

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Index

Session Name

Geophysical and Remote Sensing Investigations of Changing Permafrost Landscapes	2
New Remote Sensing Technology and Applications to Map Regional Permafrost Vulnerability	3
Dynamics of Permafrost Rivers, Deltas, and Coastlines	4
Ground-ice Distribution and its Role in Permafrost Carbon Dynamics	5
Snow, vegetation, and permafrost interactions and advancements in sensing/monitoring technologies	6
Permafrost Discovery Gateway: Big imagery Permafrost Science Today and Tomorrow WORKSHOP	8
Water in Permafrost Systems – An Interdisciplinary Consideration	8
Taking a Look at the Overlooked: Microorganisms and their Processes in Permafrost	10
Permafrost Dialogue: New Avenues of Communication for Permafrost Science, Outreach, & Education	11
Global Terrestrial Network for Permafrost (GTN-P)	11
Permafrost Data Systems WORKSHOP	12
Unique Challenges of Permafrost in Mountain Areas	12
Changing Biogeochemistry of Permafrost Regions	13
Rock Glacier Inventories and Kinematics	14
Planetary Permafrost	15
Infrastructure Engineering on Permafrost	16
Transportation Engineering in Permafrost	17
General session permafrost and cold regions engineering	18
Geologic Terrain Analysis, Geomorphic Mapping in Support of Infrastructure Development	19
Engineering Properties of Frozen Soils	19
Pipelines, Construction, Mining, and Oil and Gas in Cold Regions	20
Arctic Environmental and Engineering Data and Design Support System (Arctic-EDS) WORKSHOP	21
<i>Schedule</i>	
Weekly Session Schedule	22

Geophysical and Remote Sensing Investigations of Changing Permafrost Landscapes

Stephanie James, sjames@usgs.gov, Burke Minsley, Neal Pastick

Investigation of Permafrost and Soil Moisture Distribution using GPR, NMR, and ERT
Taylor Sullivan

High-resolution frost heave map at fire scars in Batagay, NE Siberia, derived by L-band InSAR and validation with field observation
Kazuki Yanagiya

Monthly UAV-based topographic surveys reveal timing and volume budgets of seasonal geomorphic processes within retrogressive thaw slumps
Jurjen van der Sluijs

Implementation of 3 component seismics on frozen ground
Thomas Højland Lorentzen

Using Landsat imagery to identify landscape change over the last 40 years from seismic exploration within the Arctic National Wildlife Refuge, Alaska.
Julian Dann

Geophysical Validation of Airborne SAR-Observed Permafrost Active Layer Estimates, Alaska USA
Andy Parsekian

Permafrost warming and thaw in the discontinuous zone tracked using electrical resistivity tomography, Alaska Highway corridor, Canada
Antoni Lewkowicz

Standardized processing of geoelectrical data for permafrost applications: Initial findings from a new IPA action group
Teddi Herring

In-Situ Monitoring of Permafrost's Geophysical and Geomechanical Characteristics Using Distributed Acoustic Sensing (DAS)
Ming Xiao

Quantification of lake change through time and extrapolation of in situ greenhouse gas flux analysis using remote sensing
Lara Hughes-Allen

Geophysical Monitoring Shows that Spatial Heterogeneity in Thermohydrological Dynamics Reshapes Transitional Permafrost Systems
Sebastian Uhlemann

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Developing a user-friendly forward modelling and inversion tool to inform electrical resistivity tomography studies of permafrost

Teddi Herring

Spatial variability of vegetation and surface cover within drained lake basins, North Slope Alaska

Helena Bergstedt

**Recent widespread thaw degradation of Interior Alaska permafrost quantified from repeat surveys, remote sensing, and geophysics

Thomas Douglas

Estimating sub-surface snow density using the surface reflection method

Adrian McCallum

Airborne Surveys of Rapidly Changing Permafrost Landscapes in Western Alaska

Guido Grosse

Quantifying the Surface Deformation of Pingos on the Alaskan North Slope using Interferometric Synthetic Aperture Radar (InSAR)

Venezia Follingstad

Diminishing cryoturbation and shrubs on the march in the Siberian Arctic: detecting sorted circles and vegetation change using convolutional neural networks

Gerald Frost

Three-dimensional investigation of a broad-based closed-system pingo on the Tuktoyaktuk Peninsula, Northwest Canada

Julius Kunz

**Leveraging new satellite technologies to better understand permafrost-surface water feedbacks in the Arctic

Sarah Cooley

New Remote Sensing Technology and Applications to Map Regional Permafrost Vulnerability

Yonghong Yi, yyonghong08@gmail.com, Lin Liu, Benjamin Jones

Permafrost Vulnerability Framework from multiple Essential Climate Variables

Alexandra Runge

High-Resolution Permafrost Mapping in the Source Region of the Yangtze River combining a process-based model with InSAR

