BOEM ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: Alaska

Planning Area(s): Chukchi Sea

Title: Evaluating Chukchi Sea Trace Metals and Hydrocarbons Sourced from Nearby Coastal Rivers (AK-08-12-12)

BOEM Information Need(s) to be Addressed: Quantifying trace metals and polycyclic aromatic hydrocarbons (PAH) contributions from these terrestrial sources will provide needed information about chemistry and seasonal variability in outputs of contaminants and pollutants from land to the offshore Chukchi lease areas and thus provide a major constraint on background source variability of these chemicals. BOEM analysts and decision-makers will use this information in NEPA analysis and documentation for Lease Sales, EPs and DPPs.

Total Cost: $232,760
plus Joint Funding ($68,393)

Period of Performance: FY 2012-2016

Conducting Organization: CMI, UAF

BOEM Contact: Dr. Heather Crowley

Description:

Background: The Yukon, Kobuk, and Noatak Rivers comprise 88% of the land-derived area draining into the Chukchi Sea (via strong northward directed currents through the Bering Strait). These rivers deliver relatively unknown quantities of particulate and dissolved phases (including metals and hydrocarbons) to the Bering and Chukchi Seas. There are ambient levels of metals and hydrocarbons present in marine sediments and seawater in the Arctic, much of which are thought to be originally derived from terrestrial sources. Metals and hydrocarbons from offshore drilling operations can alter the natural biogeochemical state of marine ecosystems. Previous studies have added to our knowledge about concentrations of metals and hydrocarbon pollutants proximate to the OCS lease areas (e.g., ANIMIDA, cANIMIDA, COMIDA CAB). This study will complement previous work by quantifying terrestrial particulate inputs to the Chukchi Sea from "upstream" sources such as the Yukon River.

Objectives:

- Develop an inventory of trace metals and PAHs to the Chukchi Sea of river sediments from the Yukon River.
- Evaluate the completeness of the historic record found in cores taken from high-sedimentation areas.
- Examine the relationship between trace metal abundance in riverine sediment sources and sediment grain-size.

Methods: Researchers will collect active river channel bedload and suspended load sediments for trace metal and PAH analyses from the Yukon River during two summer field seasons. Bedload samples will be collected from river banks whereas suspended sediment load samples will be collected from water pumped at a 1 m depth below the surface. Samples will then be filtered using a continuous flow centrifuge. Sediment cores will also be extracted from the three locations using a vibracorer. Local residents will be trained to collect additional suspended load and bedload samples during the fall, winter and spring seasons.

Current Status: Awaiting final report

Final Report Due: September 2016

Publications Completed: None

Affiliated WWW Sites: http://www.boem.gov/akstudies/
http://www.sfos.uaf.edu/cmi/

Revised Date: August 2016

ESPIS: Environmental Studies Program Information System
All *completed* ESP studies can be found
here: http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp