

# **Interdecadal change in the South Asian summer monsoon rainfall in 2000 and contributions from regional tropical SST**

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Supplementary Figures S1–S2**

Robust changes happen in the global SST after 2000 (Figure S1). The Pacific Decadal Oscillation (PDO) entered into a negative phase after the late 1990s (e.g., Zhu et al., 2011). However, the strong El Niño in 2015/2016 can partly decrease the cold SST anomalies in the eastern Pacific, which can be seen from the weak cold and even warm SST anomalies there (Figure S1). Such SST anomalies will enhance the zonal SST gradient in the tropical Pacific, inducing rising and sinking anomalies in the western and eastern Pacific, leading to corresponding rainfall increase and decrease, respectively. The Indian Ocean SST also increases, with the warming center over the central tropical Indian Ocean, contributing to the increased rainfall there. Besides, warm anomalies also happen in the tropical Atlantic. Particularly, strong warm SST anomalies over the North Atlantic indicate a warm AMO phase in the second period.

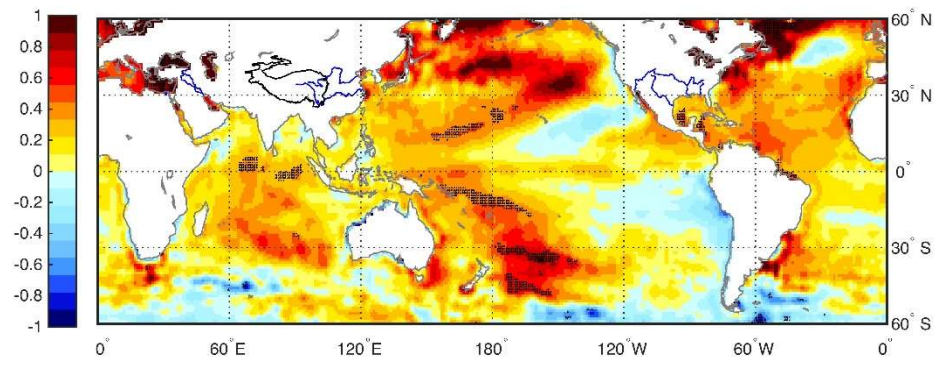


Figure S1 Difference in global SST (Unit: °C) between 1979-2000 and 2001-2017. Dotted areas are significant at the 90% confidence level through students'  $t$ -test.

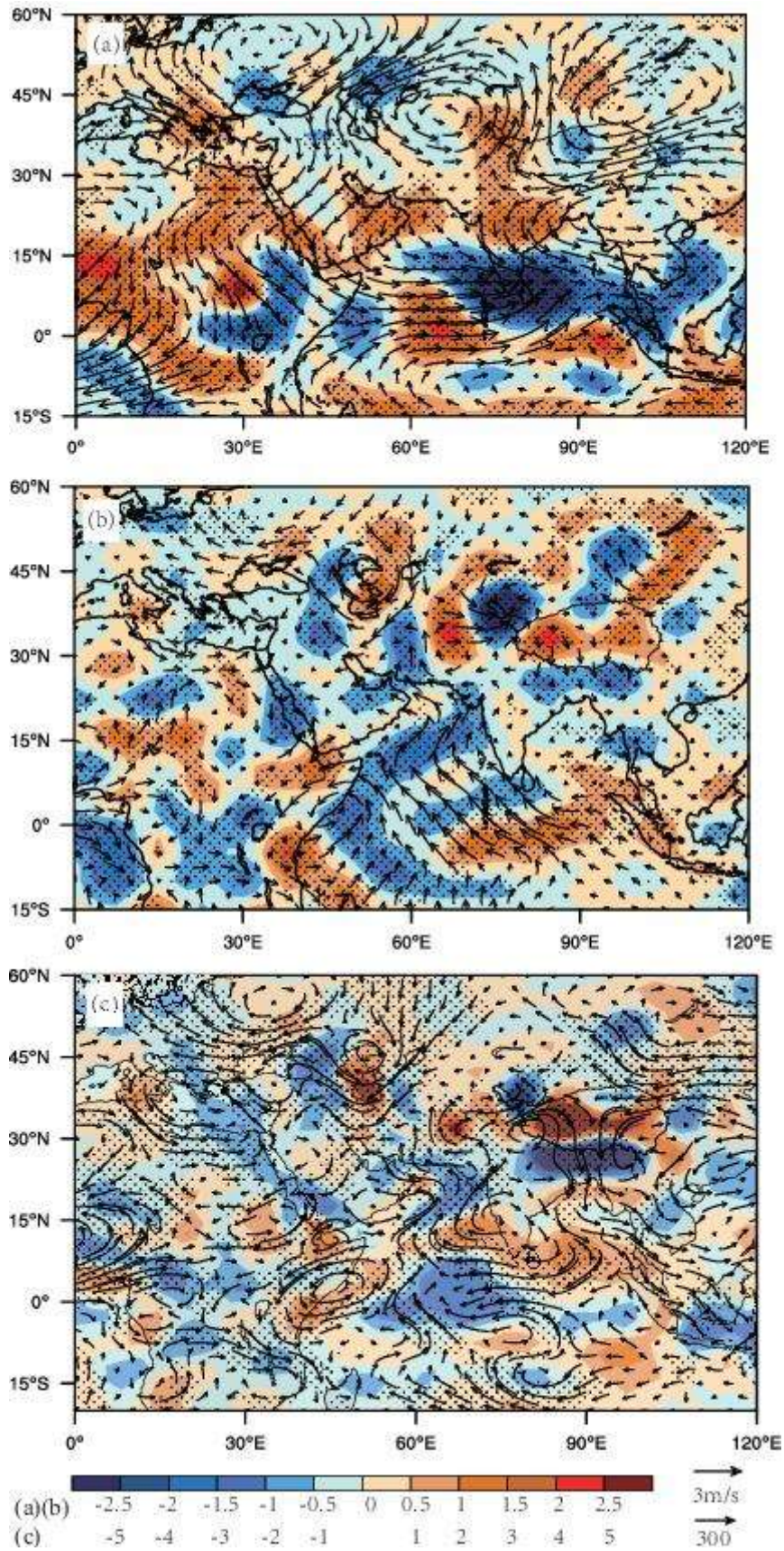


Figure S2 Difference in (a) 200hPa wind and divergence (shadings), (b) 850hPa wind and divergence, and (c) vertically integrated (surface-300hPa) water vapor flux and

moisture divergence. Dotted areas are significant at the 90% confidence level through students'  $t$ -test.

## **Reference**

Zhu, Y., H. Wang, W. Zhou, and J. Ma. 2011. "Recent changes in the summer precipitation pattern in East China and the background circulation." *Climate Dynamics* 36(7-8): 1463-1473.  
doi:10.1007/s00382-010-0852-9.