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Automated fitting of time dependant point process models to extreme values of globally observed daily temperature maxima and minima.

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The analysis of climate data, both from observations and climate models, requires the development of automated fitting procedures if extreme value theory is to be applied on a global scale. Here I present the results of unsupervised fitting of stationary and time varying point process models to globally observed daily temperature. Sensitivity to automatic threshold selection and bias in time dependence estimation is explored together with a selection of goodness of fit diagnostics. Applying this methodology to a new quasi-global data set of daily land surface temperatures spanning the period 1950 to 2000 shows large areas are found to have experienced significant (at 90% level) changes in location of the fitted distributions when tested with the deviance statistic . The majority of significant trends in location are positive (ie extremes getting warmer), typically $\sim$1.5°C, although areas of the US and China show significant negative trends.