



The Power of UA Research

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Senate Education Committee

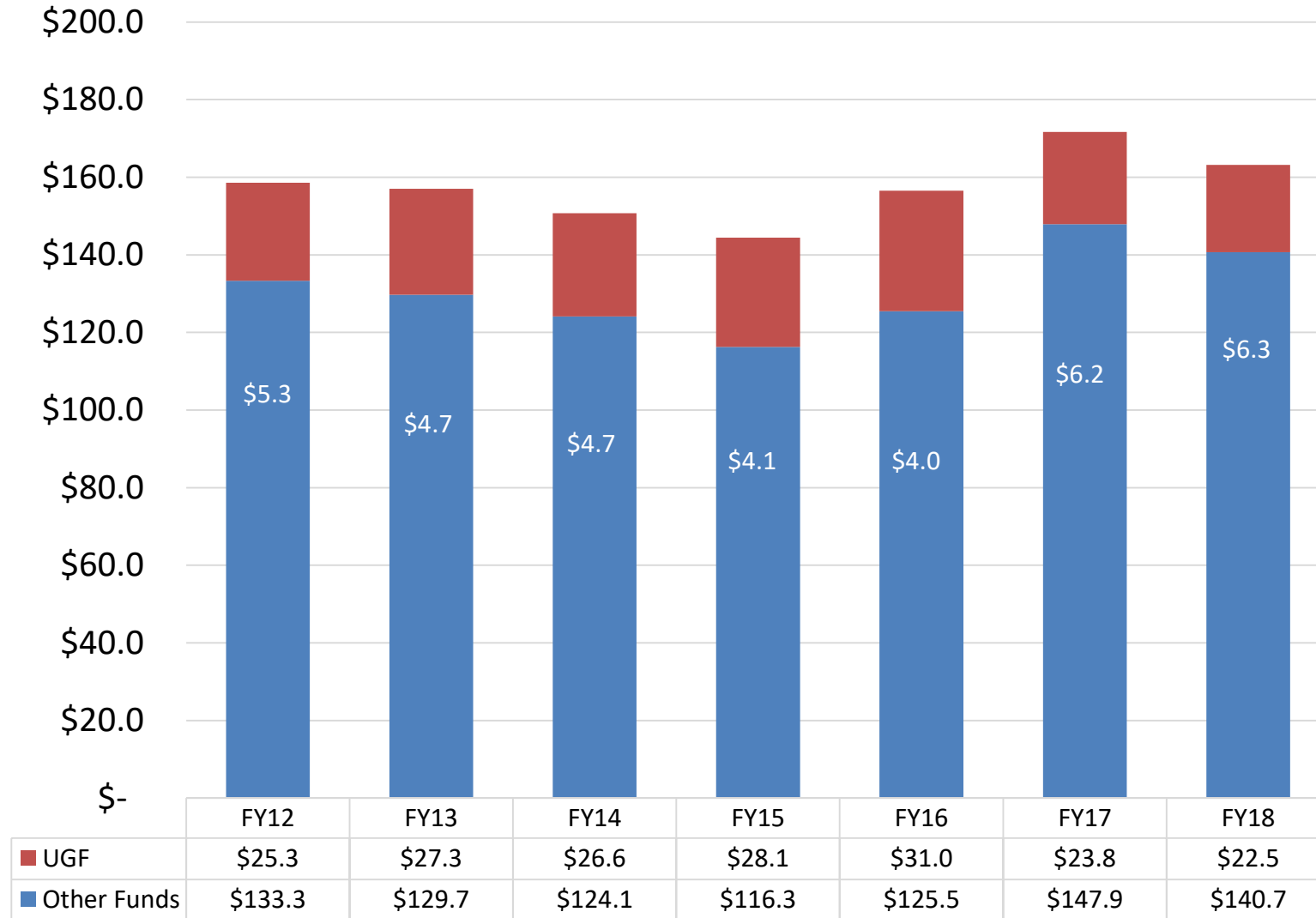
February 21, 2019

An Important Alaskan Industry

*Since **FY11**, research
revenue generated by
University of Alaska has
exceeded **\$1 billion***

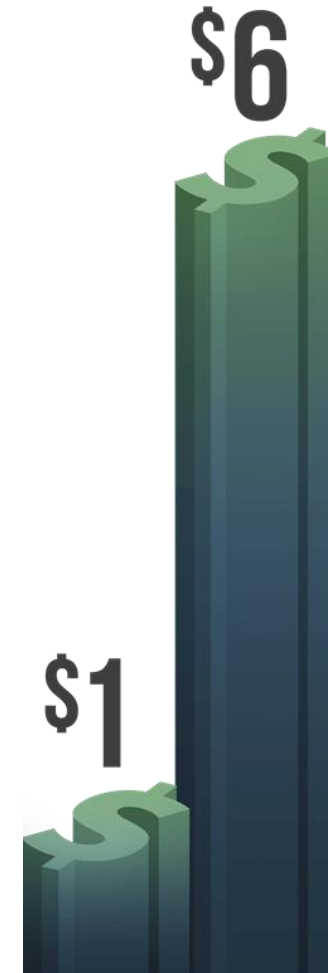
UA Research Return on Investment

\$ millions



Economic Impact as Multiplier

With UA Research as a multiplier -- every dollar invested in research brings over six dollars to Alaska

