2026 AGS

FAIRBANKS ALASKA

TECHNICAL CONFERENCE

Program with Abstracts

Saturday April 18th, 2026

Reichardt Building 201

University of Alaska Fairbanks

ALASKA GEOLOGICAL SOCIETY

A G S

UAF™

DEPARTMENT OF GEOSCIENCES

University of Alaska Fairbanks

College of Natural Science and Mathematics

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About Us

The Alaska Geological Society, Inc.

P.O. Box 101288 Anchorage AK, 99510
On the web: www.alaskageology.org

The Alaska Geological Society is a not-for-profit organization of both professional geoscientists and general earth science enthusiasts. Our mission is to promote interest in, and understanding of, the geology of Alaska and to provide a forum and common organization for those interested in geology and related earth sciences.

Membership Information

The AGS annual memberships expire on November 1st. The annual membership fee is $25/year and $5/year for students. Lifetime memberships are $250. You may download a membership application from the AGS website and return it at a meeting or mail it to the address above. You may also complete an online form at: https://www.alaskageology.org/membership.html.

AGS Publications are now available for on-line purchase on our website.

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2026 AGS Technical Conference

Dear Participants of the 2026 AGS Technical Conference,

It is a pleasure to welcome you to the 2026 Alaska Geological Society Technology Conference, held on the scenic campus of the University of Alaska Fairbanks. This event is hosted by the UAF Department of Geosciences, with invaluable support from the DGGS. I am delighted that you can join us and hope that you will find this conference both stimulating and rewarding.

Each spring, the Alaska Geological Society organizes these conferences, alternating between Anchorage and Fairbanks. This tradition reflects the AGS commitment to fostering interest in Alaska's geology and providing a collaborative platform for enthusiasts and professionals in the earth sciences. Our mission remains clear: to advance understanding, encourage dialogue, and build a community dedicated to geological exploration and knowledge.

The AGS stands proudly alongside the Coast Geological Society, Los Angeles Basin Geological Society, Northern California Geological Society, and San Joaquin Geological Society as one of five active member societies within the Pacific Section of AAPG or PSAAPG. United by a shared vision, AGS and PSAAPG work together to support geological education through regular meetings, informative publications, immersive field trips, and scholarships for promising students. We are sincerely grateful to PSAAPG members for their ongoing moral and financial contributions, which have been instrumental in bringing this conference to fruition.

We also extend thanks to our corporate sponsors, whose material and financial support have made it possible to host this event. Your involvement has been crucial, along with your generosity. A special note of appreciation goes to the AGS Technical Conference Committee, Nina Harun, Jochen Mezger, Marwan Wartes and Laura Gregersen. Their dedication and hours of hard work have been vital in planning this gathering. Finally, an Alaska-sized thank you to all the presenters—both oral and poster—and to the organizers of our extracurricular field trip. These trips enrich the conference experience for everyone.

Wishing you a productive and enjoyable event,

Monte Mabry, AGS President, 2025-2026

Welcome from the Conference Committee

The AGS Technical Conference is a timely kick-off to the summer season. The talks and posters being presented at the 2026 conference reflect the diversity of geological research in the state. It is a great opportunity for geologists and students to learn about all the exciting projects happening in this great state.

We want to thank the Department of Geosciences at the University of Alaska Fairbanks for supporting and hosting the conference at the Reichardt Building. We want to thank our sponsors Pacific Section of the American Association of Petroleum Geologists (PSAAPG), ConocoPhillips and Pacific Rim Geological Consulting. Without our sponsors, this would not be possible. We also want to thank everyone who submitted abstracts for their presentations and posters. We would not be able to host the conference without your willingness to share your important research. We greatly appreciate CRREL and the UAF Museum of the North support for our exciting field trips. Enjoy the conference and join us for Happy Hour at the UAF Pub (sponsored by Tom Budtzen of Pacific Rim Geological Consulting) at the conclusion of the conference!

Thank you,
2026 AGS Technical Conference Committee

Nina Harun (DGGS), Jochen Mezger (UAF), Marwan Wartes (DGGS) and Laura Gregersen (DOG).

Alaska Geological Society Technical Conference
Saturday, April 18th

Conference Schedule

8:15 AM – 9:00 AM Registration and Check-in Poster setup begins (open all day).

9:00 AM – 9:10 AM Welcome and Opening Remarks Monte Mabry, AGS President

9:10 AM – 10:00 AM Keynote Presentation

Patrick Duckenmiller (University of Alaska Fairbanks, Museum of the North)
Cretaceous Dinosaurs in Alaska: Major Questions, Recent Advances, and Future Directions

10:00 AM – 10:30 AM Morning Break & Poster Viewing

10:30 AM – 11:50 AM Session 1:

- **Thomas Buntzen** (Pacific Rim Geological Consulting)

  Metallogenic Framework of Greenland-A Brief Review

- **Minh Pham** (University of Florida, Gainesville) (virtual)

  Diachronous Eclogite-Facies Metamorphism and Rapid Exhumation in the Brooks Range Schist Belt, Northern Alaska

- **Isabella Muller** (University of Texas at Austin)

  Apatite Fission Track and 40Ar/39Ar Thermochronology of the Yukon-Tanana upland, Interior Alaska

- **Tabitha Nowak** (Virginia Tech) (virtual)

  Reconstructing Spatial and Temporal Megathrust Rupture History using Stratigraphy and Microfossils at Sitkinak Island, AK

11:50 AM – 1:00 PM Lunch & Poster Viewing

1:00 PM – 2:00 PM Session 2:

- **Erin Campbell** (Alaska DGGS)

  Alaska Division of Geological & Geophysical Surveys: An Overview and Update

- **Trystan Herriott** (Alaska DGGS), M. Wartes, J. Crowley, D. LePain, J. Long, and M. Schmitz

  Dating sequence-stratigraphic surfaces with CA-ID-TIMS U–Pb geochronology and Bayesian age–depth modeling—Further resolving a record of Cenomanian transgression in northern Alaska

- **Zakaria Hannebaum** (University of Alaska Fairbanks), G. Erickson, K. Johnson, J. Ramezani, K. Tsukui, P. McCarthy, P. Flaig, Z. Perry, and P. Druckenmiller

  Updated Chronostratigraphy for the Prince Creek Formation Reveals the Paleogeographic Significance of Two New Ornithischian Dinosaurs

2:00 PM – 2:30 PM Afternoon Break & Poster Viewing

2:30 PM – 3:30 PM Session 3:

- **Claire Puleio** and Jessica Larsen (University of Alaska Fairbanks)

  Magma storage conditions at Mount Edgecumbe (L'úx Shaa) volcano

- **John Eichelberger,** Marwan Wartes and Nina Harun (Alaska DGGS)

  The Geothermal Riches of Alaska

- **Nora Nieminski** (Program Manager Coastal Hazards, Alaska DGGS), Harper Baldwin, Chris Miao, Seth Classen, Jan Olsen, and Jaden Carl

  From Observation to Resilience: Integrated Storm Impact Analysis Following Ex-Typhoon Halon

3:30 PM – 3:50 PM Recognition of Sponsors, Student Scholarship Recipients, Pathfinders and Conference Student Presentation Awards.

