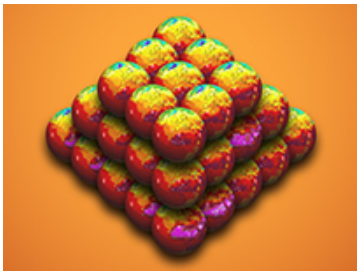

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Predictability of heavy rainfall events in Japan in early July 2018 on medium-rage timescales

Extremely heavy rainfall events occurred over western Japan in early July 2018. This study assesses the predictability of these events for the period 5th–7th July using three operational medium-range ensemble forecasts available from the European Centre for Medium-range Weather Forecasts (ECMWF), the Japan Meteorological Agency (JMA), and the National Centers for Environmental Prediction (NCEP), and ensemble simulations conducted with an ECMWF model and NCEP operational ensemble initial conditions. All three operational ensembles predicted extreme rainfall on 5th–6th July at lead times of ≤ 6 days, indicating the high predictability of this event. However, the extreme rainfall event of 6th–7th July was less predictable. The NCEP forecasts, initialised on 30th June, performed better at predicting this event than the other operational forecasts. The JMA forecasts initialised on 1st July showed improved predictability; however, the ECMWF forecasts initialised after 30th June showed only gradual improvements as the initialisation time progressed. The ensemble simulations revealed that the lower predictability of the rainfall in the ECMWF forecasts on 6th–7th July can be attributed to the model rather than to the initial conditions. Accurate prediction of the North Pacific Subtropical High is a prerequisite for accurate prediction of such extreme rainfall events.

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