Supplementary Material of "Multiscale lineament analysis and permeability heterogeneity of fractured crystalline basement units"

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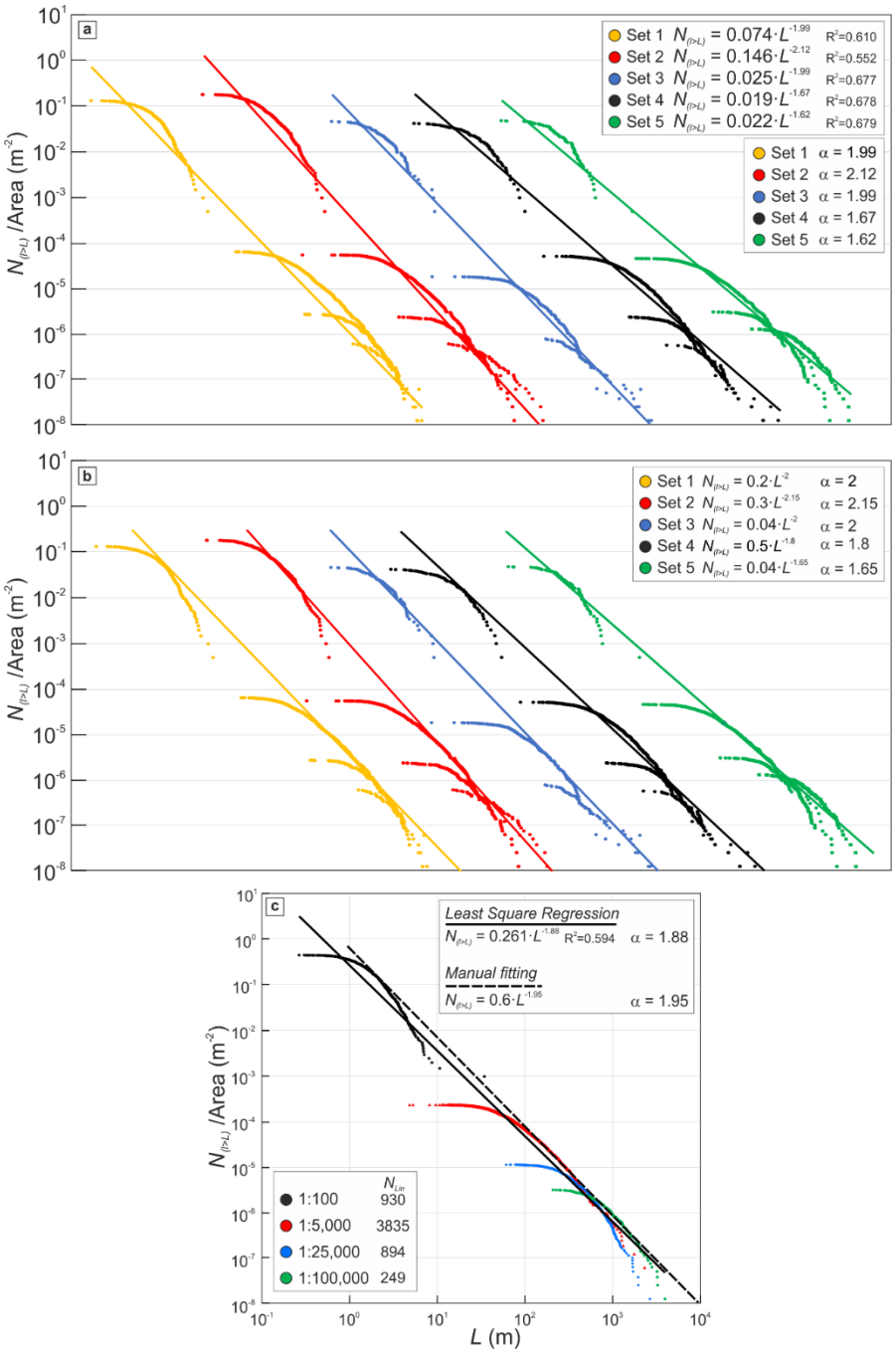


Figure S1. Cumulative length distribution for each orientation set (same as in Fig. 6b) separated along the X-axis to highlight the fitting curve for each orientation set. (a) Results of fitting from least square regression method. (b) Results of manual fitting. (c) Multiscale cumulative length distribution for the entire lineament network showing the results of least square regression (black curve) and manual (dashed curve) fitting.

