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### On the cover

One real advance in tropical cyclone intensity prediction in the past few decades was made by Fuqing ZHANG, and it all boils down to his ground-breaking work in 2004 by assimilating Doppler radar observation into a convection-allowing model using ensemble Kalman filter for a supercell case. This milestone work opened up new avenues for understanding dynamics and predictability of multiscale atmospheric processes from baroclinic waves to supercells. In memory of this revolutionary work, the cover photo, taken by Yijing LIU, was chosen, which shows a complete picture of a supercell that occurred in Inner Mongolia China on 22 August 2021. This special issue solicited a total of nine articles, covering a wide range of research topics on ensemble-based data assimilation of satellite observation, predictability and dynamics of tropical cyclone, squall line, sea breeze, and supercell etc.

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