Seasonal Prediction Model Emerges Due to USU-NCHU Collaboration

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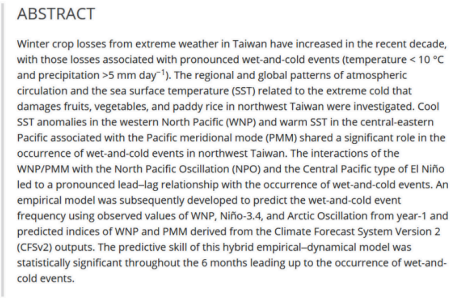

ABSTRACT

Winter crop losses from extreme weather in Taiwan have increased in the recent decade, with those losses associated with pronounced wet-and-cold events (temperature < 10 °C and precipitation >5 mm day^{-1}). The regional and global patterns of atmospheric circulation and the sea surface temperature (SST) related to the extreme cold that damages fruits, vegetables, and paddy rice in northwest Taiwan were investigated. Cool SST anomalies in the western North Pacific (WNP) and warm SST in the central-eastern Pacific associated with the Pacific meridional mode (PMM) shared a significant role in the occurrence of wet-and-cold events in northwest Taiwan. The interactions of the WNP/PMM with the North Pacific Oscillation (NPO) and the Central Pacific type of El Niño led to a pronounced lead–lag relationship with the occurrence of wet-and-cold events. An empirical model was subsequently developed to predict the wet-and-cold event frequency using observed values of WNP, Niño-3.4, and Arctic Oscillation from year-1 and predicted indices of WNP and PMM derived from the Climate Forecast System Version 2 (CFSv2) outputs. The predictive skill of this hybrid empirical–dynamical model was statistically significant throughout the 6 months leading up to the occurrence of wet-and-cold events.

An abstract detailing seasonal prediction models for wet-and-cold events

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Parichart Promote, Simon Wang, and Paul Johnson (USU) team up with Yuan Shen and Ming-Hwi Yao (NCHU) to develop a seasonal predictional model related to wet-and-cold event frequencies as related to the impact on sea surface temperatures that damage fruit, vegetables, and paddy rice in northwest Taiwan.

Check out the article!