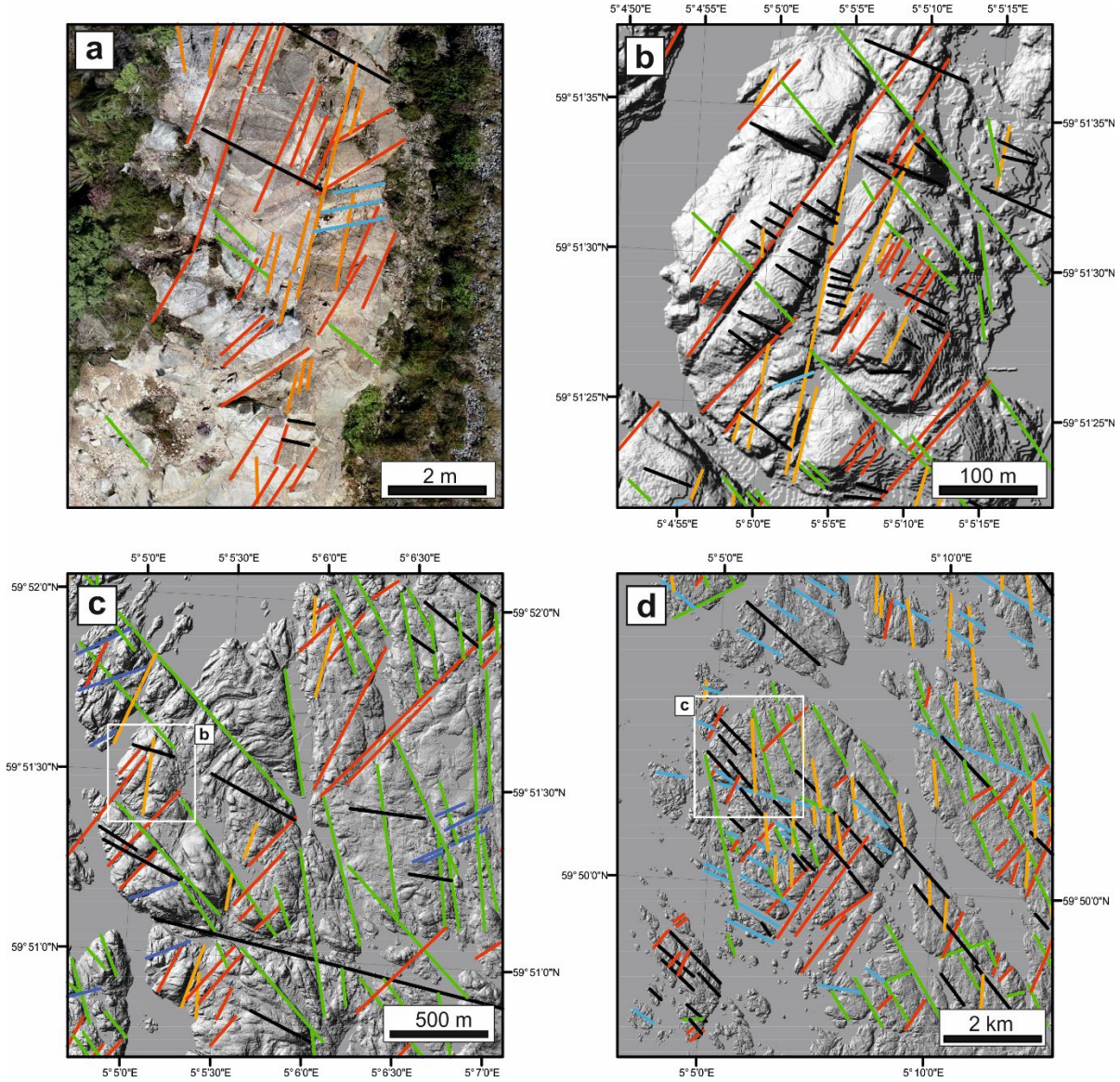


Figure S2. Details of the manually interpreted lineament maps and the related orthophotos and DTMs. (a) Lineament map overlayed to the orthophotos of the Goddo Fault Zone outcrop at 1:100. (b,c,d) Lineament map picked from the analysis of the LiDAR DTM at 1:5,000; 1:25,000; 1:100,000 scales, respectively. Lineaments are color coded according to their orientation and following the color scheme presented in the rose diagram of Fig. 4 of the main text.

