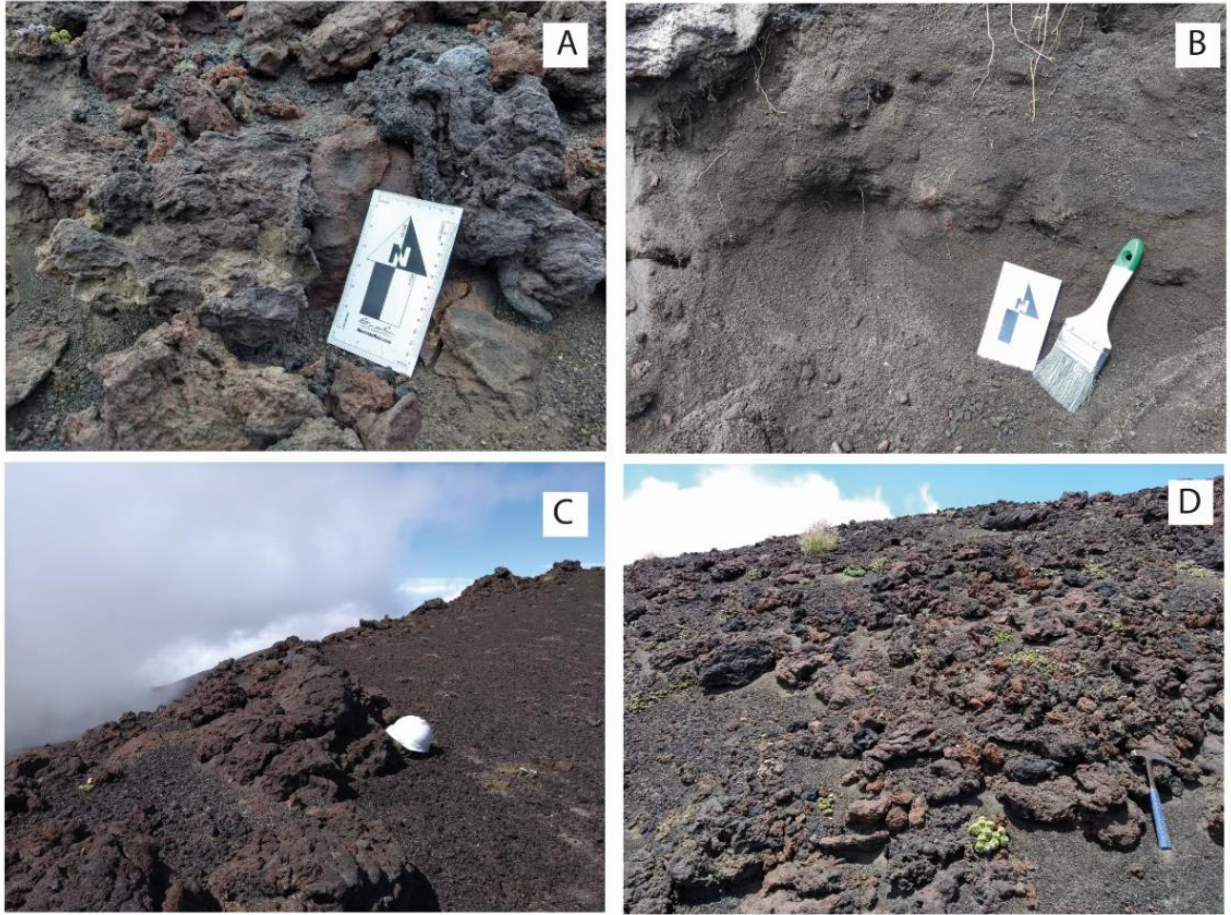
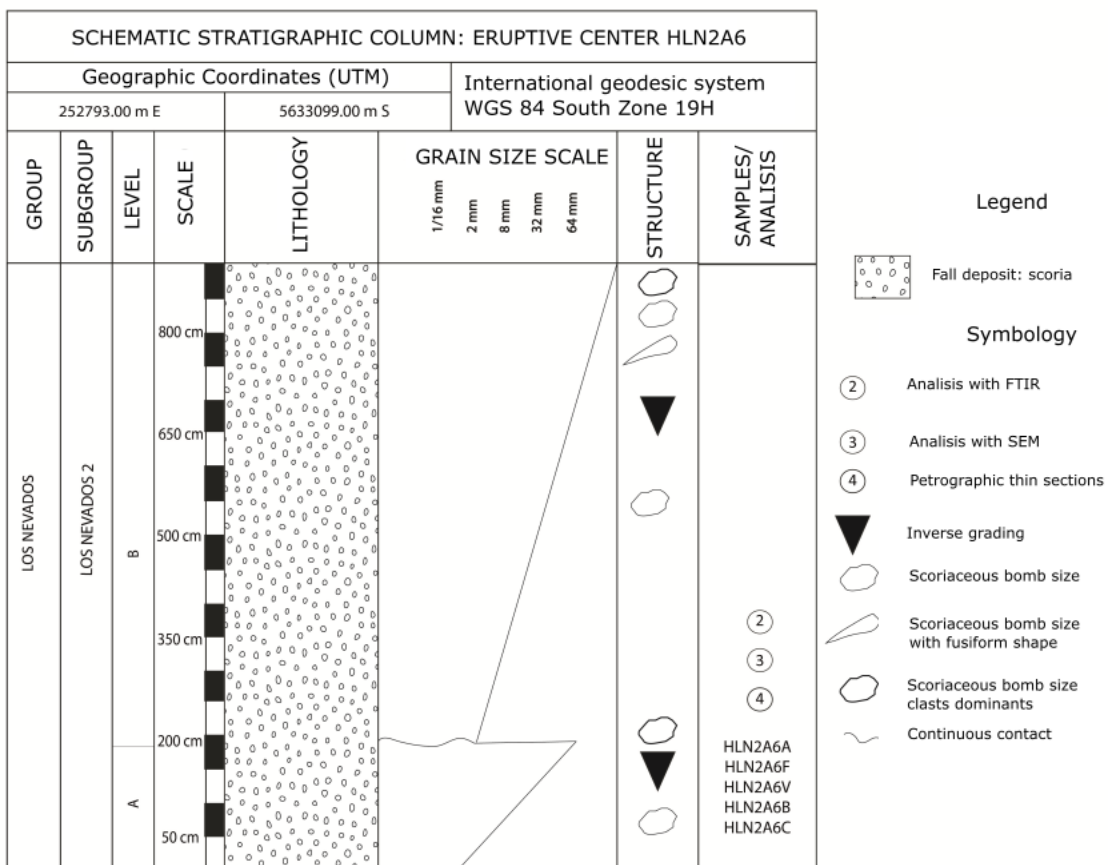


