

# Alaska Center for Unmanned Aircraft Systems Integration - RDT&E

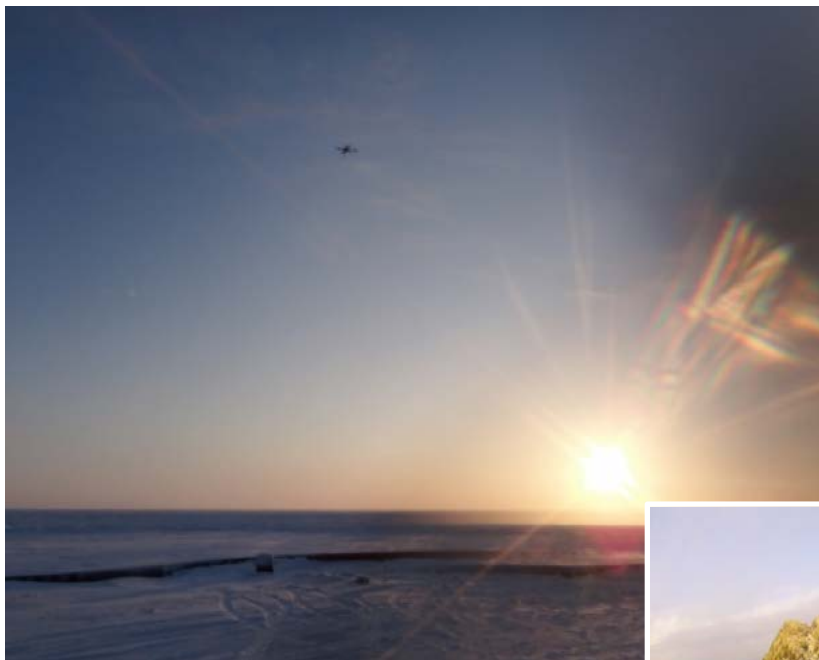
*An Eventful Year: Award of the FAA Test Site*

*Ro Bailey*

*Deputy Director, ACUASI &  
Director, Pan Pacific UAS Test Range Complex*



# UNMANNED AIRCRAFT SYSTEMS FOR ALASKA



Exciting, busy **2013**  
Sought out by Industry,  
**Researchers, Feds**  
Advanced technology, airspace  
access, more

# An Eventful Year

- ACUASI's first year - UAS program 13<sup>th</sup> year
- Significant increase in work & inquiries
- FAA SIR released 14 Feb 2013
  - Proposal submitted over 2.5 months
  - Team built with 58 partners
- Ground-breaking accomplishments
- FAA awards Test Site to Alaska-led Team

# ACUASI's First Year

- Events
  - Established initial underpinnings to support test site proposal
  - Reorganized & started formalizing procedures
  - Moved into our own building (former OEM site)
  - Hired professor shared with College of Engineering
  - Many successful missions
  - Successfully worked with Alaska legislature on UAS resolution (HCR 6) & subsequent task force
  - Became US co-chair of UAS Expert Group under AMAP (Arctic Council)
- Changes
  - Greg Walker stepped down to become Chief Technology Officer
  - Marty Rogers named new ACUASI Director

# ACUASI Priorities for Next Year

- Stand up the test site
- Refocus energy on high latitude activities
  - Of benefit to Alaskans
  - In support of research
  - To attract technology businesses to Alaska
- Sharpen our technology focus on improving and advancing the state-of-the-art of sensors



# FAA Test Site

- Jan 2012: FAA Reauthorization Act directed FAA to select 6 Test Sites
- Feb 14 2013: Solicitation was released
- UAF led team for states of Alaska, Oregon, and Hawaii, plus 56 additional team members
  - Includes state agencies (DOT, DPS, Forestry of DNR, DHS&EM, National Guard
  - Universities, EDCs, corporations
  - Associations like Medallion, AUVSI
- And, 30 Dec 2013, we were announced as a selectee
- Media attention exploded—at least 35 interviews to date, over 1200 media mentions of UAF

