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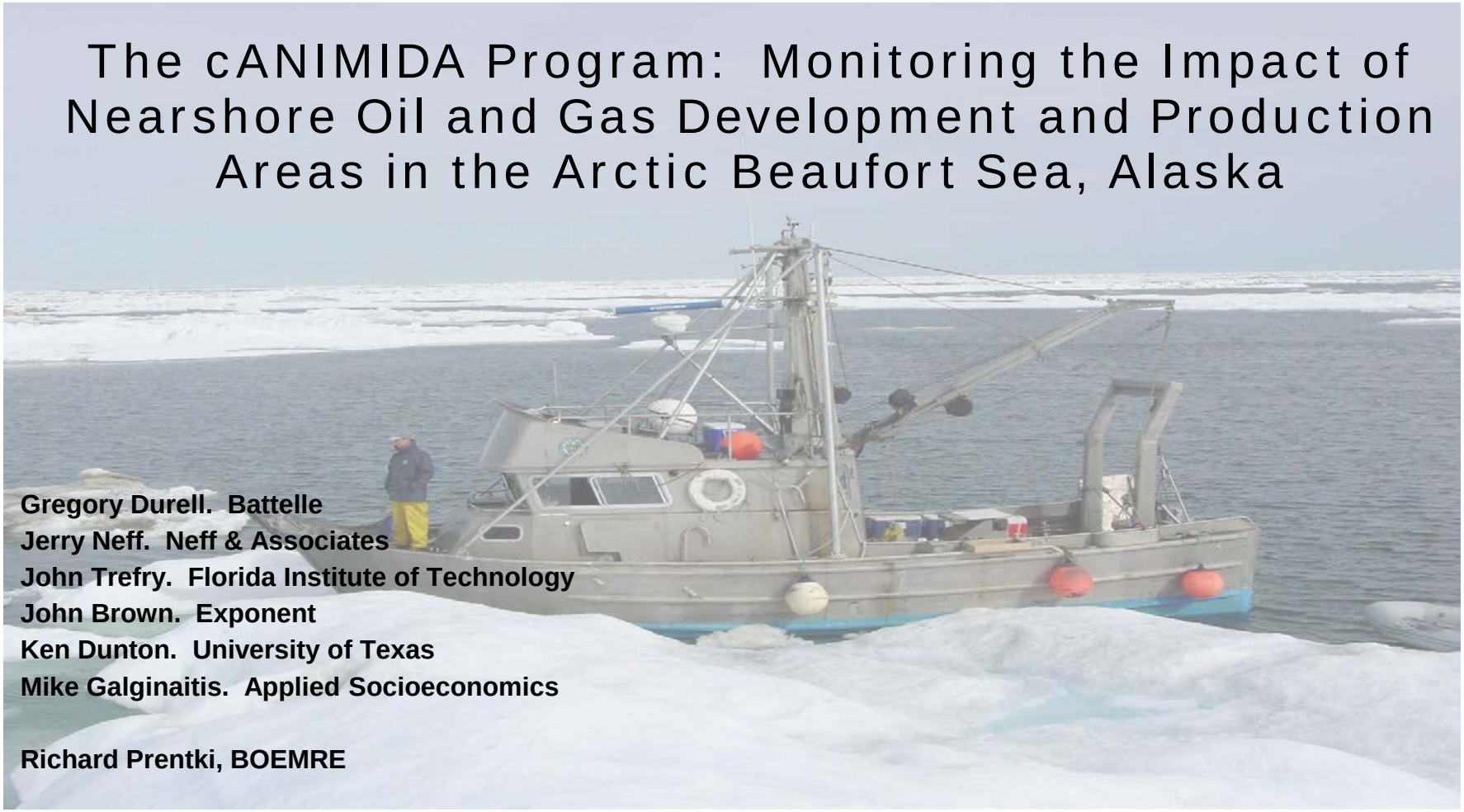
The cANIMIDA Program: Monitoring the Impact of Nearshore Oil and Gas Development and Production Areas in the Arctic Beaufort Sea, Alaska



Gregory Durell. Battelle
Jerry Neff. Neff & Associates
John Trefry. Florida Institute of Technology
John Brown. Exponent
Ken Dunton. University of Texas
Mike Galginaitis. Applied Socioeconomics

