

Online Supplemental Material

Role of the interaction between a gust front and a mesoscale air mass boundary in convection initiation: A case study

Xinyan CUI^a, Rui QIN^b, Mingxuan CHEN^b and Lei HAN^c

^aCollege of Oceanic and Atmospheric Sciences, Ocean University of China, Qingdao, Shandong, China, and Institute of Urban Meteorology, China Meteorological Administration, Beijing, China; ^bInstitute of Urban Meteorology, China Meteorological Administration, Beijing, China; ^cCollege of Information Science and Engineering, Ocean University of China, Qingdao, Shandong, China

**This file includes:
Supplementary Figures S1–S3**

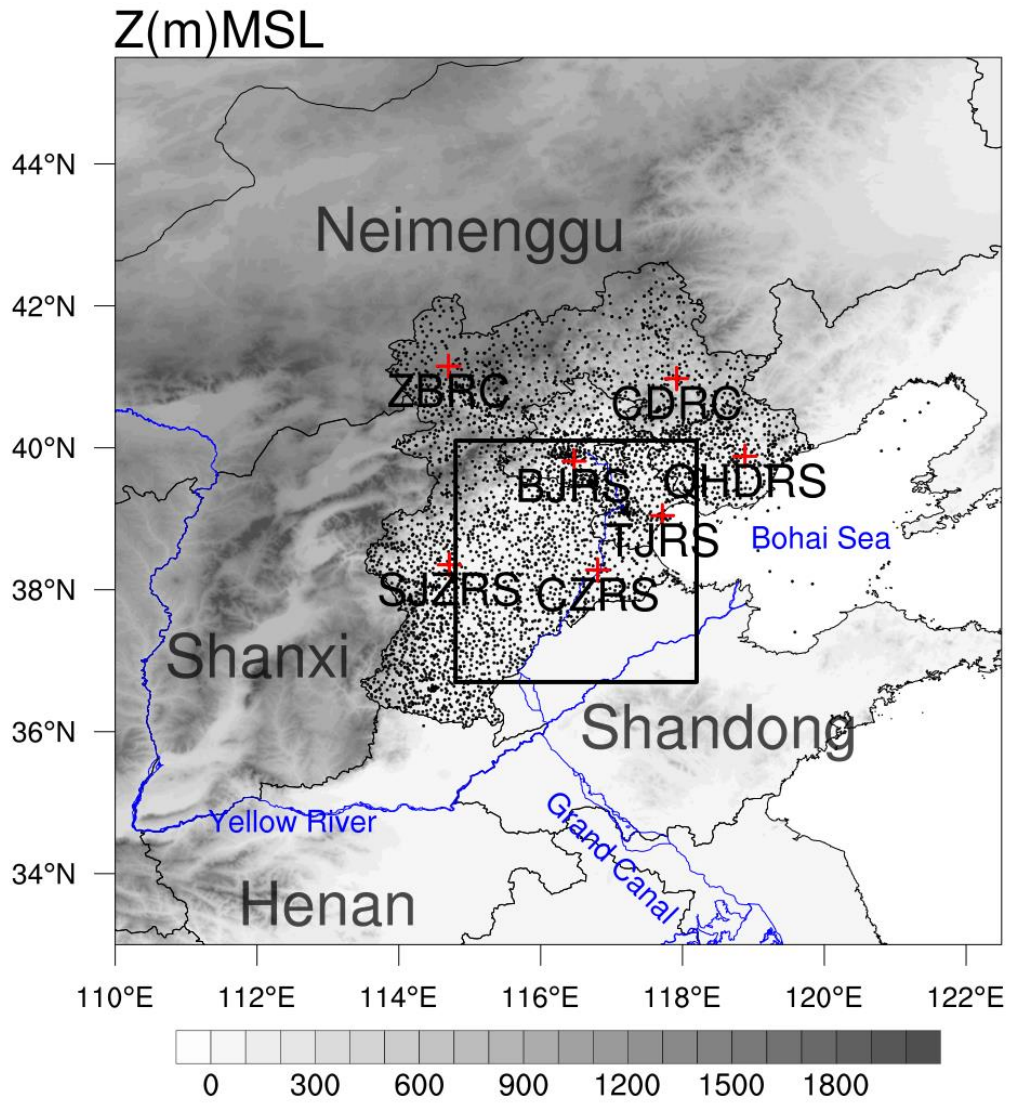


Figure S1. Terrain elevation (gray shaded; units: m). The red crosses indicate the radar locations of Cangzhou (CZRS), Beijing (BJRS), Tianjin (TJRS), Qinhuangdao (QHRS), Shijiazhuang (SJZRS), Chengde (CDRC), and Zhangbei (ZBRC). Small black dots mark the locations of the AWSs used in this study. The black frame is the 1-km-resolution VDRAS simulation domain.

