

On the Spatial Distribution of Freezing height of Typhoon Trami

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Drop sonde observation from aircraft was conducted for typhoon Trami that occurred in September 2018. The drop sonde observation provides the vertical profile of the temperature and humidity in and around the eye of typhoon. Meanwhile, the global precipitation measuring (GPM) core satellite, which equips dual frequency precipitation radar (DPR), passed over Trami for several times, two of which captured the eye structure. In particular, the over flight case on September 27 by DPR is several hours after the drop sonde observation.

Since DPR can observe the vertical structure of the precipitation system, it is possible to estimate the freezing height in the stratiform precipitation region from the melting layer appearing as the so-called bright band, and an attempt was made to separate snowfall and rainfall by using dual frequency observation which gives information on altitude of transition from rain to snowfall in convective precipitation. In this report, freezing height pattern of typhoon Trami is estimated by combining information from drop sonde and DPR observation, especially around the eye of the typhoon. According to DPR's bright band information, the freezing height increases from 4500 m to 5400 m along the spiral band. Especially on the south side, it rose suddenly about 500 m around the inner core. In the vicinity of the inner core, which is a convective precipitation system, the region of large dual frequency ratio rises to about 6 km. On the other hand, from the observation of the drop sonde, the 0 °C altitude rose to about 6500 m in the eye.

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