**Figure S1: Field photography of sampling sites and schematic stratigraphic columns**



**Figure S1a. Photo archives from volcanic vent HLN2A6. (A)**Scoriaceous vesicular bombs. **(B)** Soil among excavated spatter scoria deposit. **(C)** Spatter deposit with vesicular scoria bombs. **(D)** Vesicular and non-vesicular scoriaceous bomb fragments (fusiform and compact).

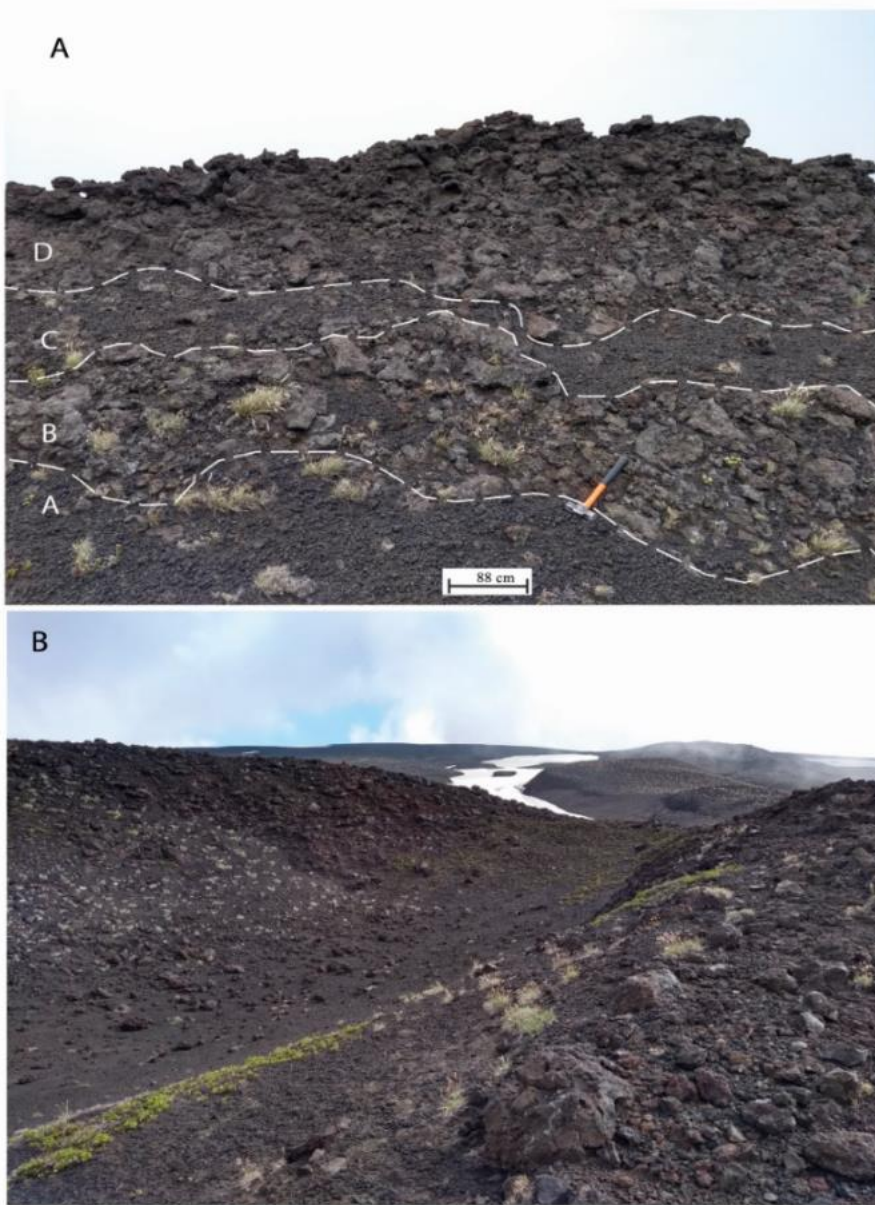


**Figure S1b. Schematic stratigraphic column from volcanic vent HLN2A6.**

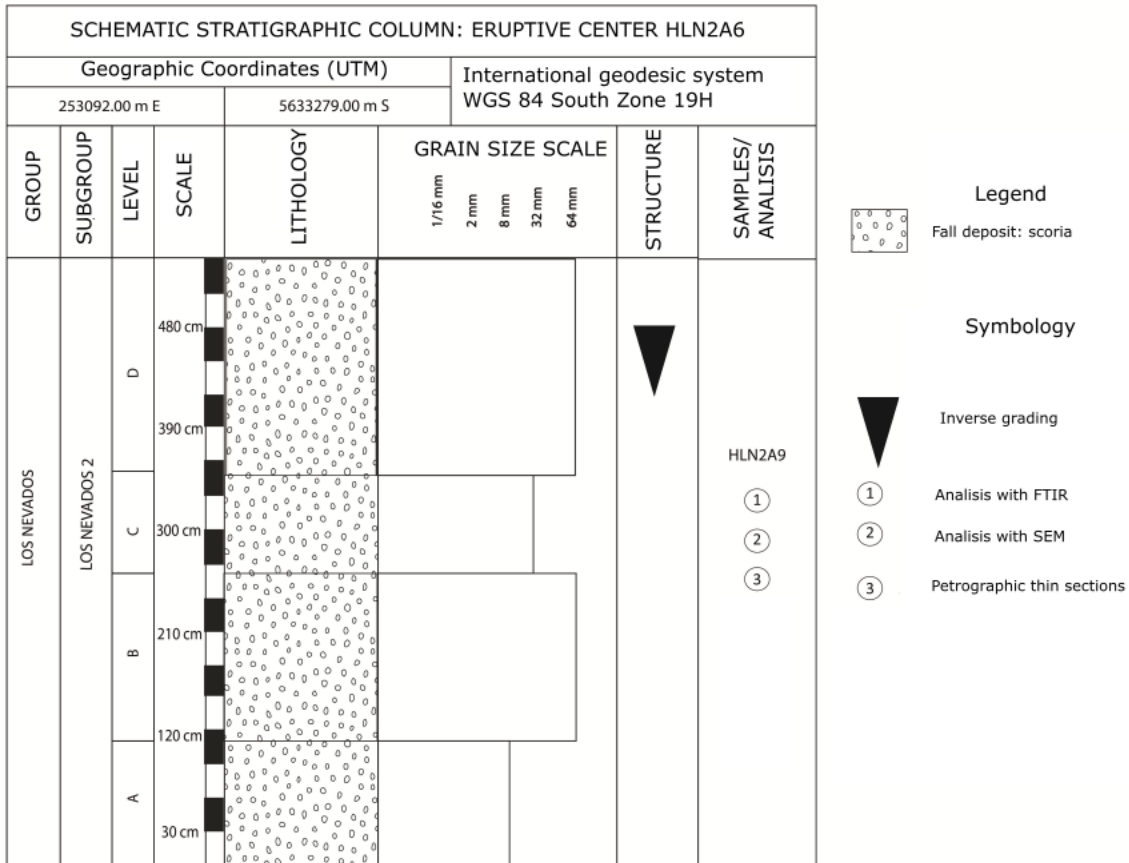


**Figure S1c. Photo archives from volcanic vent HLN2A7.** (A) Spatter deposit with vesicular scoria bombs. Mixed with weakly deposited soil. (B) Massive cristalline levé at the top of Spatter deposit.





**Figure S1d. Photo archives from volcanic vent HLN2A9.** (A) Scoria lapilli deposits. Unconsolidated at the base, but fragments are melted together at the top (spatter levé). Represent the North side of the inner flanks (B) Inside crater wall of volcanic vent HLN2A9. North (right side picture) and South (left side picture) inner flanks.



**Figure S1e. Schematic stratigraphic column from volcanic vent HLN2A9.**