

The effects of boundary layer processes on snowfall in Yanqing Zone of 2022 Winter Olympic Games

*BO YU¹, Jia DU¹, Ruixin LIU¹, Yujue LIU², Ziming LI³, Luyang XU¹

1. Beijing Municipal Weather Forecast Center, 2. Institute of Urban Meteorology, China Meteorology Administration, 3. Environmental Meteorology Forecast Center of Beijing-Tianjin-Hebei

Yanqing Zone of Beijing, as the venues for alpine skiing, sleigh and sled in 2022 Winter Olympic Games, the characteristics of snowfall have attracted much attention. According to the difficulty of snowfall forecast, the snowfall processes in Yanqing Zone during 2008 to 2018 was divided into two categories, synoptic scale system dominance and boundary layer process dominance (without obvious influence of synoptic scale system). In view of the snowfall dominated by the boundary layer processes, which was relatively difficult to predict, the analysis showed that one day of snowfall per year was caused by boundary layer processes. The snowfall dominated by boundary layer processes was divided into two types, northerly flow and westerly flow, and on the ground, it was usually a weak pressure field or an easterly flow. The northerly flow pattern accounted for a higher proportion of boundary layer process dominance, when the ground was easterly wind, if the saturated air and the terrain were forced to rise together, it could produce snowfall; when the lower layer was northerly wind, and it would produce local snowfall in high altitude area. The westerly flow pattern usually caused snowfall with large range and long duration, when the wind direction in boundary layer changed from easterly to southeasterly and the wind speed increased, it corresponded to the strongest period of precipitation; when the easterly wind speed decreased, the snowfall intensity also decreased.

Keywords: Boundary layer processes, Snowfall in Yanqing Zone, Classification analysis

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(1. Beijing Municipal Weather Forecast Center, Beijing 100089,China;

2. Institute of Urban Meteorology, China Meteorology Administration, Beijing 100089,China;

3. Environmental Meteorology Forecast Center of Beijing-Tianjin-Hebei, Beijing 100089,China)

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