



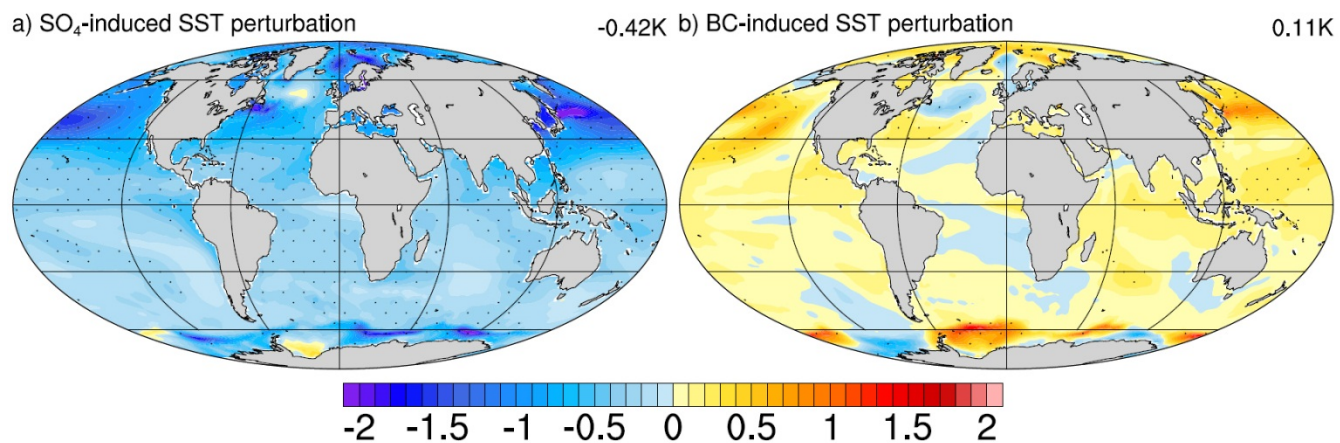
*Supplement of*

## **Disentangling fast and slow responses of the East Asian summer monsoon to reflecting and absorbing aerosol forcings**

**Zhili Wang et al.**

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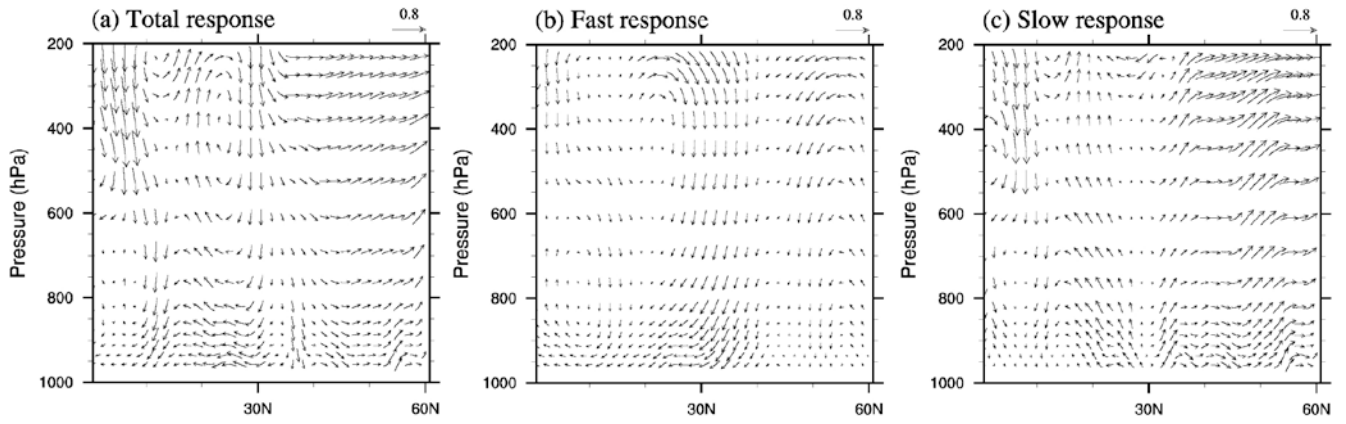


**Figure S1: Global distributions of JJA mean SST responses to (a) SO<sub>4</sub> and (b) BC forcings (unit: K). The dots represent significance at  $\geq 95\%$  confidence level from the t test.**

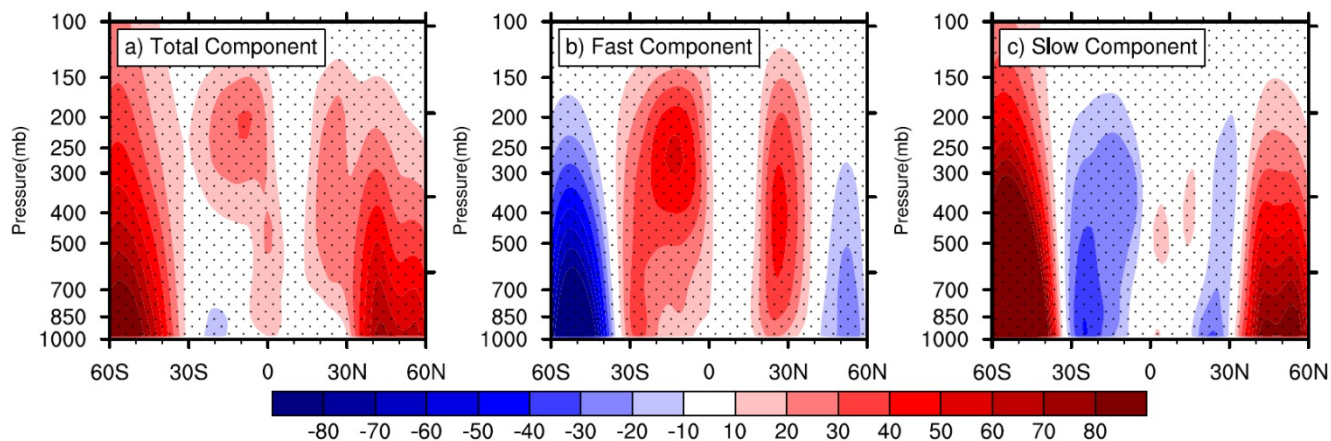
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**Figure S2: JJA mean total, fast, and slow responses of zonally averaged meridional circulation depicted by  $(v, -\omega)$ , where  $v$  is the meridional velocity (unit:  $\text{m s}^{-1}$ ) and  $-\omega$  is the vertical velocity (unit:  $\text{hPa s}^{-1}$ ), between  $100^\circ\text{E}$  and  $140^\circ\text{E}$  to  $\text{SO}_4$  forcing.**

