



Hudson - Mohawk Professional Geologists Association

Annual Donald Cadwell Memorial Lecture on Glacial Geology

F E B R U A R Y
M E E T I N G

www.hmpga.net

February 16, 2022



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HMPGA Annual Donald Cadwell Memorial Lecture on Glacial Geology, February 16th, 2022

Camp Century revisited: a fossil ecosystem under ice reveals Greenland's warmer past

Dr. Andrew Christ
Gund Postdoctoral Fellow
Rubenstein School of Environment & Natural Resources
University of Vermont

✉ Andrew.Christ@uvm.edu
🐦 @drewchrist_geo

USACE, 1965



This course has been approved for 1 PDH+

Abstract: Climate warming is rapidly melting the Greenland Ice Sheet. Terrestrial geologic records from past times when the Greenland Ice Sheet was smaller than today are crucial to understanding ice sheet sensitivity to warming and its potential contribution to sea level rise. Sediment and bedrock collected from the bottom of ice cores can be a critical archive of past times when the ice sheet was smaller than it is today. The Camp Century ice core, collected in 1966 from northwestern Greenland, was the first ice core drilled to the bed of an ice sheet and retrieved subglacial sediment. (cont'd on next page)

F E B R U A R Y M E E T I N G

Abstract Cont'd: The story of Camp Century is a fascinating chapter of Cold War intrigue. In the 1960s, the U.S. Army built Camp Century, a military base dug inside the surface of the Greenland Ice Sheet, to secretly hide nuclear weapons from the Soviets but advertised through propaganda as an Arctic research laboratory. Pioneering climate scientists at Camp Century drilled the first ice core to the bottom of the Greenland Ice Sheet, revolutionizing our understanding of Earth's climate over the last 100,000 years and jump-starting the field of climate science. But the 3.5 m of frozen sediment at the very bottom of the ice core was lost in a freezer in Copenhagen, Denmark for decades - until it was re-discovered in 2017. This re-discovery allowed us to apply modern geochemical and isotopic analyses that did not exist when the ice core was collected.

Now, over 50 years after the ice core was collected, we discovered fossil plants, frozen in sediment under 1.4 km of ice, from ancient Greenland tundra when the ice sheet disappeared at least two times in the past: once in the Early Pleistocene and 400,000 years ago. In order for Camp Century to deglaciate, the Greenland Ice Sheet would contribute at least 1.6 m to sea level. Our findings are significant because this part of the Greenland Ice Sheet vanished 400,000 years ago without any human influence on the climate system, spelling big implications for future climate warming and sea level rise.

You can read more about my recent work in The Proceedings of the National Academy of Sciences and The Washington Post.

<https://www.pnas.org/content/118/13/e2021442118>

<https://www.washingtonpost.com/climate-environment/2021/03/15/greenland-ice-sheet-more-vulnerable/>

Dr. Andrew Christ is a Gund Postdoctoral Fellow in the Rubenstein School of Environment and Natural Resources at the University of Vermont. He is a glacial geomorphologist interested in the climate history of Earth's polar regions of the last several million years. To study this topic, he uses a variety of geologic archives ranging from marine sediments collected from the fjords of the Antarctic Peninsula to glacial moraines in the Transantarctic Mountains to sediments recovered from the bottom of ice cores. Dr. Christ grew up surrounded by glacial landscapes in the Rocky Mountains but did not realize his interest in glacial geomorphology until attending Hamilton College, where he went on many glacial geology field trips in the Mohawk Valley.

