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**Abstract Title:**

*Environmental controls of the thaw depth and rate of thaw under climate fluctuations*

**is part of the Paper Session:**

**Past, Present, and Future of Frozen Ground Environments I**

scheduled on Wednesday, 3/25/09 at 8:00 AM.

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**Abstract:**

The study is undertaken to reveal the role of precipitation and environments in the active-layer dynamics and spatial distribution in northern Russia. Analyzed is active layer monitoring data collected within the framework of CALM program in Yamal Peninsula during 2007 and 2008 summer field trips. In 2008 measurements were done twice within 8 days. Thus the rate of thaw in late August to early September is calculated. Comparing active layer depths, air temperature and precipitation in 2007 and 2008 allowed to estimate the role of climatic parameters in thaw depth distribution within various environments represented at the research site. Monitoring results are grouped according to environmental factors forcing spatial and temporal variability of the active layer depths. Most important factors are soil texture, thickness of vegetation mat and organic matter in the soil.

It is revealed that average active layer for the study site is in the direct relation to thaw index: in the cooler 2008 average active-layer depth was 90 cm compared to 92 cm in 2007. At the same time, various environments show different response to summer temperature fluctuations depending on both summer and winter precipitation. Silty-clayey areas with thick vegetative mat show much deeper thaw depth in 2007 compared to 2008. But sandy environments with sparse vegetation show much higher thaw depths in 2008. These sandy environments are characterized by the highest rate of thaw by the end of the thaw period. Explanation lies in the difference of atmospheric precipitation and its annual regime.

**Keywords:**

Yamal-Russia, active layer, thaw depth, thaw rate, environments, summer temperature, atmospheric precipitation

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