

## ***Interactive comment on “3-Dimensional Rockfall Shape Back-Analysis: Methods and Implications” by David A. Bonneau et al.***

### **Anonymous Referee #1**

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The manuscript titled "3-Dimensional Rockfall Shape Back-Analysis: Methods and Implications" by Bonneau et al. reports the results of a research campaign on the methods to define the shape of rockfall blocks. Six approaches are presented in the methodological section and the results are reported on Sneed and Fold triangular plots. The authors demonstrate that the method used to measure the size of the fallen block has certain relevance on blocks' shape, leading to potential misclassification. In parallel, as remarked, rockfall codes largely consider the shape of the block into dynamics calculations and runout distance.

Although the flowchart of the performed tests is clear to me, I have some questions related to the adopted approaches.

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1. The authors propose the “Minimum bounding sphere” fitting model (Section 2.2.4). Why the results of the fitting model are not proposed in Figure 13?
2. RFSHAPZ is one of the novel fitting methods. What does "RFSHAPZ" means? Is the method derived from other approaches? Why Fourier series, Gaussian and sum of sines fits? It there a particular reason? Which is the size of the point cloud the authors refer to?
3. RFCYLIN is the other novel fitting method. Similarly, what does "RFCYLIN" means?
4. What differs manual methods 1 and 2?
5. The authors should compare the results of automatized methods to the data obtained through a non-automatized method, say, the manual approach which is considered as "true". This will help in defining the best approach.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-366>, 2018.

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