Reservations are required by Monday

February 14, 2022

Whether attending the dinner or only the in-person presentation

Register on-line at www.hmpga.net

Call or email Marie Cole at (518) 724-7254 • marie.cole@ramboll.com

Cost: \$10.00 for student members*

\$25.00 for dormant geologists

\$30.00 for members

\$35.00 for non-members

In-person program only: Free

+PDH certificate available for: \$5.00 (member w/ dinner) •

\$10.00 (member for program only) • \$20 (non-member program only)

* Student dinner sponsorship available for qualifying students - contact Jesse Vollick • jesse.Vollick@ramboll.com

Location:	Century House 997 New Loudon Road Latham, NY 12110	Time:	Social Hour Dinner Program	5:00pm 6:00pm 7:00pm
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Sponsorship is available for this meeting! Dinner sponsors receive free dinner, a display table set up for the social hour and a 5-minute presentation to the dinner audience, prior to the presentation. Please contact Jesse Vollick at jesse.vollick@ramboll.com for more information.

President's Message

Dear HMPGA Members,

My sincere thanks to Jon Fox for presenting at January's monthly meeting. Despite a last minute change to a virtual format, the meeting was a huge success. There were over 90 attendees, many of whom obtained PDH credit as part of our new initiative to assist our members with the new continuing education requirements for NYS licensed professional geologists. If you haven't seen it, an advisory notice for the Regulatory Amendments approved and effective January 1, 2022 was recently posted to NYSED's geology professions page at <http://www.op.nysed.gov/prof/geo/>. This notice includes a summary of the major regulatory changes.

I am pleased to announce that the talk for February's monthly meeting is also approved for PDH credit! February's event is the Annual Donald Cadwell Memorial Lecture on Glacial Geology and features Dr. Andrew Christ's presentation, *Camp Century revisited: a fossil ecosystem under ice reveals Greenland's warmer past*. Since 2006, the Donald Cadwell Memorial Lecture has occurred annually in February to honor the memory of Don Cadwell and his many contributions to our community of professionals.



Don Cadwell, David Franzi, Jay Fleisher and Ernie Muller on the Bering Glacier in 1989. Source: D. Franzi

Our March meeting will be a joint event with the Air & Waste Management Association NENY Chapter. More details will come in the next few weeks.

Stay healthy,

Jesse Vollick, P.G.
President 2021-2022

Study Sheds New Light on Growth of Mysterious Stone Forests

Science News

Stone forests are pointed rock formations resembling trees that populate regions of China, Madagascar, and many other locations worldwide.

They are as majestic as they are mysterious, created by uncertain forces that give them their shape.

<http://www.sci-news.com/othersciences/geophysics/stone-forests-08828.html>



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Volunteer opportunities

If you need volunteers for an event or would like to get involved in an event please contact Elizabeth Moore at:
mooreelizabeth.07@gmail.com

Job Openings:

Engineering Geologist/Mining Engineer

H2H Geoscience Engineering, PLLC

Troy, NY

Full-Time



H2H Geoscience Engineering, PLLC is a rapidly growing geologic, engineering and environmental consulting firm currently seeking an entry level candidate to join our dynamic team of professionals.

Qualified candidates must have a Bachelor's degree, B.Sc. in Mining Engineering is preferred, or in an associated technical field such as Geology, Geological Engineering, or Civil Engineering. PE/CPG preferred. At least 5 years of geology, mining engineering, or operations experience is preferred.

This position requires willingness to travel to sites throughout the eastern United States for up to a week at a time, ability to work both in the field and office efficiently, excellent communication skills and attention to detail.

For immediate consideration, please e-mail resume to rhisert@h2hg-e.com with "Engineer/Geologist" as the subject header.

Please see the HMPGA website for more details:
<http://www.hmpga.wildapricot.org/page-1604462>

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****Support Your Local Geologist - Buy a Pleistocene Pilsner****

NYSCPG's 2nd special edition beer batch is brewed by our friends from Lithology Brewing Company of Farmingdale, NY! The beer is available for purchase (\$18/4-pack), contact your local representative Mark Williams for details:

518-222-6616 or mark.williams@intertek.com

Purchases directly support the NYSCPG so please spread the word.
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Being active in HMPGA is a fully volunteer activity that often demands a great deal of attention.
The following members chair this year's committees and we thank them:

Webmaster	Scott Hulseapple	shulseapple@alphageoscience.com
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Programs	Jesse Vollick	Jesse.vollick@ramboll.com
Membership	Vacant	