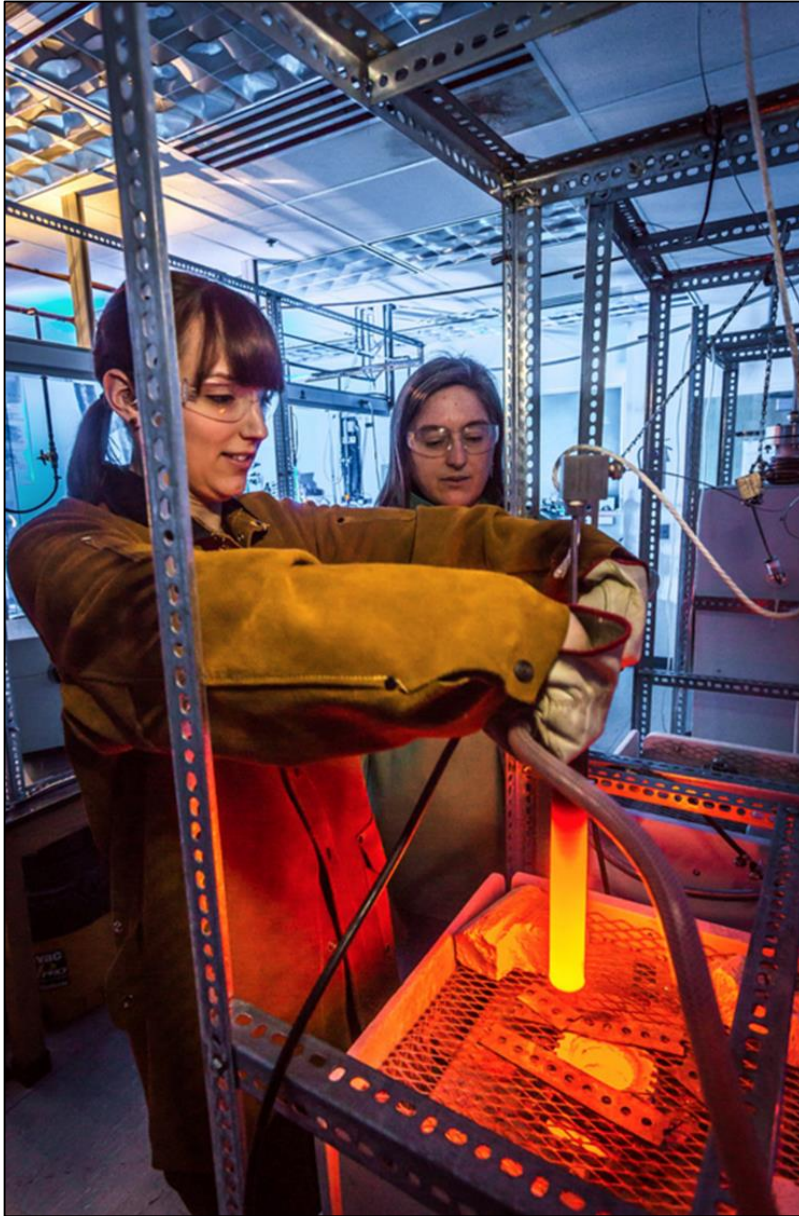


An Important Alaskan Industry

- ✧ In 2018, UA brought in \$141 million in external research expenditures
- ✧ \$23 million in state research funding multiplied by 6
- ✧ \$90 million direct wages and salaries; 1250 direct jobs
- ✧ Another \$27 million indirect income, 350 jobs from multiplier effects of direct employment
- ✧ \$70 million in purchases, contracted services, travel, student aid and equipment

Research and Quality Education

- ✧ Research opportunities attract outstanding faculty
- ✧ Research integral to curriculum that reflects up-to-date knowledge
- ✧ Undergraduate and graduate student involved in research
- ✧ Quality of UA research institutions attracts out-of-state students and retains Alaskan students
- ✧ Builds a pipeline of outstanding students who become employees of Alaska businesses



Instruction, mentoring, research, and outreach

...brought together within
undergraduate, graduate
and continuing education
programs to benefit Alaska,
the nation, and the world.



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of ALASKA
Many Traditions One Alaska

BLaST: Biomedical Learning and Student Training



Program funded \$23 million National Institutes of Health, focusing on undergraduate research and mentoring of students - focus on rural and Alaska Native students.

Mentored research experiences for over 200 undergraduate students from diverse backgrounds at UAF, UAS and Ilisagvik College.



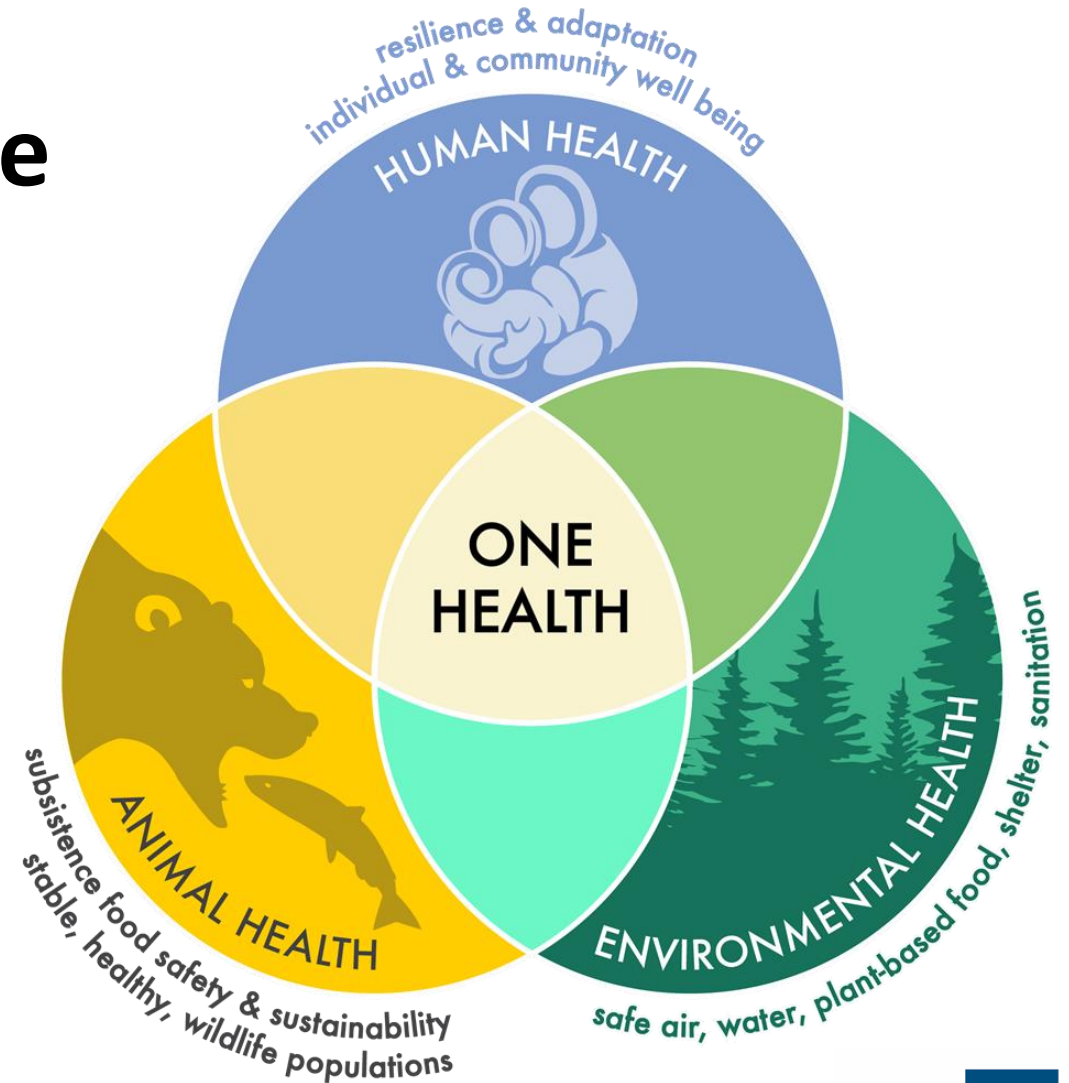
UA Research Makes Communities Healthier

- UA provides research necessary for permitting projects and management of healthy fish and wildlife populations
- Biomedical and health research programs address important issues including mental health, suicide prevention and opioid addiction



