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Special Edition on Tropical Cyclones in 2015–2016
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Plain Language Summary: We investigated extremely heavy precipitation that occurred around the Kinugawa River, Japan, in September 2015, and the probability of extreme precipitation occurrence, using data from a large ensemble forecast of more than 1,000 members that were dynamically downscaled to 1.6 km horizontal grid spacing. This extreme precipitation event occurred under specific conditions: two coexisting typhoons at close proximity that produced a high atmospheric instability, and water vapor transported from the Pacific Ocean.

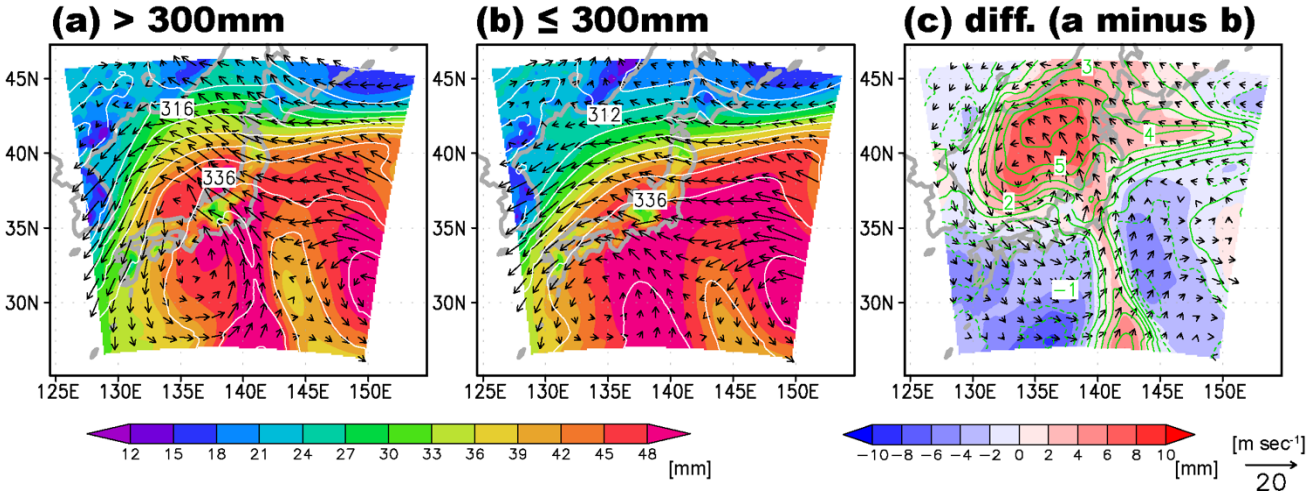

Figure 1. Composite maps of the 3-day mean precipitable water vapor (shading), equivalent potential temperature at 850 hPa (contours), and mean wind at 850 hPa (vectors). (a) Means of the ensemble members simulated the 3-day precipitation over 300 mm at *Nikko*, (b) the mean value of the outside of criteria (300 mm 3-day^{-1}), and (c) the differences (left minus center).

- The observed event was statistically rare among simulated cases and the 3-day accumulated precipitation around Nikko was equivalent to the 95th percentile among all simulated ensemble members (1029 members).
- This extreme precipitation event occurred under specific conditions: two coexisting typhoons at close proximity that produced a high atmospheric instability, and water vapor transported from the Pacific Ocean.
- The large-ensemble downscaled data used hence enabled us to evaluate the occurrence probability of a torrential rainfall event that was rarely observed, which may contribute to updating a disaster-mitigating plan for possible similar disasters in future.