

Problems in Predicting Heavy Rainfall using a Cloud-Resolving Model - Impact of Assimilating Aqua/AMSR-E data to 2004 Fukui Heavy Rainfall Case -

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Localized, band-shaped heavy rainfall was observed over the Fukui area on 18 July 2004, located on the Japan-Sea side of the Japan Islands. This heavy rainfall event resulted from an intensification of convective instability, induced by the inflows of low-level humid air and middle-level dry air [1]. A numerical simulation using a cloud-resolving model with a horizontal grid of 1.5 km (CRM) was carried out to examine the impact of Aqua/AMSR-E precipitable water vapor data. The CRM with AMSR-E data well reproduced the heavy rainfall until 6-hour forecast except the precipitation intensity, while after then it hardly improved the prediction. The problem for the precipitation intensity was caused from the difficulty to assimilate the precipitable water vapor [2], and those for the maintenance was caused from the uncertain analysis of the wind field over the Sea of Japan that determined the movement of low-level humid air [1].

Keywords: Cloud-resolving model, Heavy rainfall, AMSR-E

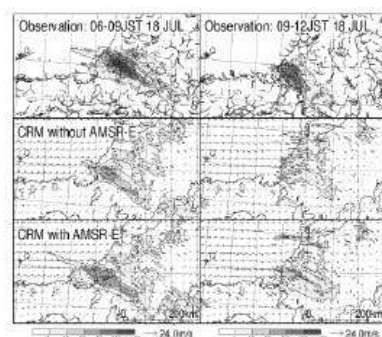


Figure 1: Observed three-hourly accumulated rainfall distributions and those predicted by CRM for 06-09 JST and 09-12JST 17 July 2004.

References

- [1] T. Kato and K. Aranami, *SOLA*, **1**, 1-4 (2005).
- [2] T. Kato et al., *J.Meteo .Soc.Japan*, **81**, 993-1013 (2003).