

Figure F1. Detailed bathymetry of Brothers volcano and surrounding area showing the location of sites drilled during Expedition 376. Contour interval = 200 m. Modified from Embley et al., 2012.

Figure F2. RCB coring bit used during Expedition 376. Bit has inserted perforated brass holder containing fractured quartz crystals designed to trap borehole fluids while implementing coring. (Credit: Tobias W. Höfig and IODP)

Figure F3. Lithostratigraphic summary, Holes U1529A and U1529B.

Figure F4. Representative macroscopic samples, Holes U1529A and U1529B. A. Volcaniclastic xenocryst included in dacite lava. B, C. Dacite with fractures accentuated by white halite. D. Lapilli-sized fragments of dacite lava.

Figure F5. Representative thin section, Hole U1529B. A. Plane-polarized light (PPL). B. Cross-polarized light (XPL). Note both the elongated orientation of the vesicles that indicate flow texture and the abundant glomerocrysts in this rock.

Figure F6. Representative microscopic images, Hole U1529B. A–C. Glomerocryst of plagioclase (Plag), clinopyroxene (Cpx), Fe-Ti oxides, and aphyric glass. MI = melt inclusion, Mss = monosulfide solid solution, Mt = magnetite. A. Transmitted, PPL. B. Transmitted, XPL. C. Reflected, PPL. Note the melt and sulfide inclusions hosted in plagioclase. D–F. Orthopyroxene–Fe-Ti oxide symplectite entrained in dacite lava. V = vesicle, Ol = olivine, Opx = orthopyroxene. D. Transmitted, PPL. E. Transmitted, XPL. F. Reflected, PPL.

Figure F7. Total alkali ($\text{Na}_2\text{O} + \text{K}_2\text{O}$) vs. silica (SiO_2). Data are reported for unaltered dacites from Hole U1527A (Igneous Unit 1) and unaltered to slightly altered dacitic clasts and lapilli from Holes U1529A and U1529B. Major element oxide concentrations reported in Table T3 were recalculated to 100% on a volatile-free basis. Additional data include (1) dacitic to rhyolitic glasses and whole rock from Brothers volcano reported in previous studies (Haase et al., 2006; Wright and Gamble, 1999; Timm et al., 2012) and (2) subaerial lava recovered along the Kermadec arc (25° – 37°S) (data compiled from the GEO-ROC geochemical database, <http://georoc.mpch-mainz.gwdg.de/georoc>; downloaded on 5 June 2018) are also reported for comparison.

Figure F8. Downhole variations of total sulfur (TS) and TOC of dacitic clasts and lapilli, Holes U1529A and U1529B.