



Lead Author e-mail: [leewcooper@gmail.com](mailto:leewcooper@gmail.com)

**Title:** *An Overview of Selected Biological and Biogeochemical Processes on Hanna Shoal, Northern Chukchi Sea, Alaska*

**Lee W Cooper**<sup>1</sup>, Jacqueline M Grebmeier<sup>1</sup>

<sup>1</sup>*Chesapeake Biological Laboratory, University of Maryland Center for Environmental Science, Solomons Maryland, 20688, USA*

The Chukchi Sea Offshore Monitoring in Drilling Area (COMIDA) project is studying biologically important regions that are close to planned oil and gas extraction efforts northwest of Alaska, USA. In 2012, fieldwork focused on the shallow Hanna Shoal region of the northern Chukchi Sea, as well as the Distributed Biological Observatory transect across Barrow Canyon. The shallow, but complex bathymetry of Hanna Shoal appears to influence the productivity of the water column and organic sedimentation processes. Based upon field efforts in 2012, as well as prior work, inshore waters are less nutrient rich and water column chlorophyll (up to 1000 mg chlorophyll a per square meter over the whole water column) also increases offshore to the north and west. However, benthic biomass, sediment oxygen demand and chlorophyll deposited to the surface sediments (up to 20 mg per square meter) do not always mimic these water column processes, due to spatially variable deposition patterns influenced by current speed and bathymetry. These organic sedimentation indicators tend to be higher to the south, including in waters to the south and east of Hanna Shoal where large populations of walrus have also been observed to forage on the benthos in the summer from remnant sea ice. The emerging picture suggests that the complex current system rotates richer organic materials around the periphery of Hanna Shoal in a clockwise direction, leading to a shoreward enhancement of organic material deposition. These pelagic - benthic coupling characteristics will be considered in the context of the larger Chukchi marine ecosystem.