

Kuramochi M., M. Kajino, and H. Ueda, 2023: Interannual variability of dust deposition in Japan during spring season and related atmospheric circulation fields. *J. Meteor. Soc. Japan*, **101**, 255-270. <https://doi.org/10.2151/jmsj.2023-016>.

Plain Language Summary: This study examines the year-to-year variability of dust deposition over Japan in April from the perspective of large-scale atmospheric circulations using atmospheric (JRA-55) and aerosol reanalysis (JRAero) datasets. The increased dust deposition in Japan is explained by the intensified dust transport from the Mongolian Plateau by the anomalous westerly winds associated with a deepened trough over the East Asian continent toward the northwest of the Japanese islands in the middle to lower troposphere.

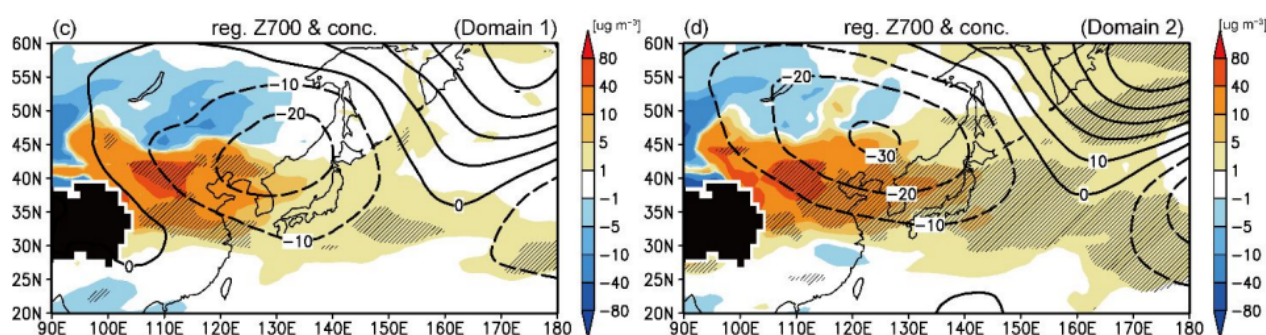


Figure 1. Regressed anomalies of dust concentration (shading), geopotential height (contours) at 700 hPa in April. Regression of area-averaged dust deposition in (left) western Japan and (right) northern Japan.

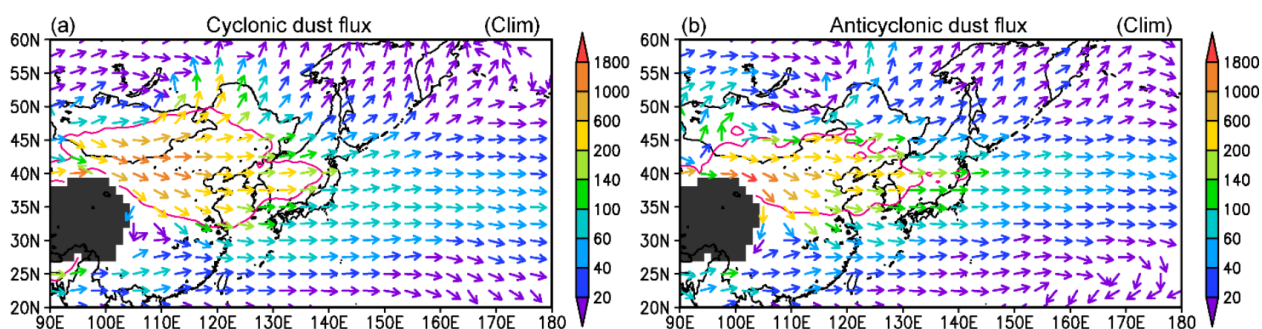


Figure 2. Climatological-mean (a) cyclonic and (b) anticyclonic dust fluxes at 700 hPa in April (vector). The magenta contours indicate their zonal component of $140 \mu\text{g m}^{-2} \text{s}^{-1}$. The magnitude of fluxes is indicated by colors and all units are in $\mu\text{g m}^{-2} \text{s}^{-1}$.

- A deepened trough over the East Asian continent toward the northwest of Japan in the mid-troposphere transports more dust from the Mongolian Plateau to Japan.
- The enhanced dust emission over Gobi Desert and the intensified extratropical cyclone activity are consistent with the larger-than-normal amount of dust in East Asia.
- Dust flux decomposed into cyclonic and anticyclonic components showed that both vortices contribute to the eastward dust transport in East Asia.