Possible precipitation regime change in Slovakia due to air pressure and circulation changes in the Euro-Atlantic area until 2100

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Abstract: The newest General circulation models (GCMs) can offer, besides the number of outputs of basic climatic elements, also values of air pressure. Precipitation and some other elements are dependent on the atmospheric circulation well described by the air pressure fields in different heights. The scenarios of air pressure changes in Europe and in the North Atlantic area have been prepared using CCCM2000 (Canadian Center for Climatic Studies and Analyses) and GISS1998 (Goddard Institute for Space Studies, USA) coupled model outputs. The analyzed region was bordered by longitudes 63.75° W and 67.50° E (36 grid points) and by latitudes 24.12° N and 83.48° N (17 grid points) at CCCM2000 and by longitudes 67.5° W and 67.5° E (28 grid points) and by latitudes 22.0° N and 82.0° N (16 grid points) at GISS1998. Because of space limitation only 2075 time frame (years 2051-2100) scenarios are compared there to baseline period (January and July averages and only sea level air pressure field). Some results on correlations of observed air pressure data at Hurbanovo (1901-2000, 124 m a.s.l., SW Slovakia), precipitation areal totals in Slovakia and at 18 stations in 1901-2000, as well as the Cyclonicity, Westerly zonality, Southerly meridionality and the Principal components NAO indices are shown there. More details on the topic will be presented in the next papers and in the Project reports.

Key words: climate change, model outputs, atmospheric circulation, correlation, trends

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