

Supporting Information for ”Cluster analysis for a standardized classification and description of volcanic ash: Case study of the 1983 eruption at Miyakejima, Japan”

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Additional Supporting Information (Files uploaded separately)

1. Captions for Datasets S1

Introduction

This supporting information is consists of figures and a dataset.

Supporting figures

Supporting figures are appeared in page X-4 to X-9 of this file.

Supporting data set

Data Set S1. This dataset contain volcanic ash grain data that we obtained and used. The dataset is available online (at <https://doi.org/10.6084/m9.figshare.14676045.v1>). As shown in the main text, grain data was obtained using an automated grain analyzer (Morphologi G3S (Malvern Instrument Ltd.)). The structure of the dataset is

/morphologi_data:

This directory contains grain data for each sample measured by Morphologi G3S (Malvern Panalytical Ltd.).

/results:

This directory contains the results of the cluster analysis.

/results/centroids:

This directory contains calculated centroids by the cluster analysis in each cluster number. The first column in each file shows the grain type. The "result_CA_all" column shows the number of grains fall in each grain type.

/results/labeled_data:

This directory contains grain type-labeled ("hclust.label" column) Morphologi data for each sample and for each grain type number.

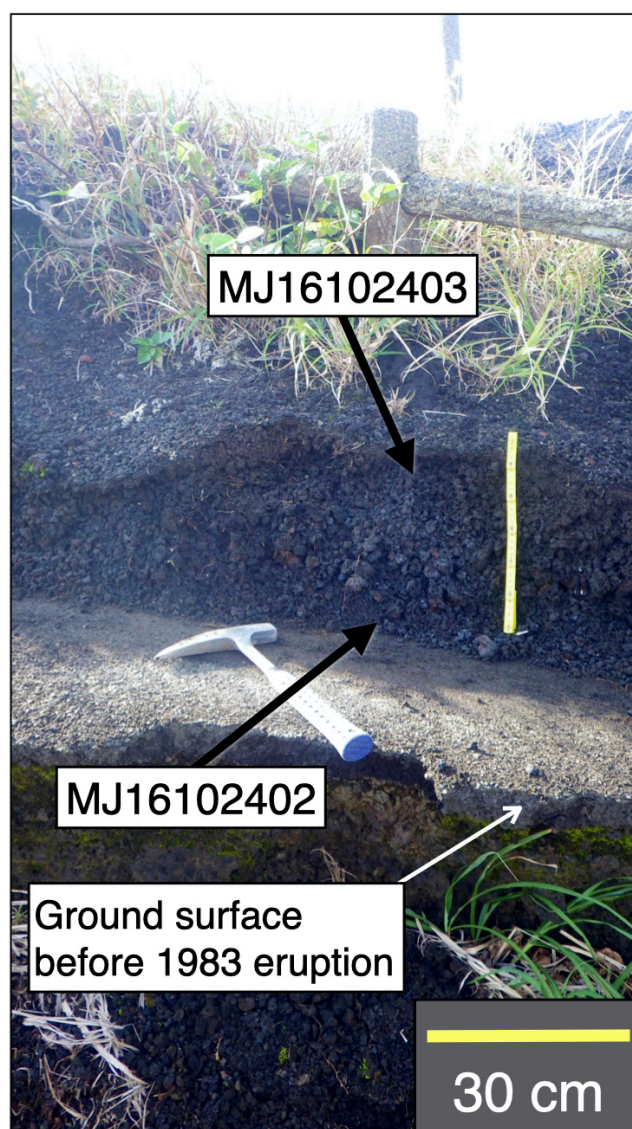


Figure S1. Sampling points on the eastern rim of the northern Jinan-yama scoria cone.