Hui Jiang

Automated quantification of the evolution of retrogressive thaw slumps from multi-temporal high-resolution satellite imagery

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Lingcao Huang

Mapping ice-rich permafrost using InSAR observations of late-season subsidence
Simon Zwieback

High spatial and temporal resolution remote sensing of a collapsing pingo in northern Alaska
Benjamin Jones

**Advances in Airborne Remote Sensing of Permafrost During ABoVE
Charles Miller

**The potential of satellite data to identify and quantify permafrost presence and change
Annett Bartsch

Detecting retrogressive thaw slumps over large permafrost areas: a case study along the Qinghai-Tibet
Engineering Corridor
Zhuoxuan XIA

Investigating the sensitivity of L-band polarization ratio to surface organic soil properties in Arctic tundra
area
Yonghong Yi

Using Radar to Remotely Sensed Active Layer Thickness and Soil Moisture
Kevin Schaefer

Quantifying Surface-Height Change over a Periglacial Environment with ICESat-2 Laser Altimetry
Roger Michaelides

Using ArcticDEM and shallow boreholes to quantify mass wasting sediment loss of retrogressive thaw
slumps in the Eureka Sound Lowlands, Canadian high Arctic
Melissa Ward Jones

Evaluating a deep-learning approach for mapping retrogressive thaw slumps across the Arctic
Ingmar Nitze

Dynamics of Permafrost Rivers, Deltas, and Coastlines

Jennifer Frederick, jmfrede@sandia.gov, Anastasia Piliouras, apiliouras@lanl.gov

Process-based thermal-mechanical numerical modeling of coastal erosion on Tuktoyaktuk Island, NT
Danika Ouellette

Permafrost thaw and coastal erosion between 1950 and 2100 at three coastal communities in Arctic
Alaska, past observations and future projections
Louise Farquharson

Spatial variability in the relative influence of permafrost on river bank erosion rates.

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Joel Rowland

Permafrost Investigations Below the Marine Limit at Nain, Nunatsiavut, Canada

Robert Way

**Permafrost dynamics related to channel migration in the Colville River Delta, Alaska

Eva Stephani

**Intra-ice and intra-sediment cryopeg brine occurrence in permafrost near Utqiagvik (Barrow)

Go Iwahana

Ground temperature responses to climatic trends in a range of surficial deposits near Kangiqsualujjuaq, Nunavik

Catherine Deslauriers

The Influence of Thermal Erosion at River Bed Deformation in Permafrost Areas

Elena Debolskaya

Demonstration of the ACE (Arctic Coastal Erosion) model at Drew Point, AK during a permafrost bluff block collapse event in summer 2018

Jennifer Frederick

Floating Ice and Riverbed Permafrost in the Lena River Delta

Paul Overduin

Functional Delta Connectivity and Impacts on Lake Ice in the Colville Delta, Alaska

Wayana Dolan

Characterizing lake spatial distribution to understand permafrost processes on arctic river deltas

Lawrence Vulis

Ground-ice Distribution and its Role in Permafrost Carbon Dynamics

Christina Schaedel, christina.schaedel@nau.edu, Charles Abolt

Vertical distribution of excess ice in icy sediments and its statistical estimation from geotechnical data (Tuktoyaktuk Coastlands and Anderson Plain, Northwest Territories)

Ariane Castagner

Soil and plant community characteristics across successional stages of ice-wedge degradation and re-stabilization in the tundra of northern Alaska

Kelcy Kent

Impact of large herbivores on permafrost soil carbon storage

Torben Windirsch

**Quantifying Erosional Dynamics in Ice-Wedge Networks with Computer Vision and Graph Theory

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Tabea Rettelbach

The Great Unknown: Thermokarst Lakes and Its Response to Permafrost Carbon Feedback Cycle
Deniz Vural

Initial investigations of degrading peat plateaus in the central Mackenzie Valley, Northwest Territories
Alexandre Chiasson

**Shifts in plant-soil interactions following ice-rich permafrost thaw – implications for carbon storage
Catherine Dieleman

Ice wedges as a winter paleotemperature proxy: limitations and local noise in their $\delta^{18}O$ record.
Kethra Campbell-Heaton

Submarine Permafrost as a Long-term Late Quaternary Carbon Sink
Frederieke Miesner

Holocene Carbon Dynamics from a Permafrost Peatland in the Sporadic Permafrost Zone, Kenai Peninsula, Alaska
Miriam Jones

Circumpolar observations of thermokarst pool expansion from high-resolution satellite imagery
Charles Abolt

The Thermokarst Detection Algorithm: A Case Study at Eight Mile Lake, AK
Heidi Rodenhizer

Distribution, morphometry, and ice content of ice-wedge polygons, central Yukon, Canada
Roxanne Frappier

