

Climate change research in Republic of Macedonia in the XXI century

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The presentation comprises recent achievements and updated research results of projected climate change in Republic of Macedonia in 21st century, related to previously elaborated National Communications on Climate Change as obligation under the UN Framework Convention on Climate Change. Results refer to air temperature and precipitation analysis on seasonal and annual base, according to various emission scenarios for years 2025, 2050, 2075 and 2100. Emission scenarios IS92a and IS92c and HadCM2, UKTR, UKHI-EQ, CSIRO-EQ and CCC-EQ models are used (for the First National Communication) and SRES A1T, A1FI, A1B, and B1 (for the Second National Communication). The projections are based on interpolated values from selected four GCMs (CSIRO/Mk2, HadCM3, ECHAM4-OPYC3, and NCAR-PCM), while for the local projection for different climatic regions of Macedonia the method of empirical downscaling is used. The direct GCM output projected to Macedonia show more intensive increase in air temperature in summer season than in winter season and much higher values of expected change than expected global temperature change. Almost no change in precipitation is expected for winter season in general on the area of Macedonia, but quite a strong decrease in summer precipitation. The local projections of climate change indicate that different climatic regions of Macedonia will respond different on large-scale climate changes. The continental climate region in southern part of Macedonia shows the weakest response to large-scale climate change in a sense of absolute temperature and precipitation changes, and the northwestern part under the prevailing mountain climate impact the strongest response. In mentioned regions the difference between a strong increase in temperature in summer season and weaker in winter season is not as evident as in sub-Mediterranean climate. Although such local projections of climate change present a step forward towards the needed knowledge about how different sub-regions of Macedonia might respond to large-scale climate change, we need to be aware of all the uncertainties related to the results before using them in impact studies related to human health, agriculture, forestry, biodiversity, water resources and energy management etc. Keywords: climate change, national communication, climate change scenarios