Arctic Publications

Number of Publications, 2011-2013

- UNIVERSITY OF ALASKA FAIRBANKS
- UNIVERSITY OF TROMSO
- ALFRED WEGENER INST POLAR & MARINE RES
- UNIVERSITY OF COLORADO BOULDER
- AARHUS UNIVERSITY
- STOCKHOLM UNIVERSITY
- UNIVERSITY OF WASHINGTON
- UNIVERSITY OF LAVAL
- UNIVERSITY OF QUEBEC
- UNIVERSITY OF ALBERTA
- UNIVERSITY OF BERGEN
- UNIVERSITY OF OSLO
- NATIONAL CENTER ATMOSPHERIC RESEARCH
- NORWEGIAN POLAR RES INST
- UNIVERSITY OF MANITOBA
- UNIVERSITY OF TORONTO
- UNIVERSITY OF HAMBURG
- UNIVERSITY OF HELSINKI
- PIERRE & MARIE CURIE UNIVERSITY
- UNIVERSITY OF BRITISH COLUMBIA
- INST MARINE RES NORWAY
- CALIFORNIA INSTITUTE OF TECHNOLOGY
- UNIV CTR SVALBARD
- SWISS FEDERAL INST OF TECHNOLOGY
- CARLETON UNIVERSITY
- JET PROPULSION LABORATORY
- COLUMBIA UNIVERSITY
- NORWEGIAN UNIVERSITY OF SCIENCE & TECHNOLOGY
- UNIVERSITY OF LONDON
UAF is active at many levels

- State
- Federal
- International
UAMN Arctic Research

Presented by
Aldona Jonaitis, Director
Patrick Druckenmiller, Curator of Earth Sciences,
Geology and Geophysics
UA Museum of the North
Study area: Colville River, North Slope, Alaska
Prince Creek Formation dinosaurs
North Slope, Alaska
70 million years ago
warm, polar forests...

...but extended winter darkness
Research questions:

1. Are the Alaska polar species unique to the Arctic?

2. Did they migrate or stay put?

3. Did they have specialized physiology (warm-blooded)?

NP = North Pole
PCF = Prince Crk. Fm.
Edmontosaurus n. sp.

new thescelosaur

Pachyrhinosaurus perotorum

Troodon

Alaskacephale gangloffi
a new Alaska dinosaur, *Edmontosaurus* n. sp.
¹Paanjaqtat Province
(Iñupiaq - “up North” or “North Slope”)
Outreach:
Collaboration with North Slope Borough School District
SNAP’s Engagement in the Arctic

Presented by
Scott Rupp, Director,
Scenarios Network for Alaska and Arctic Planning
Climate Visualizations
SNAP is striving to implement useful climate data visualizations that make sense. The new map tool, with its interactive titles, forms the basis for future data and mapping enhancements.

SNAP
We develop plausible scenarios of future conditions through a diverse and varied network of people and organizations, which allow better planning for the uncertain future of Alaska and the Arctic.

What we do
SNAP is all about helping people plan in a changing climate. We work with a wide range of partners and collaborators on many projects to explore a range of possible futures based on the best scientific knowledge and data available. SNAP also strives to make our resources available and our methods known. SNAP has a strong partnership with ACCCAP that allows us to leverage each other's strengths in order to inform a broad audience.
Community Charts: Fairbanks, Alaska

To load a chart, type your community’s name:
Fairbanks, Alaska

Data Set
Temperature

Units
°F  °C

Emissions Scenario
Low (B1)  Medium (A1B)  High (A2)  ?

Inter-Model Variability
Off  On  ?

Average Monthly Temperature for Fairbanks, Alaska
Historical PRISM and S-Model Projected Average, Mid-Range Emissions (A1B)

Due to variability among climate models and among years in a natural climate system, these graphs are useful for examining trends over time, rather than for precisely predicting monthly or yearly values. For more information on derivation, reliability, and variability among these projections, please visit www.snap.uaf.edu.
Alaska’s Climate Change Strategy: Addressing Impacts in Alaska

Final Report Submitted by the Adaptation Advisory Group to the Alaska Climate Change Sub-Cabinet

January 2010
Climate Change in Alaska’s National Park Areas

State of Change

DRAFT - DO NOT DISTRIBUTE
BLM>More BLM Programs>Landscape Approach>Rapid Ecoregional Assessments>Central Yukon

**Landscape Approach**
- Rapid Ecoregional Assessments (REA)
- Ecoregional Direction
- Monitoring for Adaptive Management
- Public Involvement
- Related Documents
- Landscape Approach Q&A
- AIM Q&A
- AIM Documents

**Locations of Rapid Ecoregional Assessments (REAs)**

**Legend**
- Ecoregion(s) in REAs

* Locations of REAs (indicated by solid colors) are defined by one or more ecoregions. Ecoregions are based on Omernik Level III Ecoregions and Unified Ecoregions of Alaska. Hatched areas of ecoregions were not assessed.

