Saito, K., M. Kunii, and K. Araki, 2018: Cloud resolving simulation of a local heavy rainfall event on 26 August 2011 observed in TOMACS. *J. Meteor. Soc. Japan*, **96A**, 175-199. https://doi.org/10.2151/jmsj.2018-027

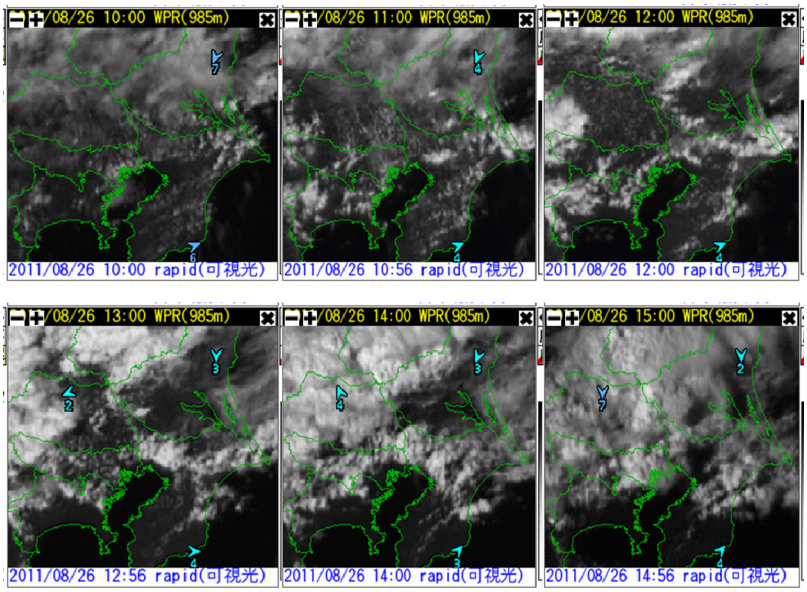

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Figure 1. Hourly visible satellite images from 1000 JST to 1500 JST on 26 August 2011. Vectors indicate observed horizontal winds at 985 m AGL by wind profilers of JMA, and numerals indicate wind speed (m s^{-1}).

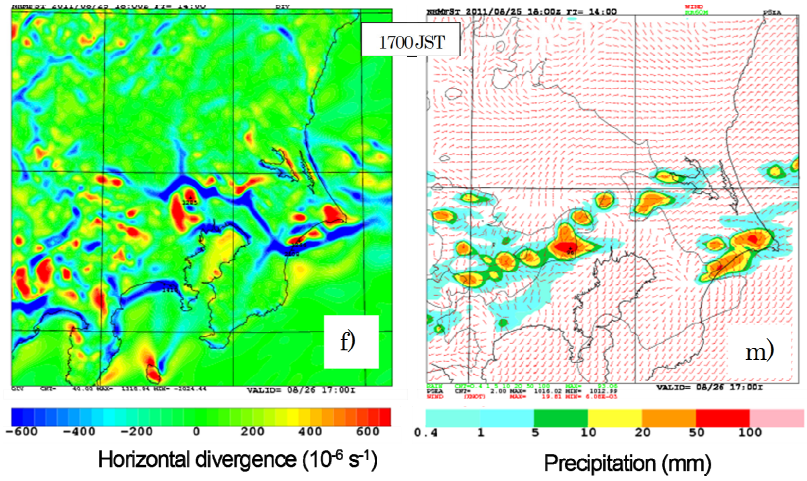

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Figure 2. Left) Horizontal divergence at 1000 hPa at 1700 JST 26 August 2011 predicted by member 'p04' for NHM EPS with the mesoscale singular vector method. Right) Horizontal winds at the lowest model level (20 m AGL) and one-hour precipitation.

- A local heavy rainfall of about 100 mm h^{-1} occurred in Tokyo and Kanagawa Prefecture on 26 August 2011. In an analysis using geostationary multi-purpose satellite rapid scan images (Fig. 1) and dense automated weather station networks, development of deep convection occurred after the merging of sea breezes from the east and the south.
- We conducted an ensemble prediction using a singular vector method based on the JMA nonhydrostatic model (NHM). Observed characteristics of the local heavy rainfall were well reproduced by one of the ensemble members with a horizontal resolution of 2 km (Fig. 2).
- A conceptual model of the initiation of deep convection by the formation of a low-level convergence zone succeeding merging of the two sea breezes from the east and south is proposed based on observations and numerical simulation results. In this event, the northerly ambient wind played an important role on the occurrence of the local heavy rainfall around Tokyo by suppressing the northward intrusion of the sea breeze from the south.