

Embayed intermediate volcanoes on Venus: constraints on the evolution of the volcanic plains.

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Volcanoes on Venus are divided into three classes based on diameter (e.g. Crumpler et al., 1997): 1) large volcanoes (≥ 100 km); intermediate volcanoes (≥ 20 km and < 100 km); and 3) small volcanoes (< 20 km). Some authors (Guest and Stofan, 1999; Crumpler et al., 1997) propose that some intermediate volcanoes could be indeed large volcanoes with embayed flow aprons.

We analyze the global population of embayed intermediate-size volcanoes and compare their summits with edifices classified as large volcanoes. We define an intermediate-size volcano as embayed when: 1) we observe flows from another source that clearly overlap the volcano slopes, and 2) we observe intermediate-size volcanoes with their summits presenting scarps related to flank-failure processes but with the products of the modification (i.e. collapse deposits) embayed. As result of the survey more than 100 embayed intermediate-size volcanoes have been catalogued and integrated into a Geographic Information System. Many if not most of these volcanoes have summit characteristics similar to other large volcanoes and therefore could indeed be large volcanoes with their flow aprons embayed.

Large volcanoes on Venus (~ 165 catalogued features) have been traditionally considered to represent a late type of activity on the evolution of the volcanic plains (e.g. Price and Suppe, 1994). If a representative fraction of the observed intermediate-size embayed volcanoes are indeed embayed large volcanoes the stratigraphic significance of large volcanoes on the evolution of the plains should be reevaluated.

References:

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