Geochemistry, Geophysics and Geosystems

Supporting Information for

Monogenetic Near-Island Seamounts in the Galápagos Archipelago

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Introduction

This supporting information contains all of the Supplementary Figures for this manuscript. This supporting information also contains table captions for Supplementary Tables, which are included as separate **.xlsx* files.

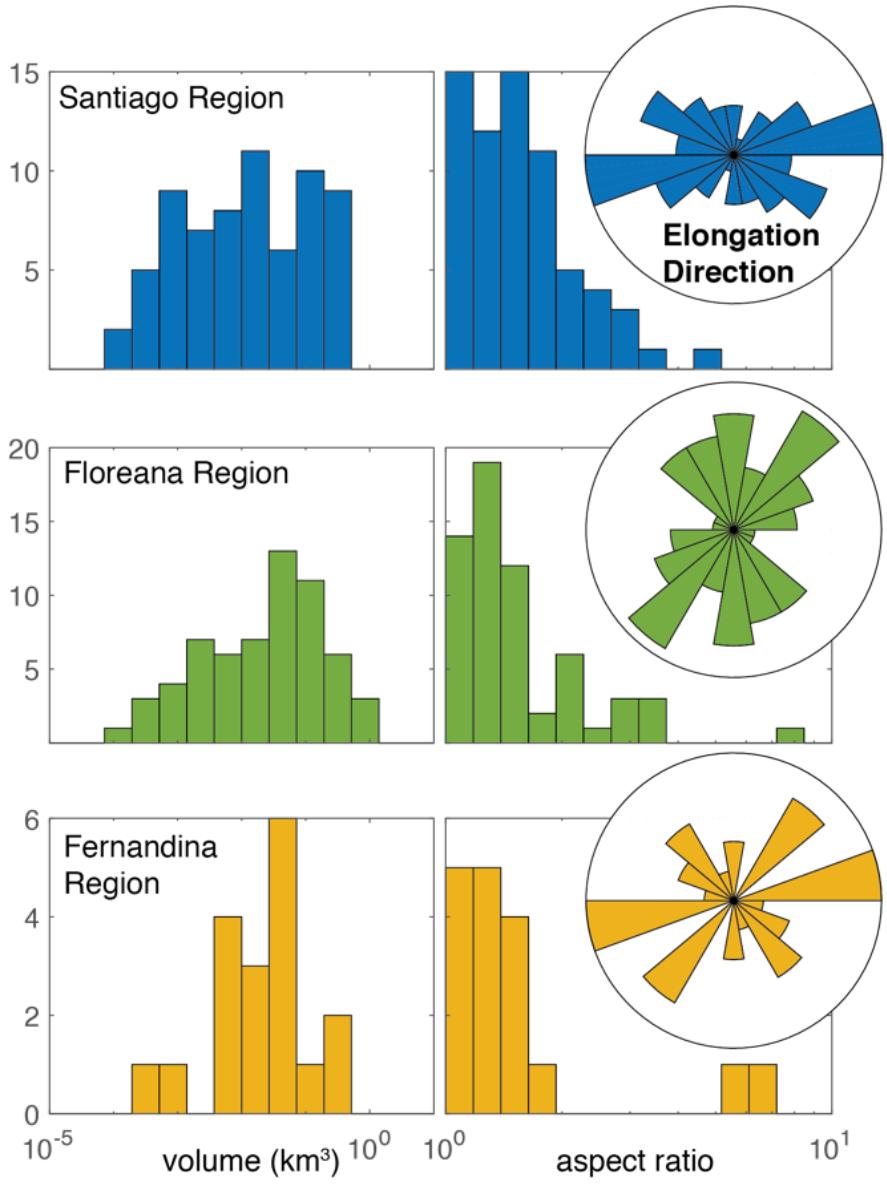


Figure S1. Spatial statistics of mapped seamounts size and shape summarized by region.

