

Kusunoki, S. and R. Mizuta, 2021: Future changes in rainy season over East Asia projected by massive ensemble simulations with a high-resolution global atmospheric model. *J. Meteor. Soc. Japan.* **99**, 79-100. <https://doi.org/10.2151/jmsj.2021-005>.

Plain Language Summary: Future changes in the rainy season in East Asia are projected based on massive ensemble simulations of about 100 members with a 60-km mesh global atmospheric model called the “Database for Policy Decision-Making for Future Climate Change (d4PDF)”. Summer precipitation will generally increase in most regions of East Asia, but will decrease over western Japan, where the onset of rainy season will delay and the retreat will occur earlier, resulting in a shorter rainy season.

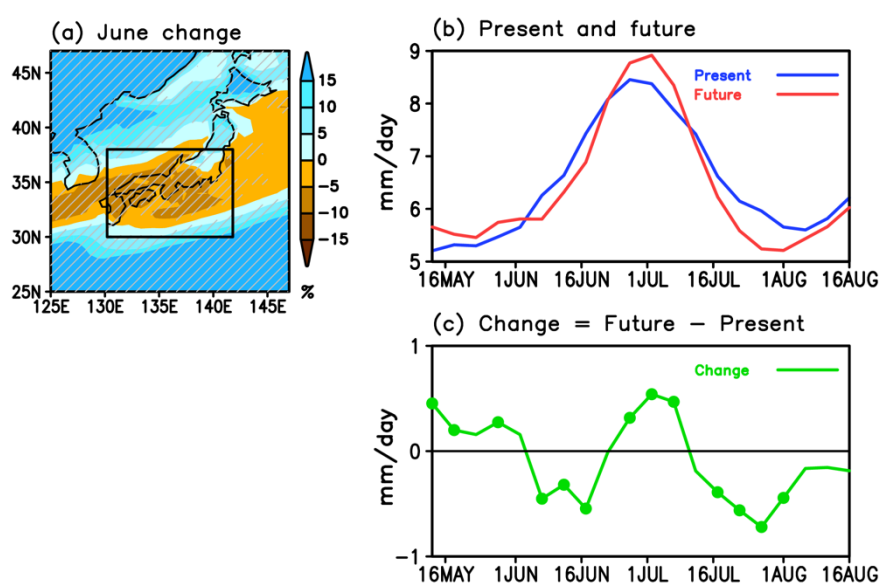


Figure 1. Future precipitation change. (a) Future June precipitation change (%) relative to present-day climatology. Hatch means above 95% significance. (b) Time evolutions of simulated precipitation averaged over western Japan (black box in panel a). (c) Future change over western Japan. Closed circle means above 95% significance.

- The performance of the 60-km mesh model used in this study was much higher than other institute's atmospheric models for simulating summer precipitation in East Asia.
- Precipitation will decrease in June around 30-35°N in China, Korea, and Japan.
- The decrease in precipitation in June in western Japan can be attributed to the counter-effect of the convergence of moisture to the south of Japan, originating in the southward shift of the West North Pacific Subtropical High.
- Frequency distribution directly derived from massive ensemble simulations at each grid point in June revealed that the most intense precipitation increases in some regions where moderate precipitation decreased in terms of simple ensemble averages.