

# Numerical simulation of tornado occurred at Nobeoka accompanied by TC1917

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A tornado occurred around 0830 JST on 22 September 2019 accompanied by the tropical cyclone 1917 in the Nobeoka, Miyazaki, Japan. Its strength was the JEF scale of 2. A regional weather prediction model, JMA-NHM (Japan Meteorological Agency's Non-Hydrostatic Model) is used to simulate the tornado. A simulation with horizontal resolution 2 km is conducted by use of JMA's meso-scale analysis for its initial and boundary values. Other runs with horizontal resolution of 400 m and 80 m or 50 m are conducted by nested in coarser resolution results of every 2 minutes. In the finest resolution, strong winds with counter-clockwise rotation exceeding 70 m/s occur near the surface, and this corresponds to the tornadoes. This tornado is accompanied by meso-cyclone in a rain-band of the tropical cyclone. It is initiated 20 km away from the sea-shore, and approaches the Nobeoka city.

Keywords: Tornado, Tropical cyclone, Gusty wind, Numerical weather prediction