Slope failure at the base of permafrost increasing frequency and magnitude of thaw-driven mass-wasting across discontinuous permafrost terrain in the central Mackenzie Valley foothills, NWT
Joseph Young

The transition to a permafrost-free Arctic - revelations from deep soil cores
Claudia Czimczik

Relict basal ice from the Laurentide Ice Sheet near Lac de Gras, Slave Geological Province, N.W.T., Canada
Stephan Gruber

Ground ice survey designed for data holders and data users to improve understanding of ground ice content in permafrost across the Arctic
Christina Schaedel

Impacts of shrubification on ground temperatures and carbon cycling in a sub-arctic fen near Churchill, MB
Chantae Robinson

Snow, vegetation, and permafrost interactions and advancements in sensing/monitoring technologies

Katrina Bennet, kbennett@lanl.gov, Anna Wagner, anna.m.wagner@erdc.dren.mil

Field Validation of Simulated Permafrost Thaw Depth Across the Vegetation Gradient in Alaska from SIBBORK-TTE Modeling Infrastructure

Bradley Gay

TTOP model sensitivity and comparison to random forest permafrost temperature modelling across Western Canada

Madeleine Garibaldi

Modelled Soil Temperature Sensitivity to Variable Snow and Vegetation Conditions in Low-Relief Coastal Mountains, Nunatsiavut and NunatuKavut, Labrador

Rosamond Tutton

Affect of the slope topography on the ground temperature, hydrology and soil formation: a case study at the Seward Peninsula.

Alexander Kholodov

Thermal Modelling of Post-Fire Permafrost Change Under a Warming Coastal Subarctic Climate, Eastern Canada

Yifeng Wang

Explicitly modelling microtopography in permafrost landscapes in the JULES land-surface model

Noah Smith

Comparison of Satellite-Derived Snow Data Benchmarks with Historic Snow Survey Data from the North Slope of Alaska using ILAMB Software.

Mary Szatkowski

The Distribution of Dwarf Shrubs and Drought Resistant Plants Varies With Soil Temperature and Position on Periglacial Patterned Ground at the Goat Flat Alpine Tundra, Montana, USA

Martha Apple

Snow and canopy interception influence on soil thermal regimes

Anna Wagner

Active Layer Thickness as a Function of Soil Water Content in Alaska and Canada

Leah Clayton

Cumulative impacts of fire and climate on permafrost at local and regional scales, southern Northwest Territories, Canada

Jean Holloway

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Machine learning analyses of remote sensing measurements establish strong relationships between vegetation and snow depth in the boreal forest of Interior Alaska

Thomas Douglas

**Boreal shrub water use in permafrost and permafrost-free systems

Jessie Young-Robertson

Spatial Patterns of Snow Distribution for Improved Earth System Modelling in the Arctic

Katrina Bennett

Quantifying Permafrost Soil Micro-Structure with Micro X-ray Computed Tomography

Nathan Blais

Extrapolating snowpack properties from small temperature sensors in two watersheds on the Seward Peninsula, Alaska, USA

Emma Lathrop

Distributed Temperature Profiling Networks for Quantifying Soil Thermal Regimes and their Controls across Discontinuous Permafrost Environments

Stijn Wielandt

Permafrost Discovery Gateway: Big imagery Permafrost Science Today and Tomorrow WORKSHOP

Anna Liljedahl, aliljedahl@climatewoodwell.org, Amber Budden

Interactive, geospatial visualization of high-resolution, pan-Arctic permafrost features in the Permafrost Discovery Gateway

Matthew Jones

Understanding the effect of image augmentation on deep learning convolutional neural net algorithms

Amit Hasan

Developing Hybrid Machine Learning Pipelines Using Cloud and HPC Resources for the Permafrost Discovery Gateway

Todd Nicholson

Automated recognition of ice-wedge polygon troughs and human-built infrastructure in the Arctic permafrost landscapes using commercial satellite imagery

Elias Manos

High performance image analysis workflow designs for automated mapping of ice-wedge polygons from high-resolution satellite imagery

Mahendra Rajitha Udawalpola

Permafrost Discovery Gateway: A project overview

Anna Liljedahl

Water in Permafrost Systems – An Interdisciplinary Consideration

Eva Stephani, estephani@usgs.gov, Josh Koch, Stephanie Wright

Modeling Arctic Lakes with the LAKE2.0 Model

Jason Clark

Simulating Arctic hydrology with WaSiM

Ronald Daanen

Impact of lateral groundwater flow on hydrothermal conditions of the active layer in a high arctic hillslope setting

Alexandra Hamm

**Measurement and Modeling of Wildfire-Initiated Talik Development in Boreal Alaska

David Rey

Modelling Water Release from Degrading Permafrost in Arid Mountain Environments

Cassandra Koenig

Are Concentration-Discharge Relations in Arctic Rivers Different from Temperate Rivers?

