



Today's and Yesterday's Japan: A system of flood risk estimation over Japan with precipitation data of weather forecast and satellite products

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A new river discharge predicting system all over Japan in order to issue alerts of flood risks utilizing Japan Meteorological Agency's Meso-scale model outputs has been developed. The system is called "Today's Japan". A statistical approach that compromises the bias and uncertainty of models is proposed for interpreting the simulated river discharge as a flood risk. A 29-year simulation was implemented to estimate parameters of the Gumbel distribution for the probability of extreme discharge, and the estimated discharge probability index (DPI) showed good agreement with that estimated based on observations. Even more strikingly, high DPI in the simulation corresponded to actual flood damage records. This indicates that the real-time simulation of the DPI could potentially provide reasonable flood warnings. A method to overcome the lack of sufficiently long simulation data through the use of a pre-existing long-term simulation and to estimate statistical parameters is also proposed. A preliminary flood risk prediction that used operational weather forecast data for 2003 and 2004 gave results similar to those of the 29-year simulation for the Typhoon T0423 event on October 2004, demonstrating the transferability of the technique to real-time prediction.

In addition, the usefulness of satellite precipitation data for the flood estimation is evaluated via hindcast. We conducted it using several precipitation satellite datasets. The GSMaP product can detect heavy precipitation events, but floods being not well simulated in many cases because of GSMaP's underestimation. The GSMaP product adjusted by using monthly and 1 degree rain gauge information can be used to detect

flood events as well as hourly rain gauge observations.