

# Ninth International Conference on Permafrost

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The Ninth International Conference on Permafrost (NICOP) was held at the University of Alaska and attended by 685 individuals, of whom 158 were members of the Permafrost Young Researchers Network (PYRN). A total of 27 countries were represented, with the largest delegations from the United States (337), Canada (91), Russia (57), Germany (31), Switzerland (20), Norway (18) and China (18), and Japan (17). The Conference marked the 25<sup>th</sup> anniversaries of the formation of the International Permafrost Association (IPA) and the Fourth ICOP, both having occurred in Fairbanks in the summer of 1983. The Conference was also an important activity of the Fourth International Polar Year (IPY).

Several plenary reports and sessions dealt with the past, present and future

state of permafrost. Sessions dealing with modern permafrost dynamics reported that ground temperatures are being measured in approximately 400 existing and newly drilled boreholes in both hemispheres. Most of the boreholes observations show a substantial warming during the last 20 years (Fig. 1). The magnitude of warming varied with location but was typically from 0.5–2°C at the depth of zero seasonal temperature variations in the permafrost. Figure 1 presents characteristic regional trends in permafrost temperatures for the northern hemisphere, based principally on the long-term borehole observations.

The thermal responses of permafrost terrains to climate change occur at different timescales. For example, changes

in active layer thickness are responsive to seasonal events, whereas modification of thermal profiles below the depth of zero amplitude (depth of no discernable seasonal change in temperature) takes decades or centuries, and basal melting associated with progressive permafrost thinning requires millennial timescales. In the northern hemisphere, thawing of permafrost is currently observed within the southern limits of the permafrost zone. The consequences of thawing permafrost in the 21<sup>st</sup> century pose serious societal and environmental impacts, some of which have global consequences.

Two oral sessions and one poster session on “Contemporary Climate Change and Paleoclimatic Reconstructions in Permafrost Regions” were co-organized by PAGES (represented by J. Brigham-Grette) and the WCRP Climate and Cryosphere (CLIC) program (represented by H.-W. Hubberten).

A wide spectrum of topics dealing with the formation of permafrost over the last 2 Myr was presented by authors from Europe, America and Russia. Seven papers reported on studies of the formation of ice-complex deposits on the Siberian lowlands and the surroundings of El'gygytyn Lake in Chukotka. Others dealt with the formation and degradation of permafrost in Alaska, Canada and South America, and with the study of relicts of old permafrost in Europe.

A number of publications on permafrost are now available, including a two-volume proceeding consisting of 360 peer-reviewed papers, a companion CD, an abstract volume and 182 extended abstracts (see [www.ipa-permafrost.org/](http://www.ipa-permafrost.org/) to order). A DVD containing the optically scanned proceedings of all nine permafrost conferences and a revised permafrost map of Alaska were also prepared and distributed. Additionally, a booklet on the history of the ICOPs and the 25-year history and accomplishments of the IPA was published. The newly published ASCE book by Siemon Muller *Frozen in Time*, was also unveiled during the conference. Pre- and post-conference field trips to parts of Alaska and the Colorado Rockies were prepared by the Alaska Division of Geological and Geophysical Surveys ([www.dggs.dnr.state.ak.us/](http://www.dggs.dnr.state.ak.us/)).

