El Niño and Southern Oscillation (ENSO) Outlook

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Synopsis: La Niña is likely to have passed its peak and to weaken through the spring.

In February 2021, the equatorial surface sea temperatures (SSTs) were below average from the west-central to eastern tropical Pacific Ocean, and positive SSTs remained in the far western Pacific Ocean (Fig.1a). The temperature difference between east-west Pacific decreased. Meanwhile, positive subsurface temperature anomalies strengthened in the western Pacific Ocean (Fig.2). Low-level easterly wind anomalies were evident across most of the tropical Pacific Ocean. Tropical suppressed convection extended from the western Pacific to the Date Line, and convection remained over Indonesia (Fig.1b). Overall, the coupled ocean-atmosphere system indicates La Niña has passed its peak in the tropical Pacific. The CWB model averages predict that La Niña (Niño-3.4 index less than -0.5°C) will slightly decrease in the spring (Fig.3). In summary, La Niña is likely to have passed its peak now and to weaken through the spring.

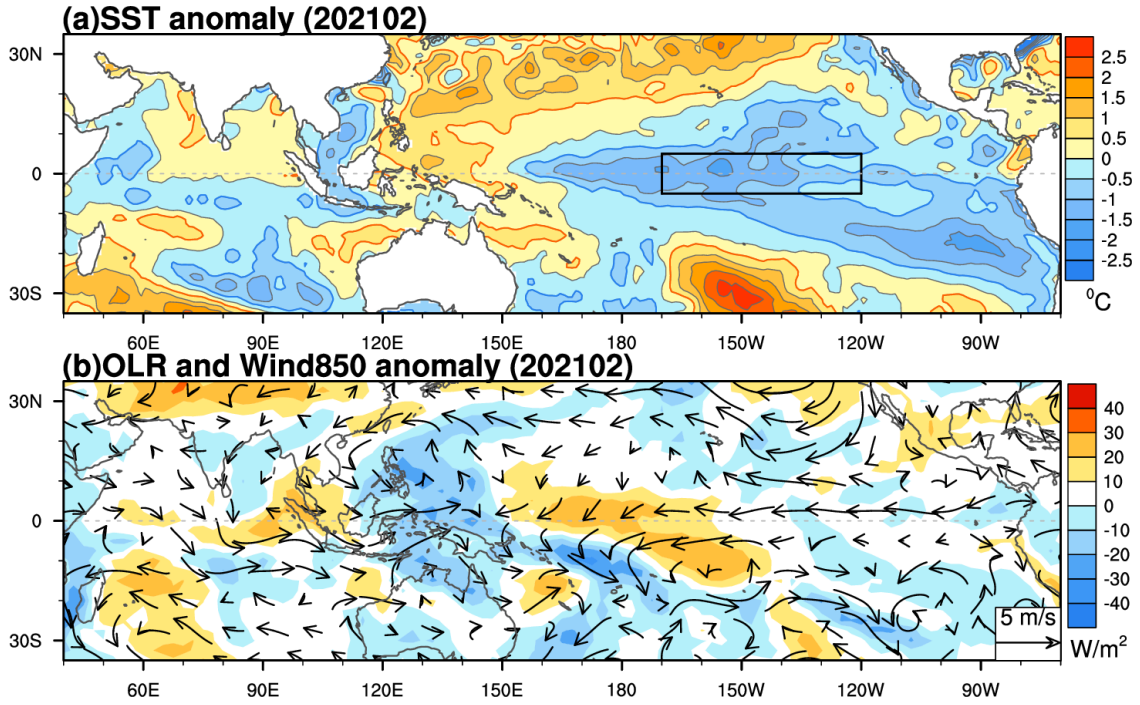

Figure1. (a) Monthly mean sea surface temperature anomalies (SST, unit:℃) and (b) outgoing longwave radiation (OLR, units: W/m^2, shading) and wind at 850hPa (vectors, unit: m/s) anomalies in the tropical Pacific and Indian Oceans

