

Consecutive extreme flooding and heat wave in Japan: Are they becoming a norm?

*JinHo Yoon¹, Shih-Yu (Simon) Wang², Hyungjun Kim³, Jeehoon Jeong¹

1. GIST Gwangju Institute of Science and Technology, 2. Utah State University, 3. University of Tokyo

In July 2018, Japan experienced two contrasting, yet consecutive, extreme events: a devastating flood in early July followed by unprecedented heat waves a week later. Death tolls from these two extreme events combined exceeded 300, accompanying tremendous economic losses (BBC: July 24, 2018; AP: July 30, 2018). Meteorological analysis on these 2018 events quickly emerged (JMA-TCC, 2018; Kotsuki et al., 2019; Tsuguti et al., 2019), highlighting several compound factors: a strengthened subtropical anticyclone, a deepened synoptic trough, and Typhoon Prapiroon that collectively enhanced the Baiu rainband (the Japanese summer monsoon), fostering heavy precipitation. The comprehensive study of these events, conducted within a month and released by the Japan Meteorological Agency (JMA) (JMA-TCC, 2018), reflected decades of knowledge of the Baiu rainband and new understanding of recent heat waves in southern Japan and Korea (Xu et al., 2019). Regardless, an extended forecast of this record-breaking precipitation remains challenging, with a skillful prediction of no more than 3 days (Kotsuki et al., 2019). Given the impending Baiu season of 2019, it is prudent to reflect upon these successive 2018 events by parsing out the critical components while discussing the potential of future compound extremes.