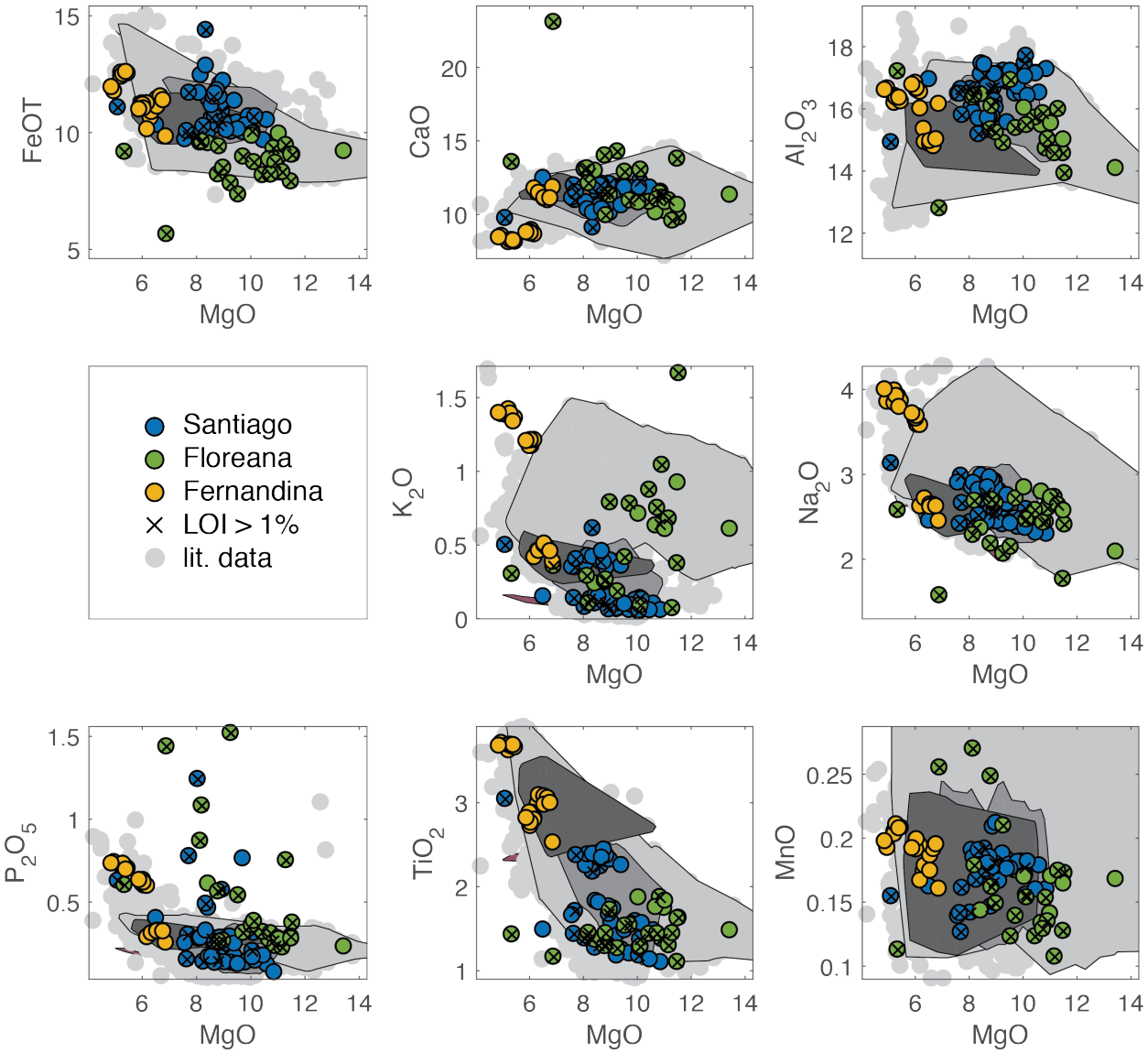
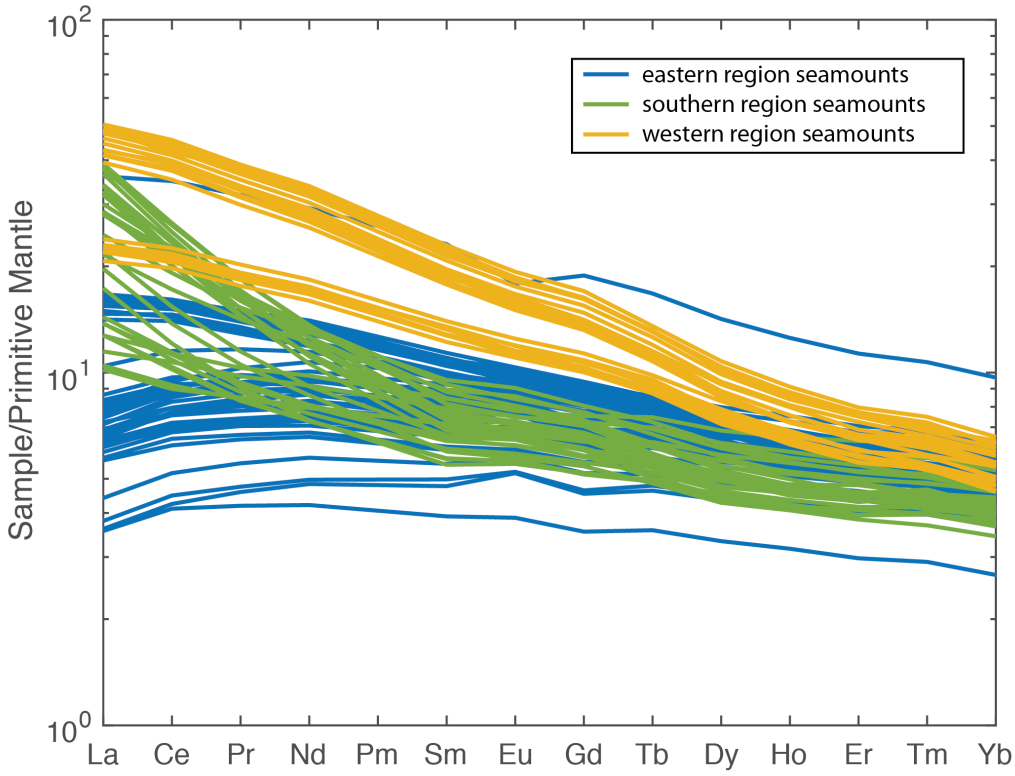


