Climate Changes and Possible Dynamics of Permafrost in Svalbard (Arctica)

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Trends of air temperature during the whole period of observations and for last ten years at station Barentsburg (Svalbard) are estimated. The temperature of a ground on different depths and the temperature freezing of thawed of a ground in the years of anomalous air temperature and thickness of a snow cover is designed.

On meteorological station Barentsburg the average positive temperature of air for the period since 2000 on 2009 has decreased on 0,4°C (fig 1). Thickness of a snow cover for last 10 years grows by 5,5 cm/year, thus last three years reached 2 m .

The results of the research show, that for the last 10 years changes of air temperature trend and it's components (mean positive and negative temperature) take place at station Barentsburg in Arctic. Under keeping of mean summer temperature of air and increase of solid precipitations in Svalbard, direction of glacial balance's trend changes – degradation of freezing decreases.

The results of calculations shows, that formation of talik is possible under real values of meteorological parameters at Svalbard. And our measurements of a seasonal - thawed layer by summer of 2010 have shown, that for the first time was formed talik in permofrost near station Barentsurg on Svalbard.

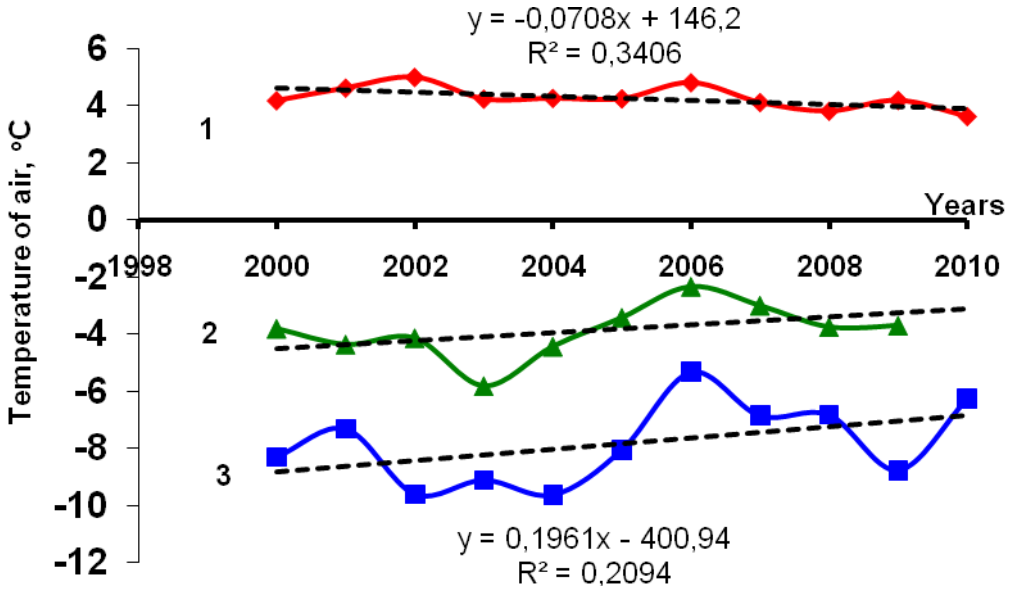

Fig 1. Temperature of air (Meteostation Barensburg (Svalbard) : 1- summer, 3- winter, 2 – annual

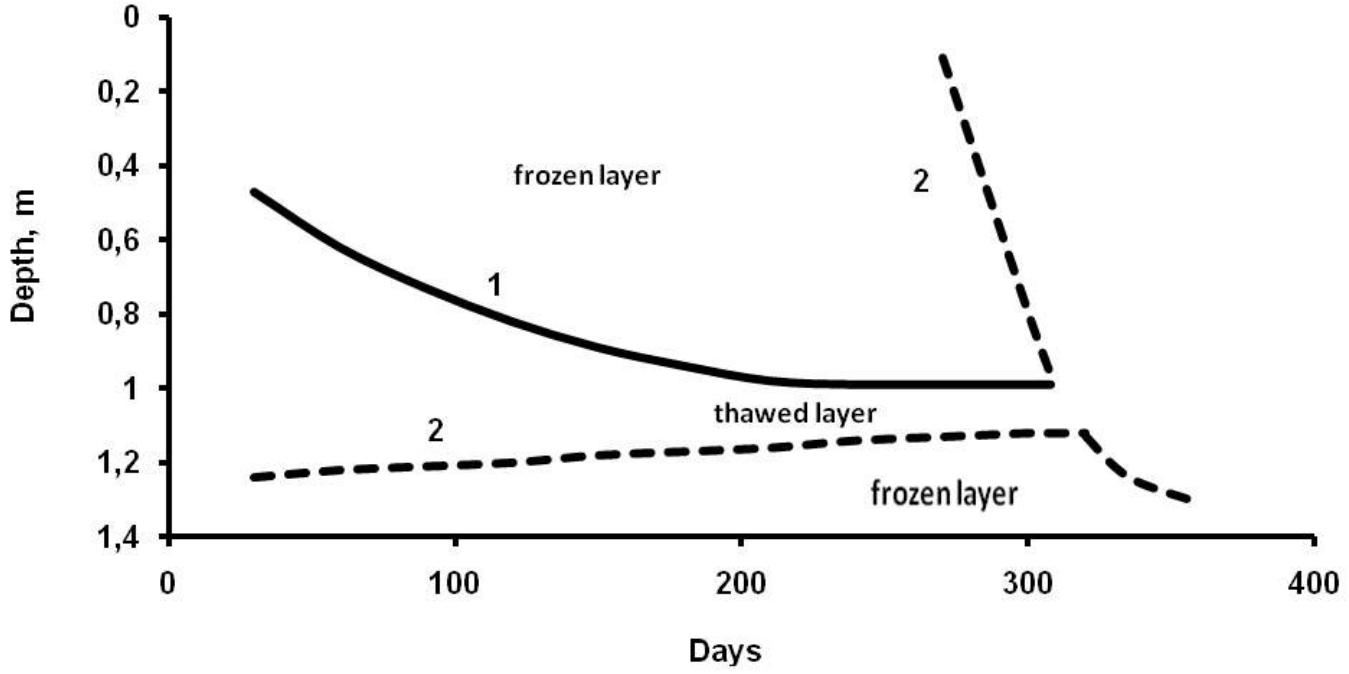

Fig.2. Dynamics of soil freezing front (1) and thawing front (2) in soil with maximum snow cover thickness 2 m (Barensburg, Svalbard 2009-2010)

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