3:50 PM – 4:00 PM Closing Remarks & Adjournment

4:15 PM – 5:15 PM Post Session UAF Museum of the North Tour

5:00 PM – 7:00 PM Happy Hour at the UAF Pub

Poster Session (Open All Day)

Viewing during breaks and lunch

Location: Reichardt Building, University of Alaska Fairbanks

Jared Gooley (U.S. Geological Survey)

New Detrital Zircon Ages Inform Sediment Provenance and Correlation of the Upper Cretaceous–Cenozoic Colville Foreland Basin, North Slope, Alaska

Kim Kyungmin (University of Alaska Fairbanks)

Data assimilation of Long-Period seismicity during the Great Sitkin eruption since 2021: Implication for gas flow rate and eruption dynamics.

Sushmita Maurya (University of Alaska Fairbanks)

Aircraft recordings using permanent seismic stations in Alaska

Xochitl Muñoz (University of Alaska Fairbanks)

Small Theropod Dinosaurs from the Prince Creek Formation of Northern Alaska

Saurabh Shukla (University of Alaska Fairbanks)

Toward Machine-Learning Detection of Aircraft Using Seismic Recordings in Alaska

David Szumigala (Alaska Division of Geological & Geophysical Surveys)

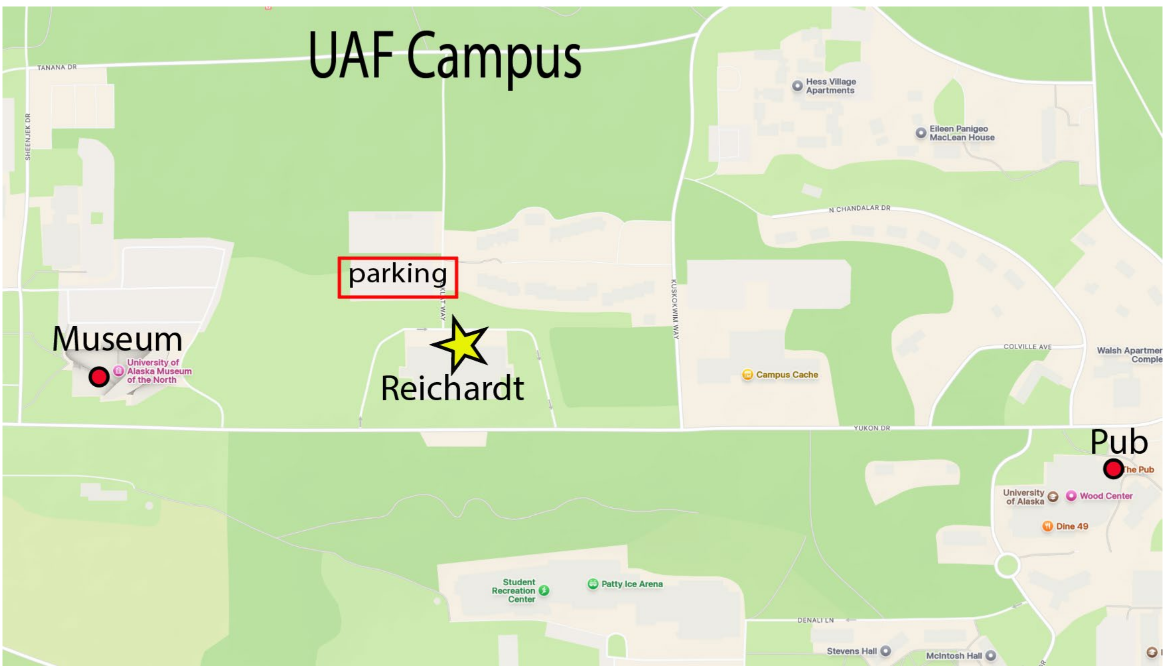
Alaska Sources of Critical Minerals

Venue and Logistics

Conference Location: Reichardt Building, University of Alaska Fairbanks Campus

Address: 1930 Yukon Drive, Fairbanks, AK 99775

Parking: Large parking lot behind the Reichardt Building. Parking is free all-day Saturday and fees apply on Friday. No parking in spaces reserved for handicapped parking.

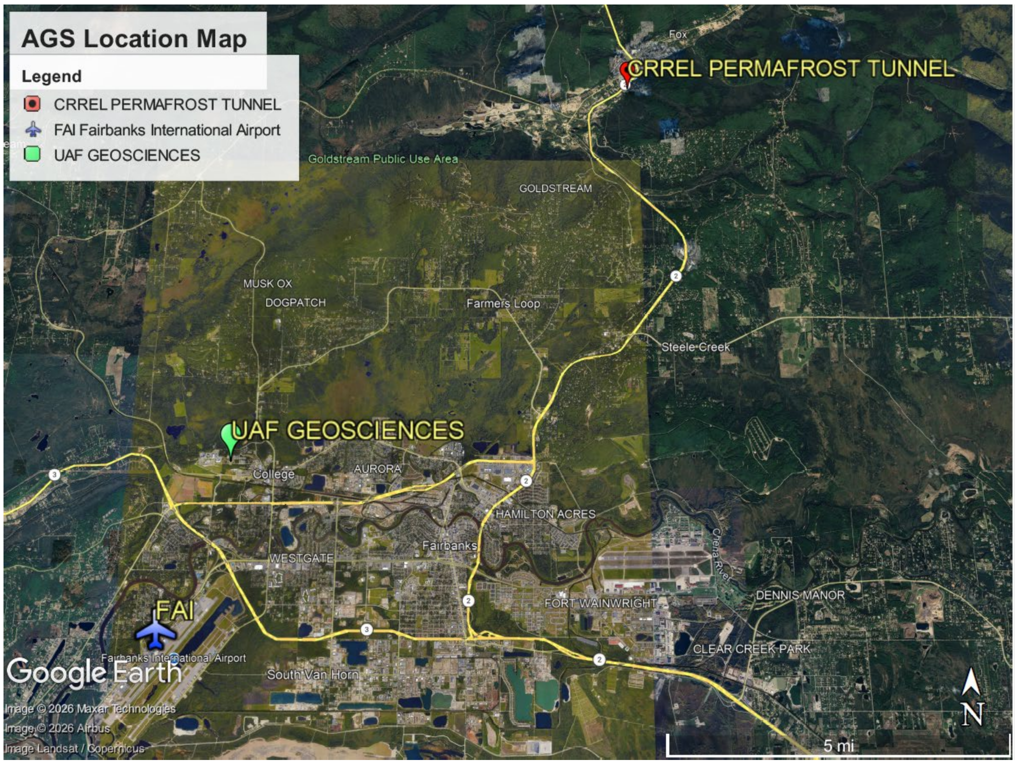


Pre-Conference Field Trip: CRREL Permafrost Research Tunnel

Address: 2126-2166 Steese Hwy, Fairbanks, AK 99712

Date: April 17, 2026

Time: 4:00 PM to 5:30 PM, MEET AT PERMAFROST TUNNEL



Post-Conference Field Trip

University of Alaska, Museum of the North: Tour of the Collections
Time: Saturday, April 18th at 4:15 PM

Location: University of Alaska, Museum of the North, 1962 Yukon Drive.
Special Thanks to Pat Dunkinmiller and his students.
Limit to 14 Participants *Meet up at conference.*

Post-Conference Happy Hour

Special thanks to Tom Bundtzen (Pacific Rim Geological Consulting)

Time: Saturday April 18th, 5:00 PM – 7:00 PM

Location: UAF Pub, Wood Center lower level

Details: First round is on us! Join us for a casual get-together to celebrate a successful conference.