HMPGA CALENDAR

DATE	SPEAKER	TOPIC
February 16, 2022	Andrew Christ, PhD University of Vermont	Camp Century revisited: a fossil ecosystem under ice reveals Greenland's warmer past
March 16, 2022	Chris Walcek Professor Emeritus, SUNY ASRC	Inconvenient Aspects of Climate Change Joint meeting with AWMA
April 20, 2022	Stephen Pekar Queens College ----- TBD - College Student Posters	The results from the expedition that explored the geologic history of the newly named 8 th continent called Zealandia ----- TBD - College Student Poster Session

OTHER EVENTS:

Watch our website (<http://www.hmpga.wildapricot.org/>), Facebook, and LinkedIn for announcements of future events!



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- Mine Planning
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 - Stormwater Design, Permitting, & Compliance
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- Petroleum & Chemical Bulk Storage Permitting, Compliance, & SPCC Plans
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F E B R U A R Y ' S G E O - C R Y P T O C I P H E R

CLUE: R = F and A = K

Each letter of the expression is substituted by another letter.

TJF MC J FMDPVMJY-HBKGVMGY FLJYHJD TXBY RPYSM

CGGA J DMLWBY CG JDSJB?

JANUARY'S SOLUTION

G E O - C R Y P T O C I P H E R

IF A GEOLOGIST TRESPASSES AT A PEGMATITE QUARRY TO STEAL HEXAGONAL CRYSTALS,
MIGHT HE BE A BERYL JUMPER?



Eastern New York (ENY) Chapter of the Air & Waste Management Association (MASS-A&WMA). They encompass the greater Capital District and Hudson Valley region of eastern New York State. A professional non-for-profit association of engineers and scientists working in the environmental field, with a particular focus on issues related to air and waste. www.awmanenychapter.wildMAYicot.org



The Geological Society of America (GSA) strives to be a leader in advancing the geosciences, while enhancing the professional growth of its members, and promoting the geosciences in the service of humankind. www.geosociety.org



The New York State Museum is a major research and educational institution. It is dedicated to promoting inquiry and advancing knowledge in the fields of geology, biology, anthropology, and history, through the investigation of material evidence germane to New York State's past, present and future. www.nysm.nysed.gov



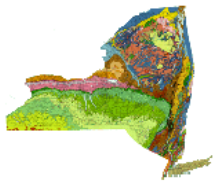
New York State Council of Professional Geologists (NYSCPG) strives to strengthen and advance the geologic sciences as a profession, promote the protection of public health and welfare and the environment through the professional practice of geologic sciences, and create high standards of ethical conduct among its members and within the profession of geology, as well as the legal standing of geologists and their ability to practice geology in New York State by promoting the licensing of geologists in New York State through statutory regulation. www.nyscpge.org

Environmental Breakfast Club

The Capital District Environmental Breakfast Club is an informal group of environmental professionals that meets monthly to discuss current environmental issues. Each meeting features a speaker on a topic of interest, a regulatory update, and an open forum. Meetings are held on the first Friday of each month except July and August. The Environmental Breakfast Club meets at the Holiday Inn Turf on Wolf Road in Colonie, New York. Meetings start at 7:30 am. The cost is \$15 per person, which includes a full breakfast buffet. www.youngsommer.com



Buffalo Association of Professional Geologists (BAPG) conducts regular membership meetings on the third Wednesday of the month, January through June and September through November. Meetings feature distinguished speakers and interesting topics. Field trips and technical seminars sponsored by the BAPG encourage the exchange of scholarship and expertise. www.bapg.org



Central NY Association of Professional Geologists (CNYAPG) conducts regular meetings on the second Thursday of each month, unless otherwise posted, from September to May. Meetings feature dinner and distinguished speakers whose presentations invite comment and discussion. www.cnyapg.org



Long Island Association of Professional Geologists (LIAPG) is a not-for-profit professional organization dedicated to the professional and business needs of geologists located in the Long Island / Metro New York area. www.lipg.org



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