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Projected changes of precipitation extremes over Southeast Asia under 1.5 and 2 degrees global warming

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Restricting warming to 1.5°C would significantly reduce the regional and local climate risks, including water resources, food security and agricultural production over Southeast Asia (SEA), a tropical region where human society is particularly vulnerable to climate change. Projected changes have been evaluated in extreme precipitation-based indices using the latest available CORDEX simulations covering SEA. The results provide relatively detailed information on the future precipitation changes expected for the countries in the Indochina Peninsula (ICP) and Maritime Continent with the frequency and intensity of precipitation extremes being strengthened at both 1.5 and 2°C global warming levels (GWLs). Predominant changes in most of indices, such as R10mm/R20mm (Heavy / Very heavy precipitation days), SDII (Simple daily intensity) and R95pTOT / R99pTOT (Precipitation of very / extremely wet days) are more pronounced at the 2.0°C GWL than at the 1.5°C GWL. Additionally, significant differences of the indices mainly focus over Maritime Continent, indicating the high sensitivity of the precipitation extremes to the GWL changes over that area. The present study reveals the global warming at either 1.5 or 2 °C level may have implications for the climate vulnerability over SEA. The index evolutions indicate an intense increase of extreme precipitation events over this region in a warmer future.