**Rainstorm in Brooks Range, Alaska**

**Assessment (REA)**

**Conservation Elements | Change**

Work scheduled to begin in 2013 and to be completed by mid-2014. The workplan will be completed by the end of 2014. It is used to identify the scope of any impacts section for a list of scheduled changes as they become available.
Arctic Domain Awareness at UAF

Presented by
Nettie La Belle-Hamer
AVCR and ASF Director
The Arctic Challenge

- Geology
- Physical geography
- Ecosystems and rate of ecosystem change
- Culture
- Infrastructure and access
- Climate and weather
- Data availability — depth, breath and length of record

UAF has significant expertise and experience in the Arctic
Operated by the Geophysical Institute at the University of Alaska Fairbanks since 1991

- **ASF SAR data center**: one of 12 NASA data centers, ~$8M/yr
- **Satellite tracking station**: NASA ground network, ~$2M/yr
- **ASF Enterprise**: high-level remote-sensing applications
- **GeoData Center**: PI-generated data
ASF’s growing capacity

AS1 (11m), AS2 (10m), AS3 (11 m)
Photo by Jeff Beiderbeck.

UAF1 (7.3m)
Photo by ViaSat.

UAF2 (9.1m)
Photo by Jeff Beiderbeck.
GINA

- Federal agencies such as USGS, NOAA and NASA rely on GINA to provide them map data for Alaska.
- 29 million of GINA’s map requests are from federal, local and tribal governments, the private sector and the general public.
SFOS/UAF Autonomous Remote Technology lab

- Operates three Webb Slocum Autonomous Underwater Vehicles (AUV) gliders
- Nonpropelled, autonomous, quiet, low-power, long-endurance specific AUV → up to ~ 3 month missions using lithium batteries
- Two-way real-time Iridium satellite communication → mission change on the fly + relay data to scientists, numerical models and decision makers
- Unique, high-resolution (vertical and horizontal) surface-to-bottom data coverage
A New, Ice-Capable Asset For Arctic Studies

The Sikuliaq will allow researchers:
• To collect sediment samples directly from the seafloor
• Host remotely operated vehicles
• Use a flexible suite of winches to raise and lower scientific equipment
• Conduct surveys throughout the water column and sea bottom
Coastal radar map surface (upper 1 m) currents:

- hourly
- over broad areas (~175 km) at 6-km resolution
- real-time access via the web
- easily understandable
- cost-effective

To guide open-water response to marine spills (and other purposes).

Shore-based power available

-4MHz

Funded by: BOEMRE, Shell, and ConocoPhillips
ACUASI

UAF Geophysical Institute: Poker Flat Research Range
Arctic Center for Oil Spill Research and Education

UAF’s A-CORE seeks to bring together:

• Communities
• Educators
• Private investors
• NGOs
• Oil and shipping industry
• Government agencies

Photo courtesy of Eric Collins, SFOS

Deepwater Horizon oil spill as detected with SAR
C-SSHRRP NorthCOM MOU

Presented by
Cam Carlson, Director
Center for the Study of Security, Hazards, Response and Preparedness

Harry Bader, Director
Center for Island, Maritime and Extreme Environment Security
Arctic Domain Security Orientation

University of Alaska Fairbanks
Center for the Study of Security, Hazards, Response and Preparedness (C-SSHRP)

Arctic Domain Security Orientation aka Arctic 101

Program development team:

Cameron Carlson — Alaska PI and director, UAF HSEM Program
Harry R. Bader — Alaska PI CIMES
Troy Bouffard — UAF grad student

Arctic instruction development highlights:

- Scalable curriculum and presentations
- Full-spectrum overviews (domain awareness)
  - The Arctic defined: science and political variations
  - Policies, strategies and security
    - Systemic, domestic and individual analysis
  - Arctic economic, social, military and political perspectives
- International relations and governance
- Comprehensive deliverables
- Direct access to leading experts and resources
- * Current focus is in supporting DoD (USNORTHCOM and JTF Alaska, Arctic Collaborative Workshop, UAF, April, 2014)
American Geophysical Union Fall Meeting 2013

• 2013 was largest UAF presence in 40+ years
• 52 talks and 116 posters
Live from D.C.

Presented by
Cathy Cahill
Professor of Chemistry/Biochemistry
Geophysical Institute
UAF Providing Scientific Support.
Senate Energy & National Resource Committee

Live from Washington D.C.