Mara Nutt

The thermal response of permafrost to coastal flooding

Yu Zhang

Hydrogeology and permafrost dynamics of a degrading lithalsa near Umiujaq (Nunavik, Canada): insights from long-term monitoring

Philippe Fortier

**Hydrologic implications of supra-permafrost taliks in disturbed landscapes of boreal Alaska, USA

Michelle A. Walvoord

Holocene thermokarst lake dynamics in northern Interior Alaska: the interplay of climate, fire, and subsurface hydrology

Lesleigh Anderson

The uncertainty in InSAR-based active layer soil water storage estimates over the Arctic Foothills

Yue Wu

The Lake Agnes rock glacier as a climate resilient cold-water reservoir within the Colorado Front Range

Brianna Rick

Hydrologic-land surface modelling of the Canadian sporadic-discontinuous permafrost: initialization and uncertainty quantification

Mohamed Abdelhamed

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Fine-Resolution Measurement of Soil Moisture from InSAR Phase Closure

Elizabeth Wig

Spatial distribution and temporal dynamics of the suprapermafrost subarctic taliks in Eastern Siberia

Liudmila Lebedeva

Seasonal Freeze-Thaw Dynamics Under and Around Streams in the McMurdo Dry Valleys, Antarctica

Michael Gooseff

Long-term (2000-2017) response of lake-bottom temperatures and talik configuration to changes in climate at two adjacent tundra lakes, western Arctic coast, Canada

Trevor Andersen

Taking a Look at the Overlooked: Microorganisms and their Processes in Permafrost

Robyn Barbato, robyn.a.barbato@erdc.dren.mil, Mary-Cathrine Leewis,
Stacey Doherty

Mycorrhizal species characterization of tundra plant roots

Sean Schaefer

**Assembly of microbial communities in thawing permafrost

Hannah Holland-Moritz

Life in the freeze: Microbial community growth and greenhouse gas production across a Holocene to Pleistocene permafrost chronosequence revealed by Stable Isotope Probing

Mary-Cathrine Leewis

Permafrost microbial communities are structured by latitudinal and soil chemical gradients

Mark Waldrop

Changes in Permafrost Microbial Community Composition after Thaw

Alison Thurston

Investigating the Preservation Process of DNA in the Cold and Arid Paleoshores of the Antarctic Untersee Oasis

Nicole Wagner

Climate change effects on microbial activity in Arctic permafrost and considerations for modeling this system in transition

Robyn Barbato

The Transition From Stochastic to Deterministic Bacterial Community Assembly During Permafrost Thaw Succession

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Stacey Doherty

Investigating microbial dormancy within the permafrost microbiome

Joy O'Brien

Microbe-substrate interactions following simulated microbial inoculation to thawed yedoma permafrost in anaerobic environments

Joanne Heslop

**Microbial response to a long-term anoxic batch scenario of permafrost-affected soil

Susanne Liebner

variation in microbial community depth profiles: implications for understanding nutrient movements

Chris Baker

Mercury, methylmercury, and microbial communities in a degrading palsa of the Hudson Bay Lowlands, Far North Ontario

Adam Kirkwood

Altered microbial structure and function after thermokarst formation

Futing Liu

Permafrost Dialogue: New Avenues of Communication for Permafrost Science, Outreach, & Education

Brendan Rogers, brogers@woodwellclimate.org, Jennifer Watts

Towards a revised version of the Glossary of Permafrost and Related Ground-Ice Terms

Antoni Lewkowicz

Engage the Public in Science and Embrace Future Change with Human-Centric Stories, Art, and Imaginings

Stacey Fritz

The Permafrost Monthly Alert (PMA) Program: Informing Engineers, Scientists, Educators, and the Public of Current Permafrost Literature

Kristina Levine

An interactive website to visualize and communicate how the Arctic is changing

Erin MacDonald

Enhancing STEM education and soil monitoring with a durable DIY low-cost soil temperature data logger

Salvatore Curasi

Towards a Standardization of Soil Cryogenic Structure and Cryostructure Terminology for the Field Description of Permafrost-Affected Soils

Nicolas Jelinski

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

**Polar Explorer - An Immersive Virtual Learning Environment that Teaches Students about the Impacts of Thawing Permafrost on Society

Deborah Huntzinger

**Alaska Voices: Building Bridges of Knowledge Through Shared Conversations

Jessie Young-Robertson

Global Terrestrial Network for Permafrost (GTN-P)

Alexey Maslakov, alexey.maslakov@geogr.msu.ru, Sarah Marie Strand, Dmitry Streletskiy

Permafrost Monitoring Network in the Northern Da and Xiao Xing'anling Mountains, Northeast China
Huijun Jin