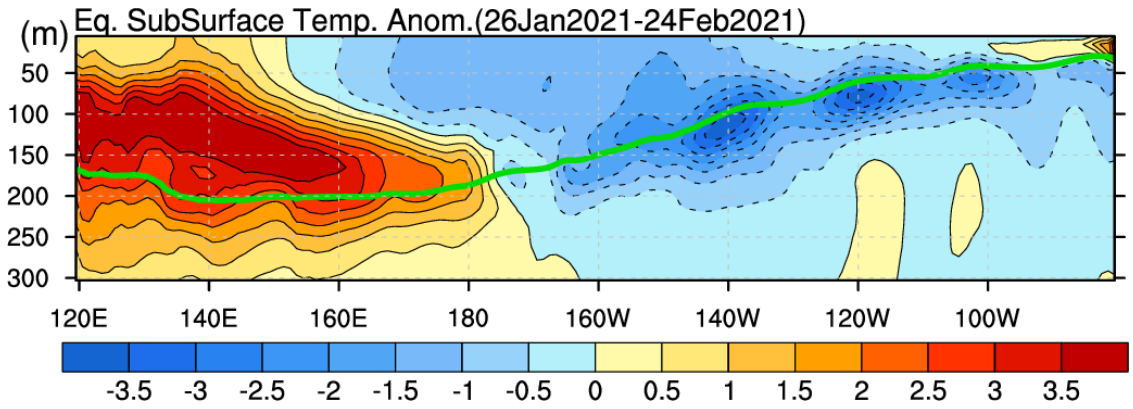

Figure 2. Depth-longitude cross sections of temperature anomalies (℃) along the equator in the Pacific Ocean from the ocean data assimilation system

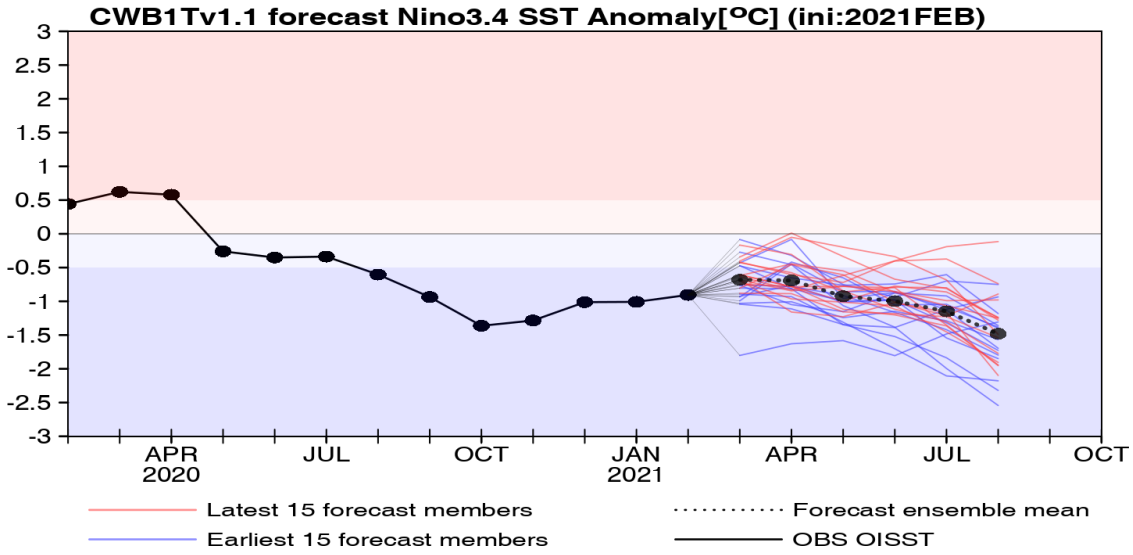

Figure 3. Observed (black solid line) and forecast ensemble mean (black dashed line) and the individual members (red and blue lines) of the Niño 3.4 (5˚N-5˚S, 120˚-170˚W)

Notes:

1. The base period of normal in this report is 1981-2010.
2. The CWB definition of ENSO events is based on Oceanic Niño Index (ONI) (3 month running mean of Niño 3.4), and the threshold is the ONI greater than ±0.5 for a minimum of 5 consecutive overlapping seasons. The corresponding atmospheric circulation patterns with SST anomalies are also considered to determine the status of ENSO.
3. The analysis data used in this report are from National Centers for Environmental Prediction/National Center for Atmospheric Research (NCEP/NCAR) Reanalysis I, OLR from National Oceanic and Atmospheric Administration (NOAA), SST from NOAA Optimum Interpolation SST (OISST) V2, and subsurface oceanic temperature from NCEP Global Ocean Data Assimilation System (GODAS).
4. The forecast Niño 3.4 is from CWB1Tv1.1, the CWB operational seasonal forecast system in Taiwan which is an atmosphere-ocean coupling model with T119L60 resolution.