Technical Conference Abstracts

Keynote

Cretaceous dinosaurs in Alaska: Major questions, recent advances, and future directions

Patrick Duckenmiller, University of Alaska Fairbanks, Museum of the North

Alaska is home to extensive Cretaceous non-marine sedimentary units exposed in coastal, river, and mountain settings that preserve body and trace fossils of dinosaurs and other terrestrial vertebrates. In particular, the Prince Creek Formation on the North Slope and the Cantwell Formation in the Alaska Range have produced world-class collections of dinosaur bones, teeth, and footprints. The discovery that dinosaur fossils occur in Alaska is not only fascinating to the public, but it has also generated considerable interest in the scientific community. This stems in part from the fact that deposition of fossiliferous units occurred at paleolatitudes as high as 80° – 85° North — making these the northernmost dinosaurs to have ever lived on Earth. At these high paleolatitudes, Alaska dinosaurs had to endure unusually cool climatic conditions, with ice and snow, and as much as four months of complete winter darkness. Given these extreme physical parameters, Alaska fossils provide crucial data to address big picture hypotheses regarding dinosaur physiology, migration, biogeography and life history strategies.

The University of Alaska Museum of the North houses the largest polar dinosaur collection anywhere, which is being used to address numerous paleobiological questions. Specifically, what dinosaurs lived in Alaska, and are they the same species that lived at coeval lower latitude sites? Were these animals year-round denizens of the Arctic or did they migrate seasonally? What types of physiological, reproductive, and behavioral adaptations did polar dinosaurs have to endure the highly seasonal environment? Recent research is providing new, and often surprising insights into these questions, including the discovery of many new species of dinosaurs, birds, mammals, and even fishes. We also recognize that at least some dinosaurs were likely "warm-blooded" and that the paleoArctic was an important nesting area for both avian and non-avian dinosaurs. Looking ahead, ongoing fieldwork and new discoveries continue to fuel fresh questions regarding evolutionary trajectories of dinosaur lineages, overwintering strategies, and diet. Key to testing hypotheses are methodological advances using stable isotope geochemistry, osteohistology, and even biomolecular techniques. Polar dinosaurs will continue to fascinate both scientists and the public for decades to come.

Session 1:

Metallogenic Framework of Greenland--A Brief Review

Thomas K. Bundtzen

Pacific Rim Geological Consulting, Inc.

Covering 836,330 mi2, Greenland is among the largest island complexes in the world, and one of the least populated--with only 58,500 residents. Roughly 82 percent of Greenland's surface is covered the world's second largest accumulation of glacial ice. Much of Greenland is older than most of Alaska and is related to cratonal-related rocks of northern Canada. Greenland is mainly underlain by Archean rocks along the west coast and the eastern coast north of approximately 70o N. The Archean is characterized by granulite-gneiss to amphibolite facies terranes but contains lower rank greenstone-bearing metamorphic areas that host Banded Iron Formation (BIF) such as the Isua (1,225 Mt @ 35% Fe) deposit north of Nuuk. The Archean rocks are overlain by the Paleoproterozoic Karrat Group, a thick metasedimentary sequence that hosts the past productive, carbonate hosted Black Angel mine (16 Mt @ 16% combined Pb/Zn) which was mined underground from 1970-to-1992. The 1.72-1.85 Ga Paleozoic Ketilidian Metamorphic Complex (KMC), an orogenic belt in Southern Greenland, formed by collision with the North Atlantic craton, contains Greenland's only productive gold mine at Nalunaq; the KMC hosts important high quality graphite resources throughout much of southern Greenland. The much-studied Mesoproterozoic Gardar Intrusive Suite (GIS) in Southern Greenland formed during a period of continental rifting and alklaline magmatism. Gardar age intrusions at Kringlerne (Ta-Nb-REE-Zr), Kvanfeld (U-REE-Zn), and Motzfeldt (Nb-Ta) host some of the largest resources of rare metals in the world. The Gardar intrusive at Ivigtut was mined for cryolite from 1845-1987, a truly strategic mineral used in the fluxing of aluminum and was the world's only commercial source of cryolite until synthetic substitutes for cryolite were created. The Neoproterozoic to Paleozoic sedimentary basins in northern Greenland host large sediment- hosted Pb/Zn deposits as at Citronen (132 Mt @ 8% Pb/Zn), which occurs in shale-dominated section of the Franklinian basin. Plutonic-related metalliferous deposits in east and southeast Greenland include the 56 Ma Skaergaard Au-Pd-V bearing layered intrusion (202 Mt @ 2.5g/t Pd+Pt, 1.0 g/t Au, 0.2% V), and the 25 Ma Malmbjerg Mo porphyry (329 Mt @ 0.15% Mo); both attest to significant mineralization in rocks of Tertiary age in East Greenland, related to magmatism associated with the North Atlantic Rift system.

Diachronous eclogite-facies metamorphism and rapid exhumation in the Brooks Range Schist Belt, northern Alaska.

Pham, Minh T.T. (1), Vogl, James J. (1), Baker, Peter Louis (2), Vervoort, Jeff David (2)

(1) Department of Geological Sciences, University of Florida, Gainesville, FL, USA
(2) School of the Environment, Washington State University, Pullman, WA, USA

The Brooks Range orogen formed during convergence between the Koyukuk arc and the Arctic Alaska margin, involving Angayucham Ocean closure, ophiolite obduction, and continental subduction (Moore et al., 1994). The Schist Belt (SB), a >600 km-long HP metamorphic belt in the orogenic core, lacks robust timing constraints on HP metamorphism, as previous estimates relied on Ar/Ar mica cooling ages and U-Pb zircon that may not uniquely record HP conditions. We applied Lu–Hf garnet geochronology (ID-MC-ICPMS) and in situ U–Pb titanite petrochronology to the SB's

