Identification of Percentile Base Extreme Maximum Temperature in Sri Lanka and its Projection to Year 2050

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Global temperature has been increasing during the last few decades due to the emission of greenhouse gases and the climate pattern has also changed with increasing temperatures. According to the Fifth Assessment Report on Inter Governmental Panel for Climate Change[1], global temperature has risen by 0.85°C [0.65 to 1.06°C] over the period 1880 to 2012. This warming may not be spatially or temporally uniform, but it is projected to continue and will likely be accompanied by more extreme climate events. Our society and infrastructure are becoming more vulnerable to severe and intense weather and it is essential to closely monitor the climate extremes to mitigate many climate related hazards which different key sectors in a country may face.

There is general agreement that changes in the frequency or intensity of extreme weather and climate events would have profound impacts on both human society and the natural environment. Recent years have seen a number of weather events causing large losses of life as well as a tremendous increase in economic losses from weather hazards. In addition to the climate extremes, researchers have found evidence of increasing extreme weather events such as hurricanes, heat waves, cold waves, floods, droughts, and severe cyclonic storms over the past few decades. Though climate change is a global phenomenon, local effects also contribute to the change of local climate pattern and climate extremes in each country.

This study is focused on identifying the extreme value for the maximum temperature by analyzing the daily data for the period 1961-1990. 95th percentile for the daily data was used as an extreme temperature value in each temperature measuring station in Sri Lanka. Trend of the number of extreme temperature days were calculated for the decadal periods until 2010 and were projected for the year 2050. The daily temperature projection data was done using the PRECIS software for the Global Circulation Model data prepared by HADCM3 and ECHAM 5.

Reference:

1. IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp.1535.