International Conference

CRYOSPHERE TRANSFORMATION & GEOTECHNICAL SAFETY

November 8-12 YAMAL – 2021
HOSTED BY

Government of Yamal-Nenets autonomous okrug
https://www.yanao.ru/

Arctic Monitoring and Assessment Programme (AMAP)
https://www.amap.no/

International Permafrost Association (IPA)
https://ipa.arcticportal.org/

The University of the Arctic (UArctic)
https://www.uarctic.org/

Moscow State University

Institute of Atmospheric Physics named after A.M. Obukhov
http://www.istc.int/en/institute/8509

Institute of Geology and Mineralogy named after V.S. Sobolev

Institute of Economics and Industrial Engineering, Siberian Branch of the Russian Academy of Sciences

Institute of Permafrost Studies named after P.I. Melnikov

Institute of Earth Cryosphere of Tyumen Scientific Center, Siberian Branch of the Russian Academy of Sciences
http://www.tmnsc.ru/engl/structure.php

Federal State Budgetary Institution Gidrospetsgeologiya
https://specgeo.ru/

Scientific Center for the Arctic Studies of Yamal-Nenets autonomous okrug
https://arctic.yanao.ru/

JSC Messoyakhaneftegaz
https://mesng.ru/
GOALS

✓ To set up a framework for interdisciplinary dialogue to identify short-term and long-term priorities for government, science and business.

✓ To work out the new concept of human-cryosphere interaction that unites the Arctic regions, where environment and climate components permeate the entire process of studying cold phenomena, features of engineering surveys, design, construction and operation of facilities to ensure the reliability and durability of structures.

✓ To create the 2-year action plan to adapt the Arctic region to major challenges.

OBJECTIVES

✓ To outline the trends, risks and vulnerabilities associated with permafrost, both fundamental and applied.

✓ To gather materials on recent developments, innovations and research.

✓ To determine the list of activities that will allow solving the outlined tasks.

✓ To identify tasks that require monitoring, solutions, and changes for the next 2, 5, 10 years.
EVENT FORMAT

**Sessions**

single session for all

**Case Studies**

discussion over the real industrial and civil construction cases, which require innovative solutions right now

**Poster presentations**

an opportunity to make a short presentation in an informal setting

**Round tables**

interdisciplinary dialogue over short-term priorities

**Discussion panels**

business/ government / scientific vision on the most acute challenges of permafrost degradation

**Exhibition**

equipment for permafrost engineering and studies
**FIELD TRIPS**

**BOVANENKOVO GAS EURISSION CRATER**

The 17th gas eurission crater in the central part of Yamal on the territory of Bovanenkovo oil and gas field was discovered in 2021. The crater has an elongated ellipsoidal shape, resembling the confluence of two cavities.

**COASTAL RETREAT IN SEYAKHA, YAMALSKY DISTRICT**

For several years, the Yamal-Nenets Department of Natural Resource Regulation, Forest Relations and Development of the Oil and Gas Complex has monitored the coastal retreat in Seyakha. The average retreat rate is 0.8 m/y. Capital facilities are under the risk of collapsing and developing of a network of thermal erosion ravines.

**NOVOPORTOVSKY ICE-CELLA**

A unique structure, which exist only in low-temperature permafrost.
Journal Rank: 2020 CiteScore - Q1 (Control and Optimization)

Energies is a peer-reviewed, open access journal of related scientific research, technology development, engineering, and the studies in policy and management. It is published online by MDPI semimonthly. Authors of the most relevant extended abstracts will be given an opportunity to publish in the special issue of the journal, with article processing charges covered by the conference organizers.

Publication of Selected Articles in a Special Issue of Energies Journal

The book of extended abstracts will also be published
## CONFERENCE TOPICS

### Links of climate and permafrost
- Physics of the atmosphere
- Modeling of climate-induced changes in the permafrost zone
- Local, regional and global-scale forecasts of changes of permafrost

### Cryogenic processes and phenomena
- Cryogenic phenomena in the mountains: solifluction, kurums, rock glaciers, landslides, rockfalls and mudflows
- Stabilization of mountain slopes
- Hazardous natural phenomena and permafrost, including extreme events (landslides, floods, droughts, etc.)

