



*Supplement of*

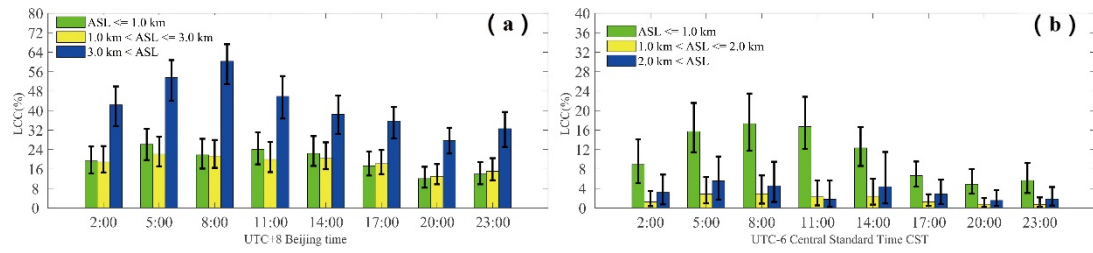
## **Triggering effects of large topography and boundary layer turbulence on convection over the Tibetan Plateau**

**Xiangde Xu et al.**

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Figure S1. The diurnal cycle of LCC from ERA5 reanalysis data in summer from 2010



to 2019 at different altitudes above sea level (ASL) in (a) East Asia (27-40N 80-130E), (b) North America (27-40N 120W-70W). The bar and error bar represent the median values and interquartile ranges (IQRs) of LCC, respectively.

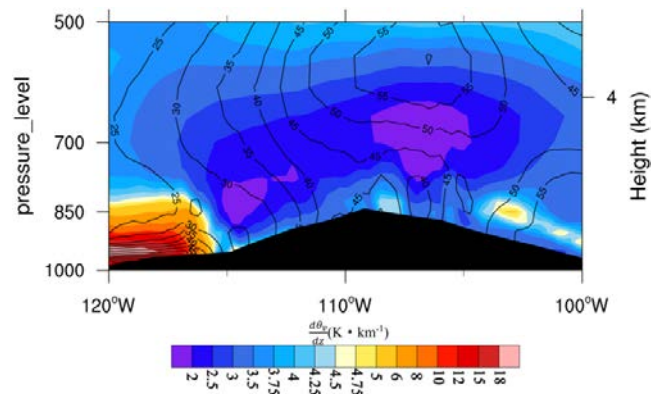


Figure S2. Vertical distribution of the vertical gradients of virtual potential temperature  $d\theta_v/dz$  ( $\text{K km}^{-1}$ ) (shaded) and RH (%) (contour lines) at the latitude across sections from 30N to 35N over the Rocky Mountains. The black shaded area represents topography.

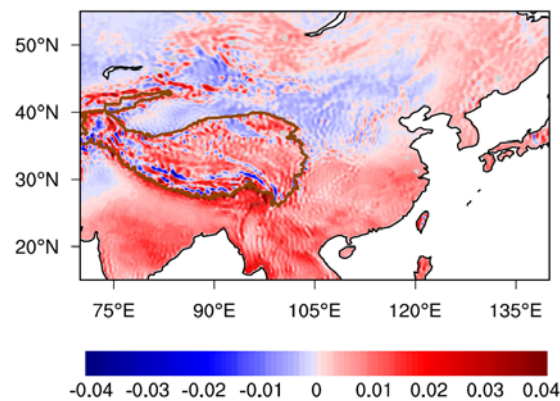


Figure S3. The spatial distribution of daily mean vertical velocities  $W$  ( $\text{m s}^{-1}$ ) at 500 hPa in summer over land in East Asia.