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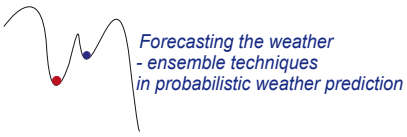

Summarizing ensemble forecast scenarios using an objective classification of European synoptic patterns

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The ability to capture and summarize the key synoptic development alternatives presented in 15-day ensemble forecasts is vital for medium-range forecasters who are required to communicate this information to end-users efficiently. While forecasters have an intrinsic understanding of synoptic type and their impact of regional weather, common clustering techniques often fail to pull out differing synoptic developments from groups of ensemble members. Regional weather alternatives remain mixed inappropriately within single clusters, making the result impractical and unhelpful. While the recent new-clusters method at ECMWF is a major advancement, the standard patterns clustered against are large-scale, Atlantic-dominated types, with only a limited correlation to regional European weather. In this presentation, a newly optimized objective method of classifying European synoptic patterns according to the well-known 29-type Hess-Brezowsky Grosswetterlagen (GWL) is applied to each ensemble member's 15-day sequence. These synoptic types have a strong correlation to regional weather patterns over much of Central and Western Europe and can be understood easily by forecasters. A new display style is then presented, which summarizes the forecast developments by grouping into GWL-labelled blocks in a tree-like structure, showing which forecast period the respective GWL is expected to occur over and, via the block size, how many members show this behaviour. Cluster mean synoptic charts are plotted for each cluster-block in the tree to show the impact of the chosen pattern on regional weather. This method is able to communicate the essential alternative developments to a forecaster very quickly and effectively. Furthermore, the sequence of most-probable GWLs through the forecast period can be used to choose a most-representative member, resulting in an optimal deterministic solution captured from a probabilistic forecast based on meaningful synoptic criteria.