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Heatwave-related extreme rainfall events

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Research on heatwave-related impacts typically focusses on risks to health or critical infrastructure. However, since high temperatures are an important element of convection-driven extreme rainfall events that can trigger flash floods, heatwave-induced extreme rainfall events are also important when considering heatwave impacts. Heavy rainfall events following heatwaves might alleviate the direct impacts of the heat but introduce other risks related to flash floods.

Using sub-daily rainfall observations on a global scale, we show that short duration rainfall extremes are indeed more likely to occur if preceded by a heatwave than compared to non-heatwave events. In addition, these rainfall events are more intense as well. However, this link is dependent on the region, with some locations, especially arid regions, showing no relationship between the two phenomena at all. We also investigate if hotter heatwaves are more likely to be followed by rainfall extremes. This could have implications for future heatwaves which are projected to become more intense.