

# ALASKA GEOLOGY

## Newsletter of the *Alaska Geological Society*



### **Integrated Seismic Stratigraphic, Geochemical Volatiles Analysis and Petrophysical Quantification of a Brookian Foredeep, North Alaska Campanian Margin Multi-Billion Barrel “Super Trap”**

**Edward A. Duncan**

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Sequence stratigraphic analysis of the Campanian progradational succession lying generally between the present-day Colville and Sagavanirktok Rivers on the North Slope of Alaska has revealed the depositional origin of a large Campanian shelf margin reentrant historically referred to as the ‘Funnel’ and delineated a now tested stratigraphic “Super Trap” holding multi-billion barrels of oil in place. The massive oil charge sourced from the lower Cretaceous GRZ/HRZ and upper Cretaceous Hue shales is contained within lowstand shelf margin deltaic and slope fan reservoir facies. Approximately 2500 square kilometers of contiguous, modern 3D were interpreted and integrated with comprehensive petrophysical analysis of key wells penetrating the Campanian succession. Campanian depositional architecture is dominated by pronounced, west to east forced regression across the Central North Slope region. A significant downward shift and associated reservoir rich lowstand depositional systems are fundamental to and contained within the “Super Trap” geometry.

Sandstone petrographic studies from cores taken through a range of reservoir facies in the “Super Trap” discovery well coupled with modern petrophysical analysis proved presence of effective oil reservoirs within an oil column exceeding 750 meters. Volatiles Analysis from core and cuttings and sampled oil geochemical analysis confirms the play fairway containing the “Super Trap” is charged with high quality, 35-40 API gravity oil.

The industry, enabled by regionally extensive modern 3D seismic, seismic-petrophysics and high-tech geophysical analysis is positioned to deliver near term production rejuvenation from new field discoveries. Particularly from “legacy” class new fields immediately adjacent to existing production infrastructure.

## ***AGS Meeting***

Date & Time:	Thursday, March 17; Announcements 11:45 am, Talk 12:00 – 1:00 pm
Program:	Integrated Seismic Stratigraphic, Geochemical Volatiles Analysis and Petrophysical Quantification of a Brookian Foredeep, North Alaska Campanian Margin Multi-Billion Barrel “Super Trap”
Speaker:	Ed Duncan, Duncan Petroleum Advisors, LLC
Place:	Virtual online presentation
Reservations:	Reservations are not required
Login:	For instructions on how to log in see: <a href="http://www.alaskageology.org/events.html">http://www.alaskageology.org/events.html</a>
How to Join:	Join with Google Meet: <a href="https://meet.google.com/euf-irms-zxu">https://meet.google.com/euf-irms-zxu</a> or join by phone: (US) +1 260-468-8004; PIN: 546 535 953#

## From the President's Desk:

Dear colleagues:

The sun has arrived, the Tour of Anchorage complete, and the Iditarod on its way. Spring is upon us! We had an excellent turn out last month for Dr. Trevor Waldien's presentation. Thank you to our local scientists as well as our geoscientists tuning in from the lower 48. Please give a warm welcome to Edward A. Duncan this month as he walks us through an Integrated Seismic Stratigraphic, Geochemical Volatiles Analysis and Petrophysical Quantification of a Brookian Foredeep, North Alaska Campanian Margin Multi-Billion Barrel "Super Trap."

The other great news is that UAF graciously gave the official okay for AGS to host a hybrid technical meeting (on campus and via zoom) on April 23, 2022. Stay tuned for a call for abstracts.

Take care and happy Spring!

