Siberian High and Effects of Arctic Oscillation and El Niño-Southern Oscillation on Its Variability during Winter Monsoon (Nov-Mar)

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The Siberian High (SH), which forms because of the intense cooling of the land during the boreal winter monsoon, is an important pressure system over the East Asia. Lower tropospheric northeasterlies over the South China Sea, reinforced intermittently by cold dry air surges from the Siberian High, interact with the near equatorial trough to give rise to strong convection and torrential downpours over Malaysia and its neighbouring sea areas. Understanding of the Siberian High, especially its variability, is therefore deemed essential. Based on NCEP/NCAR reanalysis data, pertinent climatological (1971-2000) and statistical features of the Siberian High in terms of mean sea level pressure, surface air temperature and wind as pentad values are discussed. The variability of the Siberian High (defined within the area $40 - 60^{\circ}$ N, $80 - 120^{\circ}$ E) is then studied through an index. It is known that the Arctic Oscillation (AO) and El Nino-Southern Oscillation (ENSO) have influences on the Siberian High (Wu et al., 2002). This study attempts to look into the influences of AO and ENSO on the development and intensity variability of the SH. Correlations among indices of AO, ENSO and SH are carried out to identify their inter-relationship and significance. Composites of mean sea level pressure and its anomalies in relation to the Siberian High during different phases of AO and ENSO that occur concomitantly are constructed to reveal the differing synoptic and anomalous characteristics.

Keywords: Siberian High, Arctic Oscillation, ENSO, climate variability, correlation and anomalies.

References

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