only two known eclogite bodies—isolated mafic lenses within blueschist- and greenschist-facies lithologies at Clara Creek (Dalton Highway) and Cosmos Hills (~250 km west along strike).
Clara Creek eclogite yields a Lu–Hf garnet age of 136.0 ± 1.0 Ma (2σ), interpreted as the age of HP metamorphism. Decompression-related titanite in textural equilibrium with albite + epidote yields U–Pb ages of 137.1 ± 1.3 Ma (2σ) and 134.0 ± 4.6 Ma (2σ); overlap with the garnet age indicates peak metamorphism and initial decompression were separated by ≤2–3 m.y., consistent with rapid initial exhumation typical of HP terranes. Cosmos Hills eclogite yielded a younger Lu–Hf garnet age of 130.5 ± 1.0 Ma (2σ), demonstrating that HP metamorphism was diachronous along strike. These data provide the first direct multichronometer constraints on eclogite-facies metamorphism in the SB, revising peak HP conditions to ~136–130 Ma, younger than the ~141 ± 6.1 Ma previously inferred from U–Pb zircon (Lemonnier, 2016).
Published constraints indicate that formation of the Brooks Range ophiolite and development of the metamorphic sole at ~173–160 Ma mark subduction initiation (Wirth et al., 1993; Moore et al., 1994; Harris, 2004; Box et al., 2019), implying ~20–30 m.y. of intra-oceanic convergence, thrusting, and seamount accretion prior to burial of the SB to eclogite-facies conditions. Garnet ages of 136–130 Ma postdate the earliest syn-orogenic deposits in the Brookian thrust belt—Berriasian–Valanginian deep-marine clastic rocks of the Okpikruak Formation (~145–134 Ma; Moore et al., 2015)—which record erosion from a largely submarine orogenic wedge with no evidence for significant topography or input from the continental hinterland (Moore et al., 1994, 2015). This indicates that deep subduction of Schist Belt rocks was coeval with, and postdated the onset of, thrust-driven sedimentation from a still-submerged orogen.
Integrated with a widespread ~114 ± 5 Ma greenschist-facies overprint (Hoiland et al., 2018) and ~105–103 Ma cooling and exhumation (Vogl et al., 2002), these data indicate a multistage exhumation history: rapid initial exhumation from eclogite-facies depths, a ~20 m.y. interval of uncertain tectonic significance that is the focus of our ongoing petrochronologic investigation, and subsequent greenschist-facies overprinting and cooling beginning around 114 Ma. Significantly, metamorphic hinterland detritus did not enter the foreland basin until the Albian (Moore et al., 2015), further implying a significant lag between deep subduction/initial decompression and final erosional unroofing to the surface.

References:
- Box, S.E., Moore, T.E., Aleinikoff, J.N., Wirth, K.R., Wang, D., and Nelson, S.W., 2019, New zircon U-Pb ages and Hf isotopes from Brooks Range ophiolite and Koyukuk arc, the upper plate of the Brookian orogen, northern Alaska: Geological Society of America Abstracts with Programs, v. 51, no. 5, doi:10.1130/abs/2019AM-336620.
- Harris, R.A., 2004, Tectonic evolution of the Brooks Range ophiolite, northern Alaska: Tectonophysics, v. 392, no. 1–4, p. 143–163, doi:10.1016/j.tecto.2004.04.019.
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- Moore, T.E., O'Sullivan, P.B., Potter, C.J., and Donelick, R.A., 2015, Provenance and detrital zircon geochronologic evolution of lower Brookian foreland basin deposits of the western Brooks Range, Alaska, and implications for early Brookian tectonism: Geosphere, v. 11, no. 1, p. 93–122, doi:10.1130/GES01043.1.
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Apatite Fission Track and 40Ar/39Ar Thermochronology of the Yukon-Tanana upland, interior Alaska

Muller, I.P. (1), Ketcham, R.A. (1), Gillis, R.J.(2), Twelker, E. (2), and Hofmann, F. (3)

(1) University of Texas at Austin
(2) Alaska Division of Geological & Geophysical Surveys
(3) University of Alaska Fairbanks

The late-stage tectonic evolution of the Yukon-Tanana upland (YTU) in interior Alaska is complex and has received limited attention, due in large part to the inaccessibility of the area. Overlapping major tectonic events in the Eocene, including dextral slip on the Tintina and Denali faults and development of the Alaska orocline (~66-44 Ma), complicate interpretations of geological datasets from this time. Prior to this, a Cretaceous extensional event led to widespread pluton emplacement throughout the region, establishing a thermal and structural framework present during later strike-slip faulting and oroclinal bending. An open question remains as to what the upper crustal structure looked like in interior Alaska during this time.Here we present biotite and K-feldspar 40Ar/39Ar ages that span the Cretaceous through early Eocene. We combine this with new apatite fission track (AFT) ages to capture cooling across a broad temperature range (< 350°C). Sampling focuses on paired, same-elevation transects across northeast-striking faults and within-block elevation profiles. The resulting dataset reveals early Eocene cooling recorded in AFT ages and age variations across faults, which indicate cooling between ~60-40 Ma. The distribution of AFT and 40Ar/39Ar ages further suggests prolonged cooling consistent with an elevated geothermal gradient maintained from the Cretaceous through Eocene, likely maintained by magmatic heat input and tectonic processes associated with extension, faulting, and oroclinal bending.

Reconstructing spatial and temporal megathrust rupture history using stratigraphy and microfossils at Sitkinak Island, AK

Tabitha Nowak (1), Tina Dura (1), Simon Engelhart (2), Richard Briggs (3), Robert Witter (4), Rich Koehler (5), , Peter Haeussler (4), and Grace Summers (2)

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(2) Department of Geography, Durham University, Durham, England
(3) Geologic Hazards Science Center, U.S. Geological Survey, Golden CO, USA
(4) Alaska Science Center, U.S. Geological Survey, Anchorage, AK, USA
(5) Department of Geological Sciences and Engineering, University of Nevada, Reno, Reno, NV, USA

The Alaska-Aleutian subduction zone frequently produces great (Mw>8.0) earthquakes with variable rupture patterns, complicating seismic hazard assessments. The ~200-year historical Alaskan earthquake record is insufficient to describe long-term subduction zone behavior, which requires millennial-scale geologic investigations. Sitkinak Island, located at the western extent of the 1964 Mw 9.2 rupture zone in the Kodiak Archipelago, is well-positioned to study the persistence of megathrust rupture boundaries. Previous work in south Sitkinak Lagoon identified a unique mixed coseismic uplift and subsidence record, marked by sharp, laterally extensive peat-mud (subsidence) and mud-peat (uplift) contacts in coastal marsh stratigraphy. However, questions remain about the site-wide continuity of paleoseismic evidence and the amount of land-level change recorded. A multi-core analysis and quantitative approach across diverse depositional settings is needed to corroborate this unique mixed record.

Here, we compare stratigraphic and microfossil data from paired sites in different geomorphic environments on Sitkinak Island. In an east-west transect of seven sediment cores, we identified four sharp stratigraphic contacts that indicate two subsidence and two uplift events that are inferred to have been caused by megathrust ruptures. We obtained age estimates using Cs-137 analysis and radiocarbon dating. Across earthquake contacts we analyzed fossil diatoms, key indicators of salinity changes, and applied a transfer function to statistically relate diatom assemblages to elevations within the tidal frame. Preliminary paleoelevation reconstructions across sharp contacts indicate subsidence of 0.90 ± 0.27 m at 1964 CE, uplift of 0.46 ± 0.25 m at 475-529 cal yrs BP, subsidence of 0.63 ± 0.27 m at 484-653 cal yrs BP, and uplift of 0.86 ± 0.26 m at 731-900 cal yrs BP. The timing and direction of coseismic land-level change are consistent between the two distinctive geomorphic environments in south Sitkinak Lagoon, strengthening our confidence in a mixed uplift and subsidence signal at the site. Our quantitative estimates of paleoearthquake rupture behavior will be integrated into rupture models to define slip variability in this region, improving hazard assessments in Alaska.

