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# Changes in the relationship of East Asian surface temperature and Pacific Decadal Oscillation during boreal winter in a new climate normal period (1991-2020)

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## Abstract

A climate normal period has been changed from 1981-2010 to 1991-2020, therefore, it would be useful to examine the relationship of various climate phenomena. In this study, we examined the relationship of East Asian surface temperature and Pacific Decadal Oscillation (PDO) during boreal winter. While the East Asian surface temperature and PDO had a negative relationship in the 1980s, a positive relationship was observed in a new climate normal period. This could be attributed to the wind anomalies in association with the PDO. There is a northerly wind associated with cold temperature anomalies over East Asia in the previous climate normal period (1981-2010) when the PDO phase is positive. In contrast, the southerly wind associated with warm temperature anomalies was observed in a new climate normal period (1990-2020) in the same sign of the PDO phase. We argue that the sea surface temperature (SST) over North Atlantic Ocean may play an important role to change the relationship of East Asian temperature and PDO. An increase in SST and precipitation over the North Atlantic region during a new climate normal may affect the structure of atmospheric circulations over the North Pacific via teleconnections, resulting in the change in the relationship of East Asian temperature and PDO.

**Keywords:** East Asian surface temperature, PDO, Climate normal

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