then, the technique is investigated as a way to extract further indications of HPEs occurrence probability in real-time forecasting, by identifying HPEs discriminant factors in ensemble forecasts. Several advantages are expected from this technique, firstly it could help quantifying the climatological severity of an incoming event directly from the forecast, secondly the event predictability could be assess through LSCs predictability which is more consistent with global numerical prediction, at least more than small scale processes implied in convective events.

Two forecast datasets are held to lead further comparisons over a two year period, based on two operational ensemble models, PEARP the 35-member model at Meteo France model and EPS, the 50-members at ECMWF. Some probabilistic scores were computed, and an attempt of calibration was experimented.