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

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Projected changes in temperature extremes at 1.5°C and 2°C global warming levels (GWLs) have been evaluated for Southeast Asia (SEA) based on temperature extreme indices from ETCCDI using the latest available CORDEX simulations. Results show that the temperature indices significant increase across Indochina Peninsula and Maritime Continent at 1.5°C and 2°C GWLs except for the decreasing daily temperature range (DTR) in the dry season. The most pronounced increases of summer days (SU) are projected in Sulawesi with the percentage magnitude of 31.7% and 19.7% (47.2% and 31.3%) at the 1.5°C (2°C) GWL for wet and dry seasons, respectively, while tropical nights (TR) increase significantly over Sumatra and Sulawesi. Robust differences of temperature extremes can be found over the SEA in both wet and dry seasons for the additional global warming of 0.5°C. The temperature extremes under the global warming of 1.5°C and 2°C levels and their differences primarily concentrate on the main islands in the densely populated coastal regions, suggesting more conspicuous impacts on the human system in the developing countries over the SEA.