

Study on vegetation change and validity of eruption age based on pollen analysis of the strata containing volcanic ash

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I Research Overview

There are many studies that lead to the reconstruction of the paleoenvironment of the Izu Peninsula. We focused on volcanic ash, which is abundant in the stratum.

The strata of Izu Peninsula are composed of strata such as loam and various volcanic ash layers.

Since the age of the volcanic ash layer is already known, we can know the age of the adjacent loam layer. Since the loam layer contains pollen fossils of plants that were inhabited at that time, the proportion of pollen by type reflects the vegetation at that time. Therefore, we can estimate the vegetation at that time by pollen survey. By combining strata age and vegetation data, we are able to estimate vegetation transition and climate change. In addition, the validity of the eruption age of volcanoes can be confirmed.

II Research method

We sampled the loam according to the depth from one stratum, and estimate the age from a neighboring volcanic ash layer. Next, we extracted pollens from each sample using pollen extraction method. And we identified the species of the extracted pollen, counted it by type, calculated the ratio, and use it as the data of the vegetation at that time. Finally, based on these data, we tried to consider the appropriateness of the vegetation transition, climate change, and eruption age at that time.

III result

The mainly observed pollens were Sudajii, Pussy Willow and Ginkgo.

Sudajii is a plant distributed south of Niigata-Fukushima, which has disappeared since the eruption 125 thousand years ago, but has been revived since the eruption 103 thousand years ago.

Pussy willow is distributed in Hokkaido-Kyushu, and its habitat was confirmed in all plots.

Ginkgo inhabits in the range of annual average temperature 0-20 °C, and did not inhabit at first, but it appeared from 124 thousand years and increased.

VI consideration

Based on the we ratio fluctuation, we considered that the temperature dropped as cold as the Tohoku northern part or as the southern part of Hokkaido since the eruption of 125 thousand years ago, and rose around the 103 thousand years ago. This consideration was also consistent with the temperature variation data derived from the Antarctic ice sheet analysis.

We are currently analyzing the entire samples to investigate temperature changes in detail. At that time, in order to reduce individual differences in judgment in pollen, we aligned the judgment criteria firmly.

Keywords: Volcanic Ash, Pollen

