

Digital-image processing to analyze grain size variation in ice core from Gregoriev Ice Cap, Kyrgyz Tien Shan

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It is known that impurities in ice core (etc. dust from continental) prevent grain growth rate at high-latitude regions. On the other hand, the effect of impurities for grain growth is not understood for ice cores retrieved from mid-low latitude glaciers, despite of higher dust concentration. This study aims to reveal relation between dust and grain size in an ice core drilled at Gregoriev Ice Cap, Kyrgyz Tien Siam in 2007.

We made thin sections which are reduced to thickness of 0.4mm. Three different images were taken by changing angle of crossed polarizers (0 deg, 30 deg, 60 deg). Changing controlled contrast and RGB, we converted the images into binary. Grain boundaries are then able to be picked by digital image-processing. This process made efficient extracting boundary and obtain area of grain using binary images.

We will present detailed procedures and preliminary results of comparison with dust concentration along the ice core.

Keywords: ice core, grain size, Grigoriev ice cap