



## Evaluating Western North Pacific Tropical Cyclone Forecast in the Subseasonal to Seasonal Prediction Project Database

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The Daily Tropical Cyclone Probability (DTCP), defined as the probability of tropical cyclone occurrence within 500 km of a location in one day, is proposed and used in evaluating subseasonal to seasonal (S2S) predictions from the S2S Prediction Project Database, from May 1 to Oct. 31, 1999, to 2010. The ensemble reforecasts are collected from eleven operational centers, the BoM, CMA, ECCO, ECMWF, HMCR, ISAC, JMA, KMA, METFR, NCEP, and UKMO. In both observation and these eleven forecast models, the DTCP is modulated by the Boreal Summer Intraseasonal Oscillation (BSISO), depicted by the two indices, BSISO1 and BSISO2. During BSISO1 phases 1, 5, 6, 7, and 8, the DTCP in the northwestern Pacific region is ~3.5 times higher. Similarly, during phases 1, 2, 3, 4, and 8 of BSISO2, the DTCP is ~2.5 times higher. Among the eleven models, the ECMWF model best reproduces the climatological DTCP and its modulation by the BSISO in the western North Pacific region, followed by NCEP, KMA, JMA models. Using the DTCP metric, the highest debiased Brier Skill Score of the eleven models is from ECMWF, which has a slightly less skillful prediction than the reference climatological forecast with lead time 11 to 30 days. The skill of the eleven models is higher during the non-active phases of tropical cyclone activity than their skill during the active phases. The updated results based on the real-time tropical cyclone forecasts of the S2S Prediction Project Database from these eleven systems will also be discussed.