Standardized monitoring of permafrost thaw: a user-friendly, multi-parameter protocol

Sarah Chadburn

Permafrost Measurements Best Practice: GCW's contribution to standardization of global observations

Anna Irrgang

Climate-related operational permafrost monitoring in Svalbard and Norway

Ketil Isaksen

A Thermokarst Monitoring Network for Alaska

Torre Jorgenson

**Permafrost warming in the Swiss Alps: current state and long-term trends

Cécile Pellet

**Global Long-Term Active Layer Thickness Trends

Kelsey Nyland

Permafrost Data Systems WORKSHOP

Nick Brown, nick.brown@carleton.ca, Matt Jones, Peter Pulsifer

**Developing an NWT Permafrost Database

Ashley Rudy

**Processing and management of mountain permafrost data

Jeannette Noetzli

International database of geoelectrical surveys on permafrost: a new IPA Action group

Coline Mollaret

Unique Challenges of Permafrost in Mountain Areas

Alexandre Bevington, alexandre.bevington@gov.bc.ca, Ludovic Ravanel

**Ground ice content loss in different mountain permafrost environments inferred from repeated and re-processed geophysical measurements data

Christian Hauck

Topographic and geologic controls on frost weathering in Alpine rockwalls

Till Mayer

**Accelerated Motion Rates of Frozen Debris Slopes in the Brooks Range, Alaska, USA

Margaret Darrow

**First experiences from a high Arctic, off-grid, solar powered time-lapse ERT system

Thomas Ingeman-Nielsen

Identifying Slope Instability in Mountain Permafrost Terrain: A Case Study in Colorado and Alaska

Kaytan Kelkar

Surface-Based Temperature Inversion Characteristics in Dissimilar Valleys, Yukon

Nick Noad

First evidence of rock wall permafrost in the Pyrenees (Vignemale peak, 3298 m a.s.l, 42°46'16" N / 0°08'33" W)

Lara Hughes-Allen

Surface temperatures and their influence on the permafrost thermal regime in steep high Arctic rock walls on Svalbard

Juditha Undine Schmidt

Mountain permafrost in the "Ojos del Salado" Volcano, Chile, advances and challenges

Ayon Garcia

Sedimentological Investigations at the Hickory Run Boulder Field, Carbon County, Pennsylvania

Raven Mitchell

Preliminary Interpretations from a Landslide Inventory in Interior Alaska

Jaimy Schwarber

Development of Early Soviet Ideas About Cryoplanation Terrace Genesis

Vasily Tolmanov

Mountain permafrost in the Tropical Andes of Peru: the 0°C isotherm as a potential indicator

Hairo León

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

An increase of rockfall activity due to elevation dependent paraglacial and periglacial processes
Daniel Draebing

Areas 20-year long permafrost evolution at the long-term monitoring site Stockhorn, Swiss Alps by combining borehole temperature, electrical and seismic monitoring data
Sarah Morard

Characteristic Periglacial Terrain: Multi-Scale Hypsometric Analysis of Cryoplanated Uplands in Eastern Beringia
Clayton Queen

A Continental Permafrost Distribution Model for the South American Andes
Lukas Arenson

Early North American investigations in cryoplanated uplands
Frederick Nelson

Quantification of permafrost degradation using calibrated 4D-ERT and consequent deformations in alpine bedrock.
Riccardo Scandroglio

Changing Biogeochemistry of Permafrost Regions

Kevin Schaefer, kevin.schaefer@colorado.edu, Kimberly Wickland

Understanding the drivers, dynamics, and regional patterns of terrestrial ecosystem CO₂ fluxes across the Arctic-Boreal Zone
Anna-Maria Virkkala

**The Vulnerability of Permafrost Carbon to Climate Change: Key Findings from a Decade of Synthesis
Edward Schuur

**Iron speciation at the permafrost-active layer boundary
Amanda J. Barker

**Landscape connectivity and dissolved organic matter in a degrading permafrost polygonal landscape
Claire Griffin

Temperature sensitivity of permafrost carbon release mediated by mineral and microbial properties
Yuanhe Yang

Estimating greenhouse gas production in thermokarst lagoons of Bykovsky Peninsula, Siberia
Maren Jenrich

Representing pH buffering in Arctic soils: The roles of water, organic carbon, and proton binding
Erin Berns

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Snow-to-Rain Shifts Regulate Carbon Emissions From pan-Arctic Permafrost Regions
Jing Tao

Rock Glacier Inventories and Kinematics

Alessandro Cicoira, alessandro.cicoira@unifr.ch, Yan Hu, Line Rouyet

Remote Detection of Buried Ice Masses; Transantarctic Mountains, Antarctica
Jaakko Putkonen

