

Ding, J., Y. Chen, Y. Wang, and X. Xu, 2019: The Southeasterly Gale in Tianshan Grand Canyon in Xinjiang, China: A case study. *J. Meteor. Soc. Japan*, **97**, 55-67.

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Plain Language Summary: On 8 June 2013, a strong southeasterly gale attacked Urumchi, the provincial capital of Xinjiang, China, giving rise to great damage. This work studies the formation of the gale incident according to observations and numerical simulation, suggesting the importance of topographic forcing of Tianshan Mountains.

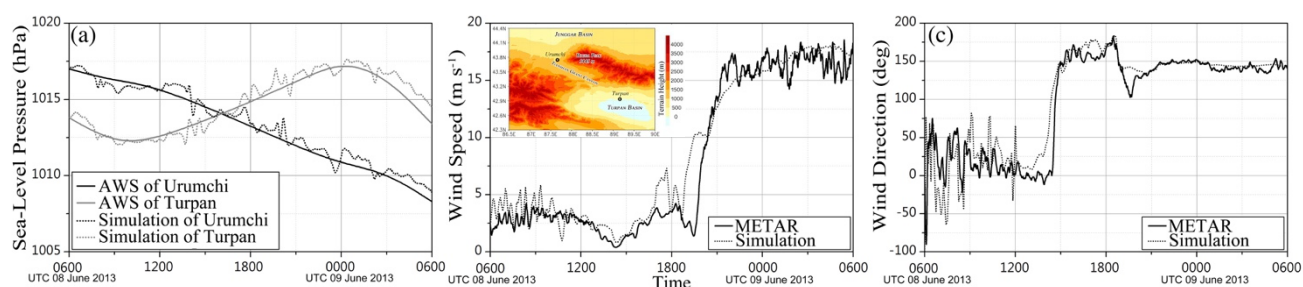


Figure 1. (a) Sea-level pressure at Urumchi and Turpan (see the inner figure), and the (b) speed and (c) direction of horizontal wind at Urumchi derived from 3-hr interval auto weather station (AWS) and numerical simulation.

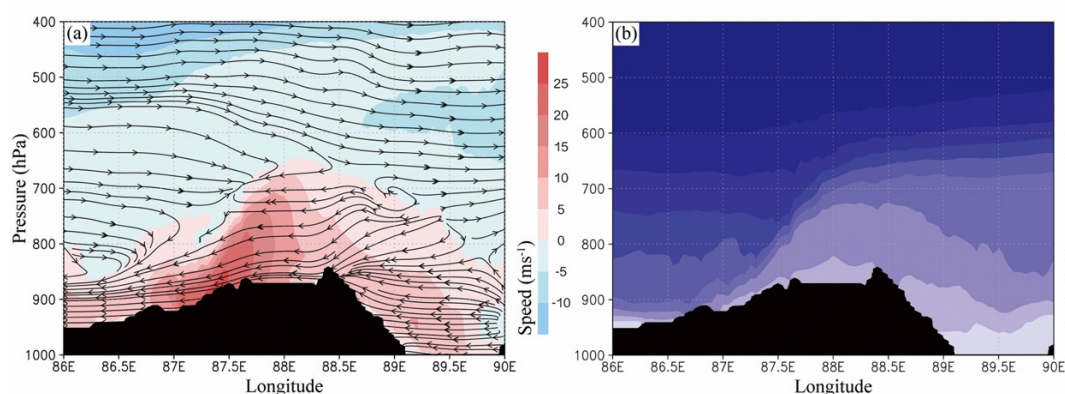


Figure 2. Cross section along the Tianshan Grant Canyon of (a) flow and wind speed, (b) potential temperature.

- The southeasterly gale occurred at the northwest opening of Tianshan Grand Canyon. Its formation was closely related to the topographic forcing of Tianshan Mountains.
- The intensification of pressure gradient across the Tianshan Grand Canyon was the advantageous condition for the generation of the southeasterly gale.
- Air current sank on the northwest opening of the canyon due to unstable stratification caused by nonlinear process and thus strengthened the gale.