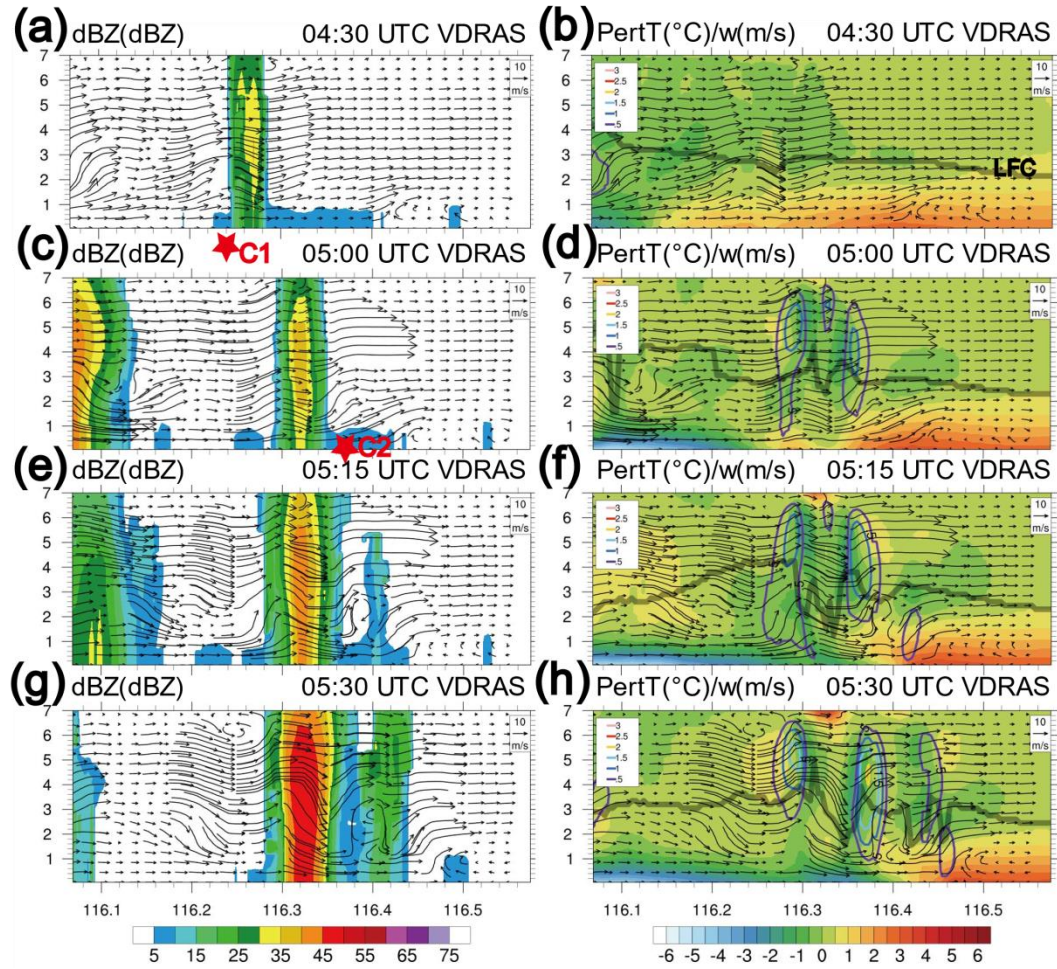


Figure S2. Cross sections along the line “L1” in Figure 2a. Left: reflectivity (color shaded; units: dBZ). Right: perturbation temperature (color shaded; units: °C), vertical velocity (color contours; units: m s^{-1}) and LFC (gray bold line; units: km). Wind is overlaid in all panels (arrowed black vectors; length proportional to wind speed). The red asterisks indicate the positions of convection cells C1 and C2. (a, b) 0430 UTC; (c, d) 0500 UTC; (e, f) 0515 UTC; (g, h) 0530 UTC.