One Health Initiative

- Considers interdependence of Human, Animal, and Environmental Health
- Builds interdisciplinary partnerships across university, state and federal agencies, and community leaders



Industry-University Cooperatives

Support applied research, technology transfer, and education



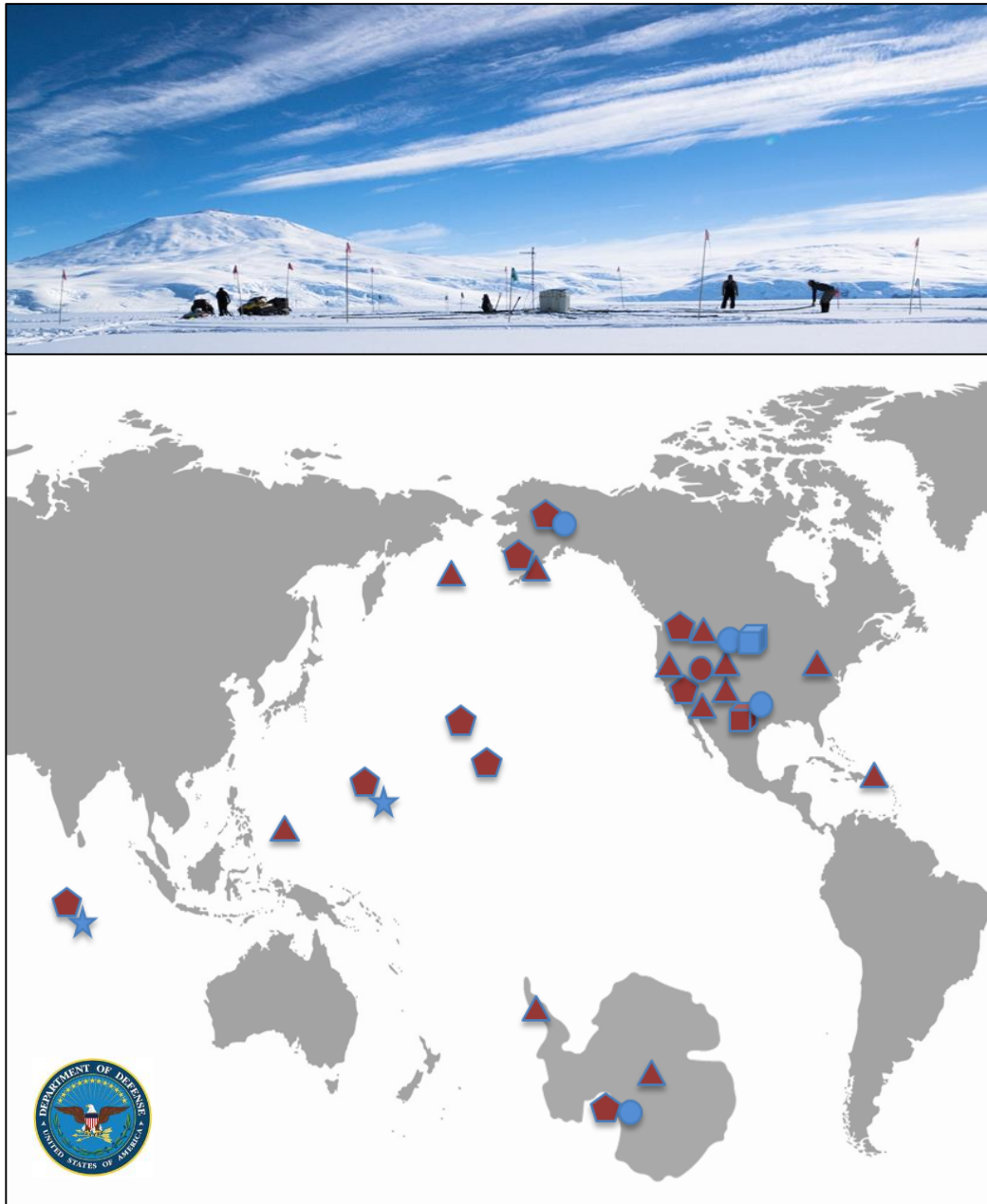
Pollock Conservation Cooperative Research Center

Since 2000 industry contributed over \$8.8 million for marine research and graduate education at College of Fisheries & Ocean Sciences

