

## Similarities in relief structure and landforms between Yakushima Island in Japan and Dartmoor in southwest England

SHIMAZU, Hiroshi<sup>1\*</sup>

<sup>1</sup>Rissho University

Relief structure and landforms was examined in two granitic mountains, Yakushima Island in south Japan and Dartmoor in southwest England. This study aims to compare these geomorphological characteristics between two mountains which have different geomorphological and geological settings.

Yakushima Island mainly consists of the Yakushima Granite dated at about 16Ma, which intruded into the Kumage formations of the Palaeogene. The highest peak is 1936 meters a.s.l. The area of the island is about 500 sq. kilometers. Dartmoor is underlain by a major batholith dated at 280 Ma which intruded into the sedimentary rocks of the Devonian and the Carboniferous. The area of Dartmoor is about 1000 sq. kilometers. The highest peak is 621meters a.s.l. Yakushima Island has been uplifted since the middle Pleistocene with high rate, whereas Dartmoor is in the tectonically stable environment.

In this study digital terrain model was used for analysis of the relief structure. The standard deviation of altitude in a 1 sq. kilometer unit is used for expressing relief. Each unit square includes 25 lattice points of a grid system with intervals of 250 meters. It is obtained from 1:50,000 scale topographic maps in Yakushima Island area and from a 50m-DTM made by Ordnance Survey Britain (OS) in Dartmoor area.

Although mean altitude and mean relief in Yakushima Island are higher than that in Dartmoor, shape of cross sections and pattern of altitudinal change in relief within each area is quite similar. The both mountains have a circle-like planform and a domelike profile. Relief increases with altitude in lower part of the both mountains. In the higher altitude area which is located in the central part of the two mountains relief decreases with altitude. This shows that relief structure of the both areas is characterized by the higher relief rims and the lower relief central parts. The cross sections of the dissected rivers show that the valleys with steep side slopes are found near the rims of the mountains and shallow valleys with gentle side slopes are found in the central part of the mountains. Although altitude, relief and inclination of slope are quite different between the two mountains, several similarities are found in relief structure and landforms, which could characterize the granitic mountains.

Keywords: granitic mountains, relief structure, landform, Yakushima Island, Dartmoor