# Pan-Pacific UAS Test Range Complex

- University of Alaska is “the operator” per FAA
  - Establishing Board of Directors, management team, procedures, policies, & how to fund
- Funding is a challenge
  - No FAA funding provided or contemplated
  - Alaska legislature provided \$5M in 2012
  - Oregon legislature provided \$3M in 2013
  - Hawaii seeking funding now
  - Plan is to add FAA research tasks & data needs into ACUASI business plus fund through test-specific customers
  - Rumor has it FAA will request funding but not likely this year

# What Alaska Offers

- Vast open airspace with little traffic
- Wild, extreme, unpopulated, diverse terrain
- Access to large military ranges with data gathering ability
- History of pioneering aviation technology
- Culture of innovative use of aviation
- Close relationship with regional FAA
- Perhaps most important, willingness to be thoughtful and methodical in potential policy decisions
- State government taking balanced approach
- Extensive experience pioneering UAS in new applications & gaining new levels of FAA approvals

# What Hawaii Offers

- Restricted airspace with cooperative military
- Remote from 48 states - oceanic airspace system
- Destination/launch point for very high altitude/high speed testing overwater
- Tropical environmental conditions
- Accessible volcano activity radically different from Alaska volcanoes
- Benign maritime environment for domain awareness testing
- Strong COE in Disaster mgmt & climate change
- Strong research relationship with University of Alaska
- Long standing partnership between our two states

# What Oregon Offers

- Strong, well-established UAS industry
- UAS industry support of test sites
- Good maritime access, including being the 3<sup>rd</sup> launch/recovery point for High Altitude/High Speed tests
- High desert environment
- Small uncontrolled low use airports (Tillamook) with UAS & COA experience
- Link with native citizens (Warm Springs Confederated Tribes)
- Good research partnership with OSU

# Pan Pacific UAS Test Range Complex

- University ACUASI is lead
- Thirteen specific spots around the three states
  - Strong link with military JPARC ranges
  - Forging links with manned aviation safety specialists
- Key questions to answer:
  - Procedures to protect manned aviation
  - Policies to protect privacy
  - Technical testing to assure control, detect & avoid, lost link procedures, airworthiness, etc

# What about Privacy?

- We're dedicated to protect privacy so beneficial uses can be obtained
- Current statutory/case law strongly protects privacy while defining legal airborne activities (manned)
  - Unmanned a new technology, but subject to same restrictions
  - FAA added initial guidelines to OTA which generally rely on existing law, require us to develop policy
  - AK legislative task force focusing on management & control of data rather than tool that collected it

