

# Electronic Supplementary Material to: ENSO-induced Latitudinal Variation of the Subtropical Jet Modulates Extreme Winter Precipitation over the Western Himalaya\*

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**ESM to:** Bharati, P., P. Deb, K. M. R. Hunt, A. Orr, and M. K. Dash, 2025: ENSO-induced latitudinal variation of the subtropical jet modulates extreme winter precipitation over the Western Himalaya. *Adv. Atmos. Sci.*, **42**(3), 427–437, <https://doi.org/10.1007/s00376-024-4057-2>.

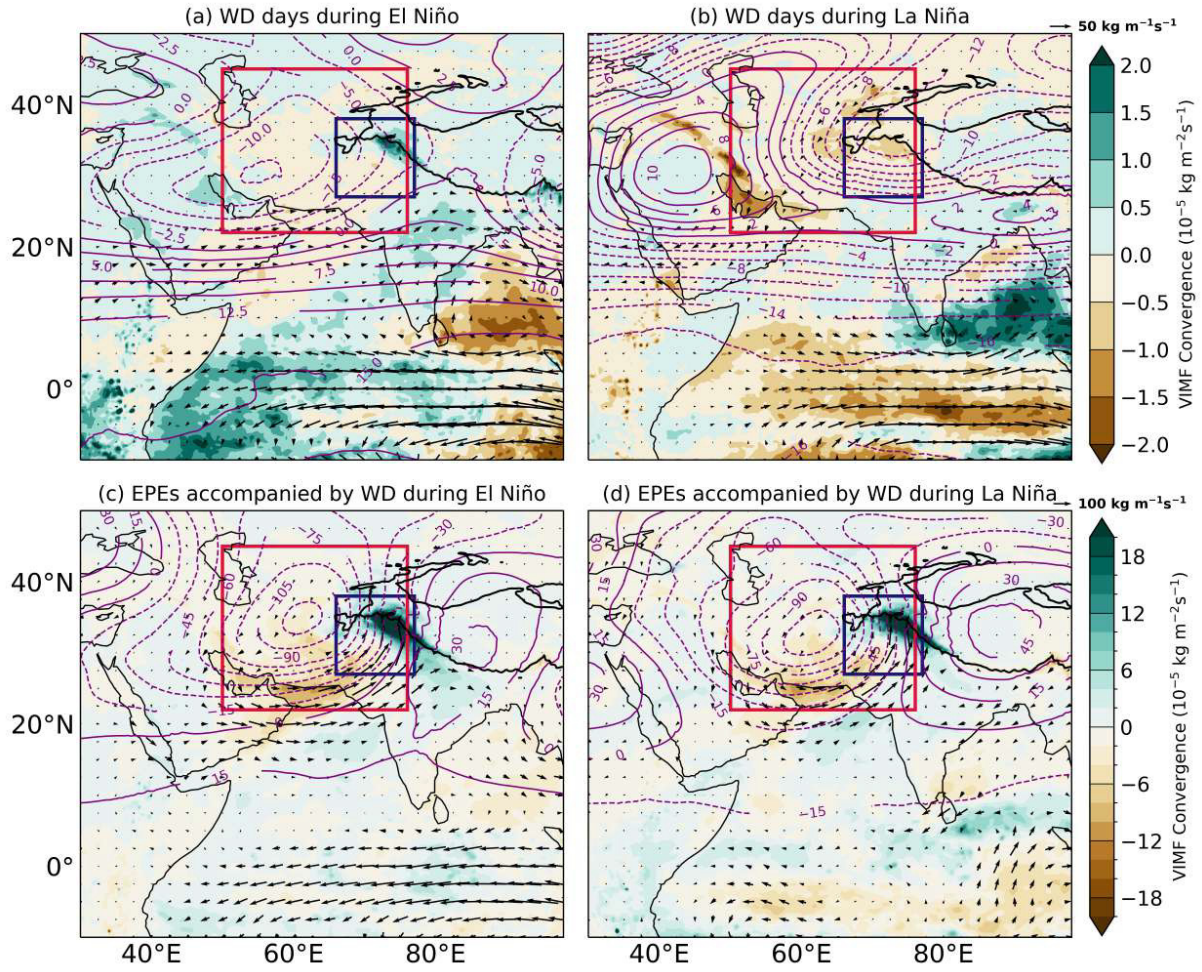
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We observed the asymmetric response in the pattern of composite of geopotential anomalies, vertically integrated moisture flux (VIMF), and VIMF convergence on WD days during El Niño and La Niña periods (Figs. S1a and b). The greater moisture convergence within the WH box and a trough over the WD box along the easterly flow across the Indian Ocean lead to higher precipitation on WD days during El Niño compared to La Niña periods. However, during WD days in La Niña periods, we observe divergence of moisture within the WH and an opposite (westerly) flow across the Indian Ocean.

No significant asymmetrical responses of El Niño and La Niña to EPEs that co-occurred with WD days are observed (see Figs. S1c and d). The composite pattern of geopotential anomalies of EPEs co-occurring with WDs during El Niño and La Niña periods exhibit trough-like characteristics within the WD box in both of the cases. The upper atmospheric trough is deeper on EPEs co-occurring with WD days during El Niño compared to La Niña period, and the anticyclonic circulation in upper atmosphere over east of WD box is stronger during La Niña period compared to El Niño period. During El Niño, there is a noticeable increase in the eastward movement of moisture over the Indian Ocean, which is evident in the co-occurrence of EPEs and WD days.

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\*The online version of this article can be found at: <https://doi.org/10.1007/s00376-024-4057-2>.



**Fig. S1.** Composite of VIMF convergence (colours;  $10^{-5} \text{ kg m}^{-2} \text{ s}^{-1}$ ), VIMF (vectors;  $\text{kg m}^{-1} \text{ s}^{-1}$ ), and geopotential height at 350 hPa (contours; m) of the days that WDs occurred in the WD box for (a) 765 days during El Niño, and (b) 795 days during La Niña events and the days that EPEs in WH box coincided with the occurrence of WDs in the WD box for (c) 51 days during El Niño, and (d) 26 days La Niña events during an extended winter period from November to March from 1979 to 2020.