



UAA Professional Development Seminar Series

Presented by Kelsey Frazier, UAA Graduate Fellow with ADAC

In the event of an Arctic oil spill, whether from a surface vessel, a subsurface pipeline, or a well blowout, ice in the water is a complicating factor. The presence of ice complicates the forecasting of the movement and spreading of oil, as well as the planning of the oil spill deanup process. The underside of Arctic sea ice is not flat; rather it presents non-geometric, unpredictable protrusions into the water column. The depth to which these protrusions grow relates to the longevity of the ice itself. Older ice reaches further down into the water, creating larger inverted cavities that have the potential to store more oil. If a given area of ice has the capacity to locally store a large amount of oil, then oil spilled under ice in this area is less likely to spread laterally. The oil will become trapped in these inverted caverns and may be encapsulated by ice growth from below. The challenge faced by an oil spill forecaster is that information on the under-ice storage capacity roughness is not readily available. Hence, we ge which is assessed based on satellite and other data available from

the ice surface, can be predictive of the under-ice storage capacity.

is a graduate Fellow with the Arctic Domain Awareness Center (ADAC), a Center

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degree in Mechanical Engineering at the University of Alaska Anchorage, and will graduate ins December, 2019. As a Fellow, Kelsey is engaged in numerous research projects focused on using science and engineering to advance the capabilities of the U.S. Coast Guard and other associated federal agencies. Her efforts to quantify subsurface storage capacity enable better oil spill slick modeling by NOAA. Kelsey is currently working with colleagues in the Mechanical Engineering and Computer Science departments at UAA to create an Arctic Ice Condition Index (ARCTICE) to inform Arctic mariners of the relative risks of transit through the Beaufort,