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A global flood monitoring system with high-resolution precipitation maps by satellite

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Recently, production of high-resolution global precipitation maps by using satellite observations have been proposed by several research groups. They are necessary to monitor heavy rainfall and flood disasters in the area where ground based observation network is not well established. In this study, we developed a pilot system to simulate river discharge and monitor flood disasters with different global precipitation maps as input. The system consists of three parts. The first part is to gather precipitation products via internet. We can get three maps (3B42RT, CMORPH, CPC_MWCOMB) in semi real time (within 24 hours after observation) and four maps (PERSIANN, 3B42, GPCP, GSMaP_MWR) several months after observation. For other surface meteorological variables (e.g. air temperature) necessary for the second part, the model forecast values distributed by Japan Meteorological Agency is also obtained. The second part is the simulations of land surface water/energy balance by Iso-MATSIRO and river routing by TRIP. The temporal and spatial resolution is 6 hours and 1 by 1 degree. The third part is publishing global maps of river discharge via www. This system is called "Yesterday's Earth" (YE) as it is based on the original system called "Today's Earth" (TE), which uses precipitation forecasted by JMA model. Precipitation, runoff, and river discharge by TE and YE simulations are inter-compared and evaluated with independent observations such as GRDC river discharge dataset.