Eye Wall Structure of Typhoon, ‘Jebi’ Observed by Kobe Phased Array Weather Radar

*Koji Sassa¹, Akira Nishii¹, Shinsuke Satoh²

1. Kochi University, 2. National Institute of Information and Communications Technology

Typhoon ‘Jebi’ landed on Kobe city at about 14:00JST on 4 September 2018 and caused severe wind damage in wide area around Kinki region including Osaka city and Kobe city. Maximum instantaneous wind velocity was 58.1 m/s at Kansai airport and 47.4 m/s at Osaka observatory, respectively. Kobe Phased Array Weather Radar (PAWR) locates at slightly west of Kobe city and have been continuously observing around Kinki region. The present study aims to clarify the structure of eye wall cloud before and after the landfall of Typhoon ‘Jebi’, and to investigate the strong winds.

Kobe PAWR makes dense volume scan with 100 elevation angles every 30 seconds. Its observation range is 60 km. We can obtained CAPPI data of reflectivity and Doppler velocity at any height and vertical section data on any line. We also obtained wind velocity field at any height by using echo tracking.

Ekman spiral was clearly observed at 12:40JST before the randfall of Jebi. The easterly wind showing the flow converging to the eye was observed in the lower layer whereas the southeasterly wind showing spiral flow rotating around the eye at higher layer. After the landfall, the eye was observed slightly east of the best track. The rotational wind field around the eye could not be observed and the eye wall have the asymmetrical structure in which only the strong southwesterly wind was observed at the east portion of the eye wall. Ekman spiral was not also observed after the landfall. Wind velocity field obtained by echo tracking showed such characteristics of eye wall.

Keywords: Typhoon, eye wall, phased array weather radar