Laura Gregersen



## SEEKING DONATIONS FOR AGS SCHOLARSHIP FUNDS

This is a challenging year for students at all levels, and geoscience students in the universities need our support more than ever. When you pay your membership dues this year, please consider a contribution to an AGS scholarship fund. You can also contribute to AGS scholarships through Pick, Click, Give when you apply for your Alaska Permanent Fund Dividend. **AGS is a 501c3 nonprofit organization and all contributions are tax deductible.**

The Alaska Geological Society offers scholarship awards  
to graduate and undergraduate students  
who are conducting geoscience research projects in Alaska

*including*

Alaska Geological Society Scholarships  
The Don Richter Memorial Scholarship



Scholarship information and applications are available online at  
**[www.alaskageology.org](http://www.alaskageology.org)**

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# 2022 AGS Scholarship Awards

## Scholarship Committee

Chair: Sue Karl: Regional geology and tectonics, stratigraphy, sedimentology

Clo Giffen: Economic and environmental geology

Peter Haeussler: Neotectonics, earthquake hazards

Deb McGimsey: Geophysics, seismic stratigraphy

Game McGimsey: Volcanology

Justin O'Shay: Geophysics and geology

Owen Stephens: Petroleum geology

## Richter Memorial Scholarship:

**Alex Beardon**, MS candidate, Kansas State University

Project: Investigating the Location and Evolution of the Yakutat Slab Tear, South-Central Alaska: Petrogenesis of Monogenetic Volcanism in the Cenozoic Maclaren River Volcanic Field

## Alaska Geological Society Scholarships:

**Bruno Belotti**: PhD candidate, University of Idaho

Project: Sediment dynamics and erosion in the subglacial environment: analysis and comparison of past and recent processes in the Kennicott glacier, Alaska

**Darren Tan**: PhD candidate, University of Alaska, Fairbanks

Project: Combining multidisciplinary observations: physical volcanology, seismology, infrasound, geodesy, remote sensing, volcanic gas geochemistry, petrology, and geochemistry from well-monitored volcanoes to yield accurate forecasts of eruptions

**Emily Ellefson**: PhD candidate, Stanford University

Project: The Impact of Land Plants on Earth Systems in the Early Paleozoic: A Palynological, Palaeobotanical, and Geochemical Perspective in the Tatonduk River and MaCann Hill sections, Alaska

**Kayla McCabe**: MS candidate, Virginia Tech

Project: Nitrogen as a proxy for oceanic redox conditions and nitrogen cycling across the end-Triassic extinction event in the McCarthy Formation, Alaska



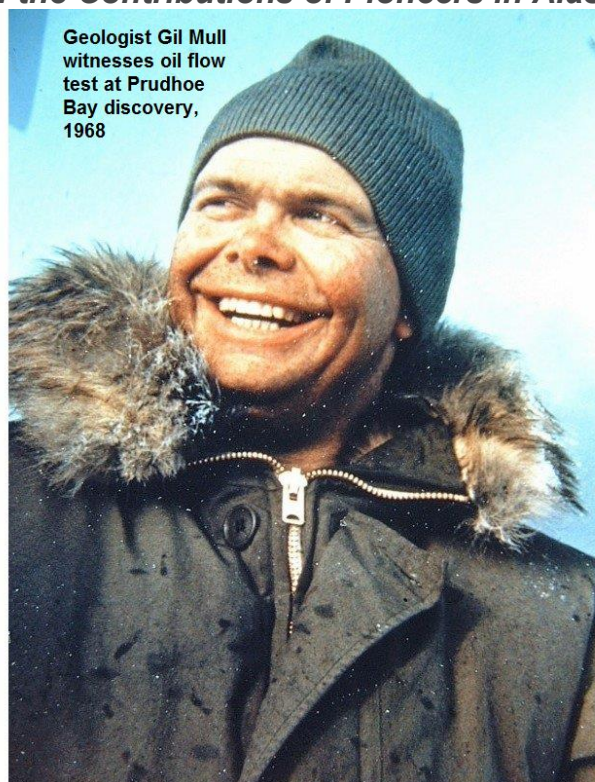
## Please join us online or in Fairbanks for our 2022 Technical Conference!