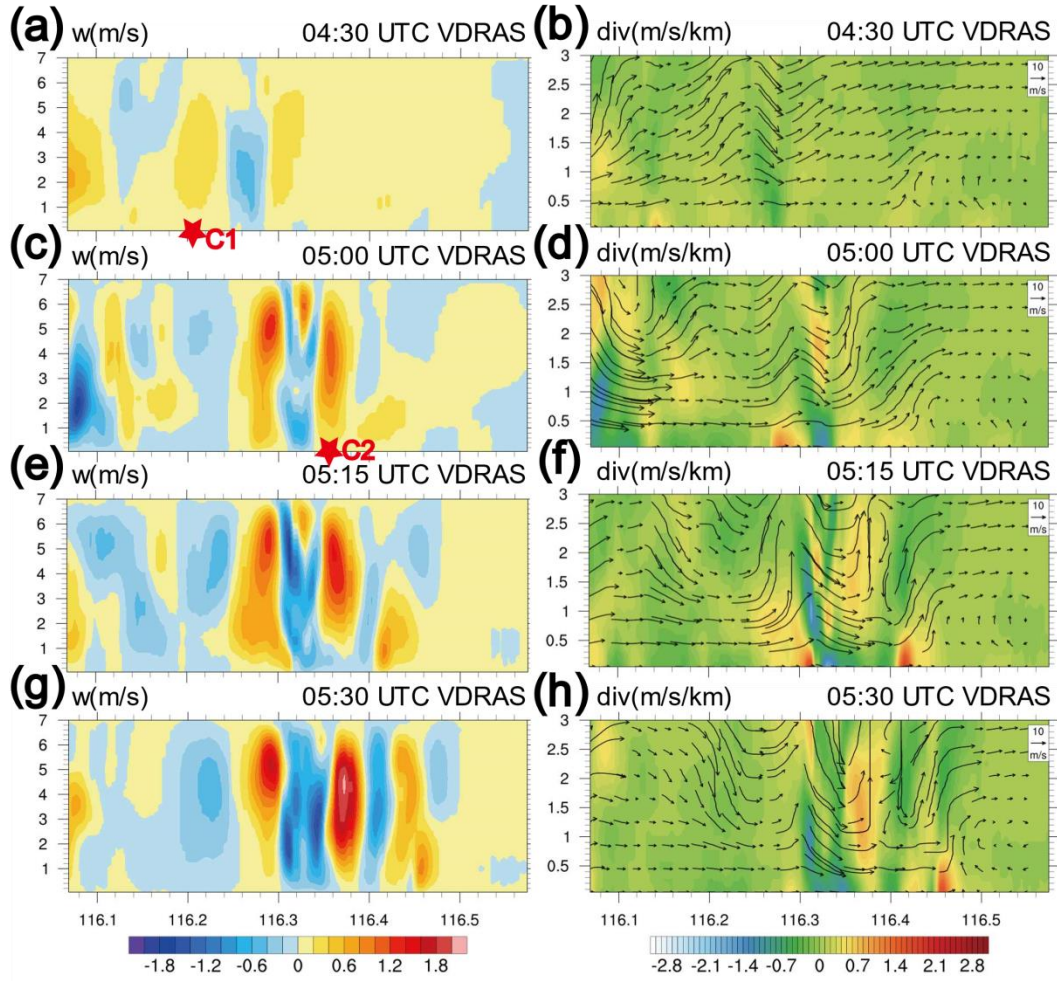


Figure S3. Cross sections along the line “L1” in Figure 2a. Left: vertical velocity (color shaded; units: m s^{-1}). Right: divergence (color shaded; units: $\text{m s}^{-1} \text{ km}^{-1}$). Wind is overlaid in the right-hand column (arrowed black vectors; length proportional to wind speed). The red asterisks indicate the positions of convection cells C1 and C2. (a, b) 0430 UTC; (c, d) 0500 UTC; (e, f) 0515 UTC; (g, h) 0530 UTC.