



Projected climate changes in Ukraine based on a multi-scenario AOGCM's ensemble

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For the first time quantitative characteristics of climate changes in Ukraine during the 21st century for three SRES emission scenarios B1, A1B and A2 have been obtained with aid of the analysis of an ensemble of 84 runs of the 10 Atmosphere-Ocean General Circulation Models (AOGCM) from AR4 IPCC-2007. Monthly means for every year of surface air temperature and precipitation were extracted from an archive of [U+FFFD] [U+FFFD] (Coupled Model Intercomparison Project, phase 3), cut off by geographical coordinates and averaged over the whole territory of Ukraine.

Time series of the models' ensemble averaged yearly-mean surface air temperature clearly demonstrate its stable rise in Ukraine during the 21st century with mean coefficients of linear trends: B1 - 0.023 °C/year, A1B - 0.037 °C/year and A2 - 0.044 °C/year. At the same moment slower increasing of areal max temperatures corresponding to the southern part of Ukraine has been obtained: B1 - 0.021 °C/year, A1B - 0.035 °C/year and A2 - 0.040 °C/year. And the most rapid increasing of areal yearly-mean temperatures has been found for minimal temperatures, i.e. for the northern and north-eastern territory of Ukraine: B1 - 0.025 °C/year, A1B - 0.040 °C/year and A2 - 0.048 °C/year. Note, temperature increasing for A2 scenario is minimal in the first half of the 21st century, but after it overcomes other two scenarios and reaches maximum at the end of the 21st century.

There is not such agreement for precipitation variations in the 21st century between AOGCMs: some of them project increasing up to 11% in some decades and others – decreasing by -23%. Averaged over the models ensemble runs precipitation changes at the end of the 21st century are within 3% and time series show almost unchanged annual precipitation for all scenarios.

Obtained results have been included in the Fifth National Report of Ukraine to UNFCCC and will be used for further assessments of possible climate change impacts on socio-economical aspects of life and planning adaptation and mitigation measures in Ukraine.