

Characteristics of particulate organic matters in ice cores drilled on the mountain glaciers

Yoriko Ishida[1]; Nozomu Takeuchi[2]

[1] Earth science, Chiba Univ.; [2] Chiba Univ.

Ice cores drilled in polar regions and high mountains contain various information of past climate and environment. Insoluble particles in an ice core are commonly analyzed as a proxy of variation in mineral dusts in the atmosphere. However, recent studies have revealed that insoluble particles on glacial surface are derived not only from windblown mineral dust, but also from pollens of vegetation surrounding the glacier and microorganisms growing on the glacial surface. We microscopically analyzed insoluble particles in some ice cores drilled on the Asian mountain glaciers. We distinguished different morphological particles in ice cores and quantified them separately. Results showed that the insoluble particles in ice cores consisted mainly of mineral particles, particulate organic matters, pollen, and microorganisms. Mineral particles were the most dominant: approximately 70 percent of total particles, and particulate organic matters were the second dominant: approximately 30 percent of the total. The annual variation in the particles in an ice core differed between mineral and particulate organic matters. The mineral particles are likely to be derived from deserts and moraines surrounding the glacier, while the particulate organic matters may be derived from microorganisms growing on the glacial surface.