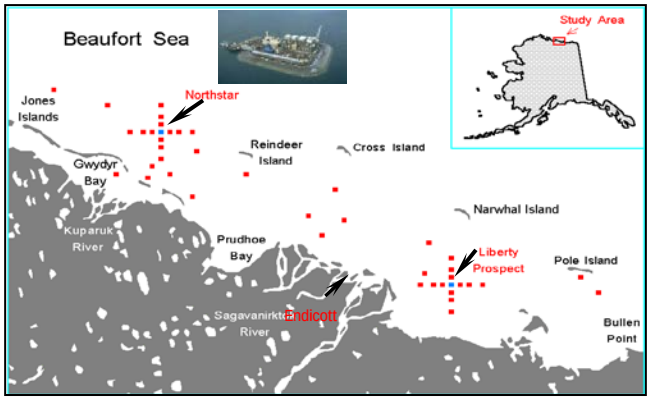
Richard Prentki, BOEMRE

Project Scope Summary

cANIMIDA: ***Continuation*** of Arctic Nearshore Impact Monitoring in Development Area (2004-2010)

Gather baseline and long-term monitoring data to evaluate potential effects from O&G development and production in Beaufort Sea OCS. Continuation of ANIMIDA, by expanding the monitoring area, employing new assessment measures, and providing more data for better trends and impact analysis.

- Studies continued and were expanded dealing with
  - Characterization of sediments.
  - Characterization of suspended sediments, including natural sources, dispersion. Partitioning of chemicals between dissolved and particulate phases.
  - Characterization of chemicals in biota; bioaccumulation and effects.
  - Monitoring the unique Boulder Patch ecosystem
  - Assessment of subsistence whaling



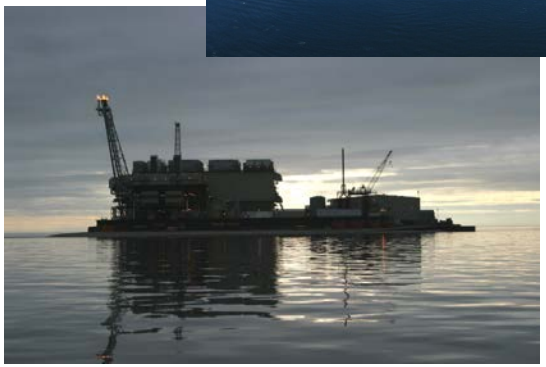
Summary and Conclusions

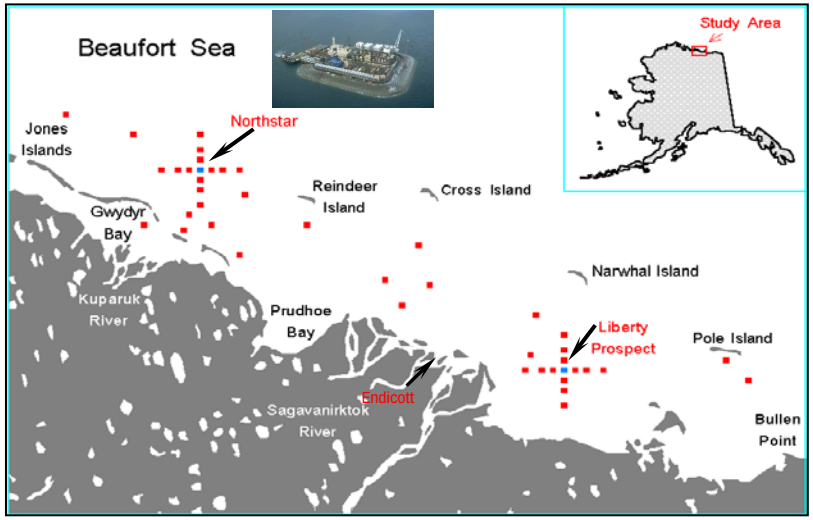
cANIMIDA environmental monitoring indicates that the O&G activities in Beaufort Sea have not contributed contamination or other stressors that would adversely impact the offshore environment