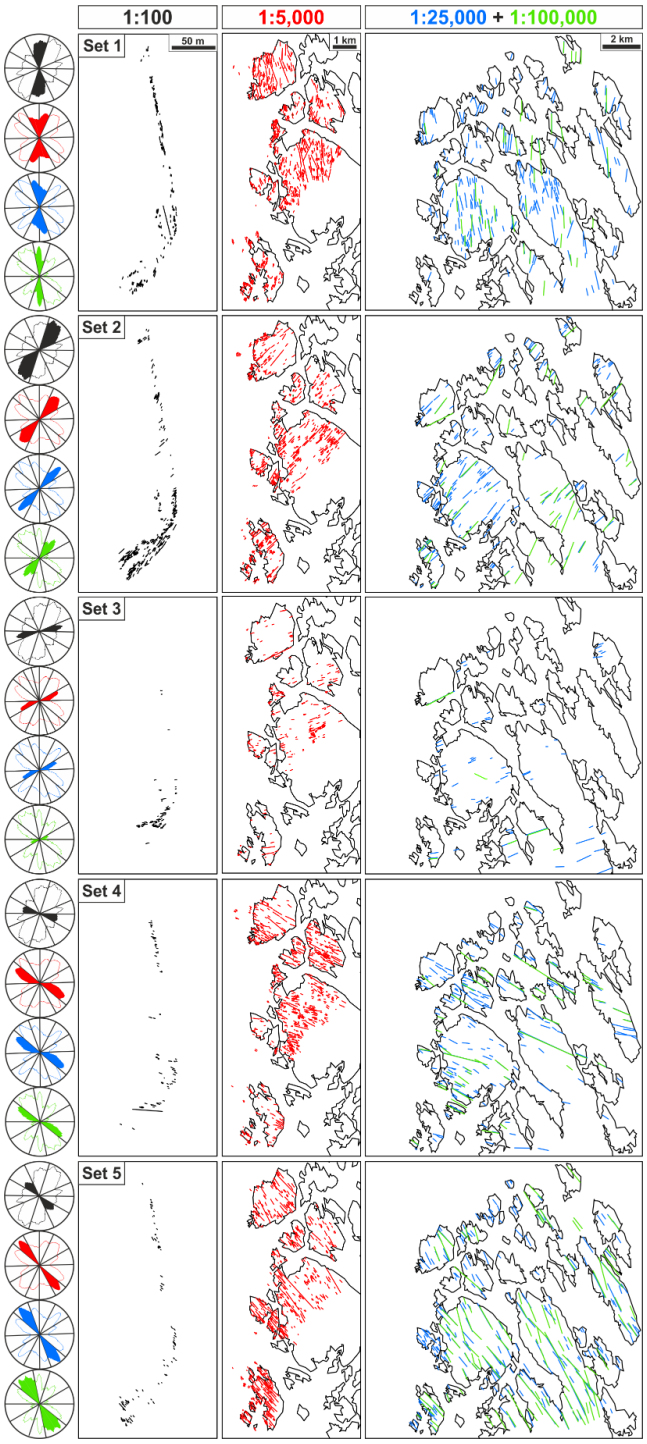
