

Dating of annual and seasonal layers in a snow pit by using pollen analysis on Belukha Glacier, Russian Altai Mountains

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This study examined a pollen dating method for the separation of seasonal layers. An ice core down to the bottom (171 m depth) was drilled in July 2003 from Belukha Glacier in Russia's Altai Mountains. Our preliminary study on a shallow ice core and a snow pit found ambiguous seasonal variations in oxygen and hydrogen isotope ratios. Thus, reliable dating of the core seemed to be difficult. However, pollen in the snow pit samples showed a distinct seasonal variation and could give an accurate determination of one year's snow accumulation. Moreover, Betulaceae, Pinaceae and Artemisia pollen species in the samples allowed us to determine four seasonal layers of the pit. However, the study was based on just one year of data. Therefore, we tested again the method for a 4.00 m pit including two year's snow/firn accumulation on the same site. As with the previous study, the results also suggested that the method should provide a reliable dating.