

Oki Islands Geopark: Geography and Formation

Location

The Oki Islands archipelago lies approximately 60 kilometers north of the Shimane Peninsula in the Sea of Japan. Once a part of the Asian continent, the islands were then repeatedly connected to and isolated from the Japanese mainland by changes in the sea level. This has resulted in a unique ecology that—together with the complex geological process that created the islands—was recognized in 2015, when the islands were designated a UNESCO Global Geopark.

Formation

The formation of the Oki Islands can be divided into four stages: the continental age, during which the Oki islands were part of a massive supercontinent; the formation of the Sea of Japan, which occurred as the Japanese landmass was slowly pulled away by tectonic plate movement; the volcanic island stage, during which the islands of Oki were slowly built up by volcanic activity; and the final stage, in which rising sea levels separated the Oki Islands from the rest of Japan.

For tens of millions of years, the Oki Islands and Japanese mainland were part of the Eurasian supercontinent. This continental age ended around 26 million years ago, when chunks of land that would eventually become Japan and the Oki Islands were slowly pulled away by tectonic movement. As the process continued, the land was gradually stretched, which caused parts of it to sink. As it sank, several lakes formed in the depressions. Over a period of 16 million years, the gap continued to widen, and sea water flowed into it and created the Sea of Japan.

Even after the formation of the sea was complete, the volcanic activity continued. Around 6 million years ago, two massive stratovolcanoes began erupting, repeatedly piling lava on top of the old continental rock (gneiss) and creating the islands of Dōzen and Dōgo. The Dōzen caldera formed about 5 million years ago, when the volcano's summit collapsed inward and filled with seawater.

The last of the islands' volcanic activity ended around 400,000 years ago. Since then, climate changes and fluctuating sea levels have repeatedly exposed and submerged the land bridge between the Oki Islands and Shimane Peninsula, intermittently connecting the islands to the mainland.