



## **Morphometric reconstruction of the San Francisco Mountain, Arizona by high-resolution Digital Elevation Model**

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The San Francisco Mountain (Arizona, USA) is the largest edifice within the Pliocene-Pleistocene San Francisco Volcanic Field. It is a stratovolcano that erupted between 2 Ma to 0.4 Ma, although sporadic volcanic activity has been maintained up to historical times (Sunset Crater). In this work, the geomorphology of this volcano is investigated in terms of digital terrain analysis. Three different resolution DEMs (SRTM 3, SRTM 1, USGS DEM 10 m) of the study area are compared. Based on the DEM and the derived maps, the main morphological elements of the area are outlined: ridges and valleys, lava flows, lava domes, scoria cones and the present caldera that has been enlarged due to glacial processes. By identifying some remnant surfaces of the volcano (i.e. flatirons) the likely location and height of the original volcanic cone is determined. The original volcanic edifice could have been ca. 4,300 m high, and the cone (that was ca. 110 km<sup>3</sup>) has been degraded by ca. 6 km<sup>3</sup> in volume. Intense glacial erosion and possible geomorphologic effects of one or several giant landslides have also been studied.