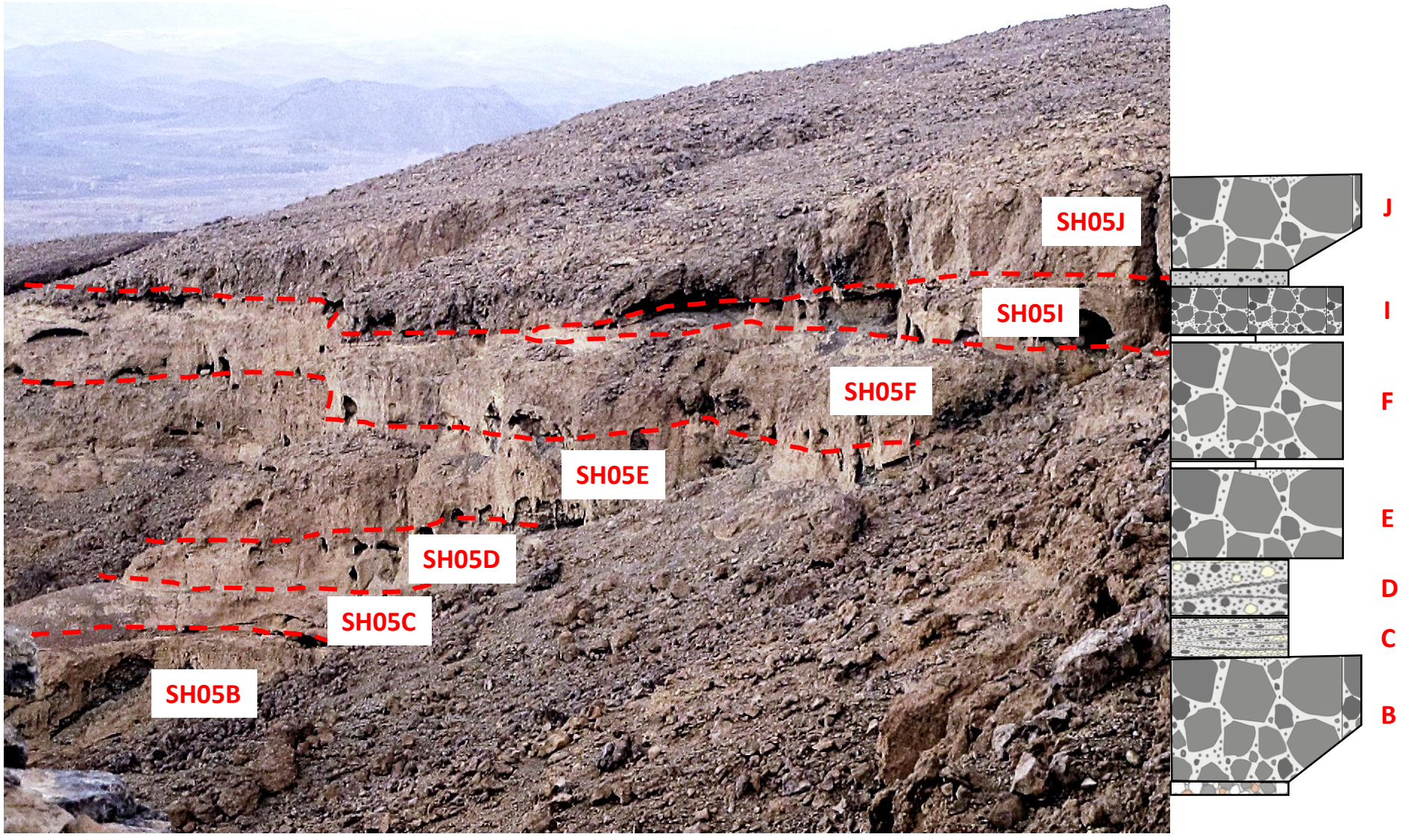
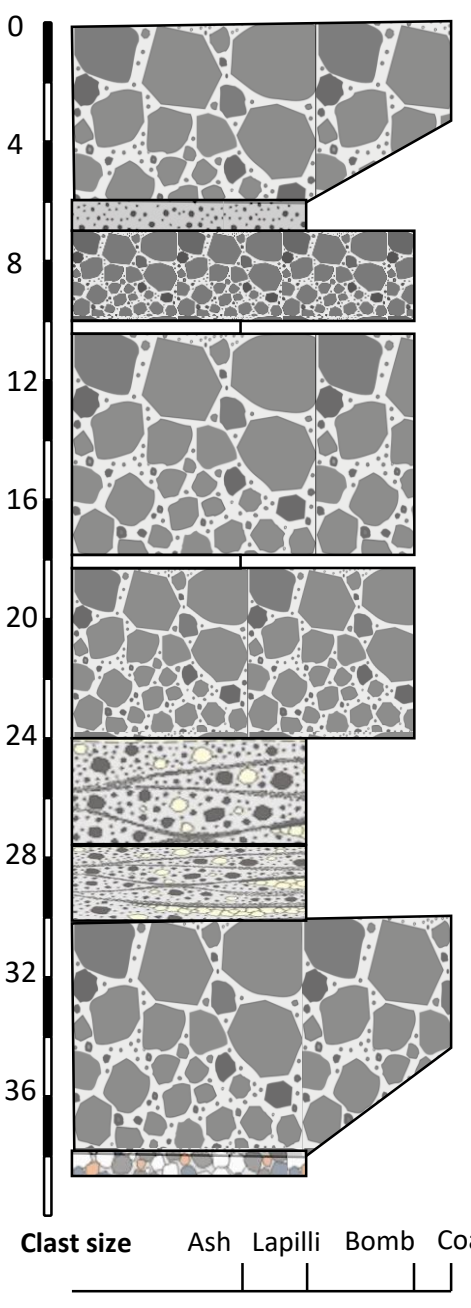
Brenna et al. (2019) Intra-eruptive trachyte-phonolite transition: natural evidences and experimental constraints on the role of crystal mushes

