

MIS026-05

Room:201B

Time:May 24 09:30-09:45

## Development of the Broadband Radar Network at Ku-band

Tomoo Ushio<sup>1\*</sup>, Eiichi Yoshikawa<sup>1</sup>, Naohiko Wakayama<sup>1</sup>, Satoru Yoshida<sup>1</sup>, Takeshi Morimoto<sup>1</sup>, Zen-Ichiro Kawasaki<sup>1</sup>

<sup>1</sup>Osaka University

A new high resolution Ku-band Doppler radar with fast scanning capability for meteorological applications has been developed. With the new system design, the radar can accurately measure the radar reflectivity factor with 4-m resolution at the lowest usable height of 60 m from short distance to 15 km (e.g., min. det. refl. at 15km is 20dBz) for 10 W power using a pulse compression technique. Concept of the system design, signal processing algorithm, and data acquisition procedures are described. This small radar system operates at Ku-band and can acquire the 3-D reflectivity image within 1 minute with less than 10m resolution in a short range (less than 15 km in radius).

Initial observation was carried out to demonstrate the potential capability of the system. In addition to the radar system, the equipments for lightning observations were also installed at the radar site. The results of the initial observation show that our radar system can successfully measure the precipitation structure within thunderstorm at high resolution. This comparison clearly shows that the observations by the Ku-band broad band radar reveal the rain structure in much more detail than the conventional C-band radar does. This small rain structure tends to be obscured in the C-band radar observation, indicating that the observation by the Ku-band broad band radar are well suited for fine scale measurements of precipitation from low altitude to the top of the cloud. During the field campaign, F0 scale tornado was also detected by the radar, the detail of the observation will be presented at the presentation.



Keywords: Thunderstorm, Lightning, Radar