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Investigation of the Drought Probabilities over Turkey in a Changing Climate

M.Tufan Turp (1,6), Abdullah Akbas (2), Sibel Saygili (3,6), Tugba Ozturk (4,6), M.Levent Kurnaz (5,6)

(1) Department of Environmental Sciences, Institute of Environmental Sciences, Bogazici University, Istanbul, Turkey (tufan.turp@boun.edu.tr), (2) Department of Geography, Faculty of Humanities and Letters, Ardahan University, Ardahan, Turkey (abdullah.akbas88@gmail.com), (3) Department of Computational Science and Engineering, Institute of Graduate Studies in Science and Engineering, Bogazici University, Istanbul, Turkey (saygilisibel@gmail.com), (4) Department of Physics, Faculty of Arts and Sciences, Isik University, Istanbul, Turkey (tugbaozturkt@gmail.com), (5) Department of Physics, Faculty of Arts and Sciences, Bogazici University, Istanbul, Turkey (levent.kurnaz@boun.edu.tr), (6) Center for Climate Change and Policy Studies, Bogazici University, Istanbul, Turkey

As a consequence of the negative impacts of climate change, Turkey is under risk of an increased drought conditions. In this study, we aim to detect the possible changes in the intensity and frequency of drought conditions and to identify the spatial and temporal distributions of these changes throughout the country. Therefore, firstly the outputs of the MPI-ESM-MR global climate model of the Max Planck Institute for Meteorology were downscaled to 50 km for Turkey via Regional Climate Model (RegCM4.4) of the Abdus Salam International Centre for Theoretical Physics (ICTP). RCP8.5, which is the worst case emission pathway, is used to make future projection for the period of 2071 - 2100 with respect to the reference period of 1971 - 2000 over Turkey. Thereafter, the Standardized Precipitation Index (SPI) values, which are computed by using monthly precipitation totals data of the model, are obtained and classified for three timescales (i.e. 3-month, 6-month, and 12-month). Lastly, the spatial distribution maps, which determine the changes in drought probabilities over Turkey, are created in order to characterize better the impact of climate change on Turkey's drought patterns.

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