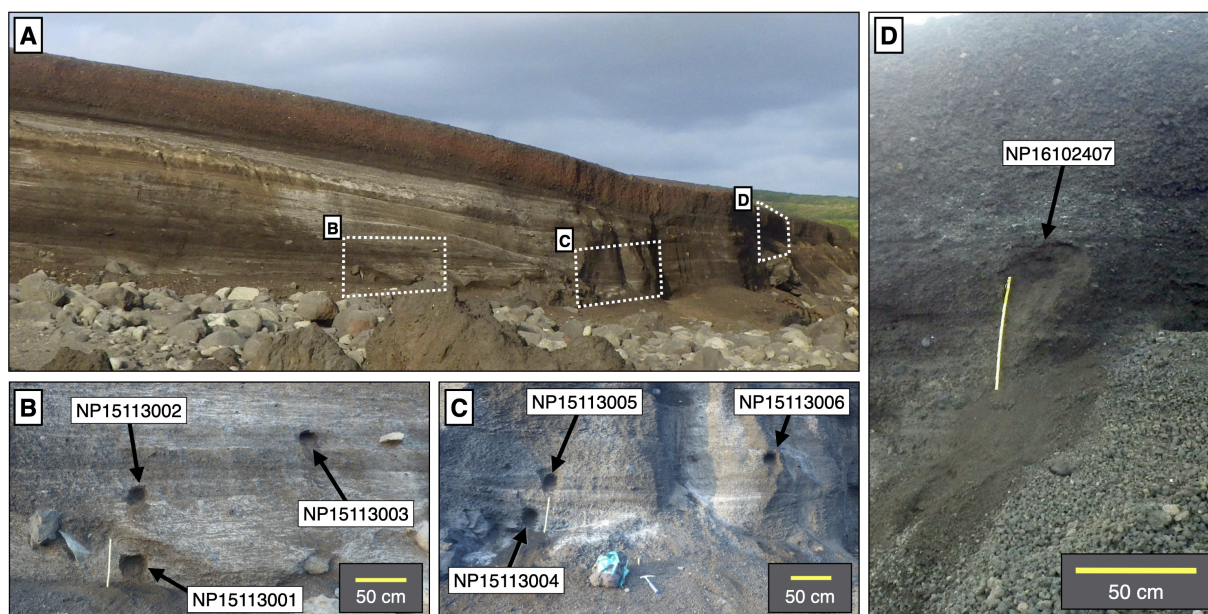
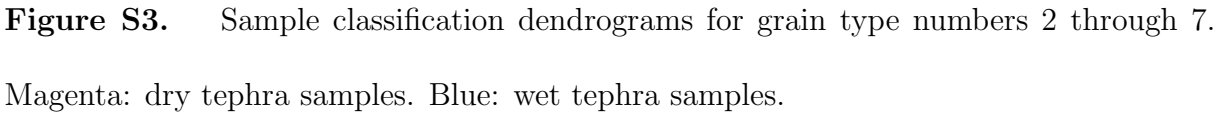


Figure S2. Sampling points at the crosscut outcrop of Nippana tuff ring. A: Overview of the outcrop. B: Lower layers. C: middle layers. D: Upper layers. Note that the uppermost reddish layer is a fallout deposit from a neighboring crater (R crater; e.g., Sumita, 1985).



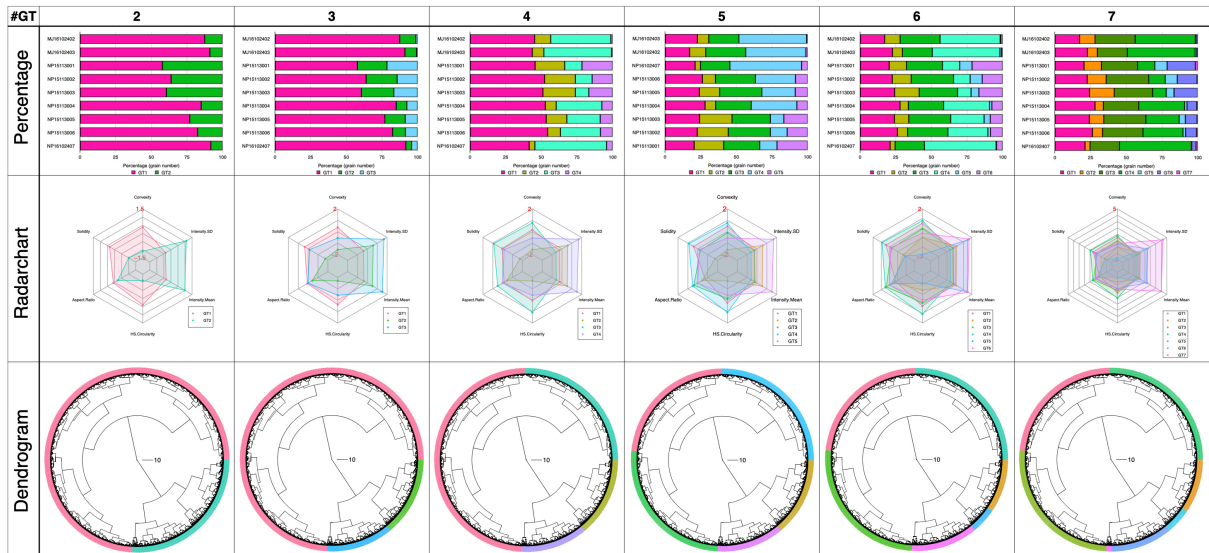


Figure S4. Grain type composition, radargram, and dendrogram for each number of grain types.

