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Evaluation of Sub-Seasonal Forecasts of Weekly Number of Dry Days with ECMWF Extended Range Forecast

Weather and climate extreme events are of major concern for countries in Southeast Asia, with hydro-meteorological events making up a total of 85% of disasters in 2017 [1]. Drought severely impacts high risk countries like Cambodia, Lao People's Democratic Republic, Myanmar and Vietnam. Through interactions with agricultural and the water management sector, sub-seasonal to seasonal forecasts of the number of dry days (NDD) were thought to be highly useful in preparation for management of low rainfall conditions. In particular breaks, or an increase in the NDDs, during the traditional monsoon season were highlighted as a variable of interest.

Here, we assessed the skill of the ECMWF S2S forecast for the number of dry days in a week. Both the correlation of anomalies (CORA) and mean-square skill score (MSSS) on the weekly NDD were calculated using 11 ensemble members hindcast data for the year 1998 to 2014 and compared to observations data from Tropical Rainfall Measuring Mission (TRMM 3B42 v7). Due to model bias, an adaptive threshold based on the 20th percentile from the distribution of the hindcast daily precipitation data was used. The skill scores were calculated for four lead times (a lead time of 1 week to a lead time of 4 weeks). The skill scores showed good skill for weeks 1 and 2 in Southeast Asia, with some skill in NDD up to a lead time of 4 weeks. It is proposed that the ECMWF S2S forecast can be used for providing a forecast on the weekly number of dry days at the subseasonal timescale.

[1] 2018. AHA Centre Annual Report 2017. ASEAN Coordinating Centre for Humanitarian Assistance on disaster management.

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