

Flood prediction with the JMA Runoff model and 1000-member weather forecast

*Tsutao OIZUMI^{1,2}, Le Duc^{1,2}, Kenichiro Kobayashi^{4,2}, Takuya Kawabata², Kazuo Saito^{1,3,4}

1. Japan Meteorological Business Support Center, 2. Meteorological Research Institute, 3. The Atmosphere and Ocean Research Institute, 4. Kobe University

In July 2020, the first class river Kumagawa flooded due to “the July 2020 heavy rain event”, this flood induced severe damage around Hitoyoshi city and Kuma village.

To predict this disaster, we simulated the Japan Meteorology Agency Runoff Index model (JMA-RI model) with a 1000-member ensemble weather forecast data. The 1000-member forecast was simulated by LETKF and JMA-NHM. The spinup period of the RI model was from 01 June 00:00 (JST) to 03 July 18:00 and the simulation started from 03 July 19:00 to 04 July 15:00. To evaluate the performance of the 1000-member simulation, we also simulate the RI model with 100-member.

The RI model with the 1000-member well simulated the peak of the flood. The probability of exceeding 30 and 50 years return period is 51% and 40%, respectively. Meanwhile, in the 100-member simulation, the probability of exceeding 30 and 50 years return period is 42% and 35%, respectively. These results indicate the 1000-member simulation is better for predicting flood forecast.

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