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Classification and prediction of days with extreme rainfall using random forest approach

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In a previous transfer project T1 of the SFB-Transregio “Waves to Weather” (W2W) a strategy was designed to classify precipitation extremes in Northern Italy and to provide additional information on the physical and dynamical drivers associated with it. Building on this, in collaboration with ARPAE-SIMC and ECMWF, we designed a new transfer project called TEX (Towards seamless prediction of EXtremes). The project has the final goal to expand and generalize this dynamical methodology to other regions and into the sub-seasonal forecast range (10-30 days). In this contribution, we present the first results concerning the validity of this method in the medium-range forecast. In particular, we show the accuracy of the random forest classification method, essentially based also on atmospheric upper-level predictors, in recognizing days with a high probability of extreme precipitation events compared to a forecast based only on precipitation outputs. These results, which are still referring to the test area of N-Italy, are preparatory for a further generalization to different areas and at a longer forecast horizon.