De Meyer, V. and R. Roca, 2021: Thermodynamic scaling of extreme daily precipitation over the tropical ocean from satellite observations. *J. Meteor. Soc. Japan*, **99**, 423-436.
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Plain Language Summary: Extreme precipitation is expected to increase in a warmer climate at the same rate of the surface humidity, that is the Clausius-Clapeyron rate (~6%/K in the tropics). This study investigates the scaling of the extreme precipitation over the tropical ocean using an ensemble of satellite-based precipitation products and SST analysis. The microwave constellation-based products show a very robust positive scaling range between 300K to 302.5K, with an ensemble mean very close to the 6%/K theoretical expectation.

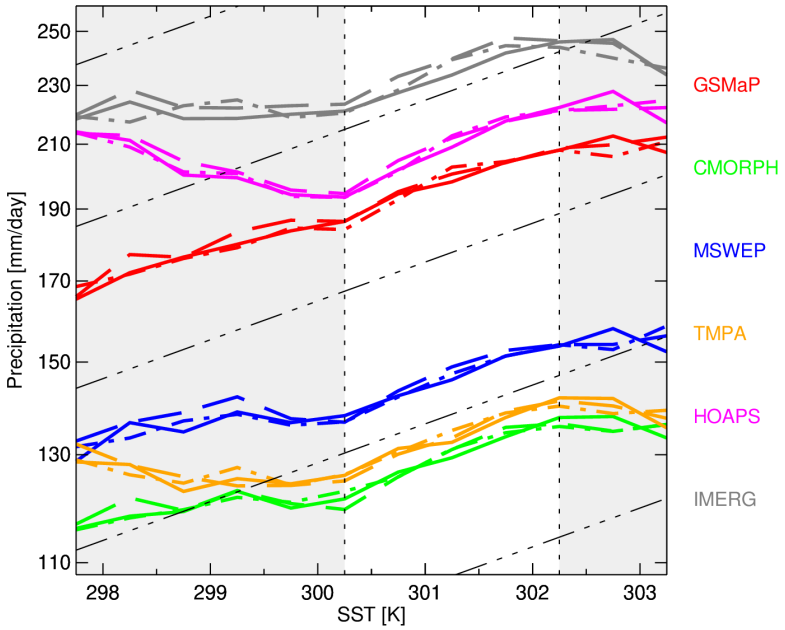

Figure 1. The value of the 99.9th percentile of the 1°x1° daily accumulated precipitation as a function of the SST lagged by 2 days. Solid line for OSTIA, dashed line for OISST and dash-dotted lines for OIRSS. Regimes are separated by vertical dashed lines. The grey shaded areas indicate the non-robust cold regime between precipitation products (left) and the non-robust warm regime between SST products (right). Black dash-dotted lines correspond to the Clausius-Clapeyron 6%/K rate.

- The extreme precipitation theory is confirmed using 1°-1day resolution satellite-based precipitation and SST products within a specific SST temperature range.
- The analysis conducted with a 5-, 11- and 17-years long period and with 3 different SST products shows no major discrepancies, as long as the SST is lagged by 2 days prior to the precipitation event.
- The robustness of the results confirms the fitness of the current generation of constellation-based precipitation products for extreme precipitation analysis.