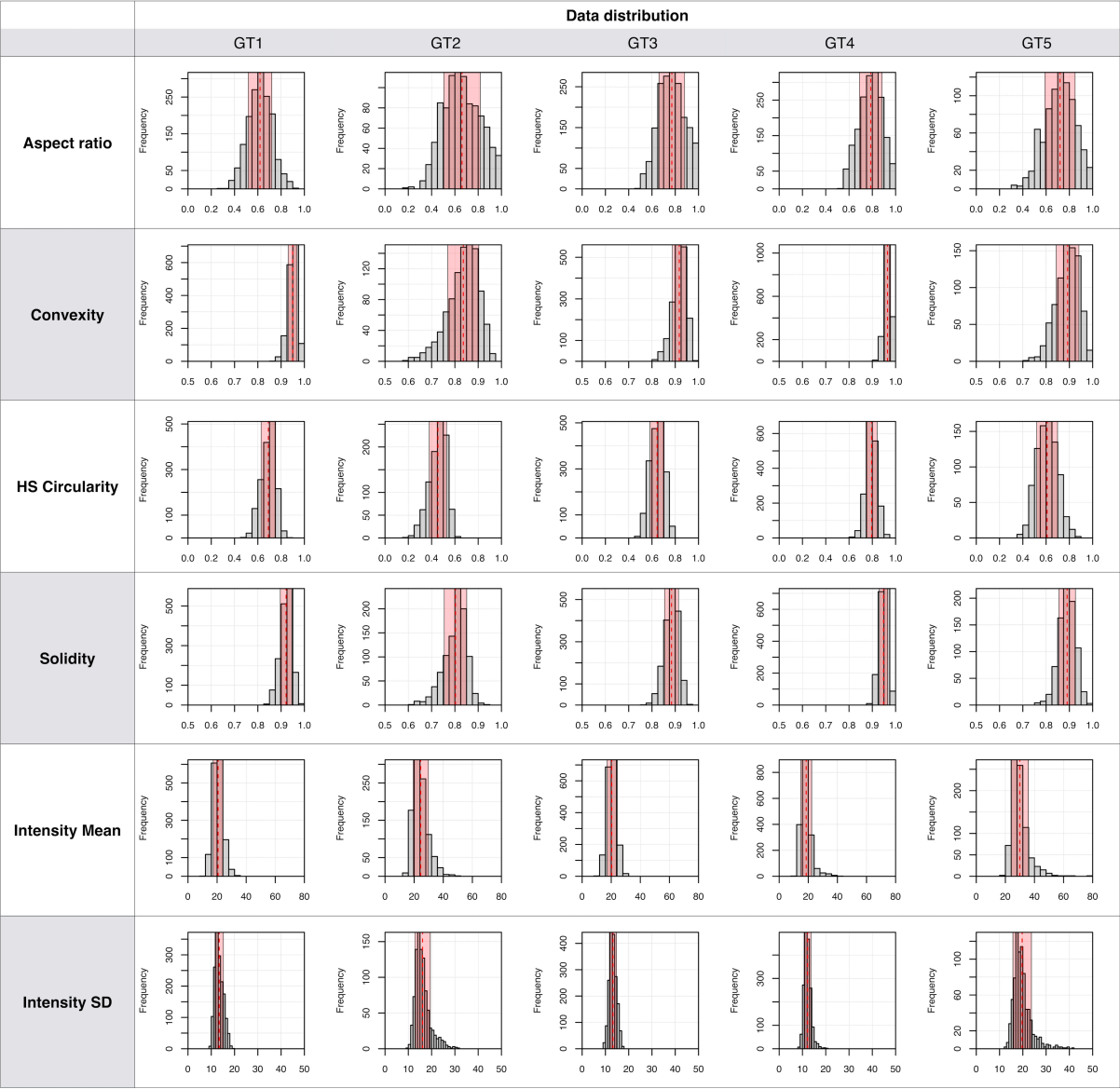


Figure S5. Frequency of parameters in each grain type. The red dashed lines and rectangles indicate the average and standard deviation, respectively.

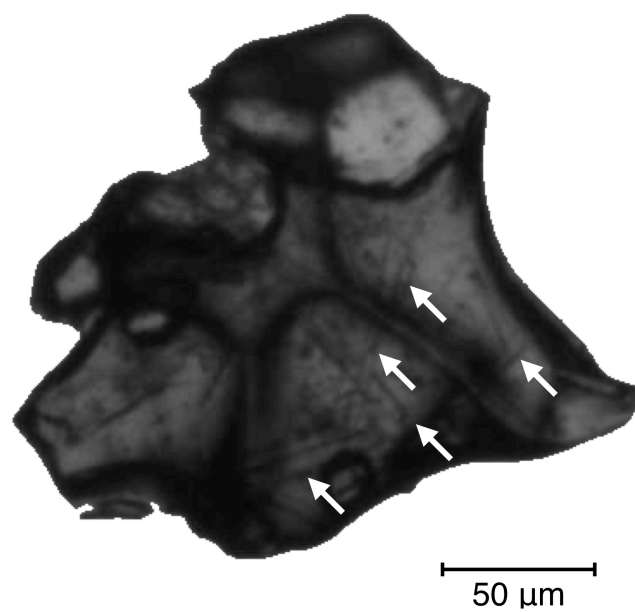


Figure S6. Example of a GT5 grain containing microlites (white arrows).