Accelerating rock glacier threatens critical infrastructure
Denny Capps

Review of the inventory and kinematic analysis of Aosta Valley (Italy) rock glaciers
Elisabetta Drigo

Reconstruction of rock glaciers dynamics in alpine environment, from modern to holocene timescales
Benjamin Lehmann

An estimation of past and present air temperature conditions, water equivalent, and surface velocity of rock glaciers in Cordillera Volcanica, Peru
Edwin Badillo-Rivera

Strengths and Limitations of Rock Glacier Inventories
Lukas Arenson

Internal structure, dynamic behavior and hydrological characteristics of a rock glacier in the semiarid andes of argentina
Diana Agostina Ortiz

Rock glaciers throughout the French Alps accelerated and destabilised since 1990 as air temperatures increased
Marco Marcer

**Operational monitoring of rock glacier kinematics: insights from the PERMOS network
Cécile Pellet

Distribution and kinematics of rock glaciers in the Southern Alps of New Zealand
Christophe Lambiel

Systematic monitoring of rock glacier kinematics from satellite SAR interferometry: insights from case studies in the European Alps and Disko Island
Tazio Strozzi

Multi-method approach to inventorying rock glaciers and features of interest in Banff and Jasper National Parks, Alberta, Canada
Mishélie Wehbe

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Statistical prediction modelling of rock glacier distribution in Norway
Harald Wathne Hestad

Tracking active rock glaciers in Utah with satellite-based InSAR
Alexander Handwerker

Rock glaciers and contributing area parameters in the Front Range of Colorado
Jason Janke

Repeated annual UAV-based measurement of the surface creep velocity of Leibnitzkopf rock glacier (Austrian Alps) without the use of geodetically measured ground control points (GCPs)
Viktor Kaufmann

Novel subsurface measurement setup to investigate heat transfer processes within the debris mantle of rock glacier Murtèl (Engadine, eastern Swiss Alps)
Dominik Amschwand

**Consensus-based rock glacier inventorying in the Torngat Mountains, northern Labrador
Robert Way

Planetary Permafrost

Joseph Levy, jlevy@colgate.edu, Ali Bramson

Boulder halo rock distributions on ice-rich latitude dependent mantle indicate large role for cold-permafrost cryoturbation processes at some sites on Mars
Joseph Levy

A sublimation-based framework for generating protrusion of marker beds within the icy Martian Polar Layered Deposits
Ali Bramson

**Ground Ice on Terrestrial Worlds: The importance of laboratory data
Hanna Sizemore

Implications for the distribution of brain terrain in Arcadia Planitia, Mars
Shannon Hibbard

Subsurface-Atmosphere Exchange of Water Vapor in Sublimation Environments
Norbert Schorghofer

**A review of terrestrial analogs for Martian glacial, periglacial, and permafrost studies
Eric Petersen

Infrastructure Engineering on Permafrost

Xiangbing Kong, xiangbing.kong.1@ulaval.ca, Peppi Croft, Karlis Rieksts

Teamwork in the Trenches: an interdisciplinary effort to address utility-related tundra rehabilitation
Lorene Lynn

Employing Polyols for Increasing Ice Melting Capacity and Decreasing Freezing Point of Salt Brine
Deicer Hizb Ullah Sajid

A Second Foundation Review of AHTNA Corporation Glennallen Facility, ALASKA, USA
James Rooney

**Synopsis: Permafrost Engineering in a Warming Climate – Current State and Future Strategy
Kevin Bjella

**A brief review of frigid-winter and ice effects on earth embankments: three case studies
Robert Ettema

Analysis of road salt use and its impact on groundwater within the context of changing winter weather conditions
Dikshya Parajuli

Laboratory testing of thermosyphon fin designs
Alexander Stott

Rethinking water and sanitation in challenging environments: lessons learned from installing portable, adaptable, mid-tech household systems
Kaitlin Mattos

On the use of Electrical Resistivity Tomography measurements and Induced Polarization-surveying in arctic landfill assessments
Regula Frauenfelder

Application of empirical correlations for predicting thaw settlement: A case study of Nunavik, Canada
Seyedeh Zakieh Mohammadi

Economical Ice Coring Method for Accreted Ice on Vertical Piles
Scott Hamel

Arctic Expeditionary Infrastructure Research
Kevin Bjella

Deformation Caused by Frost Heave on a Rock Slope of Mudstone
**Otgonjargal Dai

Material properties of advanced high-strength cold-formed steel alloys subjected to subzero temperatures
Hannah Blum

Transportation Engineering in Permafrost
Joey Yang, zyang2@alaska.edu, and Fujun Niu

Drivers of permafrost degradation along the Inuvik to Tuktoyaktuk Highway
Jennika Hammar

Performance of Bridges in Cold Regions with Sliding Seismic Isolation Bearings
Munstair Billah

