

Ocean Imaging

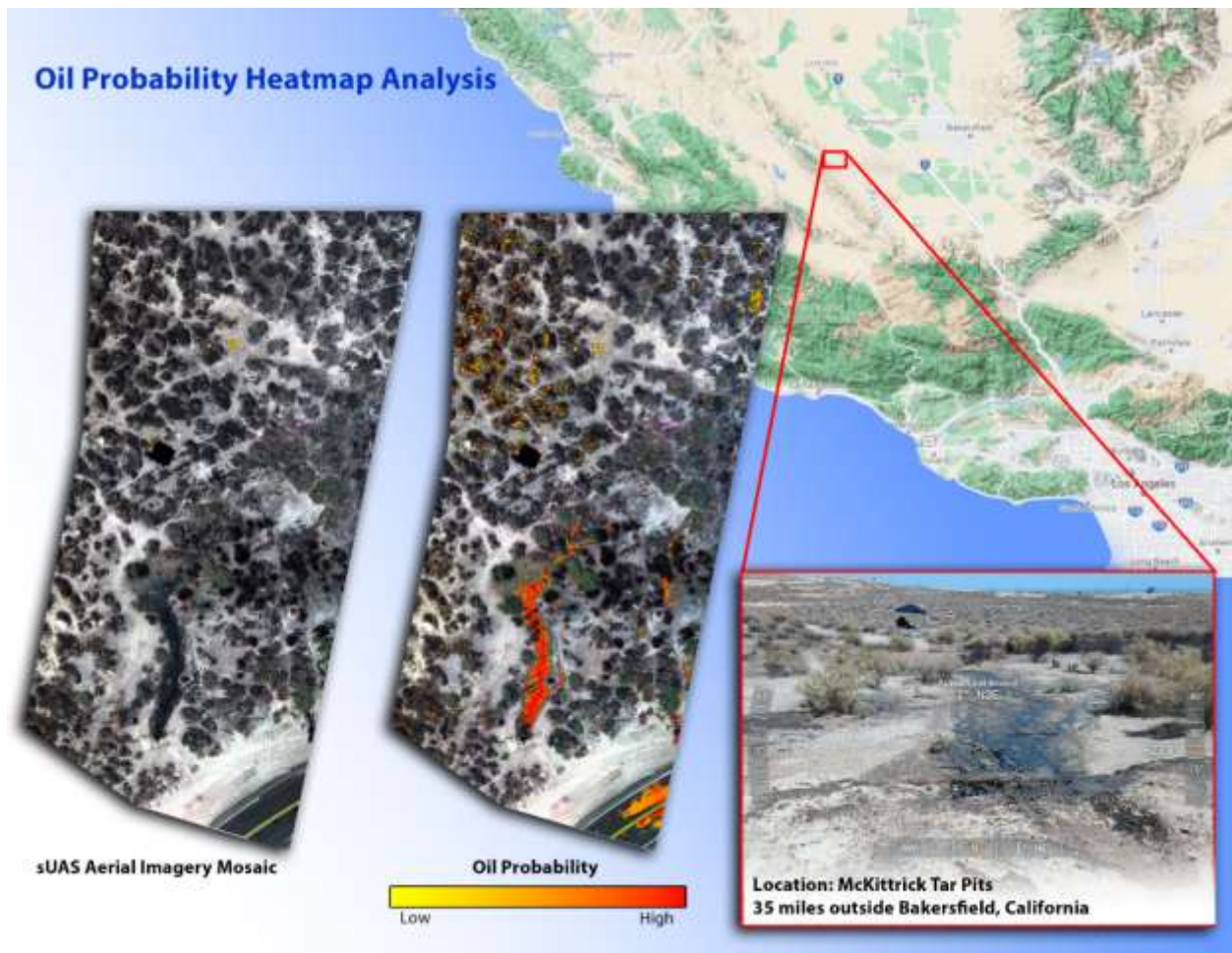
November 2021 - Ocean Imaging Completes Study to Improve OIL Detection Capability Using a Portable, UAS-Based SCAT Reconnaissance System

In 2019 Ocean Imaging was awarded funding for a two-year project to develop Small Unmanned Aircraft Systems (sUAS) designed to help detect and map oil in coastal and inland zones. Shoreline Cleanup Assessment Technique (SCAT) operations are a fundamental part of oil spill response for both marine and inland spills. The project funded by California Department of Fish and Wildlife (CDFW) Oil Spill Prevention and Response (OSPR) division aimed to incorporate more sophisticated sensors into a portable sUAS to assess the efficacy of the enhanced equipment and novel oil detection algorithms designed to help responders and SCAT teams more quickly and accurately identify and assess oiled areas in shoreline and inland waterway habitats.



The system was built using CDFW's existing sUAS platform and multispectral camera adding two additional cameras imaging in the ultraviolet and thermal infrared wavelengths. Custom software was written to facilitate the incorporation of these sensors and processing of the resulting data. Ultimately two study locations in California (the McKittrick natural oil seeps and a natural seep oiled beach below Carpinteria Bluffs in California) were chosen that offered fresh and weathered oil targets needed for the creation of an oil detection and classification algorithm. A multistep image processing algorithm was developed using the new sensor bands that effectively classified high probability oil targets

with minimal false positive identifications. The results of the study showed that a sUAS equipped with a state of the art, 5-channel multispectral and thermal infrared imaging system could provide accurate and easy to interpret oil identification information to SCAT and other response workers at a reasonable cost.



The project resulted in the ability to create near real-time oil probability ‘heat map’ analyses like the one shown above derived from the sUAS imagery which can quickly guide oil spill responders to oiled areas. Oil shown on the highway next to the study site (bottom right of the analysis) is actual oil seeping up through the asphalt.