Session 2:

Alaska Division of Geological & Geophysical Surveys: An Overview and Update

Erin Campbell

Alaska State Geologist and Director, Alaska Division of Geological & Geophysical Surveys

The Alaska Division of Geological & Geophysical Surveys (DGGS) is guided by its statutory mission to determine the potential of Alaska land for production of metals, minerals, fuels, and geothermal resources, to determine the locations and supplies of groundwater and construction materials, and to identify potential geologic hazards to infrastructure. Our energy resources, mineral resources, and surficial geology staff are focused on oil and gas, coal, geothermal energy, minerals, and aggregate resources. The hydrology and geologic hazards staff cover avalanches, landslides, earthquakes, tsunamis, coastal hazards, geologic health hazards, volcano hazards, and hydrology. To disseminate our work, several staff are dedicated solely to the curation and delivery of geologic information. The agency also hosts the Alaska Geospatial Office and Geologic Materials Center in Anchorage. In response to national and state priorities, federal and state funding opportunities, and recent meteorological and geological disasters, DGGS has renewed emphasis in geothermal energy, and has expanded staff in mineral resources and geologic hazards. The agency strives to address the needs of Alaskans efficiently, quickly, and thoroughly, and to best benefit all residents.

Dating sequence-stratigraphic surfaces with CA-ID-TIMS U–Pb geochronology and Bayesian age–depth modeling—Further resolving a record of Cenomanian transgression in northern Alaska

Trystan M. Herriott (1), Marwan A. Wartes (1), James L. Crowley (2), David L. LePain (1), Joshua H. Long (3), and Mark D. Schmitz (2)

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Integrating high-precision geochronology with sequence stratigraphy in a Bayesian age–depth framework is a new and promisingly powerful tactic for basin analysis. Here, chemical abrasion-isotope dilution-thermal ionization mass spectrometry results from tephra and detrital zircon condition age–depth models that calibrate a chronostratigraphic correlation between two mainly shallow-marine outcrops of Nanushuk and Seabee Formations on the central North Slope, Colville foreland basin. The Nanushuk–Seabee transition at each location is a transgressive surface of erosion (TSE) that is widely regarded to reflect rapid flooding at ~95 Ma and sometimes serves as a transgressive surface (TS) proxy. However, we document diachroneity for TSE establishment, with posterior ages of ~96.4 Ma (Rooftop Ridge) and ~95.0 Ma (Ninuluk Bluff). And stratal stacking relations reveal older onset of ~3rd-order transgression within Nanushuk, with TS posterior ages of ~96.9 Ma (Rooftop Ridge) and ≥~96.7 Ma (Ninuluk Bluff). Stratigraphic accumulation rates in lower, muddy offshore transgressive Seabee (~140 m/Ma [Rooftop Ridge] and ~160 m/Ma [Ninuluk Bluff]) are within the range of rates for upper, sandy shoreface-prone transgressive Nanushuk (~180 m/Ma [Rooftop Ridge] and ~110 m/Ma [Ninuluk Bluff]), with notable sedimentation evidently rendering sluggish shoreline retreat during marked base-level rise. Regionally, Seabee is thus as old as ~96.9 Ma, which is the age of a tephra from lower, deep-marine Seabee that overlies Torok Formation near the Lupine River. Slope-apron successions that include the oil-bearing Bermuda interval—which is usually ascribed to lowstand conditions—are reinterpreted here as transgressive systems tract (TST) Seabee that correlates with the TST Nanushuk and Seabee topset record, tying together shallow- and deep-water healing-phase wedges that mark termination of the long-lived (~20 Myr) Nanushuk–Torok clinothem at ~97 Ma. This case study showcases the collective benefits of employing these methods to delineate systems tracts development in four dimensions, elucidating basin-fill successions and supporting high-fidelity parsing of local to global candidate causal controls on stratigraphic architecture.

Updated Chronostratigraphy for the Prince Creek Formation Reveals the Paleogeographic Significance of Two New Ornithischian Dinosaurs

Zakaria Hannebaum (1), Gregory Erickson (2), Kirk Johnson (3), Jahandar Ramezani (4), Kaori Tsukui (4), Paul McCarthy (5), Peter Flaig (6), Zachary Perry (1), and Patrick Druckenmiller (1)

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(2) Department of Biological Sciences, Florida State University
(3) National Museum of Natural History, Smithsonian Institution
(4) Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology
(5) University of Alaska Fairbanks Department of Geosciences
(6) Bureau of Economic Geology, The University of Texas at Austin.

The Upper Cretaceous Prince Creek Formation (PCF) lacks a robust chronostratigraphic framework for its fossil bearing units. Two stretches of PCF fossiliferous rocks outcrop along the Colville River on the North Slope of Alaska: (1) Ocean Point (OP), and the (2) Kikak-Tegoseak Quarry (KTQ). OP is reported to be early Maastrichtian based on palynological, faunal, and 40Ar/39Ar radiometric data, ca. 69.1 $\pm$ 0.03 Ma. Previously reported TIMS results from newly collected bentonite samples suggest OP strata is instead late Campanian, ca. 72.744 $\pm$ 0.053 to 72.974 $\pm$ 0.019 Ma. Nearly 50.0 km south of OP on the Colville River lies the KTQ. Previous work suggested this quarry is temporally equivalent to OP based on palynological correlates, but crucially, the KTQ lacks radiometric constraints. This study seeks to update the chronostratigraphy of the PCF with new data to facilitate accurate placement of its fauna, including two new dinosaur taxa.

Two important dinosaurs remain undescribed from the PCF. Material representing a leptoceratopsid, a small (pig-sized) ceratopsian, was discovered recently at OP. This discovery adds to a growing list of small-bodied ornithischian dinosaurs present at OP; in fact, OP records more co-occurring small-bodied ornithischians than anywhere else in North America during the Campanian. This unusual diversity raises questions about how so many small-bodied ornithischians were able to coexist on the North Slope during the Campanian and may provide further support for faunal provincialism during the Campanian. The second taxon is a lambeosaurine (crested hadrosaurid) represented by an incomplete skull [UAMES 7043] collected from near the KTQ. Two lineages of lambeosaurines dispersed into Eurasia from North America during the Late Cretaceous: the corythosaurines and parasaurolophines. The timing of this dispersal is uncertain. UAMES 7043 may temporally fall within this dispersal event and will illuminate our understanding of how large vertebrates utilized polar landscapes during the Late Cretaceous.

Session 3:

Magma storage conditions at Mount Edgecumbe (L'úx Shaa) volcano

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(2) Alaska Volcano Observatory

Mount Edgecumbe is a stratovolcano located in Southeast Alaska which last erupted as recently as 800 years ago. A new magma intrusion was observed in 2018 resulting in increased seismicity and ground

deformation. This study provides petrologic and experiment-based data on the magma plumbing system at this volcano using late Pleistocene dacite samples. This dacite is representative of highly explosive activity at the volcano. Temperature estimates from Fe-Ti oxide equilibrium pairs yield 922 to 975 °C in the dacite, with fO_2 ΔNNO 0.5 to -0.9 log units (Matt Loewen, USGS, personal communication). These experiments cover pressures ranging from 500 to 2000 bars and temperatures ranging from 800 to 950 °C at water-saturated conditions. For temperatures below 900 °C, we utilized Waspaloy cold seal pressure vessels and above 900 °C we utilized TZM alloy pressure vessels. Waspaloy runs were buffered at ~ NNO+0.5 log units using a nickel filler rod. TZM/MHC runs were buffered by adding ~2.5 bars CH_4 gas to buffer hydrogen diffusion, monitored with a separate capsule containing buffer compounds. The results from these experiments are used along with Rhyolite-MELTS modelling to replicate the mineral assemblages and abundances in the natural sample. The experiments indicate a preliminary magma storage pressure of <1000 bars. The 2018 unrest is inferred as magma movement from 20 km to 10 km depth (Grapenthin et al., 2022), which is much deeper than the storage depth obtained from these experiments. Therefore, it is likely that the material intruded during the recent unrest may be basalt replenishing the system, with silicic magmas stored at much shallower depths.

