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AQ = Air Quality

IM = Information Management

PO = Physical Oceanography

FE = Fates & Effects

MM = Marine Mammals & Protected Species

SE = Social & Economic Sciences

HE = Habitat & Ecology



## BOEM Information Need:

- Site-specific, common, quantitative information on potential spilled oil behavior and weathering provided by an oil weathering model (OWM).
- The OWM calculates the persistence of the lighter, but most toxic components of the oil slick and the dispersion of oil into the water with or without the presence of ice.
- The behavior and weathering of spilled oil is very dependent on the specific chemistry of oil—a major reason for the difference in oil persistence and environmental damage from the *Exxon Valdez* and *Deepwater Horizon* spills.



## Background:

### A) Relationship with Previous Work/Efforts

- The Alaska OCS Region has helped develop and currently uses the SINTEF OWM to estimate the fate and persistence of spilled oil.



## Background:

### **B) Relationship with Concurrent/Future Efforts**

- The OWM has recently been improved as part of the Oil-in-Ice Joint Industry Program (JIP) to better incorporate Arctic and cold weather conditions, but only a small subset of Alaska OCS and North Slope oils are included.
- This research will be informed by results from BSEE's TAR study "Validation of the Two Models Developed to Predict the Window of Opportunity for Dispersant Use in the Gulf of Mexico" that aims to improve prediction of the window of opportunity for successful chemical dispersant use in the GOM.



## **Study's Objectives:**

- Expand the existing SINTEF OWM library of oil compositions to cover additional representative Alaskan OCS crude and marine fuel oils through a suite of standard oil composition analyses and mesoscale empirical weathering measurements.



## **Methods:**

- This study will include a 5-year license for the JIP-updated Sintef OWM. The study will compile existing updated weathering data for Alaska State and OCS crude and marine fuel oils within the last 5 years to be entered into the SINTEF oils library. Laboratory and mesoscale oil weathering tests will be conducted on approximately eight Alaskan crude or condensate oils (including: Oooguruk, Nikiakchuq, Northstar, Point Thompson, Alaska North Slope, Cook Inlet) and 2-4 refined oils (such as low-sulfur marine diesel, IFO and Bunker C).

