



## **Robust changes in tropical rainy season length at 1.5°C**

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Changes in the hydrological cycle are among the impacts of climate change most relevant for human and ecosystems. Besides trends in overall wetting or drying, changes in temporal characteristics are of crucial importance to determine the climate hazard posed by such changes. This is in particular the case for tropical regions, where most precipitation occurs during the rainy season and changes in rainy season onset and length have substantial consequences. Here we present projections for changes in tropical rainy season lengths for mean temperature increase of 1.5°C and 2°C above pre-industrial levels. Based on multi-ensemble quasi-stationary simulations at these warming levels, our analysis indicates robust changes in rainy season characteristics in large parts of the tropics despite substantial natural variability. Specifically, we report a robust shortening of the rainy season for all of tropical Africa as well as north-east Brazil. About 40% of West Africa are projected to experience robust changes in the rainy season length with a mean shortening of about 6 days under 1.5°C. We find that changes in the temporal characteristics are largely unrelated to changes in overall precipitation, highlighting the importance of investigating both separately.