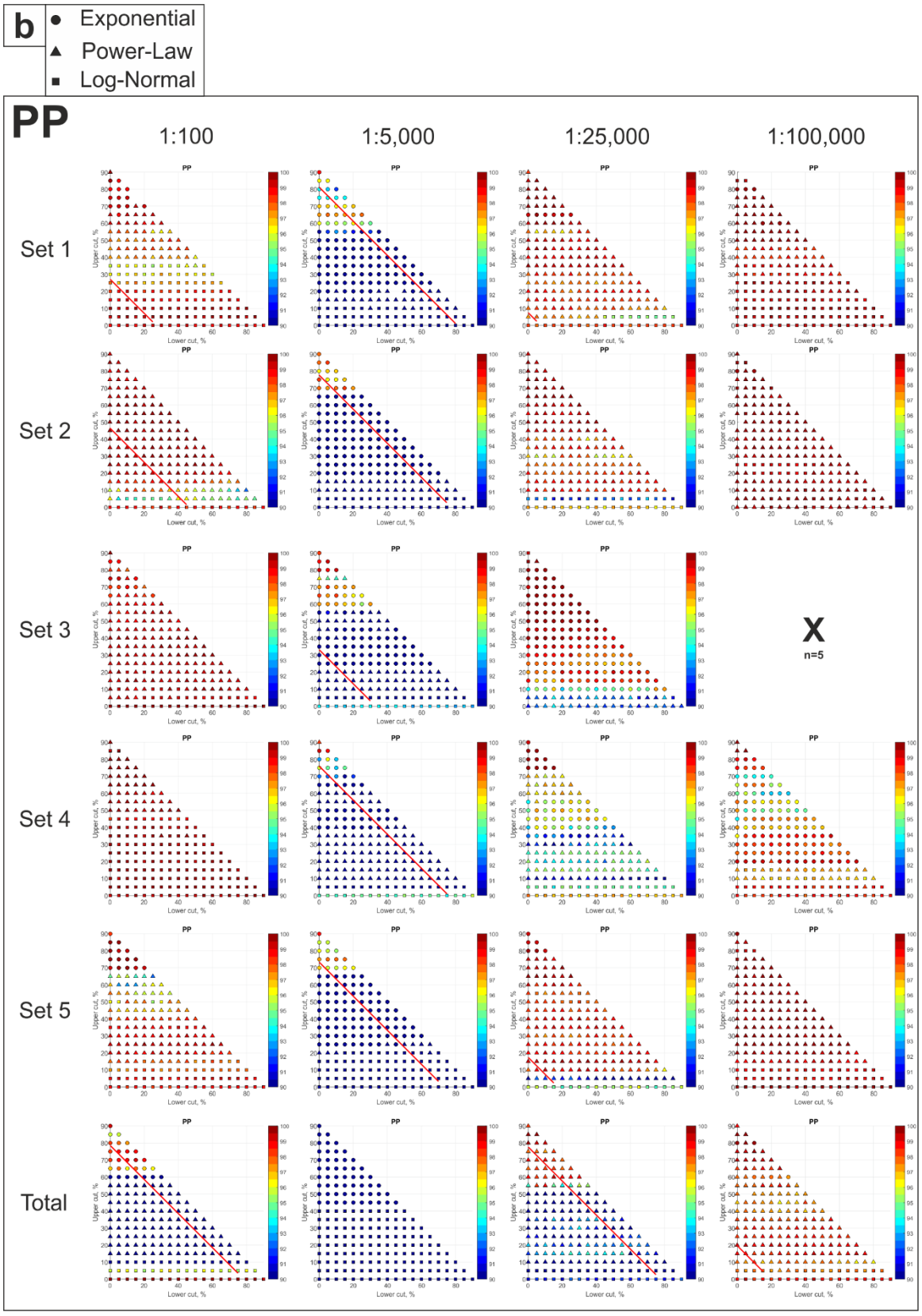


