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Preliminary Evaluations of the Extended-Range Tropical Cyclone (TC) Forecasts in the Western North Pacific and Taiwan Area by using the ECMWF S2S Forecasts

The predictability of the 1-4 week tropical cyclone (TC) forecasts in the western North Pacific is evaluated in this study. The CWB TC Tracker (Tsai et al. 2011; Wea. Forecasting) is utilized to objectively detect TCs in the 28-day ECMWF Subseasonal to Seasonal real-time forecasts during 2015-2017. Two types of the forecast evaluation methods are used: (i) categorical binary forecast evaluations (i.e., contingency table, probability of detection, false alarm ratio, Threat Score, performance diagram etc.) and (ii) probabilistic forecast evaluations (i.e., receiver operating characteristic (ROC) curve and reliability diagram).

Preliminary verifications for the TCs in the western North Pacific (0-180°E, 0-60°N) show that the forecast skill in the subregion (120°E-150°E, 5°N-40°N) is higher than those in the South China Sea (105°E-120°E, 5°N-25°N) and Central Pacific (150°E-180°E, 5°N-40°N). In the western North Pacific, the Threat Scores in Weeks 1-4 are about 0.4, 0.3, 0.2, and 0.2, respectively. Moreover, the skill of the S2S forecasts in predicting the TCs affecting the Taiwan area is explored. The Threat Scores from Week-1 to Week-4 forecasts are all higher than 0.4. The evaluation results show that the ECMWF S2S forecasts are able to provide the TC strike probability forecast information for the Taiwan area.

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