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Does the recent warming hiatus exist over northern Asia for winter wind chill temperature?

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Wind chill temperature (WCT) describes the joint effect of wind velocity and air temperature on exposed body skin and could support policy makers in designing plans to reduce the risks of notably cold and windy weather. This study examined winter WCT over northern Asia during 1973-2013 by analyzing in situ station data. The winter WCT warming rate over the Tibetan Plateau slowed during 1999-2013 (-0.04 °C/decade) compared with that during 1973-1998 (0.67 °C/decade). The winter WCT warming hiatus has also been observed in the remainder of Northern Asia with trends of 1.11 °C/decade during 1973-1998 but -1.02 °C/decade during 1999-2013, except for the Far East of Russia (FE), where the winter WCT has continued to heat up during both the earlier period of 1973-1998 (0.54 °C/decade) and the recent period of 1999-2013 (0.75 °C/decade). The results indicate that the influence of temperature on winter WCT is greater than that of wind speed over northern Asia. Atmospheric circulation changes associated with air temperature and wind speed were analyzed to identify the causes for the warming hiatus of winter WCT over northern Asia. The distributions of sea level pressure and 500 hPa height anomalies during 1999-2013 transported cold air from the high latitudes to middle latitudes, resulting in low air temperature over Northern Asia except for the Far East of Russia. Over the Tibetan Plateau, the increase in wind speed offset the increase in air temperature during 1999-2013. For the Far East, the southerly wind from the Western Pacific drove the temperature up during the 1999-2013 period via warm advection.