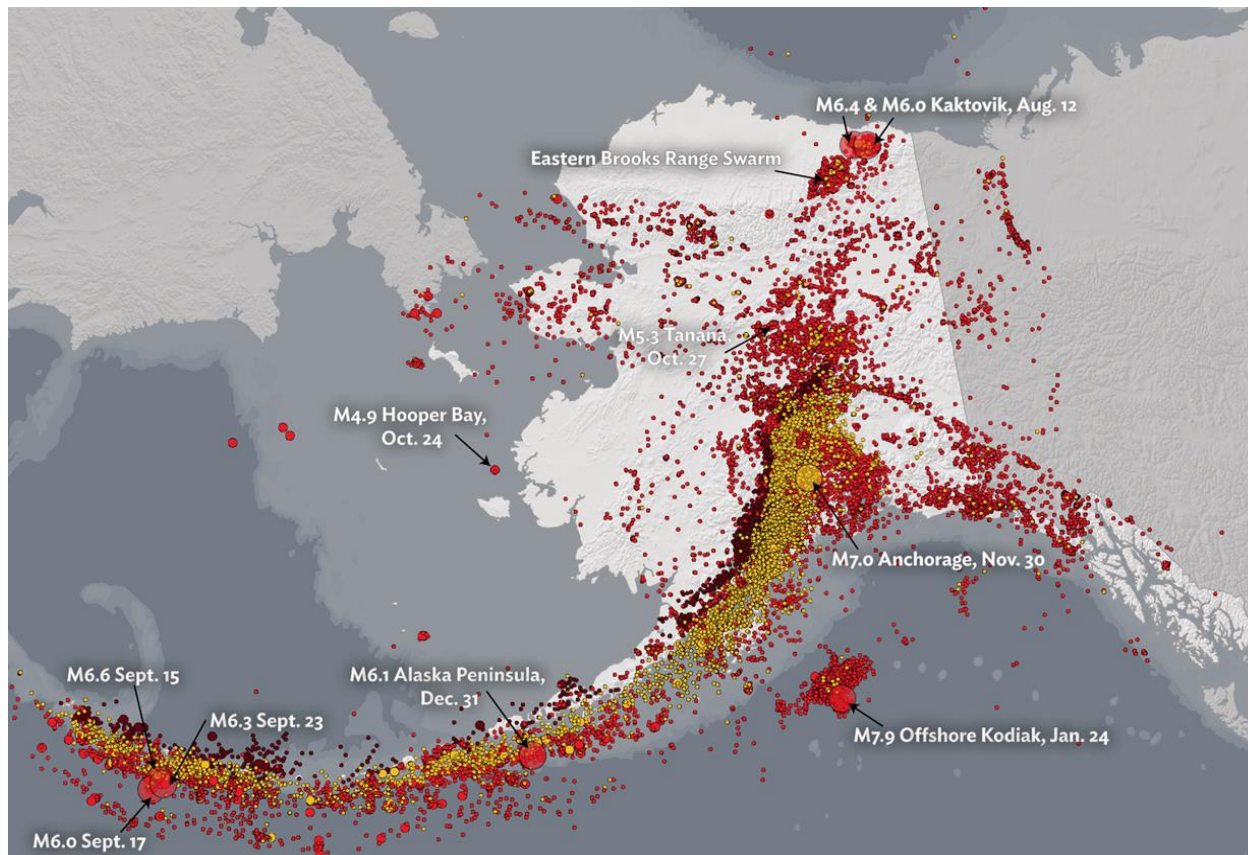
UA Research for National Security

Wilson Alaska Technical Center

- Operates Dept. of Defense nuclear monitoring facilities worldwide
- One of only 18 DoD University Affiliated Research Centers
- Over \$50 million in funding since 2008



UA Research for Earthquake and Disaster Preparedness



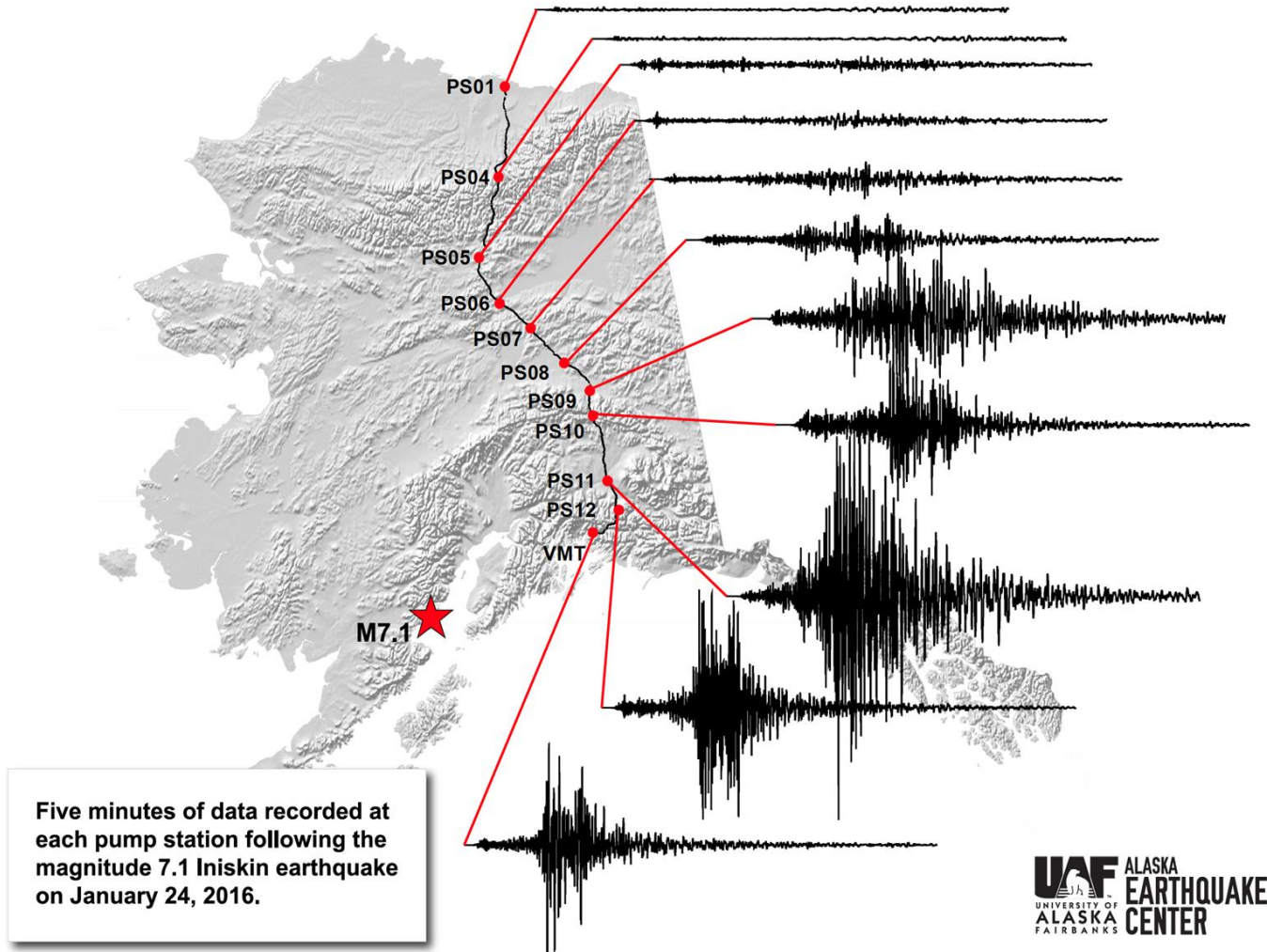
Alaska Earthquake Center

*Real-time monitoring,
research, and service for
the State of Alaska*



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Statewide Monitoring Network



