

Investigate The Potential Extreme Drought Event using Integrated Statistical Model

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Abstract:

Frequent extreme drought event especially in urban area is majorly affected by the uncertainty of global climate changes and drastic releases of greenhouse emissions. The identification of the potential drought events in the long-term became significant to monitor how frequent the events and how huge the impact to the efficiency of water resources management. Due to this concern, the integrated statistical model (SDSM-SPI) was applied to estimate the probability of extreme drought events focused on the urban area. The IPCC Fifth Assessment Report (AR5) by three Representative Concentration Pathways (RCP2.6, RCP4.5 and RCP8.5) were used to provide plausible future scenarios of anthropogenic forcing spanning at the region in difference potential radiation level. The results revealed the climate changes could alter the seasonal trend and intensity with small rises in average 7 %/year (rainfall) and 0.2 oC/decade (temperature). Although the rainfall was expecting to increase however almost 42 % of Pahang state expected to receive lower rainfall intensity than the historical annual rainfall. Estimated the drought events potentially to occur in 20 % from upcoming 80 years with every station has high probability to drought at least twice times. For the RCPs performances, the RCP4.5 potentially to produce more frequent drought events compared to other RCPs.

Keywords : Drought; Dry; SPI; SDSM; Statistical Model.

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