Cathy Cahill
Congressional Fellow
Arctic Council

Presented by
Mark Myers
Vice Chancellor for Research
Alaska Publications 2011-2013
The population of people living above the Arctic Circle

1,350,000

18,000

16,000

26,000

470,000

240,000

80,000

since 1917
UAF support of upcoming U.S. chairmanship of Arctic Council

• Providing technical advice on themes
• Working with State Department advanced team on locations for Arctic Council meetings in Alaska
• U.S. proposal Arctic Science Summit Week and Senior Arctic Official meeting for Fairbanks (March 2016)
• AK EPSCoR hosted SDWG Workshop in ANC February 10-12 (on behalf of Canadian chairmanship with support from U.S.)
Examples of UAF participation in Arctic Council activities

- University of the Arctic — Brian Rogers, Chair
- International Arctic Science Committee — Larry Hinzman, U.S. Representative
- ACCA — Mark Myers and Larry Hinzman
- Ecosystem Studies of Subarctic Seas — Franz Mueter, Vice Chair
- Circumpolar Reindeer Education Program — Greg Finstad
- Association of World Reindeer Hearers — Greg Finstad
- U.S. representatives on the Circumpolar Biodiversity Monitoring Program — Bodil Bluhm, Katrin Iken, Russ Hopcroft
- IASC marine working group — Rolf Gradinger, U.S. representative
- Arctic Council task force — Mark Myers, U.S. delegate
UArctic

Presented by
Brian Rogers
Chancellor, UAF, and Chair, UArctic Board of Governors
University of the Arctic

- A cooperative **network** of 157 universities, colleges and other organizations committed to higher education and research in the North
- Created on the initiative of the Arctic Council
Arctic Council

8 arctic states  Canada, Denmark/Greenland/Faroe I., Finland, Iceland, Norway, Russia, Sweden and U.S.
6 arctic indigenous peoples organizations
32 observers
  12 nonarctic states: China, France, Germany, India, Italy, Japan, South Korea, Netherlands, Poland, Singapore, United Kingdom
  20 nongovernmental organizations and intergovernmental organizations
3 specifically on Arctic Research and Higher Education

UArctic  — a institution membership origination created by Arctic Council
International Arctic Science Committee  — a national academy membership organization
International Arctic Social Sciences Association  — a individual membership organization
UArctic membership at a glance

- 157 members
  - 111 higher education institutions
  - 46 research institutes and other organizations
- Eligible for full membership if in the arctic states
- Associate membership if outside the region

1,100,000
Students in member institutions (2012)

80,000
Teaching staff in member institutions (2012)
Governance

Board of Governors
• internationally representative board
• highest decision-making body
• responsible for strategic development, institutional priorities and finances

Council of UArctic
• consists of representatives from all UArctic members
• decides on membership of UArctic and nominates members of the board
• makes strategic decisions on UArctic’s program development
• gives academic guidance for program implementation and delivery
Chair UArctic Board of Governors
Brian Rogers
Chancellor, UAF

Vice Chair UArctic Board of Governors
George Iwama
President, University of Northern British Columbia

Denis Mayrand
Associate Vice-President Research
Université Laval

Lindsay Whaley, Professor,
Vice-Provost and Associate Provost
Dartmouth College

Mikhail J. Prisyajny
Vice Rector, North-Eastern Federal University

Elena Kudryashova
Rector, Northern Arctic Federal University

Lauri Lajunen
Rector, University of Oulu

Kjell Åke Jonsson
Vice Chancellor, Umeå University

Lasse Lønnum
University Director
University of Tromsø

Tove Søvndahl Pedersen
Director of Greenland Self-Government Office in Copenhagen

Jamie Reschyn (UNBC)
Student representative

Monika Margrét Stefánsdóttir (Akureyri)
Student representative elect

Student representative
Monika Margrét Stefánsdóttir (Akureyri)
Student representative elect

www.uarctic.org
Administration

Small, decentralized administration based on members across the region.
Rectors’ Forum

Annually brings together university leaders around specific themes
Thematic Networks & Institutes

27 UArctic thematic networks
3 UArctic institutes

Thematic Networks office
Oulu University
Thematic Networks & Institutes

27 UArctic thematic networks
3 UArctic institutes

- Arctic Coastal and Marine Issues
- Arctic Engineering and Science
- Arctic Extractive Industries
- Arctic Law
- Arctic Sustainable Arts and Design
- Business Management in the North
- Communicating Arctic Research
- Digital Media and Media Arts
- Distance Education and e-Learning
- Energy in New Time
- Environmental Impact Assessment of Industry Contaminated Areas
- Environmental Training and Education for Sustainable Development of the Arctic
- Geology of the Arctic
- Geopolitics and Security
- Global Change
- Health and Well-being in the Arctic
- Indigenous Arts and Crafts
- Local and Regional Development in the North
- Northern Food Security
- Northern Governance
- Northern Tourism
- Polar Ice, Climate and Land Dynamics
- Social Work
- The Verdde Program
- World Images of Indigenous Peoples of the North
- Permafrost
- Natural Hazards

- Joint courses and (degree) programs
- Research
- Networking
north2north student mobility

A student exchange program that allows students at UArctic institutions to visit different northern regions and share experiences face to face, through study at other UArctic institutions.

“...It gave me a taste of what it would be like to live abroad, away from family and friends, and it also confirmed my desire to stay in the North.”

Natasha Letchford (Canada), north2north, University of Akureyri

north2north student exchanges (in 2012)

167
UAF leadership in UArctic

- Brian Rogers — Chair, UArctic Board of Governors
- Pat Pitney — Vice President, Finance
- Mike Sfraga — Circumpolar Policy Institute
- Donna Anger — Council member
- John Eichelberger — UArctic Dean of Graduate Studies
Thank you