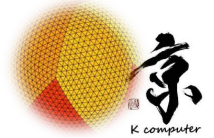


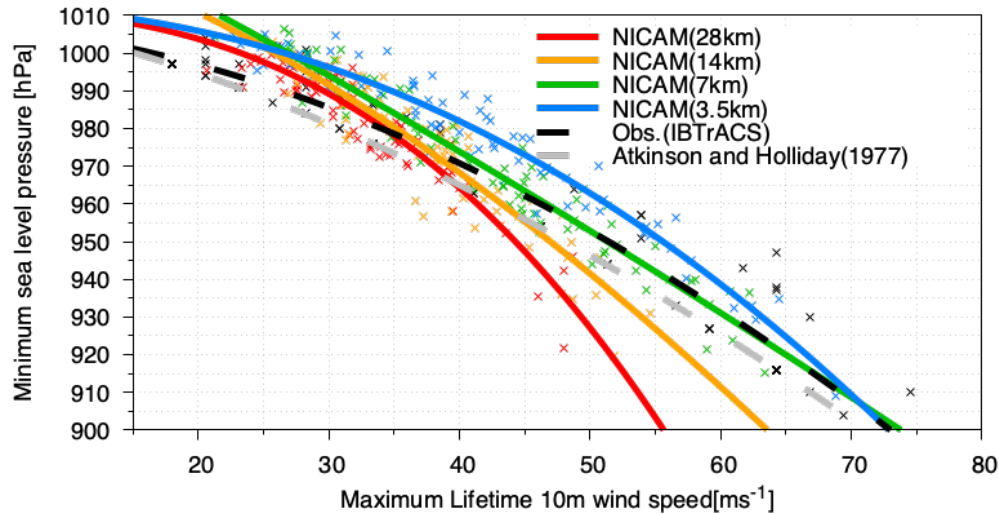
# Evaluating performances of one-year simulation by using 3.5 km mesh global nonhydrostatic model



*Y. Yamada<sup>1)</sup>, C. Kodama<sup>1)</sup>, A. T. Noda<sup>1)</sup>, M. Satoh<sup>2)</sup>, M. Nakano<sup>1)</sup>, T. Miyakawa<sup>2)</sup>, H. Yashiro<sup>3)</sup>, and T. Nasuno<sup>1)</sup>  
 1) JAMSTEC, 2) AORI/U.Tokyo, 3) NIES*



**Fig. 1. Relationship b/w WS and SLP of tropical cyclone (TC)**



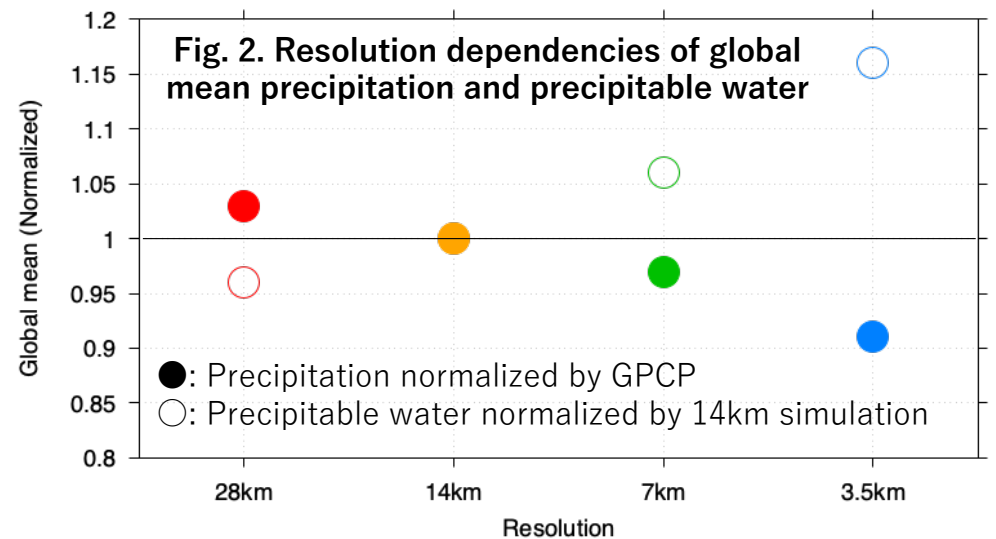
One-year (2004–2005) simulations were conducted by NICAM model with 28, 14, 7, and 3.5 km meshes.

Finer resolution seems to improve structure of TC (Fig.1).

Compared with GPCP, the 14 km simulation showed the best performance for precipitation (Fig. 2).

In order to conduct a reliable simulation, we need to improve performance of the 3.5 km global model.

The supercomputer Fugaku will give us extensive computing resources for addressing this issue.



Acknowledgments: This work was supported by MEXT (JPMXP1020351142) as "Program for Promoting Researches on the Supercomputer Fugaku" (Large Ensemble Atmospheric and Environmental Prediction for Disaster Prevention and Mitigation).

## Experimental design

Model	Nonhydrostatic Icosahedral Atmospheric Model (NICAM.12) (Tomita and Satoh, 2004; Satoh et al., 2008, 2014)			
$\Delta x$ (km)	28	14	7	3.5
dt (second)	120	60	30	15
# of vertical layers	38			
Top	~40 km			
Cloud microphysics	NSW6 (Tomita, 2008; Kodama et al., 2012)			
Cumulus convection and large scale condensation	Not used			
Radiation	mstrnX (Sekiguchi and Nakajima 2008)			
Turbulence	Mellor-Yamada Nakanishi-Niino Level 2 (Nakanishi and Niino, 2006)			
Gravity wave	Not used			
Land surface	MATSIRO (Takata et al., 2003)			
Ocean treatment	Single-layer slab ocean with a nudging toward observation (NOAA OI SST v2 weekly; Reynolds et al., 2002)			
Integral periods	1 June 2004 – 31 May 2005			