

# Temporal Variation of the Western Pacific Subtropical High Westward Ridge and its Implicationson South Korean Precipitation in Late Summer

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**Abstract**

This study investigates variations in the Western Pacific Subtropical High (WPSH) and its impact on South Korean precipitation in late summer during the period between 1958 and 2017. Composite analysis reveals that precipitation occurrence is directly linked to the displacement of the WPSH western ridge, a single, large-scale feature of the atmosphere in the Pacific Ocean. When WPSH ridging is located northwest (NW) of its climatological mean position, excessive precipitation is expected in late summer due to enhanced moisture transport. On the other hand, a precipitation deficit is frequently observed when the western ridge is located in the southeast (SE).

Different phases of the WPSH are associated with lagged patterns of Pacific and Atlantic atmospheric and oceanic variability, introducing the potential to predict variability in the WPSH western ridge and its climate over northern East Asia by one month. Based on the identified SST patterns, a simple statistical model is developed and improvement in the ability to predict is confirmed through a cross-validation framework. Finally, the potential for further improvements in WPSH-based predictions is addressed.

**Keywords: Western Pacific Subtropical High and South Korean precipitation**

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