

Doppler radar observations on the structure and intensity of tropical cyclones in the Ryukyus and the Philippines

*Hiroyuki Yamada¹, Udai Shimada², Chikaya Tamori¹, Hironori Iwai³, Kazuhisa Tsuboki⁴, Esperanza O. Cayan⁵, Flaviana D. Hilario⁵

1. University of the Ryukyus, 2. Meteorological Research Institute, 3. National Institute of Information and Communications Technology, 4. Nagoya University, 5. Philippine Atmospheric Geophysical and Astronomical Services Administration

The western North Pacific is the basin with the largest number of tropical cyclones on the planet. Previous studies pointed out the frequent occurrence of rapid intensification and the increasing number of these cases in recent years. The accurate estimation of tropical cyclone intensity is essential for both disaster prevention in the coastal regions and further understanding of physical mechanisms governing intensification. We investigate the relationship between the structure and intensity of tropical cyclones using Doppler weather radars operated in the Ryukyu Islands of Japan and those along the Pacific coast of the Philippines. Analyses were made for several intense typhoons including Haiyan (2013), Goni (2015), and Chaba (2016). In addition, we found the rapid development and subsequent weakening of Kompas (2010), which is not on the best track records. In these analyses, we focused on the slope angle of the eyewall and its relationship to flow structure and intensity. The relationship between the eyewall skewness and lightning activity from a viewpoint of cloud microphysics is also within the range of our interest. In this presentation, an overview of dropsonde observation of typhoons starting this year using a Gulfstream-II jet airplane will also be introduced.

Keywords: tropical cyclone, tropical meteorology, Doppler radar

Field Experiment of TC Intensity and Structure in Okinawa

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