PPUTRC Board of Directors  
ACUASI Director  
Senior State Representatives

Chief Executive Office

Alaska  
COO

Hawaii  
COO

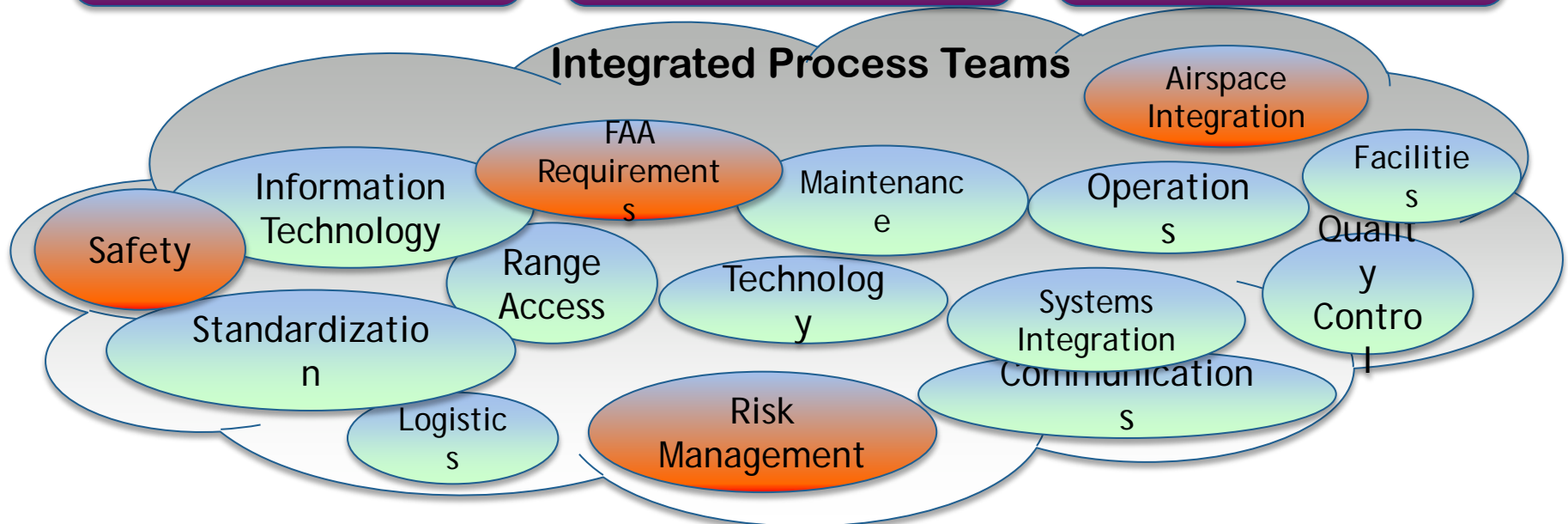
Oregon  
COO

Alaska Range/Site  
Management Team

Hawaii Range/Site  
Management Team

Oregon Range/Site  
Management Team

### Integrated Process Teams



# Alaska Center For UAS Integration - RDT&E

- Created by Board of Regents Dec 2012
- Three integrated focus areas
  - Engineering - develop technical capabilities to meet new requirements
  - Application Development - drive system capabilities to expand uses and users
  - Training & Education - develop humans to develop, maintain & operate systems
- Within GI & UAF, but named as overall for UA
- Situated to exploit FAA opportunities - Arctic airspace, FAA Test Site

## How we've used the \$5M to date

- Moved into the former OEM building
  - But collected surplus furniture, printers, etc. from the warehouse to minimize costs
- Hired a professor to advance our educational outreach
  - But split the costs with College of Engineering so we have room to do more
  - Funded student research that resulted in a new & better rotorcraft
- Expended technology development funds for the MIZOPEX project
  - But now have a unique capability and upgraded aircraft to offer for future jobs
- Advancing our tools to state-of-the-art for Arctic use

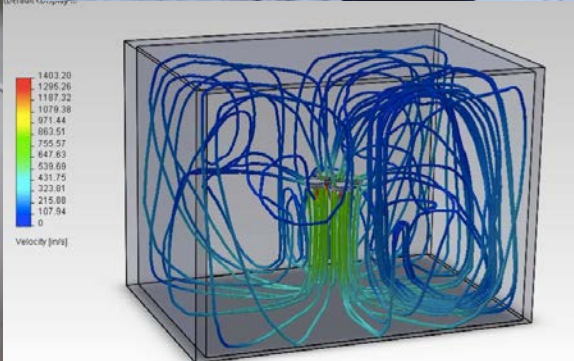
Striving to use money wisely

# Recent Missions (2013)

- MIZOPEX
- Idaho Power
- ENI Petroleum (multiple)
- BP (multiple)
- Coast Guard aboard the Healy
- Pilgrim Hot Springs
- Ugak Island
- NEX7 Payload Evaluation in California
- Iceland mapping flights
- Bethel Aircraft Crash exercise
- Demo for DOT road mapping
- For FEMA, data upload demonstration
- Outreach to scouts, public, with demos