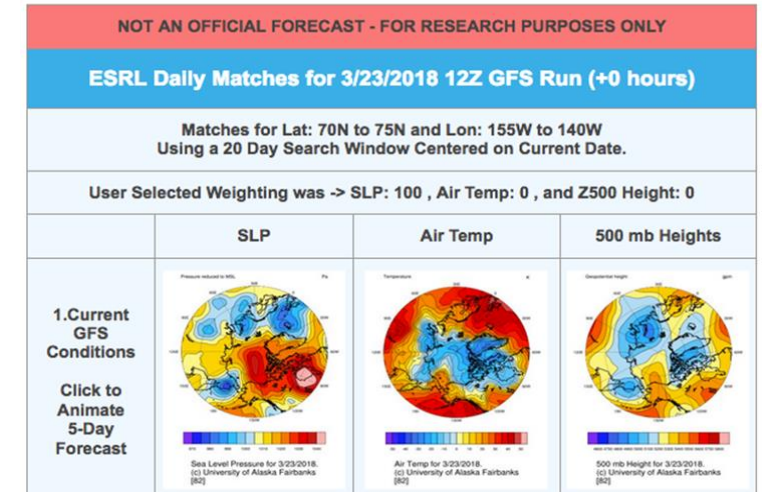
- Tracks seismic, weather conditions
- Helps protect communities and critical infrastructure
- **USArray** -- partnership with National Science Foundation



UA Research for Military

U.S. Navy ICEx Ice Camp

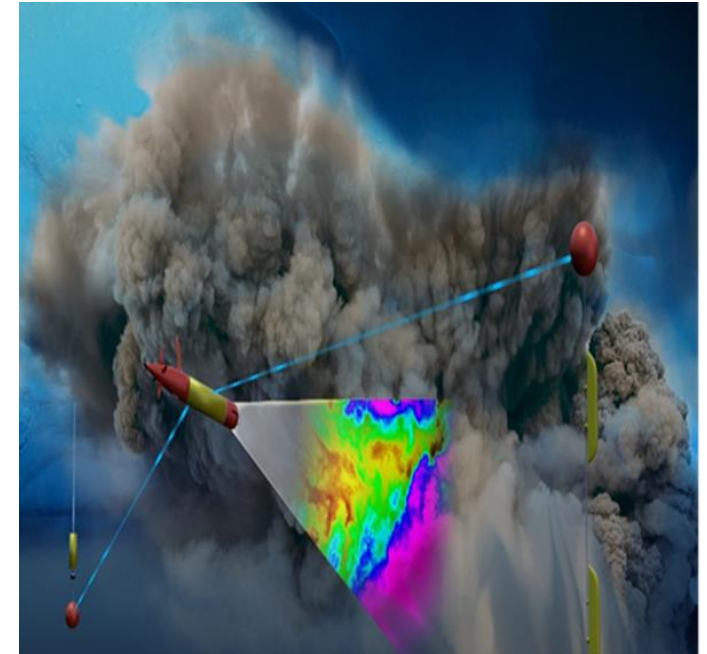
- Support under-ice activities of Navy's Arctic Submarine Lab
- Predicts ice conditions days to months out for safety assessments
- Industry partnerships providing seasonal outlooks for operations planning
- Work with Navy, NOAA National Ice Center and private sector



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Arctic Domain Awareness Center

- Conducts research across network of academic and industry partners
(\$3.5 million fed. funds)
- Research improves situational awareness, crisis response capabilities in Arctic
- Trains future leaders for Dept. of Homeland Security via structured education programs
- ADAC's principal customer: U.S. Coast Guard ...supports Arctic search & rescue, disaster response, and law enforcement missions



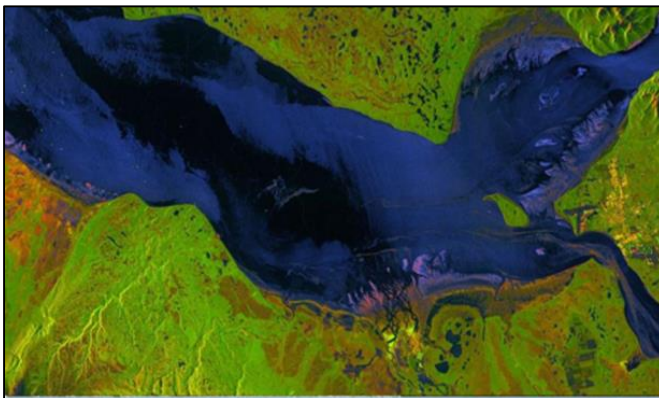
ADAC technology – Modeling arctic oil spill impacts under ice



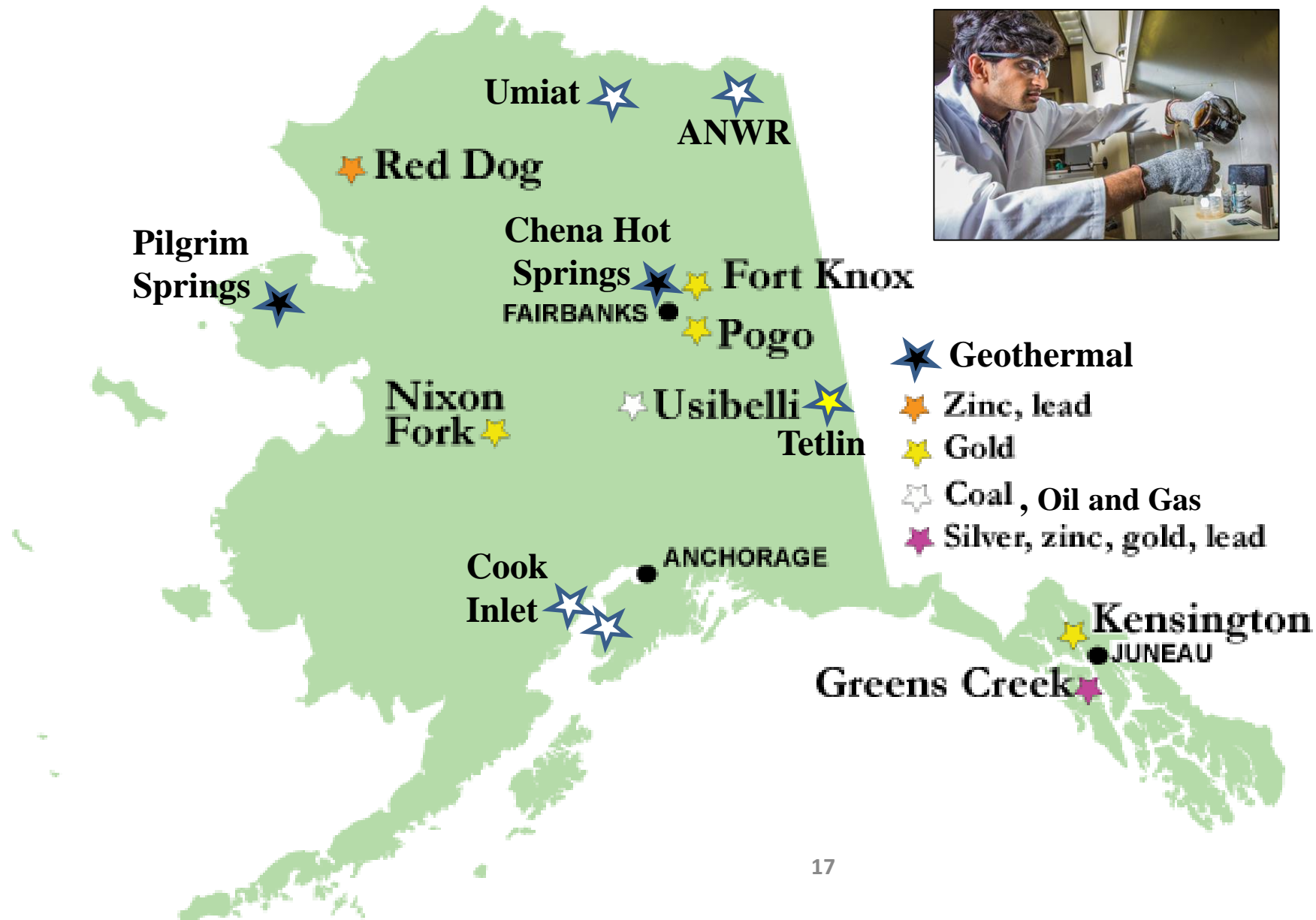
UA Research for Intelligence Community

Arctic GeoData Cooperative

- Satellite downlink for domain awareness
- Partnership of Alaska Satellite Facility, GeoNorth and Lockheed Martin
- Supplies National Geospatial-Intelligence Agency (NGA) radar data from space
- Dept. of Defense applications

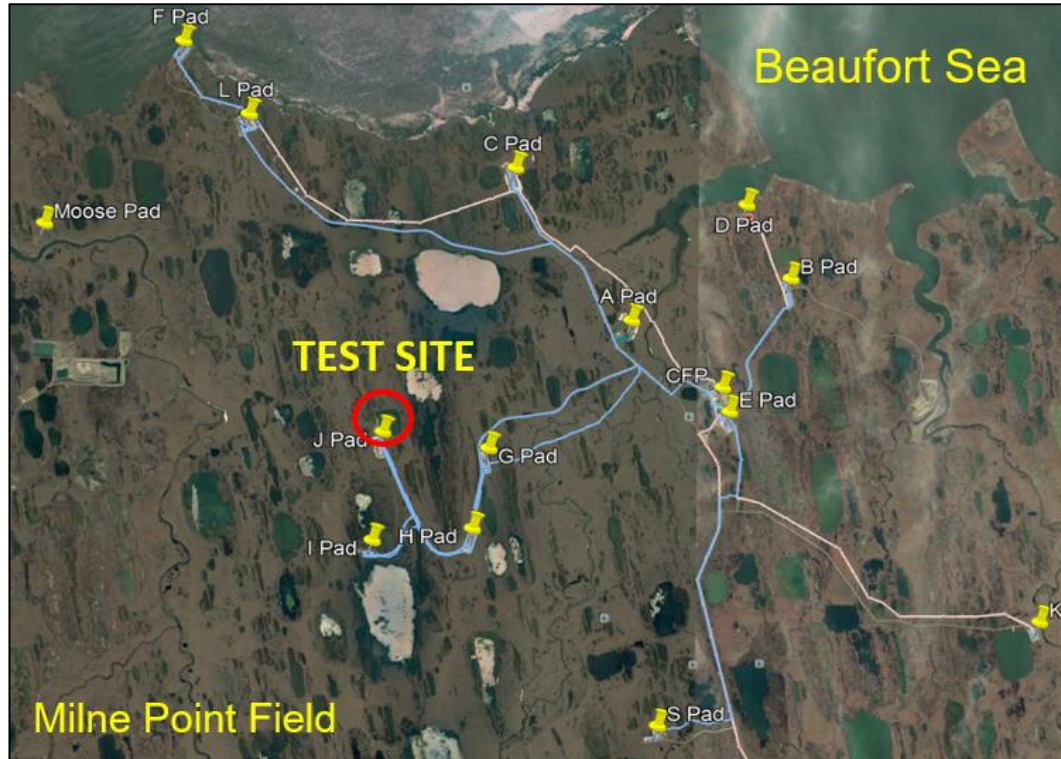


UA Research on Economic Geology of Alaska



Research to increase Oil Production

*First North Slope field tests using Polymer Floods
technique for recovery of heavy oil*



*Industry-driven
research leveraging
federal funds*



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Intellectual Property and Commercialization

- Moving research from ideas to markets
- Fostering culture of innovation and entrepreneurialism
- Diversifying and enriching Alaska economy

