

## The alteration in the pollen concentration peak in a melting snow cover

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### Abstract

We have investigated the changes in *Cryptomeria japonica* pollen concentrations in a melting snow cover at different time points in order to understand the alterations in their concentration peaks. Recent studies have revealed that the pollen concentration peaks in mountain snow covers in temperate regions are useful for distinguishing between annual and several seasonal layers. Moreover, a dating method was applicable to a melting ice core. However, the manner in which pollen grains and their concentration peak values get influenced by melt water needs to be clarified. The present study intends to clarify this issue. Snow samples were collected from the Norikura Highland in central Japan during two snow-melting seasons: (1) from March to April in 2005 and (2) from March to May in 2006. The analysis of the *C. japonica* pollens was carried out because the pollen release reaches a high level from March to April in Japan when the winter seasonal snow still remains at the site; further, the pollen grains are commonly found within a typical size range. The results showed that the snow depth from the ground surface decreased because of snow melting during April and May, and the pollen concentration peak was consistently observed at the surface of the snow cover during the melting process. This indicated that the pollen concentration peak was not redistributed to the lower layers because of melting and the pollen grains present in the melted snow were concentrated at the surface. However, when the snow cover was about to disappear, the peak value decreased. This might account for the horizontal relocation of the pollen grains at the surface. Additionally, the peaks persisted at the surface even in the regions of the snow cover where water channels were formed. This indicated that the pollen peaks in the snow cover did not move toward the lower layers because of significant melting, although the peak values themselves may be changed due to the horizontal relocation of pollen grains.