

Climatological Description of Seasonal Variations in Lower-Tropospheric Temperature Inversion Layers Over the Indochina Peninsula

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In this study we use operational rawinsonde data to investigate climatological features of seasonal variations in static stability in order to understand the behavior of temperature inversion layers, i.e., extremely stable layers, in the lower troposphere over the Indochina Peninsula region, at the southeastern edge of the Asian continent. Static stability was evaluated from the vertical gradient in potential temperature (hereafter VGP). Stable (VGP more than 10 K/km) and unstable (VGP less than 1 K/km) layers frequently appear over the Indochina Peninsula region during the boreal winter. Temporal and vertical variations in stability during the boreal winter can be categorized into three characteristic types: Type I) The mean height of stable layers increases from 2 km to 5 km from the dry to the rainy season, over inland areas of the Indochina Peninsula and southern China, Type II) Similar to type I, with the additional occurrence of stable layers at a height of about 1 km, mainly over coastal areas of the Indochina Peninsula, and Type III) Stable layers at a height of about 2 km, mainly over the Malay Peninsula. We did not find any significant seasonal change in the vertical distribution of stable layers over the Malay Peninsula.