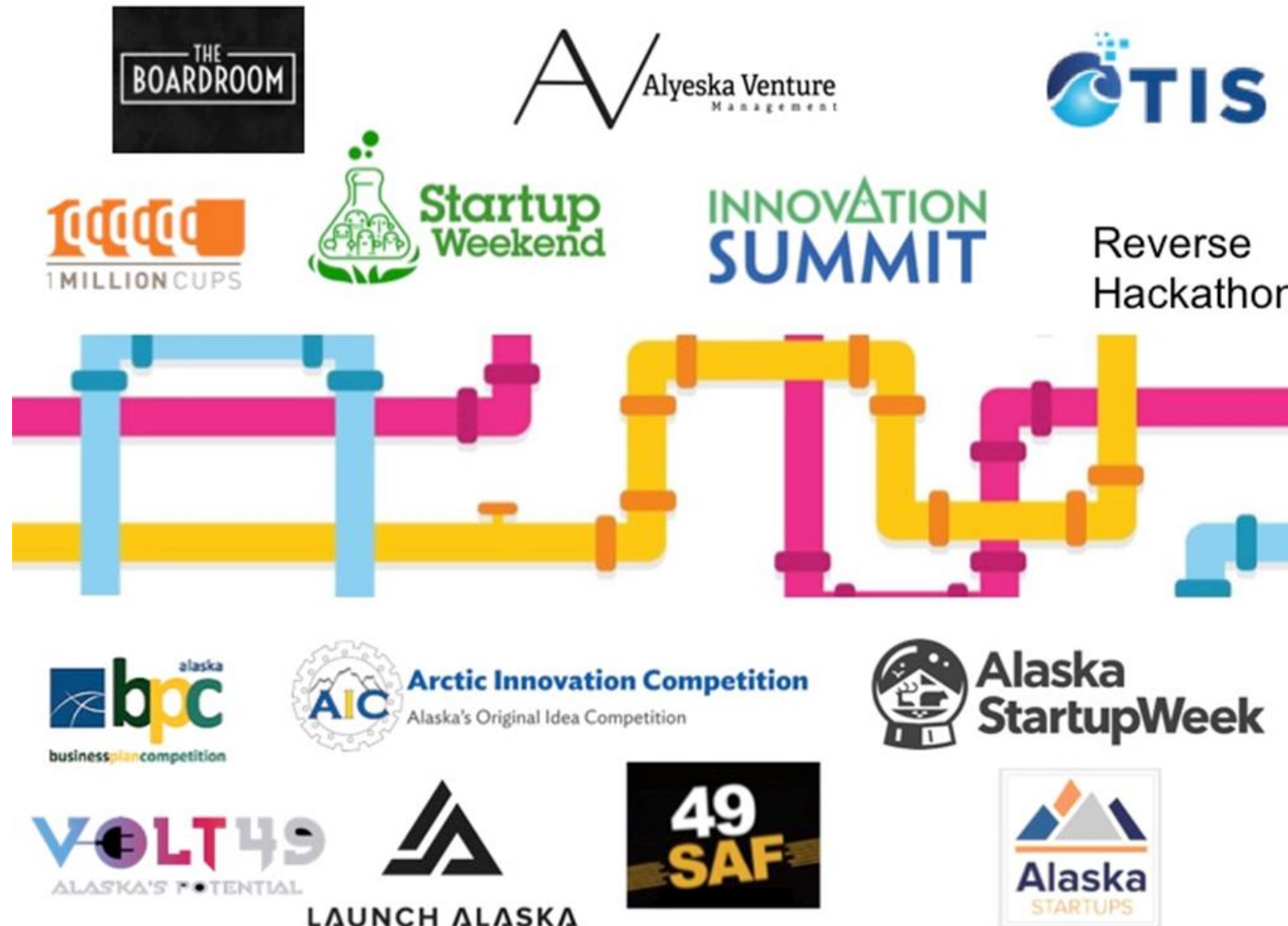


Business incubator to turns ideas and research into business success



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Alaska's "Innovation Pipeline"



UA's Role

Innovate

Host

Refer

Advise

Mentor

Support

Connect

How UA Feeds Alaska's Innovation Pipeline

1. Direct licenses to existing companies for UA-developed IP (*Intellectual Property*)
2. Forming spin-off companies to commercialize UA-developed IP
3. Working with industry to develop new ideas and products
4. Supporting student innovation to build an entrepreneurial workforce for tomorrow

V-ADAPT, inc.

- U.S. Air Force funded research over +15 years
- Market opportunity in aviation sector
- Start-up company June 2013

Invention Disclosures



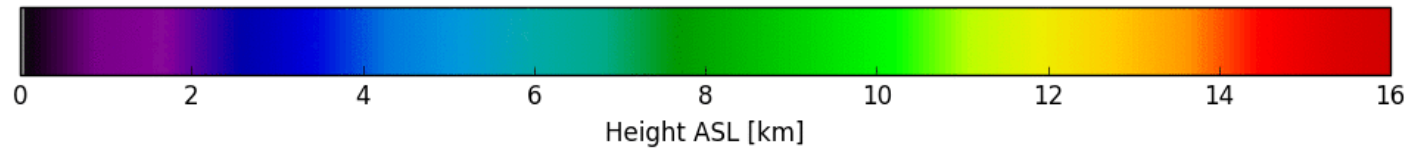
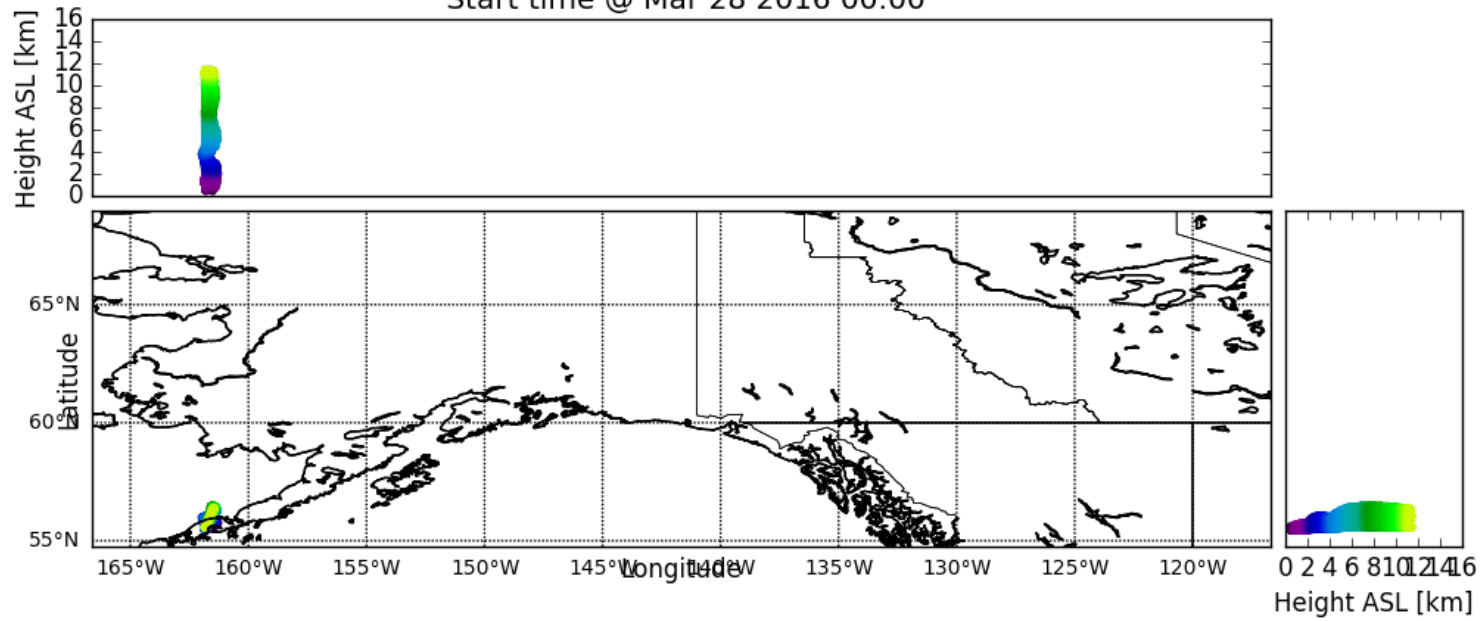
Declared Intellectual Property



