

Chen, W., Z. Guan, H. Yang, and Q. Xu, 2020: East Asian-Australian monsoon variations and their impacts on regional climate during boreal summer. *J. Meteor. Soc. Japan*, **98**, 283-297.

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Plain Language Summary: The East Asian summer monsoon (EASM) and the Australian winter monsoon (AWM) are two important components of the Asian-Australian monsoon system during boreal summer. Our results demonstrate that AWM and EASM are closely related to each other even after ENSO and IOD signals are filtered out. When the Australian winter monsoon is anomalously strong, the cold Australian High and the WPSH both intensify and the East Asian summer monsoon becomes stronger to the south of 30°N. The simultaneous variations of these two monsoons would have remarkable impacts on climate in the Asian-Australian region.

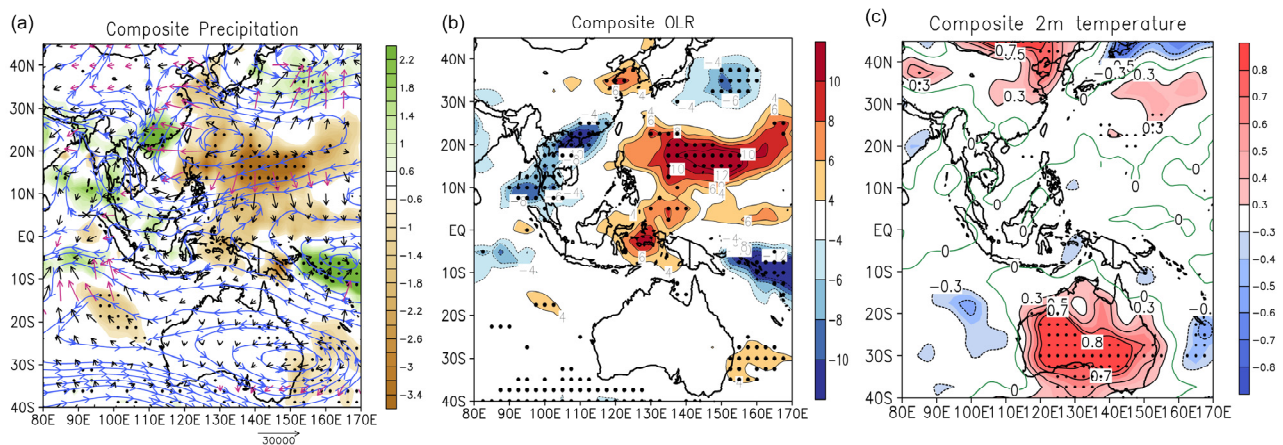


Figure 1. Composite differences of precipitation, OLR, and 2m temperature between strong and weak East Asian-Australian monsoons years after ENSO and IOD signals are filtered out. Shaded areas in (a) indicate precipitation anomaly (mm d^{-1}). Streamlines indicate the rotational component of the whole layer of water vapor flux anomaly ($10^{-6} \text{ g s}^{-1} \text{ cm}^{-2}$) integrated from 1000hPa up to 300hPa with red arrows for the U or V component at/above the 95% confidence level. Shaded areas in (b) indicate OLR anomaly (W m^{-2}), and shaded areas in (c) denote 2m temperature anomaly ($^{\circ}\text{C}$). The stippled areas are for values at/above the 95% confidence level.

- The anomalously strong (weak) EAAMs correspond to anomalously strong (weak) AWM and EASM to the south of 30°N. Such simultaneous changes of the monsoons and related circulation systems are associated with SST anomalies in the equatorial Pacific.
- The EASM couples with AWM via the anomalous easterlies near equator in the Maritime Continent (MC) region and the slanted vertical anomalous circulations.
- In the years with strong EAAMs, precipitation decreases in northern Australia and over areas from the western Pacific to Bohai Sea and Yellow Sea of China. Meanwhile, the western MC and the southeastern China experience more than normal precipitation.