

# **HOW PERSISTENT STRONG WINTER COLD SURGE OVER ASIA AFFECT THE SST ANOMALIES ALONG THE EQUATORIAL PACIFIC AND INDIAN OCEAN**

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Experiments based on the Global Ocean-Atmosphere-Land System model developed at LASG/IAP (IAP/LASG GOALS) were designed to study how persistent strong winter cold surge over Asia can affect the SST anomalies along the equatorial Pacific and Indian Ocean. Results show that strong outbreak of Siberian anticyclone generates positive SLP anomaly over the Eurasian Continent. Over Indian Ocean, abnormal strong winter monsoon and easterly along the equator are forced. Over north Pacific, the abnormal air-sea interaction generates anomalous cyclonic SLP pattern over the Bay of Alaska which propagates southwestward and then reaches the southwest north Pacific, resulting anomalous westerly to the west and easterly to the east over the equator.

Diagnosis on the tendency of SST shows that, along the equator latent heat release and vertical up/down welling are dominate factors. Positive SST tendency in the west and negative in the east along both the equatorial Indian and Pacific Ocean during the strong cold surge period (Jan-March) are observed and formed as initial condition for the further development of SST variation. Due to the integral effect, such strong tendency signals in SST can be felt in SST anomaly for more than half a year. Whether these initial SST anomalies can lead to an El Nino event will depend upon the further development of other air-sea environment.

**Key Words :** Cold surge, air-sea interaction, anomalous sea level pressure, SST tendency, SSt anomaly