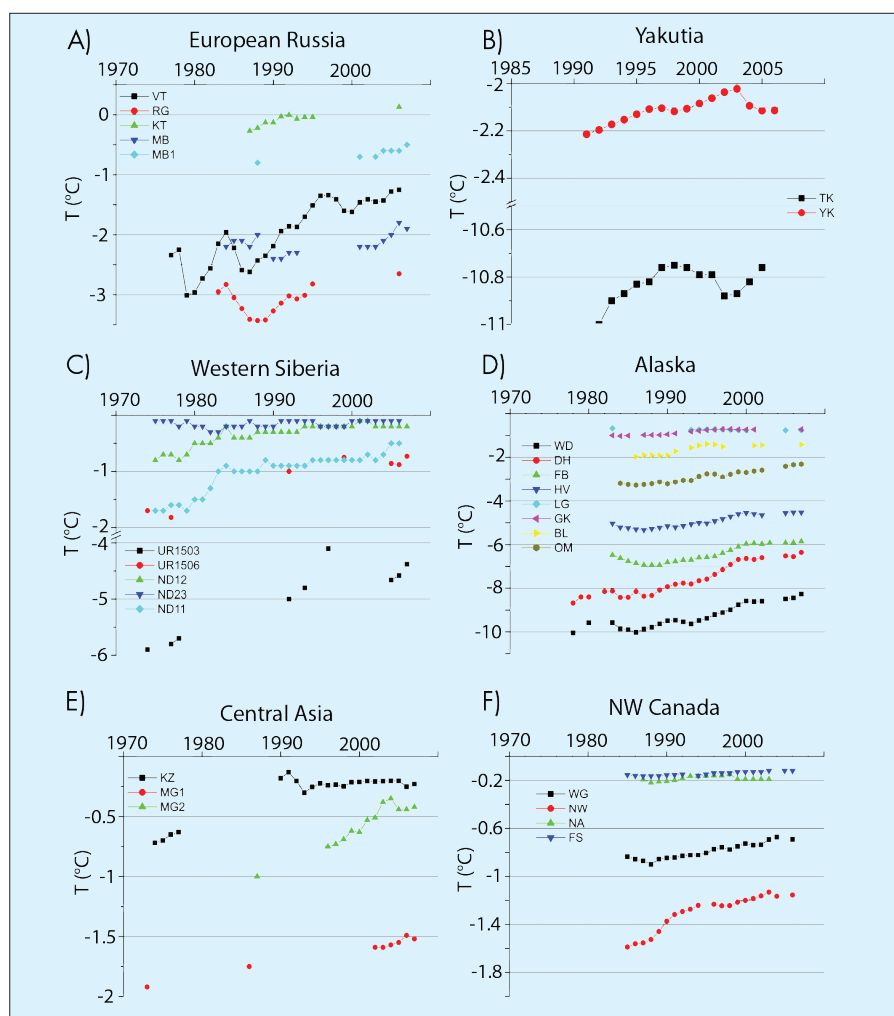


Figure 1: Warming trends in Arctic permafrost from 1970 to present. Local climatic effects can modify these trends. **A)** European Russia: VT, Vorkuta; RG, Rogovoi; KT, Karataikha; MB, Mys Bolvansky. **B)** Yakutia: TK, Tiksi; YK, Yakutsk. **C)** NW Siberia: UR, Urengoi; ND, Nadym. **D)** Alaska: WD, West Dock; DH, Deadhorse; FB, Franklin Bluffs; HV, Happy Valley; LG, Livengood; GK, Gulkana; BL, Birch Lake; OM, Old Man. **E)** Central Asia: KZ, Kazakhstan; MG, Mongolia. **F)** NW Canada: WG, Wrigley; NW, Norman Wells; NA, Northern Alberta; FS, Fort Simpson. (Figure modified from Brown and Romanovsky, 2008).

Plans for future meetings were also discussed. The Tenth International Conference on Permafrost will be held in Tyumen, Russia in 2012. The Third European Conference on Permafrost will be held in June

2010 in Norway-Svalbard, following the Oslo IPY Conference. Additionally, Canada extended an invitation for participation in the Canadian Permafrost Conference in September 2010 in Calgary.

## References

Brown, J. and Romanovsky, V., 2008: Report from the International Permafrost Association: State of Permafrost in the First Decade of the 21<sup>st</sup> Century, *Permafrost and Periglacial Processes*, **19**(2): 255-260.

## Arctic Paleoclimate Assessment

### Past Climate Variability and Change in the Arctic

**US Climate Change Science Program**  
[www.climatescience.gov](http://www.climatescience.gov)



The US Climate Change Science Program's Synthesis and Assessment Product 1.2, titled "Past Climate Variability and Change in the Arctic and at High Latitudes" provides a synthesis of Arctic paleoclimate information for the past 65 Myr. Intended primarily for the policy sector, the report consists of seven chapters and a glossary written by a team of five lead authors and supported by 32 contributing authors from the US, Canada, Denmark, Germany and the UK. The document underwent peer review, and was then available for public comment.

This product is one of 21 initial Synthesis and Assessment Products (SAP) designed to highlight the state-of-the-art research that should support decisions related to climate change issues. This report is freely available for download from the US Climate Change Science Program website at [www.climatescience.gov/](http://www.climatescience.gov/)

## New on the PAGES Bookshelf

### Natural Climate Variability and Global Warming: A Holocene Perspective

**Editors: R.W. Battarbee & H.A. Binney**  
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Predicting the course of future climate change requires an understanding of the natural variability of the climate system as well as the effects of human-induced change. This book is based on keynote lectures from the ESF-Holivar Open Science Meeting in London 2006. It covers our understanding of natural climate change, its variability on decadal-to-centennial timescales, the extent to which climate models of different kinds simulate past variability, and the role of past climate variability in explaining changes to natural ecosystems and human society over the later part of the Holocene.

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