



Contemporary changes in precipitation extremes in Poland in comparison to changes in other parts of Baltic Sea Basin

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The aim of the paper is detection and attribution of changes in precipitation extremes in Poland on the ground of similar changes in the rest of Baltic Sea Basin. The indices defined by the Expert Team on Climate Change Detection and Indices (ETCCDI) are computed for a number of stations from Poland and surrounding countries. Among them are: Monthly maximum 1-day precipitation (Rx1day), monthly maximum consecutive 5-day precipitation (Rx5day), precipitation intensity index (RRw), annual number of days with daily precipitation $\geq 10\text{mm}$ and $\geq 20\text{mm}$ (R10mm and R20mm), maximum length of dry spell (CDD), maximum length of wet spell (CWD), annual total from days when daily total is equal at least 95 percentile and 99 percentile calculated in reference period 1961-1990 from daily totals equal at least 1 mm (R95pTOT and R99pTOT). The daily precipitation records from more than hundred stations from the period 1951-2012 were used. The changes in annual values and their variability are analysed. The regions of similar changes are distinguished both for Poland and for the whole Baltic Sea Region. In the second part of the paper the attribution of large scale mechanisms causing detected changes is planned. The set of possible large scale predictors is prepared. Among them are indices of atmospheric and oceanic circulation in the European-North Atlantic Region: the North Atlantic Oscillation index, The Scandinavian index, the East Atlantic index, and the Atlantic Multiannual Oscillation. Additionally the large scale fields of sea level pressure and humidity and temperature from low troposphere are used. The records of indices were taken from NCDC (<http://www.cpc.ncep.noaa.gov/data/teledoc>). The large scale fields data were taken from NCAR/NCEP Reanalysis. Among the methodologies used to detect the mechanisms of precipitation extreme changes are: correlation analysis, composites and Canonical Correlation Analysis.

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