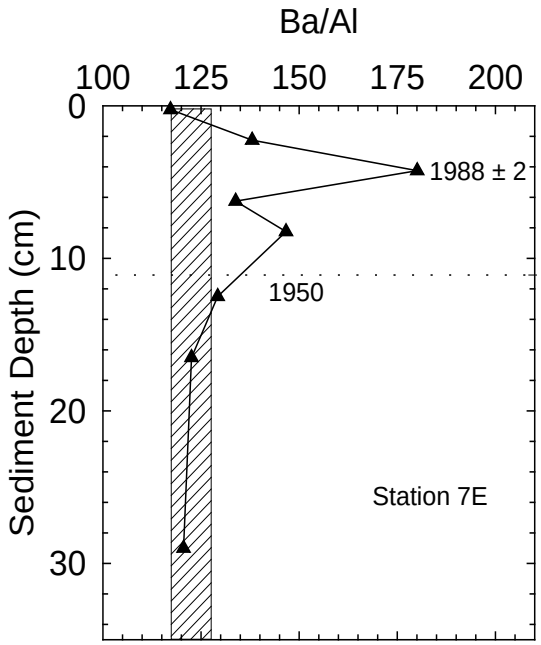
- Sediment contaminant levels are *low* and relatively *uniform* throughout Beaufort Sea, with only subtle point source signals.
- Tissue contaminant levels are also quite uniform and below levels of concern, with no impact or response to stress being observed.
- Contaminant levels in sediment and biota have remained fairly constant over the past 20 years.
- HC and metals signatures in sediment and biota reflect mainly natural sources; anthropogenic sources to Beaufort Sea are small.
- Most of HC and metals input to Beaufort Sea is with suspended solids from the rivers during the spring runoff (~80% in 2-3 weeks).
- The Boulder Patch ecosystem and whaling appear unaltered since off-shore development and production began

Reporting

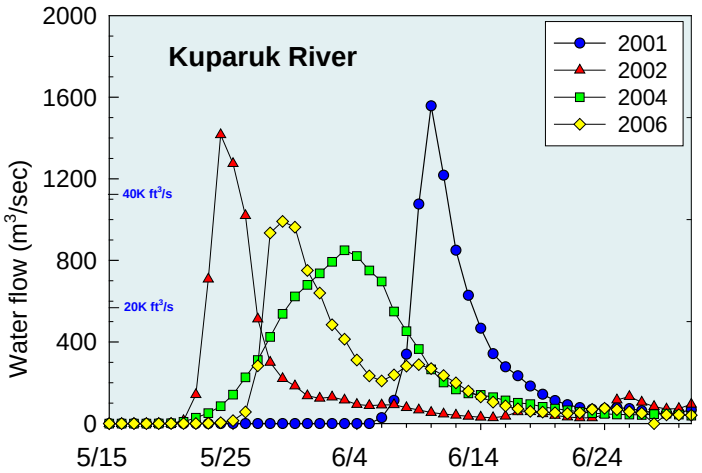
- MMS Alaska OCS Region Web Site: http://www.mms.gov/alaska/
- Final Consolidate Reports for each cANIMIDA task
- Journal Papers for each cANIMIDA task
- Conference Presentations
- "cANIMIDA Data Management Platform" http://www.duxbury.battelle.org/CANIMIDA/
  - Data that can be queried/downloaded
  - Simple GIS interface
  - Document Repository
    - Project reports and other docs
    - Journal publications
    - Conference presentations



