

GLOBAL CLIMATE MODEL OUTPUTS FOR ASSESSING DROUGHT IMPACTS ON SRI LANKA

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Among all the natural hazards, droughts occur more frequently and have the longest periods and affect most part of Sri Lanka. Even though standardized precipitation index (SPI) is not a drought predicting tool using downscaled results it was possible to forecast SPI. Forecasted SPI can be used for two purposes. Firstly, in order to implement a better drought relief payment policy. Secondly, it will be useful for better water resource planning in order to reduce agriculture risk. A Statistical downscaling procedure was developed over Sri Lanka for drought risk. The system was based on Climate Information tool Kit 2.0 (CLIK) by Asia-Pacific Economic Corporation (APEC) Climate Center (APCC). As the predictor region, El Niño Southern Oscillation (ENSO) region was considered because recent droughts are more influenced by ENSO compared to traditional South West monsoons (SWM) and North East monsoons (NEM) for the island.

A Seasonal drought study was carried out considering 3 months intervals for 4 seasons, January to March (JFM), April to June (AMJ), July to September (JAS) and October to November (OND). In order to identify optimal SPI scales, models, variables and NINO regions for each season, a preliminary study was carried out using a sample station. Based on the outcome of the study, a detailed study was carried out for 34 stations covering central and southern parts of the island. Regression based statistical downscaling was considered for the study. Interestingly central high hills showed a very high correlation with ENSO during OND. Our results highlight that CLIK is skillful over Sri Lanka mainly in identifying best downscaling characteristics over a station. JFM was highly skillful for a global climate model (GCM) model NCEP (from National Centers for Environmental Prediction, USA) whereas OND was skillful against CWB (from Central Weather Bureau, China). Highest correlation was obtained for the NINO 3 region. Sea Level Pressure (SLP) was dominating over other environmental variables.