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WINTER WEATHER IN JAPAN CONTROLLED BY LARGE-SCALE ATMOSPHERIC AND SMALL-SCALE OCEANIC PHENOMENA

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The important components of atmospheric circulation in the winter over the Northern Hemisphere are the Arctic Oscillation (AO) and Western Pacific (WP) pattern. Although in general negative AO and WP phases cause Siberia, East Asia, and Japan to be abnormally cold, Japan was relatively warm in October 2012 even though both the AO and WP were strongly negative. The temperature of the Sea of Japan reached a high in October 2012, and it was found that heating by these very warm waters, despite the small size of the Sea of Japan, overwhelmed the cooling effect of the strongly negative AO and WP in October. Linear regression analyses except the forcing of atmospheric circulations showed that Japan tends to be warm in years when the Sea of Japan is warm. Consequently, the temperature over Japan is statistically controlled by interannual variations of small-scale oceanic phenomena as well as by large-scale atmospheric patterns. Previous studies have ignored such small-scale oceanic influences on island temperatures.