Simulating the thermal regime of railway embankment structure on the Tibetan Plateau under climate change
Rui Chen

Numerical modeling of a new covered arch bridge and its future impact on the surrounding ground thermal regime in continuous permafrost
Balaussa Kameledenova

**Modelling consequences of permafrost degradation for Arctic infrastructure – a case study of the Dalton highway
Thomas Schneider von Deimling

Use of a Portable Friction Tester on Snow and Ice Pavement
Michelle Michaels

Developing Pavement Performance Prediction Models Using Rutting Criteria for a Cold Region Environment
Holly Trisch

**Recent Experiences with Existing Passively Cooled At-Grade Foundations
Edward Yarmak

Upper Silvis Lake Spillway and Powerhouse Failure
James Rooney

Permafrost degradation effect on seismic response of bridge pile foundation along Qinghai-Tibet Railway
Xiyin Zhang

Quantification of Rut Detection and Height Mapping in Winter Terrains for Off-Road Mobility
Anthony Fuentes

Nondestructive Evaluation of a New Concrete Bridge Deck Subject to Excessive Rainfall during Construction: Implications for Durability in a Cold Region
Enoch Boekweg

Prediction of Climate Change Impact on a Highway in Warm Permafrost

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Yue Zhao

Spontaneous Corrugation on Snowy and Icy Road Surface Produced by Moving Vehicles in Cold Regions
Hao Zheng

Monitoring ground temperatures on portage sites along the Tibbitt-Contwoyto winter road to assess road resiliency
Ryley Beddoe

General session permafrost and cold regions engineering

John Thornley, John_thornley@golder.com, and Erin Trochim,
edtrochim@alaska.edu

Infrastructure's Adaptation to Climate Change at the Russian Cold Region's Territories
Irina Chesnokova

Regional-scale investigation of pile bearing capacity for Canadian permafrost regions in a warmer climate
Amro Faki

Alaska's Transportation Infrastructure in a Changing Environment
Erin Trochim

**Developing a Framework for Assessing the Vulnerability of Infrastructure on Permafrost to Climate Change
Dmitry Streletskiy

Understanding the Changing Natural-Built Landscape in an Arctic Community: An Integrated Sensor Study in Utqiagvik, Alaska
Howard Epstein

Early Warning Frost Detection System
Rob Clark

**Performance of climate projections used for engineering design in Yukon and adjacent Northwest Territories, 1991-2020
Astrid Schetselaar

**A spatially consistent account of infrastructure across the entire Arctic
Annett Bartsch

On the influence of complex and changing Arctic conditions on historic and future waste disposal sites - a multi-criteria risk assessment
Regula Frauenfelder

Geologic Terrain Analysis, Geomorphic Mapping in Support of Infrastructure Development

Michelle Gavel, michelle.gavel@alaska.gov, and Trent Hubbard

Permafrost Characterization Using Ground Penetrating Radar (GPR) in support of land use planning, Inukjuak, Nunavik
Arianne B. St-Amour

**Using Geo-data to adapt to a changing Arctic
Rada Khadjinova

Mesosopic-Model Simulation of Freeze and Thaw with Groundwater Flow for Terrain Change in Permafrost Regions
Shunji Kanie

Geomorphological Mapping in Permafrost Terrain to Inform the Routing and Planning of the Kivalliq Hydro-Fibre Link, Manitoba to Nunavut, Canada
Robin McKillop

Investigating the relationship between permafrost, climate change, and the built environment in Arctic coastal and riverine environments
Albin Rosado

**Multi-disciplinary hazard mapping framework for critical infrastructure on permafrost, Ilulissat, West-Greenland
Johanna Scheer

Engineering Properties of Frozen Soils

Kannon Lee, klee@pndengineers.com, Amy Steiner

Synthesis of Geophysical and Geomechanical Properties of Permafrost-Affected Soils Highlights Complex Processes of Permafrost Degradation in a Geotechnical Context
Min Liew

Geotechnical Properties of Frozen Ground at McMurdo Station, Antarctica
Rosa Affleck

**Thaw consolidation model for permafrost based on the residual stress
Simon Dumais

Creep of marginally frozen soils
Jean-Pascal Bilodeau

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Fine-scale heterogeneity vs. large-scale models: Effects of soil heterogeneity on simulated physical properties - Does it matter?

