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Pollen analytical studies of lake sediments, Ichino-megata, Oga Peninsua. -Late Vegetation and climate changes around th

Katsuya Gotanda[1*], Yoshimune Morita[2], Junko Kitagawa[3], Miroslaw Makohonienko[4], kazuyoshi yamada[5], YOSHITSUGU SHINOZUKA[5], Mitsuru Okuno[7], Hitoshi Yonenobu[5], Yoshinori Yasuda[3]

[1]Chiba University of Commerce, [2]Okayama Univerisity of Science, [3]IRCJS, [4]Adam Mickiewicz University, [5]Naruto University of Education, [6]Hokkaido University, [7]Fukuoka University

Oga Peninsula, Akita Prefecture located in Northeast Japan is jutting out into the Sea of Japan. There are three maars, Ichi-no-megata, Ni-no-megata, San-no-megata. Lake Ichi-no-megata, the largest maar, is 45m maximum water depth and has flat bottom with a steep slope. We obtained lake sediments from the Lake Ichi-no-megata and analyzed fossil pollen for reconstructing the vegetation and climate changes around the Tohoku region affected by the Sea of Japan.

We obtained thee boring cores from the center of Lake Ichi-no-megata from November to December, 2006. The boring core is reached 37.2m in depth. The lake sediments is well preserved lamination (varve), and has volcanic products from San-no-megata maar between 23.7m and 32.3m in depth. There are five identified tephra in this core, B-Tm (1.99m), To-a (2.01m), K-Ah (6.64m), As-K (12.18m) and AT (36.55m). 78 plant remain samples, mainly leaf, are corrected for dating the ^{14}C age. From the 14C ages and tephra, it is considered that the sediments core is recorded the environmental changes since 30000 years ago.

283 sub-samples for pollen analysis are corrected by 1cm thickness in random order excluded sand layer. We classified 10 local pollen zones (I ? X) by the frequency of arboreal pollen appearances.

The lowest pollen zones (I-IV : 12.50m-8.71m) is characterized by abundance of conifer tree pollen, such as *Picea*, *Abies* and *Tsuga*, with *Betula*. These pollen zones are corresponded to the Last Glacial Maximum, thus this region covered with subarctic conifer forest reflected the cold climate. The dominated pollen taxa are changed dramatically in pollen zones V-VI (12.50m-8.71m). These pollen zones are characterized by decreasing these conifer pollen and increasing deciduous broadleaved tree pollen, *Betula* and *Quercus* sub. *Lepidobalanus*. The vegetation was changed from subarctic conifer forest to temperate deciduous forest by warm climate. *Fagus* is dominated in pollen zones VII-VIII (8.71m-1.62m). The appearance of *Fagus* is reached to 45%, with *Carpinus* and *Quercus* sub. *Lepidobalanus*. *Fagus* forest around the Tohoku region was established at this period. The upper pollen zones (IX-X : 1.62m-top) are characterized by suddenly increase of *Pinus* pollen and decrease of *Fagus* and *Quercus* sub. *Lepidobalanus*. The abundant appearance of *Pinus* indicate the human impact for vegetation around this region from 500 years ago.

The reconstructed vegetation changes from pollen analysis using Ichi-no-megata sediments are well corresponded with other pollen analytical studies in Japan. In addition, the climate changes reconstructed from vegetation changes are corresponded with Global climate changes.

Fagus forest around this region established after the forest mainly composed of *Quercus* sub. *Lepidobalanus*. This time lag is occurred by strength of Tsushima warm current inflow into the Sea of Japan. The coast of the Sea of Japan in the Tohoku region, which is covered with *Fagus* forest in the present, has heavy snow caused by northwesterly winter wind and moisture from the sea. It is considered that the inflow of the Tsushima warm current into the Sea of Japan strengthened since 10,000 years ago.

Keywords: Ichi-no-megata, lake sediments, Fagus forest