### Landscape studies and bioindication of the state of permafrost
- Succession dynamics in the permafrost zone
- Viable organisms and traces of life in permafrost-affected soils and frozen rocks.
- Peatlands under the environmental changes

### Permafrost engineering.
- Current state of foundations, industrial, civil and man-made installations, roads and railways (materials, calculation and design, research, architecting, construction, maintenance and repair and further research in the following areas)
- Estimated and normative indicators for the justification and calculation of capital construction projects in the Arctic
- Physical and mathematical foundations of the permafrost-thermal regime of railroad and highway embankments considering moisture migration
- Novel technologies and materials for construction in the Arctic: testing and implementation
- Permafrost monitoring and risk management

### Geophysical methods in studies of permafrost
- Geophysical monitoring of hazardous processes in ecosystems and technical facilities

### Civil protection and economic management in the permafrost zone
- Mitigation of permafrost hazards and vulnerability of settlements
- Challenges in mining, processing and transportation of minerals in the permafrost zone.

### Links in cryosphere and hydrosphere
- Offshore permafrost on the Arctic shelf
- Dynamics of lake and river taliks
- Ground waters of the permafrost zone

### Gases and gas hydrates in the permafrost zone
- Fluxes of greenhouse gases and the biogeochemical cycles in the Arctic
- Fluid dynamics in permafrost
- Properties and distribution of natural gas hydrates in the permafrost zone

### Arctic and sub-Arctic environment: features, challenges and solutions
- Management of solid and liquid wastes in settlements and industrial facilities in the Arctic
- Air, water and soil pollution of the permafrost zone: migration, adaptation, biodegradation and remediation
- Carbon footprint of human in the Arctic

### Digital technologies and remote sensing methods in the permafrost studies
- Improvements of collection, analysis and management of big data
- Geographic information systems
- Airborne- and satellite-survey of the state of permafrost

### Physicochemical and thermal properties, and mechanics of permafrost
- Field and laboratory methods to study frozen rocks
- Spatial thermal computing, deformations and rheology of frozen grounds

### Geophysical survey and the construction of buildings and structures
- Challenges in prospecting and exploration of mineral deposits and fluids in the permafrost zone

### Legal regulation of activities in the Arctic*
*the topic is coordinated by Ministry of Natural Resources of Russia*
Accommodation in Salekhard city

Room reservations must be made individually by each participant

The approximate cost of hotel accommodation per day is 5,500 – 6,500 rubles (breakfast included)

The hotel «Yuribey»

yuribey.yanao.ru
11 Molodezhi avenue
+7 (34922) 252 00
mail-yuribey@gov.yanao.ru

The hotel «Arctic»

arttika.com.ru
38 Republik Street
+7 (34922) 404 04, +7 (34922) 407 77
arttica@salekhard.ru
arttika.salekhard@gmail.com

Conference Languages

Russian
English
Simultaneous interpretation
**EVENT CALENDAR**

**by August 15**
Submission of abstracts

**August 1-31**
Mandatory registration of participants on the website*

**November 13-14**
Field trips**

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**November 7** Arrival of participants  ——  **November 13** Departure of participants

**November 8**
- 09:30 Grand Opening
- 10:00 Sessions
- 12:00 Sessions
- 15:00 Discussion panel
- 17:00 Poster presentations
- 20:00 Concert

**November 9-11**
- 09:00 Sessions
- 12:00 Sessions
- 15:00 Round table discussion / Case Study
- 17:00 Poster presentations

**November 12**
- 09:30 Plenary session
- 12:00 Round table discussion Setting tasks for a 2-year period
- 15:00 Discussion panel
- 17:00 Poster presentations
- 20:00 Formal banquet on behalf of The Governor

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* the registration link will be sent additionally
** paid, by appointment, places are limited
Abstract and extended abstract should be presented by August 15

TITLE – IN ENGLISH

Ivanov I. I.1, Petrov P. P. 2 – In English
1 Organisation, address, e-mail – in English
2 Organisation, address, e-mail – in English

Abstract

Abstract in English is a short description of your work, a single paragraph no longer than 150 words. Do not replace or delete the word “Abstract”. The name of your file must include family name and initials of the first author (Latin alphabet) as well as date – for example, ivanov_i_i_2021.doc or ivanov_i_i_2021.docx. PDF will not be accepted.

The prescribed font for the paper and its keywords is Times New Roman 10 point, first line indentation is 0.5 cm, 1.15 line spacing, justified.