Figure S2. Major element variations for seamount samples compared to previously collected data. Seamount samples are shown as colored circles. Samples with black X's had LOI >1%. Grey circles show compiled literature data (Regional: White et al., 1993; Harpp and White, 2001; Saal et al., 2007; Santiago: Gibson et al., 2012; Santa Cruz: Wilson, 2013; Floreana: Harpp et al., 2014b; Terrace lavas: Geist et al., 2008; Peterson et al., 2017; Anderson et al., 2018). Variably shaded grey fields have been drawn around literature data for the three islands nearest to the seamounts sampled (light: Floreana, medium: Santiago, dark: Fernandina).



Supplementary Figure 3. Rare Earth Element diagram showing variability between seamounts. Solid colored lines show data from this study.

Table S1. Names and location descriptions of samples and sample type.

Table S2. Seamount spatial statistics.

Table S3. XRF derived major and trace element data. Repeat analyses in Table S3 have been averaged. Elements reported as oxides are weight % by mass, all other elements are ppm by mass.

Table S4. Reproducibility of XRF derived major and trace element data. Elements highlighted in blue are used for interpretation in this study. Elements reported as oxides are weight % by mass, all other elements are ppm by mass.

Table S5. ICPMS derived trace element concentrations. Samples in italics are described initially in Schwartz et al. (2018b) but have been recalculated using the same standard values (see text for details). Sample NA-064-086 initially described in Anderson et al. (2018). All elements are reported as ppm by mass. Type indicated by an "x" is the mean of three

individual analyses, type indicated by "d" is an averaged duplicate, each consisting of three analyses.

Table S6. Reproducibility of ICPMS derived trace element data for repeat analyses. Run indicated by an "x" is the mean of three individual analyses.

Table S7. 1SD for ICPMS derived trace element concentrations calculated as 1SD between three individual 30 s analyses.

Table S8. TIMS derived radiogenic isotope compositions. Values in bold italics are from light leaching experiment (see text for details). Errors are reported as the in-run standard error (2SE).

Table S9. Helium isotope compositions. Errors are reported as the in run standard deviation (2SD). Isotopic ratios are reported as the measured ratio relative to the ratio of the atmosphere (R/R_A).

Table S10. Average partition coefficients for select minerals and basaltic melts. Values are calculated from all results for each mineral-melt pair on the GERM database.