**Plain Language Summary:** During the heavy rainfall event in western Japan in July 2018, many differently-sized precipitation systems appeared one after another. This paper suggests that particularly large precipitation systems with areas of more than 10,000 km² increased the risk of deadly sediment disasters during the rainfall event. Such a large precipitation system occurred when the wind speed was significantly different between the lower and upper atmosphere.

Figure 1. (a) Precipitation systems at 1200 UTC 6 July 2018. Blue, cyan, magenta, and yellow colors correspond to precipitation systems of $S < 10^2$ km², $S = 10^2$–$10^3$ km², $S = 10^3$–$10^4$ km², and $S \geq 10^4$ km², respectively, where $S$ denotes the area of the precipitation system. The gray color indicates moderate rain (rainfall intensity $P < 10$ mm h⁻¹).

(b, c) Time series of accumulated rainfall both for (b) the Hiroshima and (c) the Keihanshin areas. The different colors denote the contributions from the different rainfall classes.

- During the heavy rainfall event in western Japan in July 2018, both the Hiroshima and Keihanshin areas were subjected to unusual rainfall amounts but their damages were significantly different.
- In the Hiroshima area where the number of sediment disasters was significantly larger, rainfall caused by large precipitation systems with areas equal to or larger than $10^4$ km² were dominant.
- Such a large precipitation system occurred under the condition that vertical wind shear in the 0.5–6.0 km above ground level layer was relatively large.