The Geothermal Riches of Alaska

John Eichelberger, Marwan Wartes, and Nina Harun

Alaska Division of Geological & Geophysical Surveys

Natural resources like oil and gold have been critical to Alaska's economic development and geothermal energy may prove equally important in the future. Alaska has some of the most significant Geothermal resource potential in the country as highlighted by nearly 100 known thermal springs. There is a pressing need for additional sources of electricity in southcentral Alaska which is currently facing looming shortfalls of natural gas from Cook Inlet. Other emerging on-site uses for geothermal energy include data centers, ore processing, green fuel manufacturing, and even recharging electric ships. Although the remote nature of the state presents a challenge, history shows that if the resource is sufficiently large, a way will be found to develop it.

Government has traditionally played a role in resource development by making geoscience data freely available to encourage economic growth. The Alaska Division of Geological & Geophysical Surveys led early efforts to catalogue Alaska's geothermal resource potential in the late 1970's and 1980's. This work was largely funded by the federal and state monies and involved with U.S. Geological Survey and academic partners. The major drop in the price of oil in the late 1980's led to a re-prioritization of state and federal resources and the DGGS geothermal program became dormant. Much of the legacy data collected during this early phase (spring location, temperature, flow rate, aqueous and rock chemistry, bottom hole temperatures, etc.) is now accessible via the DGGS Geothermal Resources of Alaska App: https://geoportal.dggs.dnr.alaska.gov/portal/apps/

A renaissance in state-led geothermal energy began in 2024 when Governor Dunleavy introduced legislation aimed at unlocking Alaska's geothermal energy. This ultimately led to modernization of the state's geothermal statutes and leasing framework. In parallel, the legislature approved funding for DGGS to restart its geothermal program. The primary objective of the program is to collect baseline geological and geophysical data to advance understanding of Alaska's geothermal potential. These data will reduce risk and attract private sector exploration investment. Early efforts have established important technical partnerships and created a venue for geothermal stakeholder networking.

Geothermal energy in most of Alaska will be different from the US West, where elevated heat flow is associated with crustal extension in the Basin and Range province in Nevada and adjacent regions. The dominant theme in Alaska is subduction, with geothermal activity revealed by intense volcanism of the Aleutian Chain. Two of these volcanoes, Augustine Volcano and Mt Spurr, are relatively close to population centers and could potentially supply power to the Railbelt grid. Both of these sites are being explored with State, federal, and private funding. Demonstrated success at either site would help to open much of the Aleutian Range for geothermal development. Back-arc settings, such as Interior Alaska also include regional fault systems, scattered volcanism, and many hot springs. Alaska's only developed geothermal system uses binary ORC technology to generate electricity, showing the potential of using hot springs to provide energy security for off-grid and off-road Native villages, now approaching fruition at Pilgrim Hot Springs on the Seward Peninsula. The future of geothermal energy development in Alaska will be exciting. Continued success in geothermal development in the state's unique geologic setting will be critical to sustaining national momentum in harnessing sustainable domestic sources of energy.

From Observation to Resilience: Integrated Storm Impact Analysis Following Ex-Typhoon Halon

Nora Nieminski (1), Harper Baldwin (2), Chris Miao (3), Seth Classen (3), Jan Olsen (4), and Jaden Carl (4)

(1) Alaska Division of Geological & Geophysical Surveys
(2) NOAA Office for Coastal Management
(3) University of Alaska Fairbanks
(4) Native Village of Hooper Bay

Ex-Typhoon Halong caused catastrophic flooding and significant erosion to parts of western Alaska in October 2025. This presentation highlights comprehensive analyses of the storm's impacts, integrating community observations, physical high-water mark surveys, water-level sensor records, photographic documentation, digital elevation models, aerial imagery, repeat coastal elevation profiles, and historical context. Together, these high-resolution geospatial and temporal datasets provide a detailed record of flooding and erosion associated with this extreme event. The integrated approach improves our ability to accurately characterize storm impacts, refine future storm-impact forecast models, strengthen community-specific erosion and flood-extent projections, and inform hazard assessments, adaptation strategies, and resilience planning across Alaska. Ongoing collection of high-resolution data is supported by the active involvement of residents and the development of new tools to advance data collection, analysis, and visualization. These efforts are meant to further enhance Alaska's storm prediction capabilities, emergency response, and long-term hazard mitigation planning.

Poster Abstracts

Jared Gooley (U.S. Geological Survey, Alaska Science Center, Anchorage AK)

New Detrital Zircon Ages Inform Sediment Provenance and Correlation of the Upper Cretaceous–Cenozoic Colville Foreland Basin, North Slope, Alaska

Alaska's Colville Foreland Basin strata record Cretaceous subsidence from tectonic loading of the ancestral Brooks Range, changes in sediment source and supply during rifting of the Canada Basin, and Cenozoic growth of the orogen. Subsurface correlations of non-marine to deep-water clinothems imply that these events drove multiple northeast-prograding transgressive-regressive cycles and controlled the distribution of petroleum reservoirs throughout the basin. However, correlating outcrop reservoir analogs to the subsurface can be challenging, particularly among lithologically similar deep-water deposits, where chronostratigraphic information is lacking. We present new detrital zircon (DZ) U-Pb data (>50 outcrop and well samples) from Upper Cretaceous–Cenozoic strata and calculate maximum depositional ages to understand sediment provenance changes and test emerging sequence stratigraphic models for the Colville Basin.

Results show that the Coniacian to mid-Campanian clinothems of the lower and middle Prince Creek and Schrader Bluff formations mark a basin-wide increase in reworked volcanic ash content sourced from the Okhotsk-Chukotka Volcanic Belt (OCVB), with mid-Cretaceous ages comprising >70% and 25–80% of DZ, respectively. Following a major transgression, mid-Campanian–Paleocene clinothems of the upper Prince Creek and Schrader Bluff formations host reduced Late Cretaceous DZ (0–20%) due to cessation of OCVB activity, and increased Paleozoic to Triassic DZ (30–50%) that we attribute to recycling of the older Chukotka-sourced Nanushuk Formation. Cenozoic strata are relatively devoid of contemporaneous zircon and denote decreased supply of volcanic ash content to the Colville Basin. Paleocene clinothems of the Sagavanirktok and Canning formations consist of >80% Paleozoic DZ sourced from central Brooks Range allochthons. Eocene–Miocene clinothem DZ distributions show diminishing Mesozoic and increasing Precambrian ages up-section. Throughout the Cenozoic, contractional deformation propagated northward and parautochthonous rocks of the eastern Brooks Range were rapidly uplifted, causing eastward tilting of the basin. These DZ provenance signatures are stratigraphically consistent across the basin and prove useful for correlating genetically related sequences, allowing us to apply outcrop observations to coeval strata in the subsurface.

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Kim Kyungmin (University of Alaska Fairbanks)

Data assimilation of Long-Period seismicity during the Great Sitkin eruption since 2021: Implication for gas flow rate and eruption dynamics.