**When:** April 23, 2022, 8am-5pm

**Where:** Reichart Geology Building, UAF  
1930 Yukon Drive, Fairbanks, Alaska

**2022 Conference Theme:**

***Building of the Contributions of Pioneers in Alaska Geology***



Geologist Gil Mull  
witnesses oil flow  
test at Prudhoe  
Bay discovery,  
1968

(Photo courtesy of Marwan Wartes)

Join us virtually online or in Fairbanks, Alaska for our 2022 Technical Conference. This conference will emphasize the strong relationship AGS and its members have with the University of Alaska geoscience programs, and the contributions of early Alaskan geologists that formed a strong foundation for current and future research throughout the State.

Please consider submitting an abstract for a brief presentation (10 minutes including Q&A) during the conference. Abstracts will be due April 8, 2022. More details to follow.





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The Alaska Geological Society, Inc.  
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The Alaska Geological Society is an organization which seeks to promote interest in and understanding of Geology and the related Earth Sciences, and to provide a common organization for those individuals interested in geology and the related earth sciences.

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## MEMBERSHIP INFORMATION

AGS annual memberships expire November 1. The annual membership fee is \$25/year (\$5 for students). Lifetime membership is \$250. You may download a membership application from the AGS website and return it at a luncheon meeting, or mail it to the address above.

Contact membership coordinator Kirk Sherwood with changes or updates (e-mail: [membership@alaskageology.org](mailto:membership@alaskageology.org); phone: 907-240-2546)

All AGS publications are now available for on-line purchase on our website. Complete catalogue at: <http://www.alaskageology.org/publications1.html>

## ADVERTISING RATES

Advertisements may be purchased at the following rate: \$200 for 9 monthly issues (September - May) of AGS newsletter (any size up to full page) and companion ad on AGS website for full year (beginning each September).

Contact Jennifer Crews at [jennifer.r.crews@conocophillips.com](mailto:jennifer.r.crews@conocophillips.com) to place ad.

# Pick.Click.Give.

## It's PFD Application Time!

Did you know that you can support the society through Pick.Click.Give? When you fill out your PFD application, just select Alaska Geological Society, Inc. in the list of non-profits and you can help AGS to promote the uniqueness of Alaskan Geology and provide for education, geologic research, and networking to all who are interested as well as provide scholarships to students across a wide range of geologic topics.

<https://www.pickclickgive.org/index.cfm/pfdorgs.info/Alaska-Geological-Society-Inc>

- From the PFD home page <http://pfd.alaska.gov/Application>, select the green "Add or Change Your Pick.Click.Give. Donation" button
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- NMR
- ROCK MECHANICS
- FLOW AND REL-K
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algorithm to search for petrophysical  
and engineering analog properties from  
a thin section image recognition model





# Alaska Geological Calendar of Events



Date	Time	Organization	Event	Location
Jan. 20 2022	11:45 am	AGS	Richard Styron, Global Earthquake Model Foundation, Active Tectonics of the North Pacific: Interplate and intraplate deformation in the icy ring of fire	Google Meet
Feb. 17 2022	11:45 am	AGS	Trevor Waldien, Interactions among inherited plate boundaries, slip rate gradients, and lithospheric structure in the Alaska Range, southern Alaska	Google Meet
Mar. 17, 2022	11:45 am	AGS	Edward A. Duncan, Duncan Petroleum Advisors, LLC, Integrated Seismic Stratigraphic, Geochemical Volatiles Analysis and Petrophysical Quantification of a Brookian Foredeep, North Alaska Campanian Margin Multi-Billion Barrel "Super Trap"	Google Meet

**AMA:** Alaska Miners Association; **AGS:** Alaska Geological Society; **GSA:** Geophysical Society of Alaska

**AAEP:** Alaska Association of Environmental Professionals; **SPE** Society of Petroleum Engineers;

**UAA** University of Alaska Anchorage.

## Membership Note

Membership renewal is November 1; annual dues are:

*Full member - \$25*

*Student member - \$5*

*Lifetime membership - \$250*



## 2021 - 2022 Alaska Geological Society Board, Committees and Delegates

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