

## Effects of Ice Phase Processes on Development of Tropical Cyclone

MASAHIRO SAWADA<sup>1</sup>, TOSHIKI IWASAKI<sup>1</sup>, SHA WEIMING<sup>1</sup> <sup>1</sup>Department of Geophysics, Tohoku University

The major energy source of tropical cyclone (TC) is the condensational heating of water vapor. Ice phase processes play an important role in the development and structure of TC. To clarify the roles of ice phase processes, we make numerical experiments on development of TC under the idealized environment using JMA-NHM with 2km mesh. The cloud-resolving simulations successfully reproduce the typical TC structure such as the eyewall cloud and the warm core. The deepening of control experiment including ice phase processes is slower and the intensity is weaker than those of warm experiment excluding ice phase processes. The control experiment has small outward-sloping eyewall associated with low angular momentum compared with the warm experiment. These differences result from enhanced downdrafts due to the cooling of melting and sublimation. These downdrafts dry the subcloud layer and reduce the transport of water vapor and angular momentum inward. We will make the sensitivity experiment and further analyze to discuss more details of the mechanism.