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Half a degree difference in the observational record

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Assessing the impacts of climate change at different levels of warming is key requirement to inform debates on climate policy in a post-Paris world. In particular, the forthcoming IPCC special report on 1.5°C is tasked to assess warming at 1.5°C compared to other levels such as 2°C or present day warming around 1°C. Assessments of such differences are hampered by uncertainties of model projections in particular related to impact relevant quantities such as extreme weather events that may mask existing differences in projections. Evidence from the observational record can provide useful information to inform the debate about differentiable climate impacts in the light of uncertainty. Here we assess the difference between extreme weather indicators from observational datasets for 0.5°C warming between the second half of the 20th century and the recent past. We report discernible differences for the global occurrence of heat extremes and extreme precipitation. Limitations of this approach related to non-greenhouse gas forcings are also discussed.