

Poster.1: . **Trends of convective event climatology in the Arabian Peninsula and forecast opportunity at S2S time scale**

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Abstract

Severe weather associated with organized convective systems is becoming more intense globally and is also observed in the Arabian Peninsula (AP). The extreme rainfall-associated flooding in low soil infiltration region like the AP often lead to significant social and economic losses within a very short period. Improving forecast capability at sub-seasonal to seasonal (S2S) timescale can potentially assist disaster risk mitigation, and water resource management.

A series of S2S regional climate model reforecasts were completed using the Weather Research and Forecasting Model (WRF) at convective-permitting resolution (4 km) for the AP. We dynamically downscale 20 years of winter season from the European Centre of Medium-range Weather Forecasts (ECMWF) S2S reforecast product. WRF simulations were initialized weekly with 1-month simulation duration between November and April.

Methods designed to evaluate the S2S forecast skills considers the probability of detection of precipitation, determining the rate of forecast agreements between ensemble members. We evaluated the WRF ensembles against satellite based Global Precipitation Mission (GPM) and 4-km reanalysis data from the King Abdullah University of Science and Technology (KAUST-RA). The WRF S2S downscaled reforecasts significantly improved from the driving ECMWF reforecast climatology. Our WRF results also produced reasonable winter precipitation climatology over the AP across various forecast lead times.