



Comparison of a new rainfall-based weather patterns classification with 76 COST733 weather type classifications over Austria

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Classifications of atmospheric weather patterns (WP) are widely used for the description of the climate of a given region and are employed for many applications, such as weather forecasting, downscaling of Global Circulation Models outputs and reconstruction of past climates. WP classifications were recently used to improve the statistical characterization of heavy rainfall occurrences. In this context, bottom-up approaches, combining spatial distribution of heavy rainfall observations and geopotential height fields have been used to define WP classifications relevant for heavy rainfall statistical analysis (Garavaglia et al., 2010). The definition of weather patterns at the synoptic scale creates an interesting variable which can be used as a link between the global scale of climate signals and local scale of precipitation station measurements.

We introduce here a new WP classification centred on Austria and based on a bottom up approach. We show that the choice of the spatial extent of the geopotential height fields considered and their position over the studied region are relevant and are related to the typology of the atmospheric circulations observed. A comparison with 76 classifications originating from the COST733 project (Harmonisation and applications of weather type classifications for European regions) reveals good performances of our classification. Moreover, this comparison approach allows the quantification of the performance gain due to the use of a bottom-up approach and of an optimal spatial extent and position of geopotential height fields used.