

## ***Interactive comment on “Non-stationary Extreme Value Analysis: a simplified approach for Earth science applications” by Lorenzo Mentaschi et al.***

### **Anonymous Referee #1**

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The present paper provides a methodology to estimate extreme values from non stationary time series data. The methodology is well explained and documented and is adequately compared with other methods that normally used for non-stationary data. It has to be mentioned that the approach is mainly applicable to forecast or hindcast data because it is designed for very long time-series.

The paper is very well written and with good and extensive documentation of the statistical methodology. Furthermore, the method is applied to 3 time series of different geophysical data. I believe that the paper is interesting and of significant scientific quality and I am suggesting it for publication.

As a general comment I would say that the mathematical documentations is a bit extensive but in line with the presentation of a new mathematical method.

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Some minor comments are presented below than can improve

Page 4 Line 6: MLE is already defined in page 2

Page6 line 23: What is : sn (t) probably you mean std (t)

Page 8 lines 15-25: If I am not mistaken the authors describe the methodology of calculating the seasonal anomalies, i.e. the deviations of the monthly data from a given climatology. If this is the case please state, on the contrary please indicate the differences and the error differences with e standard methodology. The inclusion of the equations is not necessary since an open source code is available but I agree that may help in the implementation.

Figure 1: In the season variability time window the 'sn' is misplaced

Page 12 line 24: Transformation 1. Do you mean Transformation using Eq (1)?

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