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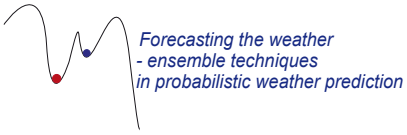

Autumn cooling over Europe: When and where?

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Recent global warming of surface air is not ubiquitous – there might be seasons, regions, and time periods with clearly discernible downward temperature trends. Autumn cooling has been previously detected in the second half of the 20th century in parts of Central and Eastern Europe as well as in large parts of North America. The cooling is accompanied by increasing cloud cover and precipitation, and decreasing sunshine duration and daily temperature range. In this study we use daily maximum and minimum temperature data from a large sample of stations from the ECA&D database in Europe and the Mediterranean to localize the seasonal and sub-seasonal temperature trends in the period 1961–2000. For selected stations with data available throughout the 20th century, we carry out a detailed analysis of temperature trends in shifting time frames of differing length (i.e. in periods of 10 to 50 years with a step of one year, and each period shifted by one year from the preceding period). Our results suggest that using different time scales apart from the conventional three-month seasons and climatological normal periods is highly desirable for thorough and reliable trend detection.