Key Words: This line must contain up to six keywords in English – in alphabetical order, separated by a semicolon.
Introduction

Please note! The papers must be thoroughly proofread by the authors. The materials will not be peer-reviewed by the conference organisers before publishing. Authors are fully responsible for any typos or inaccuracies included in the provided paper. Authors are fully responsible for any typos or inaccuracies included in the provided paper.

Abstract that do not meet the requirements will not be accepted!

Expanded abstracts up to 5 pages long must be sent in *.doc or *.docx formats. Page size must be 21*29.7 cm (A4). Margin requirements are as follows: top and bottom - 2 cm, left - 3 cm, right - 1.5 cm. First line indentation is 0.5 cm. Line spacing must be set to 1.15 cm.

Times New Roman font must be used throughout the document.

Main title
12 point, bold, capital letters; authors – 10 point; place of work – 10 point, italics. Text must be centered.

The paper and its keywords must be Times New Roman 10 point, justified.

Section titles
12 point, bold, centered. There must be an empty line before the section title.

Subsection titles
12 point, italics, bold, left-aligned, no empty lines before or after.

Main text
Times New Roman 12 point font, 0.5 cm first line indent, 1.5 line spacing, justified.

Headers, footers, page numbers
Do not number the pages. Keep headers and footers empty!!!
ABSTRACT

Graphics object

Figures, equations and tables should preferably be placed using the command "in line with text", without using "wrapping", "in front of text", or "behind text" alignments.

Figures

Figures with captions must be centred. A reference must be included in brackets in the main text, for instance, “...a section is shown (Fig. 1)”. The dimensions of pictures and photographs should be aligned with the margins of the entire page. Number the figures consequently, placing them as close to the first reference in text as possible. All axes must be labelled. If necessary, include a legend for the figure. Axis captions, letters and numbers in figures must be legible.

The caption below a figure must include a brief description or any other identification. The figure caption has the same formatting as the main text. Use the usual 10 point Times New Roman Italic font to address the legend / abbreviations. Leave a blank line between the caption and the text below.

Equations

Equations must be centred. Number them sequentially in parentheses.

\[
L = \frac{-\left(\varepsilon + C_w \cdot R_\mu \cdot T_0 \cdot \frac{T_o^2}{\mu \cdot \kappa \cdot \rho_w}\right)}{\left(\frac{\lambda_w \cdot G}{\lambda_f} + g \cdot T_0 \cdot (\rho_s - \rho_w) / \kappa \cdot \rho_w\right)} \tag{1}
\]

where \(L\) - ..., \(t\) - ...

Equations from special programs or printed texts can be inserted as pictures (using the same formatting as that of figures).
Tables
Do not create tables by using plain text separated by spaces or tabs. Use the “Tables” function. Tables must be centred. The table number is placed above it in the top right corner. Use 12 point Times New Roman font, italic. Name of the table must be specified in the next line, centred, and formatted like the main text. The reference to the table in the text is given in brackets (Table 1). There must be an empty line after the table.

Table 1

<table>
<thead>
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References
References are given in alphabetical order, first Russian, then foreign, italicized italicized in square brackets. Separate multiple sources with semicolons.

EXAMPLES:

Single author: [Ivanov, 2015]
Two authors: [Ivanov, Petrov, 2000]
More than two authors: [Ivanov et al., 2017]
A single author and a single year: [Ivanov, 2015a, 6]
Unpublished papers: [Ivanov, in press]
References to multiple sources: [Alexeev, 2010; Bondarchyuk, 2008]
Russian and foreign sources: [Иванов и др., 2017; Smith et al., 2000]
**Acknowledgements**
You can include acknowledgements, references to grants, etc. Acknowledgements are placed at the end of the main text, before references.

**Bibliography**
Consistency in formatting is of key importance – both in the text and in the bibliography.
You must include all used sources at the end of the paper in alphabetical order, always starting with authors’ surname: surname, initials. Title of the article // title of the journal, issue number, – publisher, year – pages used. The font must be 10 points, the indent – 0.5 cm.
If the work is known because of its title, not authors, then begin the reference with its title (see example).
Russian sources are indicated first, foreign sources are indicated last.

**EXAMPLES:**


CONTACTS OF THE ORGANIZING COMMITTEE

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