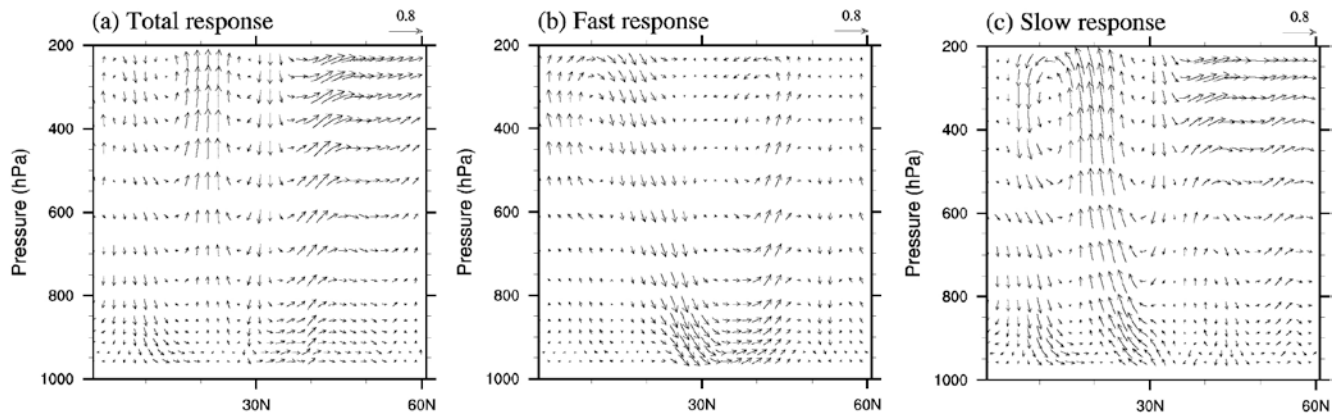


**Figure S3: JJA mean total, fast, and slow responses of zonally averaged meridional stream function between 100°E and 140°E to SO<sub>4</sub> forcing (unit: 10<sup>9</sup>kg s<sup>-1</sup>). The positive values indicate clockwise circulation. The dots represent significance at ≥95% confidence level from the t test.**

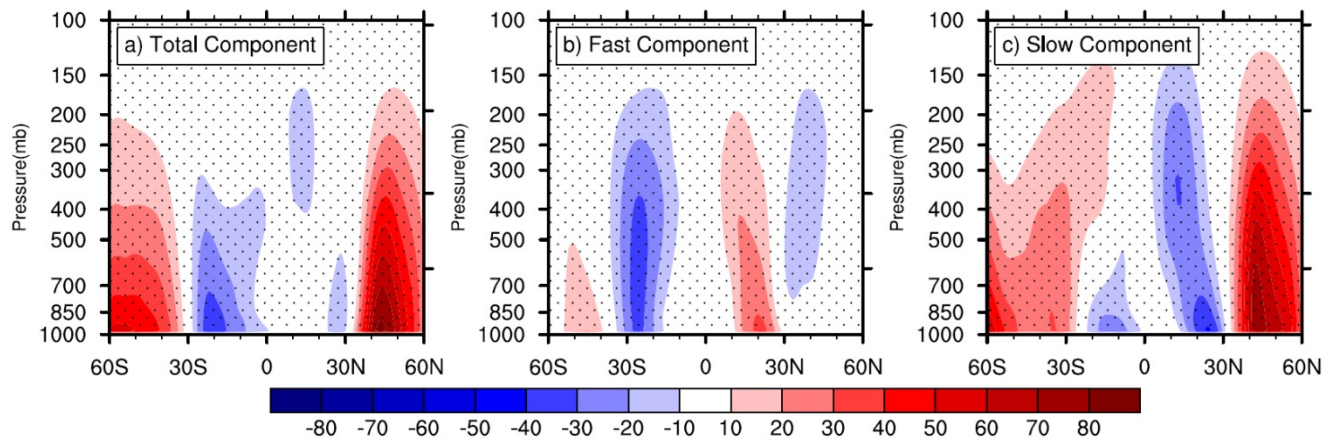
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**Figure S4: JJA mean total, fast, and slow responses of zonally averaged meridional circulation depicted by  $(v, -\omega)$ , where  $v$  is the meridional velocity (unit:  $\text{m s}^{-1}$ ) and  $-\omega$  is the vertical velocity (unit:  $\text{hPa s}^{-1}$ ), between  $100^\circ\text{E}$  and  $140^\circ\text{E}$  to BC forcing.**



**Figure S5: JJA mean total, fast, and slow responses of zonally averaged meridional stream function between 100°E and 140°E to BC forcing (unit:  $10^9 \text{kg s}^{-1}$ ). The positive values indicate clockwise circulation. The dots represent significance at  $\geq 95\%$  confidence level from the t test.**