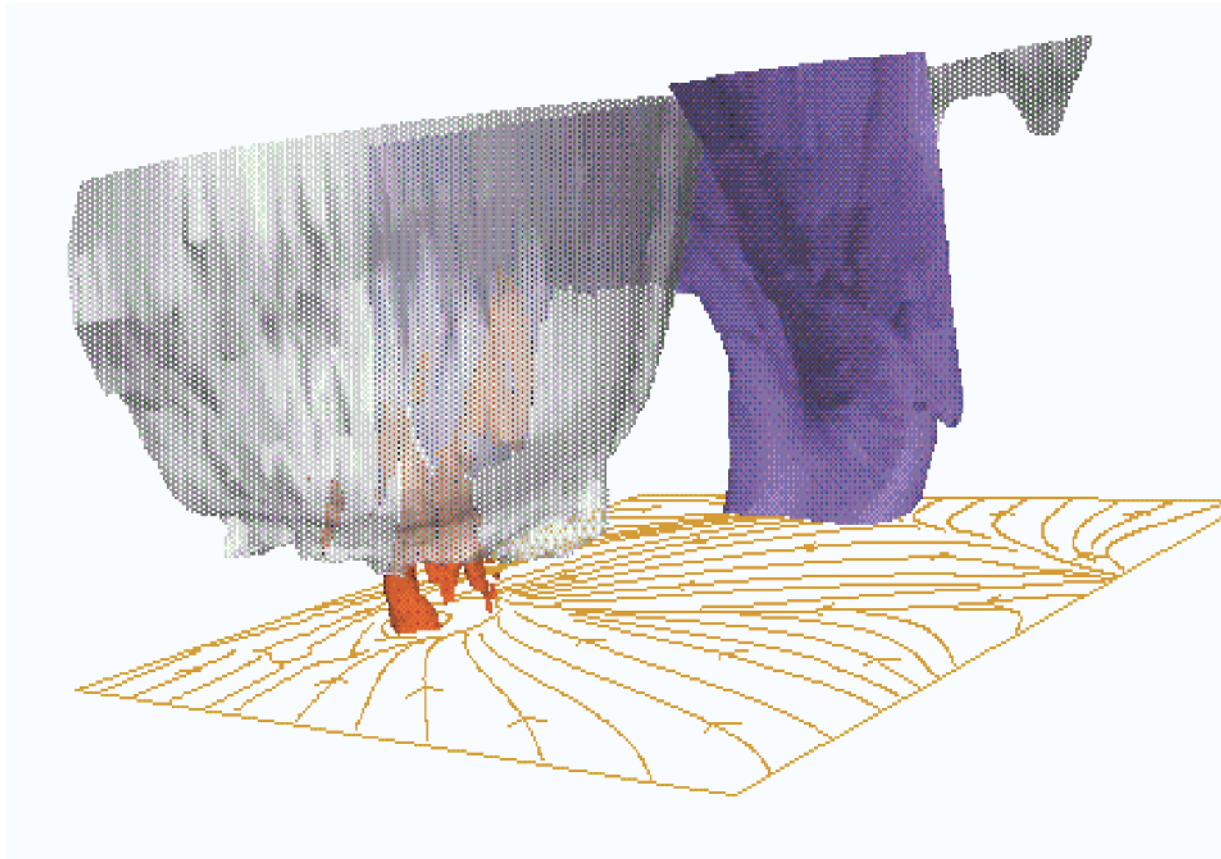


3. Tornado-like Multiple Vortices in a Simulated Supercell Thunderstorm

Noda, A.¹⁾, Niino, H.¹⁾ and Kimura, R.¹⁾

1) Ocean Research Institute, University of Tokyo, Minamidai, Nakano, Tokyo, 164-8639, JAPAN
email:noda@ori.u-tokyo.ac.jp.



It has been known that a violent tornado is spawned by a special type of thunderstorms called a supercell. The supercell possesses several remarkable characteristics such as a vault-shaped rainwater distribution caused by a strong updraft and a strong circulation called a mesocyclone (MC). A tornado is often formed near the MC. The recent development of computer technology enables us to simulate not only a supercell but also a tornado-like vortex spawned by the supercell.

The figure shows a close-up view of a simulated supercell near the MC. The whole calculation domain is $64 \text{ km} \times 65 \text{ km}$ in the horizontal direction and 14 km in the vertical direction, but only the domain of $15 \text{ km} \times 15 \text{ km} \times 3 \text{ km}$ is shown. The near right corner is the northeast and the left corner the southeast. The gray, purple and red color show isosurfaces of 0.5 g/kg cloud water, 5 g/kg rainwater, 0.05 s^{-1} vertical vorticity respectively, and the orange color shows streamlines near the ground. The skirt-shaped cloud called a wall cloud can be seen at about 500 m above the ground level around the southeast end of the vault-shaped rainwater. Below the wall cloud, three tornado-like vortices, which remind us of a multiple-vortex tornado, are simulated.

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