Licensed Technology



Pavlof
Output Time @ Mar 28 2016 01:00
Start time @ Mar 28 2016 00:00



*Computer
modeling for
volcanic ash
plumes from
North Pacific
volcanoes*



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Grid Bridging System

- New energy technology developed by UA's Alaska Center on Energy & Power (ACEP)
- Collaboration and funding with U.S. Office of Naval Research
- Modular system increases renewable energy on grid
- Deployed with Alaska Village Electric Cooperative - applicability beyond Alaska



System testing and characterization at ACEP's Power Systems Lab



NemaMetrix

- UAF researchers invented quick, simple way to sort *C. elegans* used in their research by size (*age*)
 - UAF received provisional patent for this system
- ↓
- IP licensed by company based in Oregon, which is developing it further

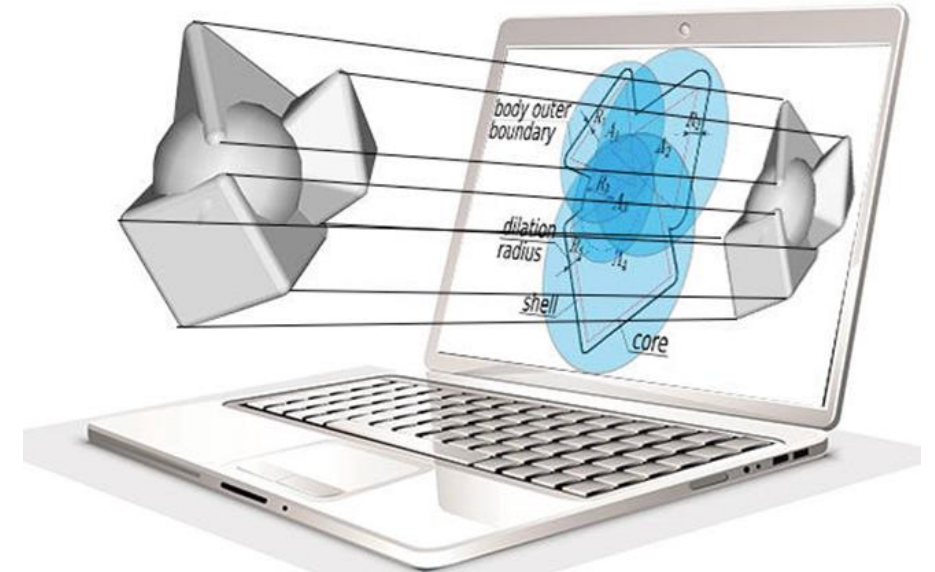


C. Elegans - common model organism used in broad range of lab research



Coupi

- Company commercializes IP developed supporting NASA missions
 - 6 full-time employees and internship opportunities to UAF students
- ↓
- Technology generated over \$25k in licensing revenue



CoupiTM
Physical world models

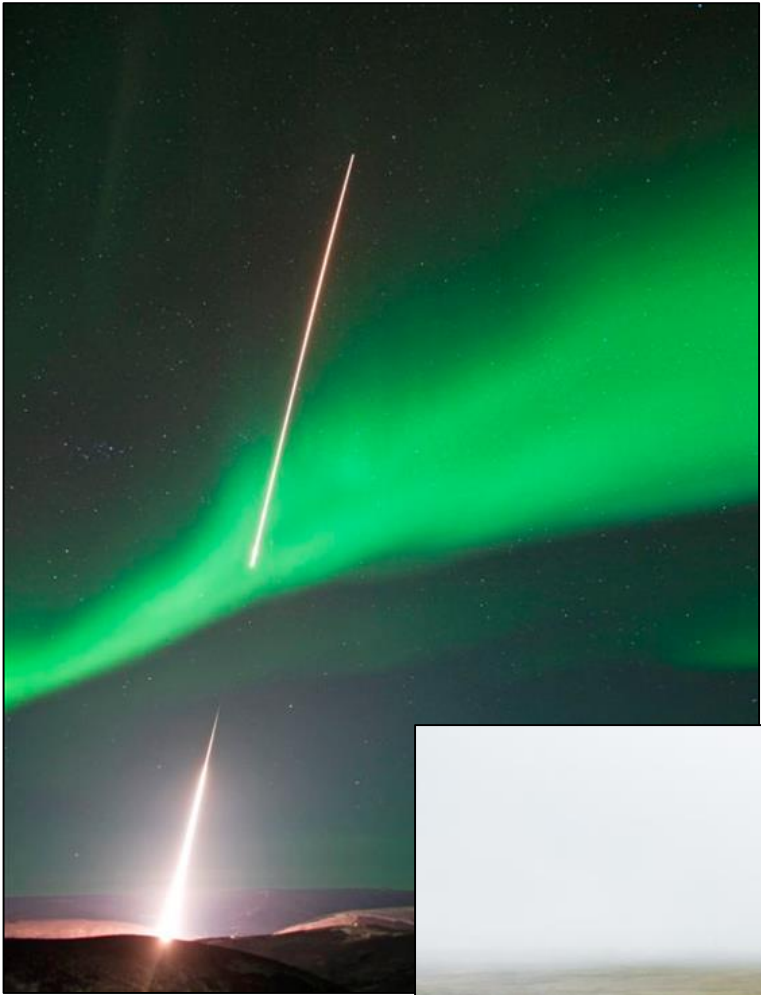
*Uses discrete element analysis
modeling technique*



*Internship opportunities
for several UAF students across
disciplines*



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