



## **Numerical convergence of the block-maxima approach to the Generalized Extreme Value distribution through an application of Freitas' Theorem**

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A rigorous study of Extreme Events in dynamical systems is of great interest in geophysical applications: when dealing with climatological data, the main problem in applying EVT is related to the choice of a sufficiently large number of extremes and the selection of values that are really extreme. To address this problem, we apply Freitas' theorem for the Extreme Value distribution in dynamical systems to both mixing and regular maps. Using a block-maxima approach we find the conditions on maxima and bin length to obtain numerical estimations in agreement with analytical values we have computed. Furthermore, we show that location and scale parameters of Generalised Extreme Value distribution have the same role of normalising sequences in Extreme Value distribution. For regular maps which do not satisfy Freitas' conditions we find a different kind of distribution which does not belong to the Extreme Value distribution family.