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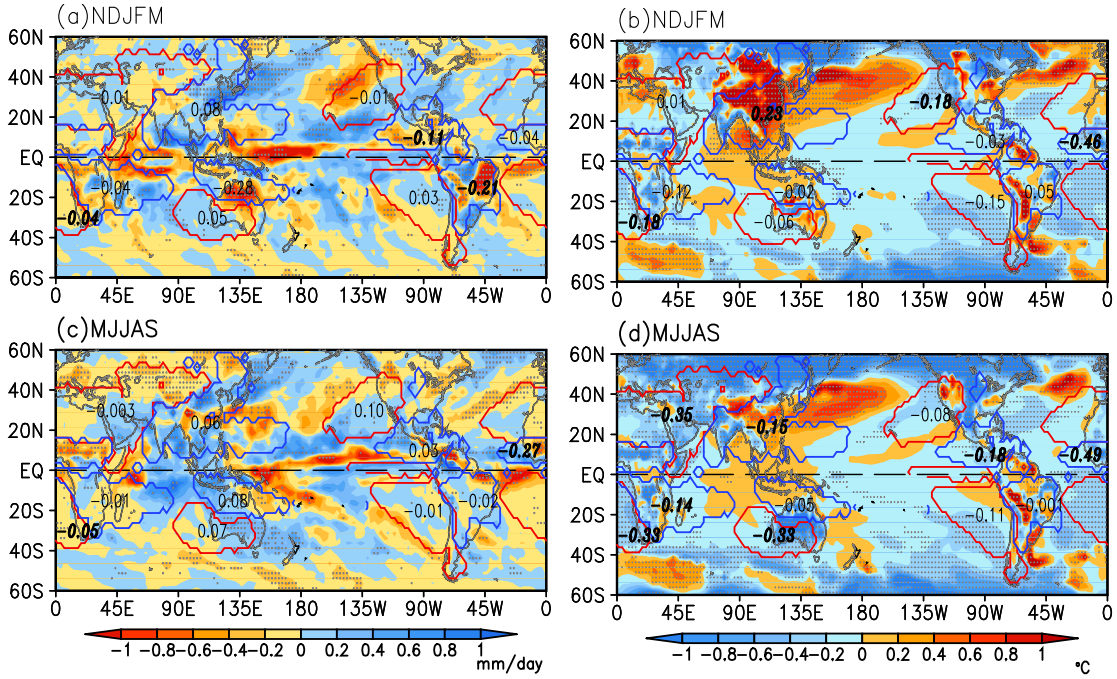

Fig. 1. Climatological precipitation (left column) and surface temperature (right column) variabilities caused by dynamic vegetation in boreal winter (a, b) and boreal summer (c, d). The areas within the blue and red lines are the monsoon and arid domains, respectively. The numbers on each monsoon and arid region are the area-average precipitation and surface temperature, respectively, and the italics bold font and stippling indicate the differences that are statistically significant at the 95% confidence level.

- This study investigated climate variability in global monsoon and arid regions because of dynamic vegetation by using NCAR's Community Earth System Model with the Dynamic Global Vegetation Model.
- On the hemispheric scale, precipitation mainly increases in the Northern Hemisphere and decreases in the Southern Hemisphere in response to dynamic vegetation, while the surface temperature exhibits a consistent decrease.
- On regional scale, the response of climate variability to dynamic vegetation in the Asian monsoon region is clearly different from the other regions, and the dynamic vegetation can strengthen (weaken) the East Asian summer (winter) monsoon.
- Mechanistic analysis reveals that the difference in hemispheric and regional climate variations may be due to changes in the dynamic vegetation-induced moisture flux and net surface radiative forcing.