

Volcanic and pseudokarstic sites of Jedu Island (Korea): Potential features for inclusion in a nomination for the World Heritage List

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Abstract

Scientific research has been conducted on various features of Jeju Island, looking toward a nomination as a World Heritage Site. The Island contains a variety of volcanic landforms and more than 100 lava tube caves of geological and speleological significance. It essentially consists of one major shield volcano, Hallasan (Mt. Halla), with satellite cones around its flanks. Especially notable features include maar (Sangumbun), parasitic cones (Geomunoreum and Seongsan-Ilchubong), giant lava tubes (Bengdwi Cave, Manjang Cave, Gimnyeonsa Cave, Dangeheomul Cave and Susan Cave), an exposure of columnar jointing at Daepodong, volcanic dome (Mt. Sanbang) and the Suwolbong tuff deposits.

Especially notable are the lava tube caves, which show a complete flow system and display perfectly preserved internal structures despite their old age of 0.2-0.3 Ma BP. Dangeheoinul Cave contains calcareous speleothems of superlative beauty.

Four aspects are identified which demonstrate the congruence of specific features to criteria for World Heritage status.

- 1) The volcanic exposures of these features provide an accessible sequence of volcanogenic rocks formed in three different eruptive periods between 1 million and a few thousands years BP.

The volcanic processes that made Jeju Island were quite different from those for adjacent volcanic terrain.

- 2) The listed features include a remarkable range of internationally important volcanic landforms that contain and provide significant information on the history of the Earth.

The environmental conditions of the eruptions have created diverse volcanic landforms.

- 3) The largest and most spectacular lava tube caves are located in the western and north eastern parts. With a length of 7.416 km, Manjang Cave is one of the longest and most voluminous.

Other, shorter caves (i.e., 4.481 km Bengdwi Cave) are more complex in form.

- 4) Of great significance are the abundant carbonate speleothems seen in some low elevation lava tube caves. This phenomenon is very uncommon, and the spectacular caves in which it occurs on Jeju Island are generally acknowledged to be world's leading examples. Dangeheomul Cave can be considered to be the world's most beautiful lava tube cave containing calcareous speleothems.