# Oil Infrastructure Monitoring Research

- Flare Stacks
- Pipelines
- Processing Facilities
- Access Roads



**BP North America Partnership**

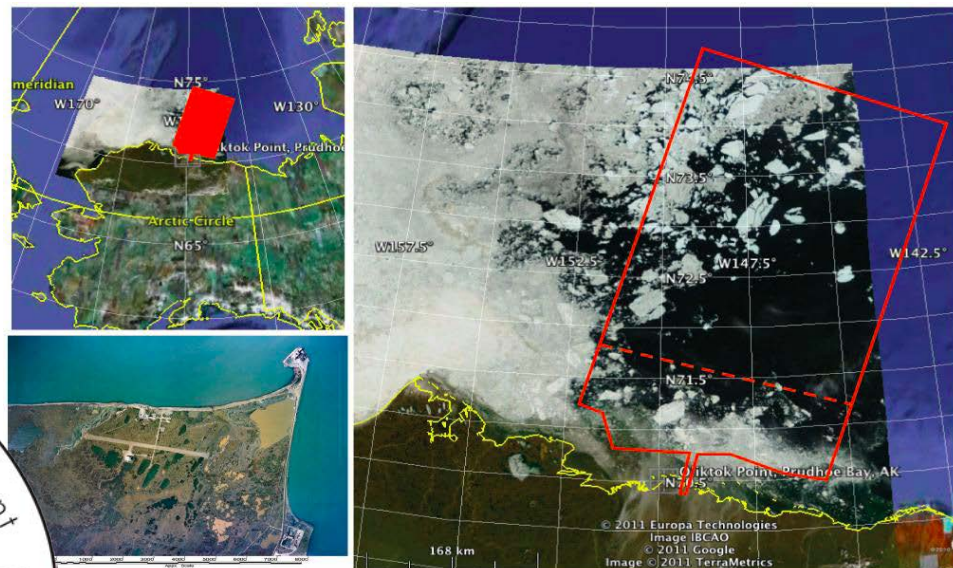
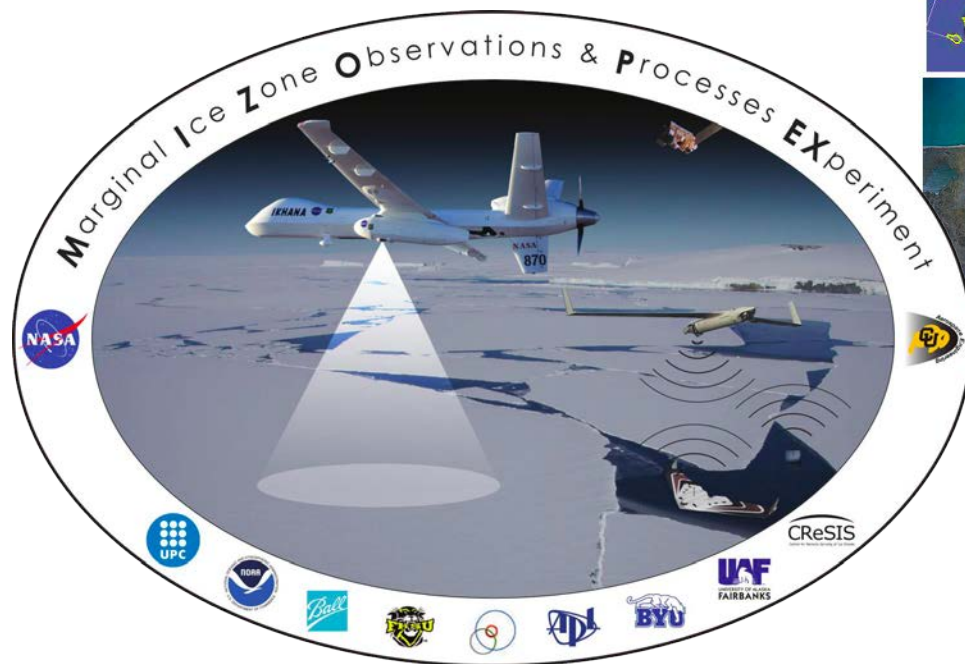
**BP Exploration (Alaska) Inc. Partnership**

