

Kotani, H., W. Ogawa, and K. Matsushima, 2025: Does the performance of a flood early warning system affect casualties and economic losses? Empirical analysis using open data from the 2018 Japan Floods. *J. Meteor. Soc. Japan*, **103**, <https://doi.org/10.2151/jmsj.2025-025>.

**Plain Language Summary:** Does the performance of a flood early warning system affect casualties and economic losses? Frequent false alarms and missed events may undermine public trust in warnings, which can prevent people from responding to future warnings and lead to more severe flood damage. We aimed to answer this question by focusing on flood warnings in Japan. Using open data from the 2018 Japan Floods, we found that the answer is likely “Yes.” Municipalities that experienced more frequent false alarms tended to suffer higher numbers of casualties and greater economic losses. This foundational study highlights the importance of improving the accuracy of weather warnings—especially by reducing false alarms—to lessen disaster impacts and guide future research in this area.

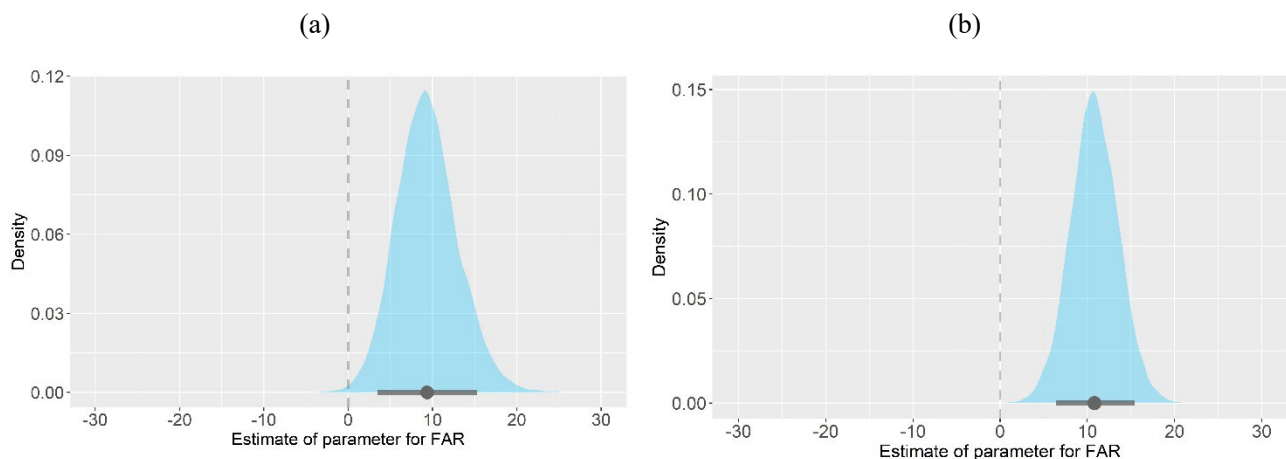


Figure 1. Estimated results (i.e., posterior distributions) of the coefficients for false alarm ratio (FAR) on (a) fatalities and (b) economic losses (general assets). The posterior means and 90% highest density intervals fall within the positive domain, indicating positive effects of FAR on these types of flood damage.

- The effects of warning performance—the false alarm ratio (FAR) and the missed event ratio (MER)—on flood damage in Japan were analyzed using data from the 2018 Japan Floods.
- The Bayesian regression analyses of open data showed that municipalities with higher FAR experienced more fatalities and injuries, as well as greater economic losses to general assets.
- In contrast, no significant positive effect of MER on flood damage was found.