Volcanic activity is accompanied by various types of seismicity, particularly long-period (LP) events and tremor, which differ from tectonic earthquakes by their lower-frequency content. Numerous numerical models suggest that long-period (LP) seismicity and tremor are from magmatic or hydrothermal fluid processes. However, the quantitative application of such models to infer subsurface physical conditions remains limited because the framework of integrating both numerical models and observational data has not been developed. In this study, we apply a physics-based inversion framework to LP seismicity at Great Sitkin Volcano to retrieve key subsurface parameters during the 2021 eruption. To track their temporal evolution, we employ the Ensemble Kalman Filter (EnKF), a data assimilation method which is typically used in weather forecasting and atmospheric models. In this approach, an ensemble of possible system states is propagated in time, and each member is adjusted when new seismic observations become available, based on their statistical consistency. This allows us to continuously estimate the evolving subsurface conditions while accounting for uncertainty. Our results reveal a clear pre-eruptive trend leading up to the May 26, 2021, explosion, with pressure increasing to ~10^5 Pa and gas flow rates approaching ~10^3 kg/s. These findings demonstrate that integrating physical models with probabilistic inversion and sequential data assimilation provides a powerful framework for quantifying subsurface dynamics and improving our understanding of volcanic eruption processes.

Sushmita Maurya (University of Alaska Fairbanks)

Using Alaska's Statewide Seismic Network for Passive Aircraft Monitoring

Aircraft generate coupled acoustic–seismic signals that are routinely recorded by permanent seismic stations as narrow-band arrivals and Doppler-shifted ridges in spectrograms. In this study, we evaluate the feasibility of passive aircraft monitoring using Alaska's statewide seismic network. Using Flightradar24 flight tracks as ground truth, we define a crossing as a flight passing within 5 km of a seismic station and identify more than 150,000 such crossings across multiple networks, including AV, AK, TA, NP, GM, DE, XO, XI, IU, and XV. For each crossing, we extract the corresponding seismic time window and examine waveform and spectrogram characteristics to assess detectability.

We compare aircraft signal detection as a function of sensor channel type, sampling rate, site conditions, and flight geometry. Detection is evaluated primarily through characteristic spectrogram signatures, including Doppler-shifted frequency sweeps and narrow-band energy. Preliminary results show that strong-motion HNZ stations provide the most reliable and consistent aircraft detections, with clear Doppler ridges, broad dynamic range, and favorable signal-to-noise behavior across varying flight paths and altitudes. HHZ channels in several networks also record visually distinct aircraft signals, and stations in the XV network are particularly notable for clear frequency sweeps. Recordings from the DE network near Nenana Airport provide especially strong observations and enable comparison with nearby permanent and nodal sensors.

In contrast, high-rate infrasound stations in the AV network at Dillingham record aircraft as broader, more diffuse energy patterns rather than the sharp Doppler ridges typically observed on seismic sensors. Some stations, including XV, AK, GM, DE, and COLA, also show aircraft-related energy below 50 Hz, suggesting that BHZ broadband channels may contribute under favorable conditions. These results demonstrate the potential of Alaska's permanent seismic infrastructure for large-scale passive aircraft monitoring and future classification studies.

Xochitl Muñoz (University of Alaska Fairbanks)

Small Theropod Dinosaurs from the Prince Creek Formation of Northern Alaska

At a paleolatitude of 80-85° N, the Prince Creek Formation (PCF) provides tremendous insight into the ecology of the Cretaceous Arctic, and preserves a rich assemblage of mammals, fish, birds and non-avian dinosaurs from approximately 73 Ma. Of these non-avian dinosaurs, there are currently six poorly known theropods, a clade of carnivorous dinosaurs. The theropods of the PCF include the tyrannosaurid Nanuqsaurus hoglundi, two "raptors" (Dromaeosauridae), one belonging to Saurornitholestinae and another to Dromaeosaurinae, a raptor-like taxon (Troodontidae), the tooth taxon Richardoestesia sp., and an ostrich-like form (Ornithomimidae). To date, very little theropod material has been described, and those that have require a thorough redescription. This is especially true for the small, non-tyrannosaurid theropods. Here, we describe an assortment of small theropod material from the PCF, including skeletal material and footprints. Undescribed skeletal material includes many teeth, two surangulars, two metatarsals, one rib and several phalanges. Additionally, we describe the first theropod footprints from the PCF. Future work on this project includes additional comparative morphological analyses, phylogenetic analyses, CT scanning and histology, and more field expeditions to the PCF to find additional fossils. With this research, we expect to refine the taxonomic composition of dinosaurs from the PCF, better understand the ecological roles of small theropods in a high latitude ecosystem, and test biogeographic hypotheses of dinosaur distribution in Laramidia (western North America) during the late Cretaceous.

Xochitl Muñoz (1), Gregory Erickson (2) and Patrick Druckenmiller (3)

(1) University of Alaska Fairbanks (2) Florida State University (3) University of Alaska Fairbanks and UAF Museum of the North.

Saurabh Shukla (University of Alaska Fairbanks)

Toward Machine-Learning Detection of Aircraft Using Seismic Recordings in Alaska

Aircraft flying over remote or sparsely monitored regions may go undetected by conventional radar and transponder-based tracking systems. Seismic sensors, which are already deployed across Alaska in dense networks, offer a passive and independent means of detecting low-flying aircraft through the ground-coupled airwaves they generate. These airwaves produce a characteristic Doppler-modulated frequency glide in seismic recordings; a physically interpretable signature that forms the basis of this detection effort.

This study develops a machine learning framework for automated aircraft detection using continuous seismic data from the Denali nodal array in Alaska, a deployment of 303 nodes recorded between February 11 and March 26, 2019. Raw waveforms were converted into spectrograms using the Short-Time Fourier Transform, and a physics-based Doppler frequency model was applied to characterize aircraft signal evolution in time and frequency. A labeled dataset was constructed spanning aircraft signals, local, regional, and teleseismic earthquake arrivals, and recurring anthropogenic noise - providing the ground truth needed to train and evaluate classifiers.

The machine learning pipeline is built around SpecUFEx, which combines Nonnegative Matrix Factorization for spectrogram decomposition with Hidden Markov Models for temporal state modeling. Together, these tools extract compact spectro-temporal fingerprints that capture the dynamic frequency behavior of aircraft signals. Supervised classifiers trained on these features will enable automated discrimination of aircraft from other seismic sources across the full nodal array.

Beyond earthquake monitoring applications, this framework targets detection of aircraft operating outside documented flight corridors , a capability with direct relevance to airspace awareness in remote Alaskan terrain where radar coverage is limited or absent. Future work includes integrating independent flight trajectory data for label verification, scaling detection across the continuous nodal dataset, and evaluating detection performance across varying aircraft types and distances.

Saurabh Shukla and Carl Tape, Geophysical Institute, University of Alaska Fairbanks

David Szumigala (Alaska Division of Geological & Geophysical Surveys)

Alaska Sources of Critical Minerals

Alaska is often described as a "warehouse of minerals" because it hosts an extraordinary diversity and abundance of mineral resources. These mineral resources include traditional commodities like gold, copper, zinc, and silver, as well as critical minerals essential for modern technologies such as graphite, rare earth elements, tin, tungsten, and platinum-group elements.

