

Analysis and dating of the pollen of the ice cores of the Grigoriev ice cap in Tien Shan, Kirghiz

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Various materials helping the paleoenvironment reconstruction are included in an ice core done digging of by a pole level and the glacier of the high mountain, and there is pollen in one of the inside. The thing that is effective for decision of the varve in the ice core done digging by the mountains glacier located in the place that is comparatively near to vegetation in particular becomes clear. Therefore, in this study, I used an optical microscope in the mountains glacier of Kyrgyzstan / Tian Shan and was aimed at clarifying a kind of the pollen of the snow and density and the change, identifying varve from a density change of the pollen of the whole ice core more.

In this study, I used each 1.05m, 1.15m, the sample of the pit (a pit) of 2.16m which dug it in 2007 in 2006 in 2005 and upper part 18m of an ice core done digging in the cultivation area of the Kirghiz Grigoriev ice cap in 2007 and analyzed it. I observed these samples with a microscope and counted pollen to be included in a sample according to a kind and was decided with the analysis in the generation of the ice core.

In total five kinds of pollen was included in a pit and an ice core, and they were Artemisia genus, Pinaceae, Chenopodiaceae, Ephedra, Betula. Artemisia genus pollen (0.76grains/ml) was the highest in the average pollen density in an ice core of each pollen, and it was Pinaceae pollen (0.35grains/ml), Chenopodiaceae pollen (0.11 grains/ml), Ephedra pollen (0.05grains/ml), Betula pollen (0.01grains/ml) sequentially.

As a result of having performed the pollen analysis of the pit sample, I understood that the pollen of Artemisia genus and Chenopodiaceae made plural peaks whereas the Pinaceae pollen formed one peak in the snow layer of one year (varve). Therefore, it is thought that Pinaceae pollen is effective for the generation decision of the ice core of this glacier.

As a result of having performed a pollen analysis of upper part 18m of the ice core, there were 49 peaks of the Pinaceae pollen. When I supposed this Pinaceae pollen peak to be a varve border and compared it with a tritium peak of 1963, I understood what I counted a lot for six years in the generation of the Pinaceae pollen. This shows that there is the case that a peak is formed more than 2 in 1 in the Pinaceae pollen. Therefore the generation with the tritium layer agreed when I decided again varve from evaluation of the size of the Pinaceae pollen peak and the comparison with the peak of the pollen of Artemisia genus and Chenopodiaceae. Therefore, I understood that it was possible for decision in the generation that was correct by putting pollen of the Artemisia genus and the Chenopodiaceae together in basics by Pinaceae pollen in this ice core.

From the above-mentioned result, I understood that the decision method might apply to it in the ice core of the Grigoriev ice cap in the generation of the ice core which I used pollen for, I might clarify the mass income and expenditure and neighboring environmental climate change by analyzing the varve.