Figure S3. Lineament map for each orientation set.


b
Exponential
Power-Law
Log-Normal
PP
1:100
1:5,000
1:25,000
1:100,000
Set 1
Set 2
Set 3
Set 4
Set 5
Total
X
n=5
Upper cut, %
Lower cut, %

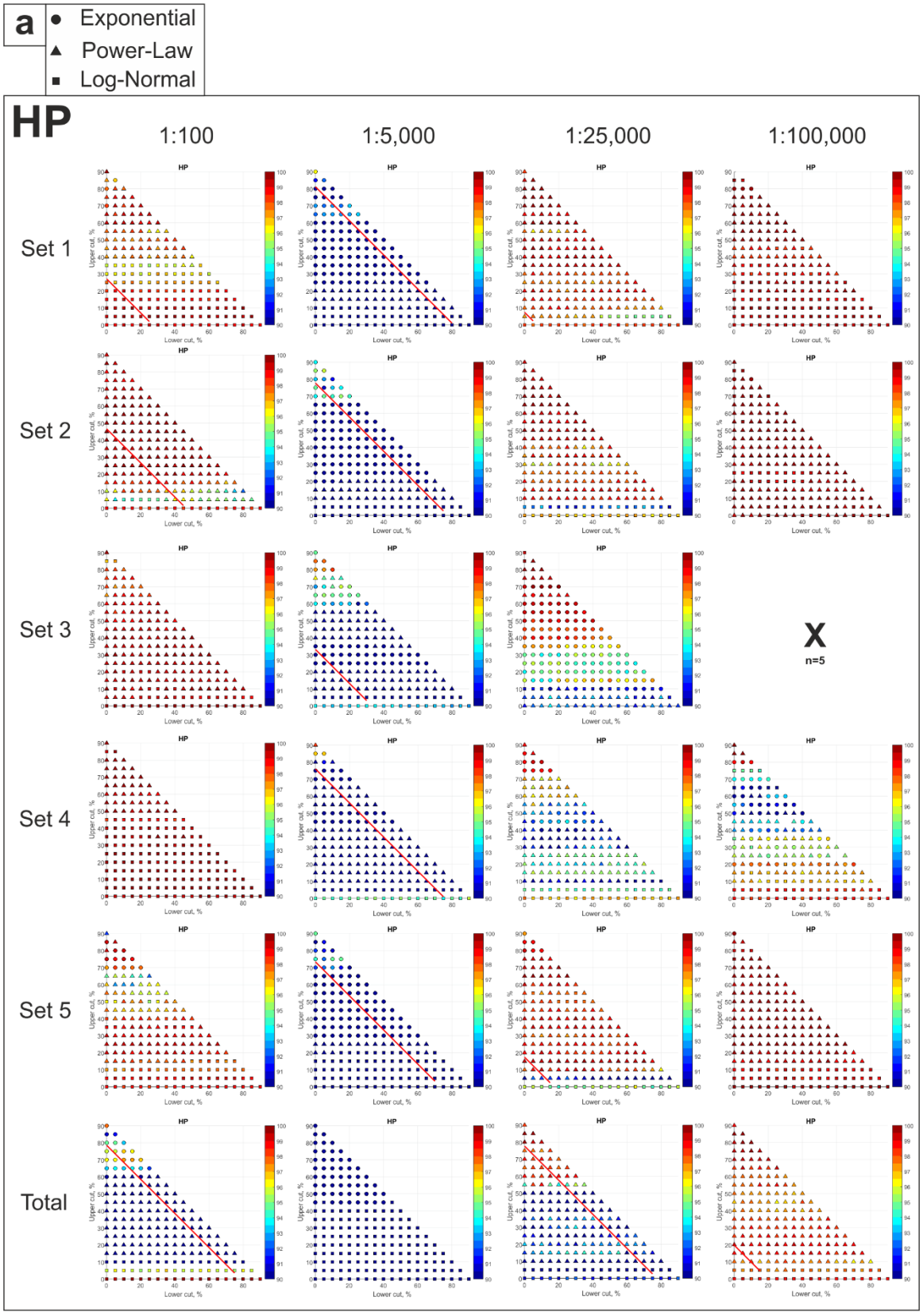

a
Exponential
Power-Law
Log-Normal
HP
1:100
1:5,000
1:25,000
1:100,000
Set 1
Set 2
Set 3
Set 4
Set 5
Total
X
n=5
Upper cut, %
Lower cut, %

Figure S4. Checkerboards showing the results of MLE-KS tests. (a) Checkerboards showing HP parameter as fitting score. (b) Checkerboards showing PP parameter as fitting score. Red lines define the boundary between distribution subdomains with more than 200 elements (to the left of the red line), and those containing less than 200 elements (to the right of the red line). 200 elements is considered the minimum number of elements to retrieve statistically significant results from these analyses (Bonnet et al., 2001). The distribution subdomains defined by the upper cut-lower cut values to the right of the red line contains fewer than 200 elements, and thus the statistical significance of the results obtained from such subdomain are debatable. Checkerboards without red lines contains < 200 elements.