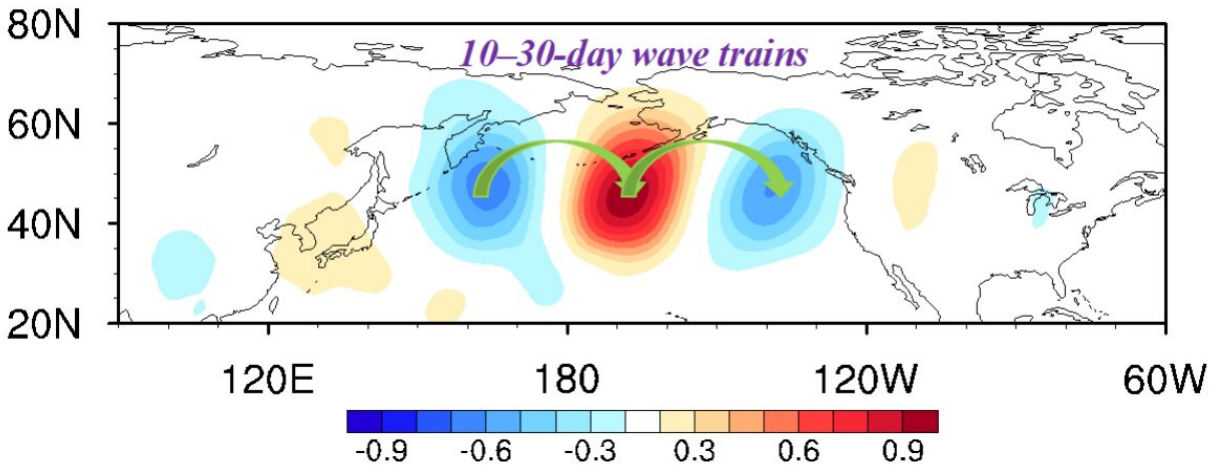
Study reveals early summer North Pacific intra-seasonal waves are stronger in intensity than in late summer

April 11 2022



Summer intraseasonal wave train over the North Pacific. Credit: Du Lei

Atmospheric teleconnections or wave trains can link weather and climate between regions separated by vast distances. Studying these teleconnections or wave trains can help us better understand the climatic links between different regions, and has implications for climate prediction.

According to a study published in 2021, Du Lei And Prof. Lu Riyu from the Institute of Atmospheric Physics of the Chinese Academy of

Sciences identified intraseasonal wave trains over the North Pacific.

The wave trains were zonally oriented along the upper-tropospheric westerly jet, with their dominant period being 10-30 days. They mainly obtained energy from the basic flow through baroclinic energy conversion to develop and maintain themselves. Climatologically, the westerly jet core jumped rapidly from the North Pacific to Eurasia in July, indicating that the westerly jet was weakened in late summer compared with early summer.

In their newly published paper in *Atmospheric and Oceanic Science Letters*, Du and Lu have verified that the westerlies over the upper North Pacific in early summer (June 1 to July 7) are significantly stronger compared with late summer (July 8 to August 31), and indicated that the wave trains are significantly stronger in the early summer than in the late summer. The major reason is that the wave trains can gain more energy from stronger westerlies through baroclinic energy conversion in the early summer.

"The present results imply that the weather and climate links between East Asia and North America may also change sub-seasonally during summer, which requires further investigation in the future," said Prof. Lu.

More information: Lei Du et al, Distinct intensity of 10–30-day intraseasonal waves over the North Pacific between early and late summers, *Atmospheric and Oceanic Science Letters* (2022). DOI: 10.1016/j.aosl.2022.100204

Provided by Chinese Academy of Sciences