

# Ocean Watch

# Spill Prediction

# Jellyfish Blooms

----- by Karina Ramos Musalem -----

EOAS professors Stephanie Waterman, Roger Francois, and Philippe Tortell, along with scientists at the University of Victoria and the Institute of Ocean Science, have received 9.5 million dollars to create the Canadian Pacific Robotic Ocean Observing Facility (C-PROOF). Funds for the project were awarded by the Canada Foundation for Innovation (\$3.8 million), the Province of British Columbia (\$3.8 million), and several project partners (\$1.9 million).

C-PROOF is designed to support ecological managers and meteorologists in planning for the future and to drive the development of ocean-driven renewable energy technologies. The state-of-the-art facility will monitor the coastal and offshore waters of BC using autonomous ocean observation platforms such as ocean gliders and mooring arrays. As the world's oceans become warmer, more acidic, and deoxygenated, these instruments will help scientists track and understand changes in ocean currents, weather, and marine ecosystems.

Much of the data produced in conjunction with C-PROOF will be publicly available. The facility's strong network of partnerships includes government organizations, NGOs such as Pacific Salmon Foundation and the Hakai Institute, local industries engaged in ocean sensor development, and stakeholders in the wind and wave energy sectors.

*For more about ocean observation platforms in EOAS research, see Oceans in Motion on page 16 of this issue.*



*An oil tanker docks at a Port of Vancouver terminal. Photo credit: Karina Ramos Musalem.*

Given the prospect of a proposed new pipeline and an increase in tanker traffic in the Strait of Georgia, community concern regarding oil spills and their impacts has been on the rise. The Marine Environmental Observation, Prediction, and Response Network (MEOPAR) and Ocean Networks Canada awarded Professor Susan Allen \$500,000 to develop a prediction and risk assessment system to study the impact of oil spills in the Salish Sea. Fisheries and Oceans Canada (DFO) and North Shore Emergency Management will complement the funding with in-kind support worth \$392,000. The project will initially run for 3 years, starting in April 2018.

The project aims to improve our understanding of the dispersion and transport of diluted bitumen (dilbit), the primary pipeline product coming from Alberta's Oil Sands, as its fate in marine environments is poorly understood compared to conventional crude. "The idea is that it can inform policy and also be something that risk management people and regulators like the Port of Vancouver will use," says PhD candidate Ben-Moore Maley, co-author of the proposal. The project draws on numerical models developed by Susan's research group (SalishSeaCast), along with researchers at DFO, Dalhousie University, and the UBC School of Community and Regional Planning (SCARP).

Blooms or clusters of jellyfish are very common in coastal environments. Scientists are interested in understanding the characteristics of these blooms to better assess their impacts on sensitive ecosystems. Using drone technology, assistant professor Brian Hunt and recent BSc alumna Jessica Schaub are one step closer to understanding moon jellyfish blooms in waters around Pruth Bay, off Calvert Island, BC. Their research has generated widespread interest and was featured in a February 2017 CBC news article.

The use of drones has revealed new information on how moon jellyfish clusters move, how they respond to river runoff, and how they are aggregated by ocean currents. Brian and Jessica were able to combine aerial images from drones with samples from net tows and underwater cameras to calculate the mass of the clusters. These results set the stage for further studies on the effects of jellyfish on the food web.

*Read the publication: Schaub, J. et al. (2018). Using unmanned aerial vehicles (UAVs) to measure jellyfish aggregations. Marine Ecology Progress Series.*

*Read more about Jessica Schaub in her profile on page 27 of this issue.*



*Jellyfish bloom viewed from the air. Photo credit: Keith Holmes, Hakai Institute.*