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Extreme dryness events in Poland, their synoptic scale drivers and trial of downscaling

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The precipitation totals in Europe since the middle of last century has changed in the north-western part, where the totals have increased and in the Mediterranean region, where the decrease of totals have been observed. Poland is located in the part of Europe where changes in annual totals are close to zero, but some seasonal shifts are observed. Precipitation in winter and early spring is increasing, whereas summer rainfall decreases. Such situation together with higher temperatures and smaller snow cover cause that water deficit in the vegetation period became significant. According to 4th IPCC Report more frequent dry spells are probable to increase even in those place where the overall amount of precipitation is not projected to change significantly. Poland is such a country. A few indices of dryness are considered. Their present variability is analyzed and the synoptic scale drivers for such situations are distinguished and the trial of statistical downscaling of such events is made. Training and evaluating is made on the basis of daily precipitation totals at few stations in Poland and gridded SLP and geopotential levels 850, 700 and 500 datasets.
Scenarios are made on the basis of CLM model results for two emission scenarios B1 and A1B. Results obtained by statistical downscaling are compared with those obtained by dynamical downscaling.