Alaska's current mines are important to the U.S. economy and to providing domestic supplies of critical minerals. Alaska ranked sixth in the U.S. in nonfuel mineral production and contributed 4.46 percent of the U.S. total mineral production value. The Red Dog Mine in northwestern Alaska produces zinc, lead, silver, and germanium, all on the current U.S. List of Critical Minerals. The Red Dog Mine is one of the largest producers of critical minerals in the United States. The Greens Creek Mine in southeastern Alaska is also an important critical mineral producer, with production of silver, zinc, and lead.

Alaska has the potential to produce even more critical minerals in the future based on the current understanding of mineral occurrences and mineral deposits throughout the state. Of the 60 critical minerals on the 2025 U.S. List of Critical Minerals, 57 out of 60 have a possibility of being produced in Alaska.

The display of specimens represents sources of critical minerals from current Alaska mines and mineral occurrences. More than 50 critical minerals are present in these ore specimens.

David Szumigala, Ph.D., Geologist, Mineral Resources Section, Alaska Division of Geological & Geophysical Surveys

Scholarship Recipients

Don Richter Memorial Scholarship

Don Richter was a geologist working for the U.S. Geological Survey, specifically with the Alaska Volcano Observatory (AVO). He was known for his work on volcanology and igneous petrology, focusing on the Wrangell Mountains, the Aleutian arc, and the Talkeetna arc, among other areas. Don's work and legacy can be remembered through the Don Richter Memorial Scholarship, which supports students in Alaska geosciences in areas that reflect his research interests.

Congratulations Lauren Berrien!

Lauren Berrien, UAA, MS
Detailed kinematics and seismic hazard on the Castle Mountain Fault

AGS Scholarship

The primary goal of the Alaska Geological Society Scholarship is to attract students to this exciting field because geoscientists are an important resource in Alaska. AGS wants to encourage dedicated individuals an opportunity to obtain additional financial support to further their geoscience education. Scholarship recipients are typically award a number of scholarships of different amounts each spring. Decisions are based upon individual merit and are decided by consensus by the AGS Scholarship Committee. This year, three individuals proved their merit and have been awarded the AGS Scholarship.

Congratulations Keelyn Fife, Aidan Roche, and Carly Ross!

Keelyn Fife, South Dakota School of Mines and Technology, MS
Reindeer Hills melange -- Evaluating the potential for multiple collisions between the Alexander terrane and the North American continental margin
Aidan Roche, South Dakota School of Mines and Technology, MS
Utilizing Field Mapping and Thermochronology to Evaluate the Tectonic Evolution of the Hayes Restraining Bend, Denali Fault, Alaska
Carly Ross, Montana State University, MS
Magma Mobilization Timescales Preceding the 1997 and 2008 Eruptions of Okmok Volcano: Insights from Crystal Cluster Petrography and Diffusion Chronometry

PSAAPG Scholarship

The PSAAPG scholarship program was created in the Spring of 2013 to help provide financial support for geoscience students pursuing a geoscience degree, and to foster closer ties between the PSAAPG and its Affiliated Societies and Student Chapters. Every year, the PSAAPG awards a scholarship through the AGS because it is an Affiliated Society.

Congratulations Zakaria Hannebaum and Andrew Holleran!

Zakaria Hannebaum, UAF, PhD
Updated chronostratigraphy for the Prince Creek Formation reveals the paleogeographic significance of two new ornithischian dinosaurs
Andrew Holleran, UAA, MS
From Thin Section to Automated Mineralogy: Evaluating spatial & stratigraphic controls on Nanushuk Formation reservoir quality through integrated petrography and modern methods of analysis

Alaska Pathfinders

About

This award was established in 2023 to recognize true trailblazers in the geosciences in Alaska; men and women who made enormous contributions to the general understanding of the geology of the Last Frontier.

Alaska geology is exceptionally diverse and complicated. Mapping and development of geologic models in Alaska are further challenged by its remoteness, severe weather, and limited infrastructure. There have been multiple key geoscientists that have risen above these difficulties and helped build a multifaceted geologic model of the state that continues to evolve and improve as more work is performed. These are the "Pathfinders in Alaska Geology".

Candidates can be nominated at any time. Awards will be announced yearly at the AGS annual Technical Conference. All nominees will be considered by the AGS Pathfinders Committee, who will forward a list of recommended Pathfinders to the AGS Board of Directors during the first quarter of the new year. If approved, a plaque with a photo and a (~120 word) biography of the elected Pathfinders will be created and unveiled at the Technical Conference award ceremony. Pathfinder plaques will ultimately reside at the Alaska Geologic Materials Center in Anchorage and will also be available to view and download via the AGS website.

For more information, visit: https://www.alaskageology.org/pathfinders.html

This year, the AGS Pathfinders Committee recommended 3 to the AGS Board of Directors. AGS Board of Directors voted and approved the inductees. The Class of 2026 includes:

Thor Nels Vincent Karlstrom (1920-2014)

From 1949 to 1965 Thor Karlstrom served as a U.S. Geological Survey (USGS) geologist in the Alaska Terrain and Permafrost Section. His published reports, maps, and coauthored book on the Kodiak Island refugium demonstrate his innovations and artistic abilities. Karlstrom compiled the 1964 map, Surficial geology of Alaska. He coauthored the 1965 Alaska map of Pleistocene and Holocene glacial extents. Following the great 1964 Alaska earthquake, he and a colleague documented widespread ground cracking and liquefaction features in the Cook Inlet lowland. Karlstrom mapped large portions of Kenai Peninsula lowland and Caribou Hills. He produced a seminal 1964 USGS Professional Paper with semi-quantitative methodologies proposing a foundational chronology for the Pleistocene glacial history of southcentral Alaska

Travis Hudson (1946-)

Travis Hudson's passion for the geology of Alaska is exemplified by more than 50 years of research and 55 first-author papers and maps. His interests cover diverse topics: petrology of igneous rocks, especially the Mesozoic arcs of southern and southeastern Alaska; mineralization associated with intrusive rocks, such as tin granites of the Seward Peninsula; architecture and stratigraphy of major sedimentary basins in interior Alaska; and the integrated tectonic evolution of Alaska. Travis challenged paradigms and provoked discussion to clarify complex problems. He worked for the U.S. Geological Survey, Anaconda, ARCO, American Geosciences Institute, and independently. Over his long career, Travis has inspired many geologist with his field-based studies and deep knowledge of Alaska geology.

Russell Dale Guthrie (1936-2024)

Dale Guthrie, a renowned vertebrate paleontologist, arctic ecologist, talented artist and teacher, served 62 years on the University of Alaska faculty. Dale contributed the concept of the Mammoth Steppe, a paleoenvironmental model of a cold steppe occupying the dry eastern segment, Beringia, of a circumpolar landscape during past glaciations. Dale's cutting-edge arctic and subarctic zoological and paleontological research uniquely documented extinct Quaternary fauna. 'Blue Babe' was an adult steppe bison bull.

Dale recovered the partially scavenged mummified remains of Blue Babe from frozen >55,000-year-old silt in a placer gold mine near Fairbanks. Dale's book Frozen Fauna of the Mammoth Steppe: The Story of Blue Babe received the Geological Society of America's Kirk Bryan Quaternary Geomorphology Award in 1992.

Notes