EMS Annual Meeting Abstracts
Vol. 8, EMS2011-13, 2011
11th EMS / 10th ECAM

Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Trends in the Frequency of Extreme Climate Events in Latvia as Influenced by Large Scale Atmospheric Circulation Processes

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Worldwide a significant increase in the mean temperature near the surface of the Earth has been reported indicating that climate is changing. However, climate change is not only characterized by changes in the mean values, but also by changes in occurrence of extreme climate events. Just few examples illustrate the threats and significance associated with extreme climate events: extreme heat events – heat waves; extreme precipitation, floods.
This study investigated the long-term variability of extreme climate event indicators in Latvia and their relation to large scale atmospheric circulation processes. To assess the trends in frequency of extreme climate events, 14 extreme climate indices, such as the number of extremely hot days, the number of frost days or the number of days with heavy precipitation, were calculated and compared with other indices characterizing the mean climate. Trend analysis of long-term changes in the frequency of extreme climate events demonstrated a significant increase in the number of meteorological events associated with an increased summer temperature (for example, the number of summer days and tropical nights) and a decrease in the number of events associated with extreme temperature events in winter (the number of ice days and frost days). Due to the decreasing number of cold days, under the changing climate, the length of the growing season has increased. There were also increases in the number of days with heavy precipitation and in the intensity of heavy precipitation. Finally, the influences of the large-scale atmospheric circulation on the occurrence of these climate extremes were discussed.