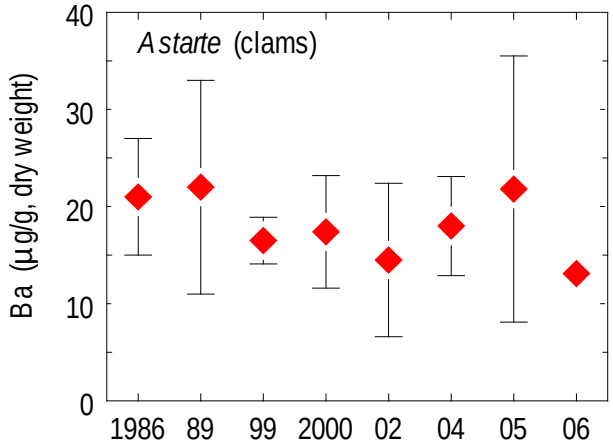




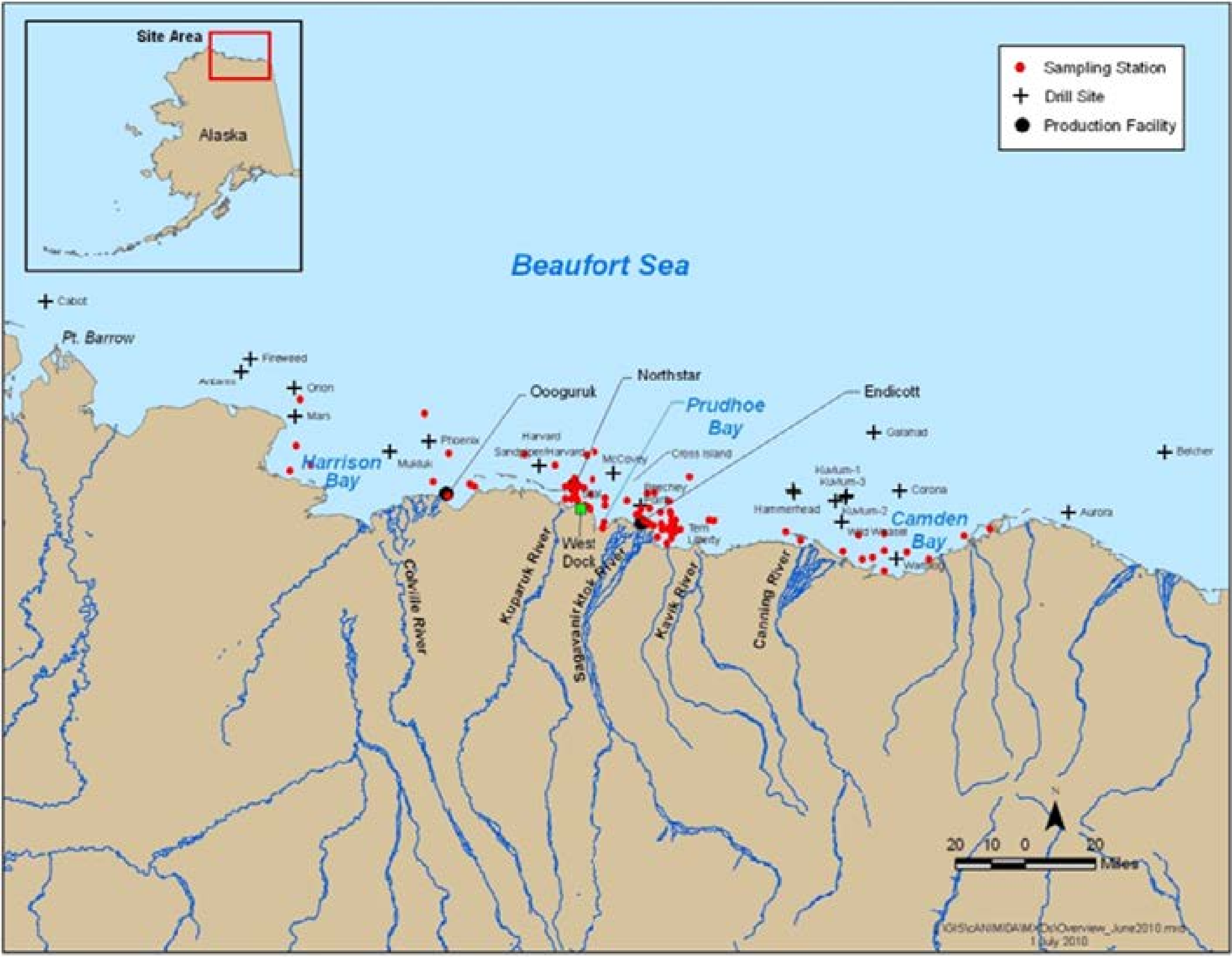
Some regional increase in sediment HCs since Prudhoe Bay O&G exploration/production began. Some localized HC and Ba signals.



Primarily natural sources of hydrocarbons and metals to Beaufort Sea. Majority of flow, >80% of suspended sediments, and >50% of metals and hydrocarbons are delivered to Beaufort Sea from rivers in 2-3 week spring melt



Biota trace metal concentrations were similarly uniform, between years and across the study area, indicating no change in contaminant input


Site Area
Alaska
Sampling Station
Drill Site
Production Facility
Beaufort Sea
Cabot
Pt. Barrow
Fireweed
Orion
Mars
Phoenix
Mukluk
Harrison Bay
Oooguruk
Northstar
Prudhoe Bay
Endicott
Harvard
McCovey
Cross Island
Galahad
Belcher
Kuvlum-1
Kuvlum-3
Corona
Hammerhead
Kuvlum-2
Camden Bay
Aurora
Tern
Liberty
West Dock
Colville River
Kuparuk River
Sagavanirktok River
Kavik River
Canning River
N
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