Electronic Appendix A – Al Shaatha volcanic log and unit descriptions





Massive very coarse pyroclastic breccia, coarse-ash matrix (30-40%) supporting lapilli to coarse bombs (up to 1 m diameter, most commonly ~20 cm), common bread-crusted pumice bombs. Coarser and more bombs in the upper half (70% bombs). Welding common in basal half. Basal 0.5 m dominated by coarse-fine ash. Sharp basal contact.

Sequence of 4-5 pinching and swelling 10-30 cm-thick ash-dominated lapilli tuff beds. Weak cross bedding, sharp contacts, containing <20% pumice and dense lithic clasts up to 5 cm. (partly welded in places)

Massive pyroclastic breccia, coarse-ash matrix supporting lapilli to bombs (up to 30 cm diameter, most commonly <20 cm). Welded in places.

Pinching and swelling 10-30 cm-thick ash-dominated lapilli tuff. Weak cross bedding or horizontal bedding

Massive pyroclastic breccia, coarse-ash matrix supporting lapilli to bombs (up to 50 cm diameter, most commonly <20 cm). Welded in places. Thickness varies between 4-8 m.

Med-coarse ash-tuff, pinching and swelling, up to 20 cm-thick

Massive pyroclastic breccia, coarse-ash matrix (40%) supporting lapilli to bombs (up to 50 cm diameter, most commonly <20 cm). Welded in places. Thickness varies between 3-6 m.

Pyroclastic breccia, ash matrix (60%) supporting lapilli to fine bombs (up to 20 cm diameter, most commonly <20 cm). Show weak cross-bedding or planar bedding in places.

Pyroclastic breccia, ash matrix (70%) supporting lapilli to fine bombs (up to 20 cm diameter, most commonly <20 cm). Parallel bedded or weak cross-bedding.

Massive very coarse pyroclastic breccia, coarse-ash matrix supporting lapilli to coarse bombs (up to 1 m diameter, most commonly ~20 cm. Dense grey crystal rich pumice. Greater ash matrix component in lower half (up to 50%). Thickness varies between 6-8 m.

Lapilli, clast supported, parallel-bedded, fine-medium lapilli, 60% grey/reddish oxidsed basalt (lithic from below), 40% greyish brown trachyte