# Recent ACUASI Project

## Marginal Ice Zone Ocean and Ice Observations and Processes EXperiment (MIZOPEX)

### UAF deployments

NASA Exercise July 2013



Multiple aircraft simultaneously  
Many new scientific payloads

# Bear Bite - SAREX

Mass Casualty Exercise 7-10 February 2013

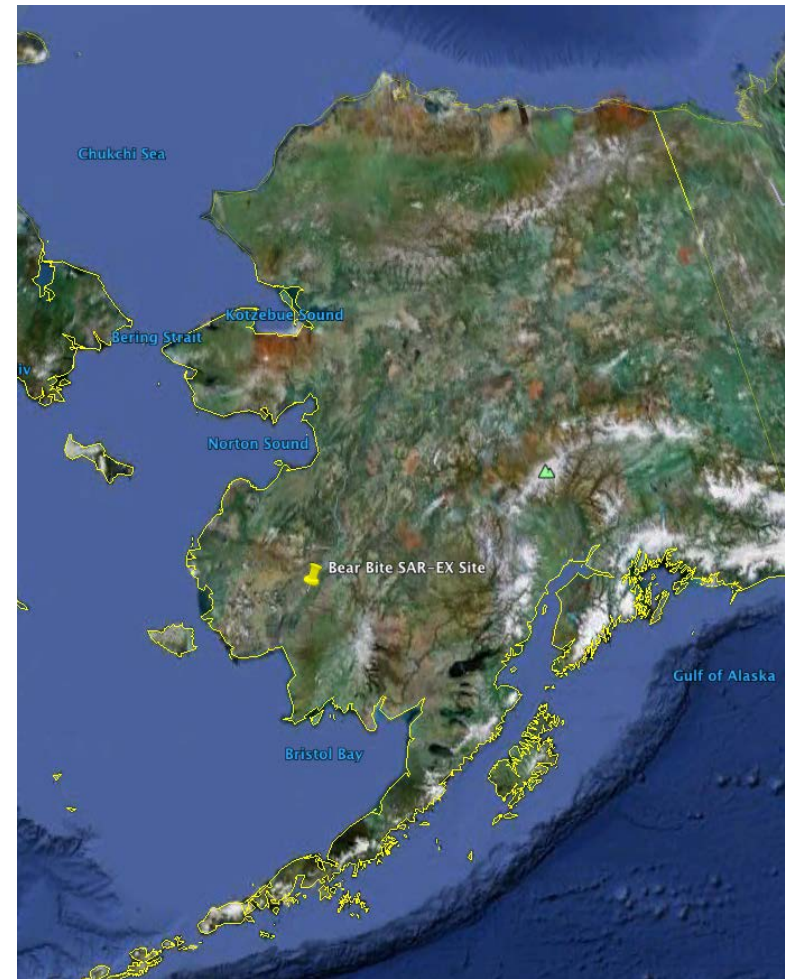
“An aircraft crashed in the tundra roughly 20 miles outside Bethel Alaska many died with some survivors”

Deployed two unmanned aircraft systems  
with support team

Coordinated with manned aviation on the  
scene

Mission:

- Map scene for event documentation
- Real-time SAR response



## Sample of Projected Missions for 2014-15

- Southern Company
- Oil Companies (Conoco, BP (continued), ENI (expanded))
- Idaho Power
- Test missions for PPUTRC (multiple inquiries)
- Sikuliaq Ice Trials
- Oden methane sensor test
- North Slope Borough demonstrations
- Oklahoma power & energy opportunities
- Possibly on retainer for FEMA - response to wildfires, etc

# Increasing Support

- State Legislature funding plus resolutions, current submitted bill and resolution
- Lt Gov led Aviation States Association study on privacy
- Fairbanks North Star Borough stepped up to offer assistance to relocating businesses, lead effort for booth at AUVSI, assist with marketing outreach
- AK Dept of Commerce is funding the booth
- AIDEA exploring means to invest in possible industry/technology park
- USARAK commander pledged Army support for University of Alaska UAS work
- Alaska Command Lt Gen Handy also pledged support
- Alaska delegation continues to support

## In Short...

- ACUASI is growing, becoming ever better known, benefitting the University, the community, and Alaska
- To ensure success, we're also seeking constant improvement through a strategic planning session with Foraker,
  - Now doing organizing & rethinking to make best use of current resources & prioritize hiring & acquisition decisions as we grow
  - Reaching out to partners & team members to develop robust, flexible, safe processes, procedures, standards

Thank you for your support

Questions?

# How you could help us

- Continue to support the program
- Lend us your experience & expertise—have you suggestions for us?
- Support a funding request next year for continued infrastructure growth
- When we have operations near you, we'd love to have you come see us work