

Takemura, K. and H. Mukougawa, 2022: A new perspective of Pacific–Japan pattern: Estimated percentage of the cases triggered by Rossby wave breaking. *J. Meteor. Soc. Japan*, **100**, 115-139. <https://doi.org/10.2151/jmsj.2022-006>

**Plain Language Summary:** This study quantitatively examined a relative importance of Rossby wave breaking (RWB) east of Japan to a formation of the Pacific–Japan (PJ) pattern compared with that of tropical atmospheric and oceanographic conditions. Cases of the positive/negative PJ patterns are firstly classified into those with and without the RWB occurrence, which are referred to as WB/PJ+/- and ZN/PJ+/-, respectively. The main findings obtained in this study are summarized as follows.

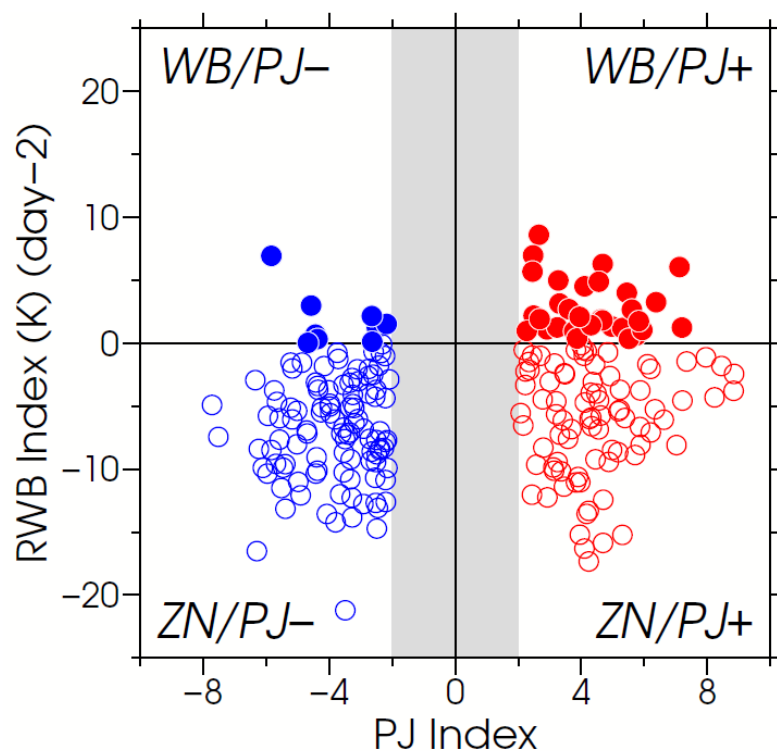


Figure 1. A scatter diagram between the PJ index on day 0 and the RWB index on day -2 (unit: K) for extracted PJ+ (red circles) and PJ- (blue circles) cases. Gray shading denotes a range of the PJ index from -2 to +2. Red closed, blue closed, red opened, and blue opened circles indicate WB/PJ+, WB/PJ-, ZN/PJ+, and ZN/PJ- cases, respectively.

- Cases of the positive PJ pattern triggered by the RWB account for approximately 20% of the whole cases of the positive PJ pattern.
- Composite of the positive PJ pattern with the presence of RWB shows that the RWB promotes the formation of the PJ pattern through the equatorward intrusion of high PV air.
- The formation of the PJ pattern with the absence of RWB are closely associated with tropical sea surface temperature anomalies and phase of the boreal summer intra-seasonal oscillation, illuminating “pure” tropical impacts on the formation of the PJ pattern.