**NASA DEVELOP National Program**

****NASA Langley Research Center

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**Short Title: Alaska Disasters**

**Updated Abstract**

Sea ice is rapidly decreasing in the Arctic, encouraging a surge in maritime transportation and energy exploration in the region. This increase in traffic, combined with challenges unique to an Arctic environment, escalates the risk of an oil spill. In addition to human activity, a significant amount of oil enters the marine environment through natural oil seeps. The United States Coast Guard (USCG) is the lead response agency for oil spills in U.S. coastal waters. Ancillary responsibilities include monitoring natural oil seeps in order to rule out anthropogenic sources. Complexities inherent to an Arctic oil spill – ice-infested waters, strong currents, cloud cover, and extended darkness - require a combination of sensors operating across the electromagnetic spectrum to accurately portray the incident. NASA DEVELOP partnered with the USCG Auxiliary University Program to create a Python-based tool that automates access to optical and radar imagery. The project incorporated optical data from the NASA Earth Observing Systems - Aqua, Terra and Landsat 8 - and radar data from the European Space Agency platform, Sentinel-1. Additionally, the study constructed a natural oil seeps map using ArcGIS 10 by spatially enabling data discovered in historical literature. The resultant dataset was injected into the interactive Arctic Emergency Response Management Application to facilitate fast visualization and coordination for emergency responders. These products will be used by the USCG to improve strategic oil spill response planning for the northern coast of Alaska.