Melanie Kern

Permafrost core characterization using gamma ray attenuation and industrial computed tomography scanning

Duane Froese

**An Experimental Investigation of Coupled Thermo-Dielectric Properties of Icy Porous Media

Tugce Bbaser

Pipelines, Construction, Mining, and Oil and Gas in Cold Regions

Jessica Worthington, Jessica.Worthington@hilcorp.com, and Joshua Greenhill, JGreenhill@mbakerintl.com

Effects of Foundation Performance on TAPS from Changing Thermal Conditions

Andrew Daggett

Cruz Construction 2021 Regional Permafrost Conference Abstract

Jeff Miller

Concrete Construction in Cold Regions – Quantifying the Impact of Daily Temperature Variations on Required Frost-Protection Measures

Danielle Kennedy

Design and Construction of an At-Grade LNG Storage Tank on Warm Permafrost in Fairbanks, Alaska

John Thornley

Alyeska's 40-plus Years of Experience with Heat Pipes on the Trans Alaska Pipeline

Larry Mosley

**Construction and Structural Analysis of an Arched, Cellulose-Reinforced Ice Bridge for Gap Crossing by (Military) Vehicles

Emily Asenath-Smith

Permafrost Test Sites: A Summary of Alaskan Pipeline Industry Efforts in Addressing Frozen Ground and Related Technical Issues

James Rooney

Slope Stabilization Along a Buried Crude-Oil Pipeline in Ice-Rich Permafrost

Peppi Croft

Embankment Fill Slope Movement on Thaw Sensitive Permafrost: Movement Mechanisms and Thermal Conditions at Lost Creek along the Trans Alaska Pipeline System (Lost Creek – Part 1)

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Peppi Croft

Climate Change Adaptation - Saving our Critical Infrastructure

Liam Zsolt

Initial Performance of Sloped Thermosyphons for Stabilization of Massive Ground Ice Beneath the Alaska Highway, Yukon Territory

Christopher Stevens

Improving Construction and Performance of a Runway in Nuiqsut, Alaska

Doug Simon

Embankment Fill Slope Movement on Thaw Sensitive Permafrost: Combining Creep Testing and Thermal Simulations to Develop Mitigation Options at Lost Creek along the Trans Alaska Pipeline System (Lost Creek – Part 2)

Oliver Hoopes

Linking climate change and human systems: a case study of Arctic pipelines

Nina Blahut

Using Airborne LIDAR to Assess Elevation Trends on the Alaska North Slope

Karl Kyzer

Centrifuge Modelling of Steel Piles in Frozen and Thawing Ground

Chris Clarkson

**Arctic Environmental and Engineering Data and Design Support System
(Arctic-EDS) WORKSHOP**

Sveta Stuefer, sveta.stuefer@alaska.edu, Margaret Darrow, Charles Parr

A workshop session without any abstracts.

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Weekly conference schedule

Early Schedule Release: Version 12 Oct 2021

Detailed schedule for each session will follow. ** Indicates invited speaker.

Mountain Time	Alaska Time	Sunday 24	Monday 25		Tuesday 26		Wednesday 27		Thursday 28	
10:00 AM	8am - 9am		Poster/social hour*		Poster/social hour*		Poster/social hour*		Poster/social hour*	
11:00 AM	9am - 10am		Opening Keynote L. Hinzman		Keynote - M. Darrow Eb Rice Lecture		Keynote - D. Peter		Keynote - F. Nelzon IPA Award to J. Brown	
12:00 PM	10am - 11am	Project/ organization meetings	Geophysical and Remote Sensing Investigations of Changing Permafrost Landscapes	Infrastructure Engineering on Permafrost	Global Terrestrial Network for Permafrost (GTN-P)	Transportation Engineering in Permafrost	Permafrost Discovery Gateway: Big imagery Permafrost Science Today and Tomorrow WORKSHOP	General session permafrost and cold regions engineering	Unique Challenges of Permafrost in Mountain Areas	Pipelines, Construction, Mining, and Oil and Gas in Cold Regions
1:00 PM	11am - 12pm		Break		Break		Break		Break	
2:00 PM	12pm-1pm		Taking a Look at the Overlooked Microorganism s and their Processes in Permafrost	Ground-ice Distribution and its Role in Permafrost Carbon Dynamics	Permafrost Data Systems WORKSHOP	Snow, vegetation, and permafrost interactions and advancements in sensing/monit oring technologies	Dynamics of Permafrost Rivers, Deltas, and Coastlines	Permafrost Dialogue New Avenues of Communication for Permafrost Science, Outreach, & Education	Rock Glacier Inventories and Kinematics	Changing Biogeochemistry of Permafrost Regions
3:00 PM	1pm-2pm		New Remote Sensing Technology and Applications to Map Regional Permafrost Vulnerability	Geologic Terrain Analysis, Geomorphic Mapping in Support of Infrastructure Development	Planetary Permafrost	Engineering Properties of Frozen Soils	Water in Permafrost Systems – An Interdisciplinary Consideration	Arctic Environmental and Engineering Data and Design Support System (Arctic-EDS) WORKSHOP	Closing/Awards	
4:00 PM	2pm-3pm		Social/2nd poster hour*		Social/2nd poster hour*		Social/2nd poster hour*			