



A Fivefold Increase in Monthly Heat Records

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The last decade has produced an exceptionally large number of record-breaking heat waves in many parts of the world. At the same time, it was globally the warmest since sufficient measurements started in the 19th century. Here we show that, worldwide, the number of local record-breaking monthly temperature extremes is now on average five times larger than expected in a stationary climate. Some continental regions in the tropics have seen an up to twelve-fold increase. This high number of records is quantitatively consistent with that expected for a climatic warming trend with added stationary white noise. Strong El Niño years see additional records superimposed on the expected long-term rise in the number of records. Under a medium global warming scenario, by 2040 we predict the number of heat records to be more than 12 times as high as in a stationary climate.