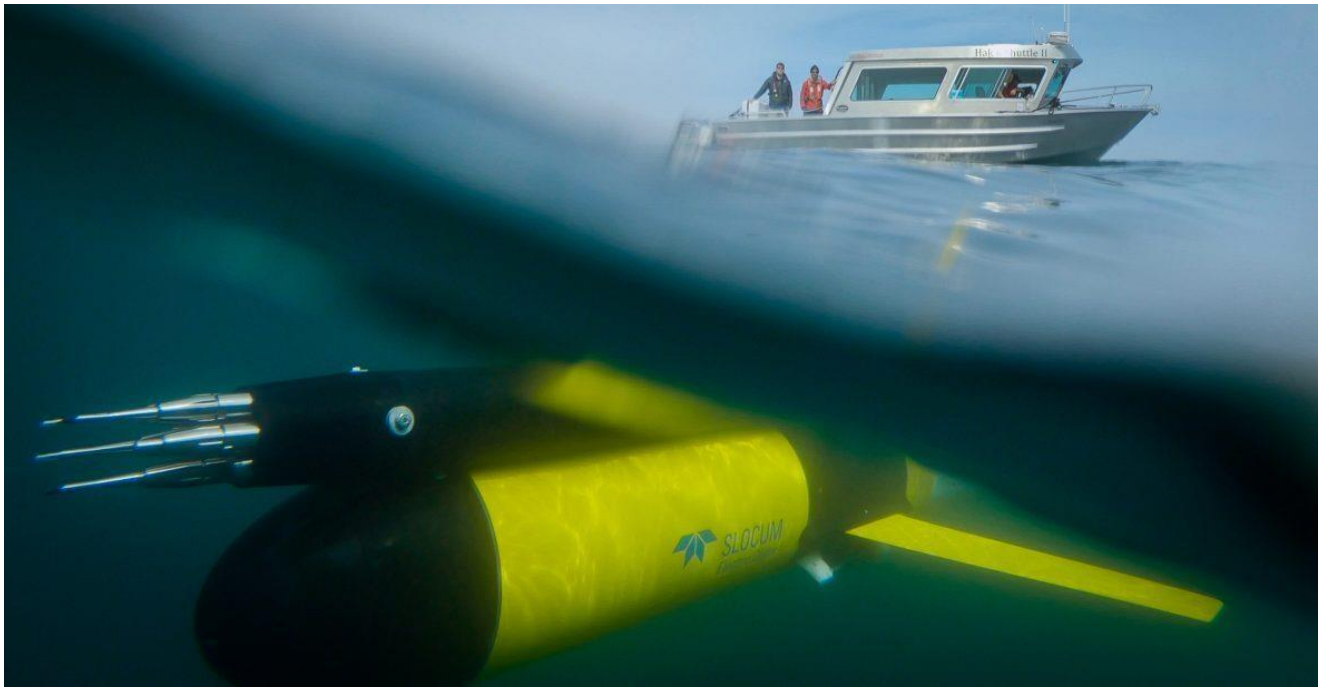
Hakai Coastal Initiative Postdoctoral Fellowship in Continental Shelf Dynamics



A glider deployed near Calvert Island by the Canadian-Pacific Robotic Ocean Observing Facility (C-PROOF) in partnership with the Hakai Institute.

Applications are invited for a two-year postdoctoral fellowship (PDF) to study the dynamics of the continental shelf off the coast of British Columbia Canada using a diverse collection of *in situ* ocean observations including ocean glider, mooring and ship-based data.

Background:
Queen Charlotte Sound (QCS) is a large semi-enclosed body of water off the central coast of British Columbia Canada north of Vancouver Island. The region is a vital commercial and subsistence fishing ground, and hosts many of western Canada's Marine Protected Areas. Unlike much of continental shelf of British Columbia, the shelf here is very wide, relatively shallow, and incised by a large number of canyons with egress to the open ocean. Similar to much of the west coast of the Americas, wind-driven upwelling plays a dominant role in the regional dynamics. However, QCS has very strong freshwater forcing from the surrounding mountain ranges and vigorous mixing, implying that lateral buoyancy-driven (estuarine-like) circulation is also important in driving cross-shelf transports. On the landward side, QCS is surrounded by fjords that are home to commercially-important salmon populations. Some of these fjords are deep with annual deep-water renewal; an important implication is that fjord waters periodically go hypoxic. Better understanding of QCS shelf circulation will allow us to better understand how these productive fjords renew, and improve our ability to predict how they will be impacted by future change.

Project Goals: The project aims to address the following research questions.

1) What are the dominant transport pathways in Queen Charlotte Sound?
2) How do these pathways connect the open ocean to British Columbia's central coast? What are the dynamical processes involved in these connections?

3) How do these pathways and processes impact properties that are important for the marine ecosystem (*e.g.* water temperature, oxygen, pH, and primary production)?

Project Team: The fellow will collaborate closely with a working group that includes scientists from the Hakai Institute, the University of British Columbia, the University of Victoria and the Institute of Ocean Sciences, a scientific facility of Fisheries and Oceans Canada. Further, the fellow will join the Canadian-Pacific Robotic Ocean Observing Facility (C-PROOF) team. The project is supervised by Dr. Stephanie Waterman (University of British Columbia), Dr. Jennifer Jackson (Hakai Institute), Dr. Jody Klymak (University of Victoria), Dr. Tetjana Ross (Institute of Ocean Sciences) and Dr. Charles Hannah (Institute of Ocean Sciences).

Position Responsibilities: The fellow will be responsible for the following tasks within the context of the overall project as described above.

1) to work with the project team on processing, analyzing and interpreting existing observational data;
2) to participate in the continued collection of *in situ* observational data in the region;
3) to work with the regional modelling community on comparing observations and model simulations to better understand the fidelity of the models in capturing coastal processes;
4) to write high-impact manuscripts for publication in peer-reviewed journals.

Requirements:

- a PhD in physical oceanography
- experience working with observational datasets, as evidenced by the candidate's publication record
- willingness to work collaboratively with a group of scientists with diverse expertise and experiences in oceanography
- capacity to lead projects with collaborators, excellent communication skills, and demonstrated ability to finish projects on time

Additional Details: The Hakai Institute is a research organization based in British Columbia with substantial oceanographic observations collected by experts in physical, chemical and biological data. The PDF will have the opportunity to visit Hakai field stations occasionally, though this project is primarily focused on the analysis and synthesis of data that have already been collected. The position will be officially based at the University of British Columbia in Vancouver Canada, though the successful candidate can choose to be based in Vancouver, Victoria, or Sidney.

This is a limited term, two-year PDF position paid at a rate of $55,000 CAD per year plus Mandatory Employment Related Benefits. There is an opportunity for renewal given satisfactory performance and funding availability. A research budget is also available. We seek a candidate who has completed a PhD within the last five years (special allowances will be made for career interruptions and personal circumstances) and who shows evidence of strong quantitative skills and an understanding of coastal oceanography.

To apply, please send a cover letter, CV and two research publications to Dr. Stephanie Waterman by email (swaterman@eoas.ubc.ca). Your cover letter should address your motivation to excel in this project, and the skills and experience you can bring to the work. Review of applications will begin on **February 1 2021.** Start date is negotiable with a preferred start of spring or summer 2021.

Equity and diversity are essential to academic excellence. An open and diverse community fosters the inclusion of voices that have been underrepresented or discouraged. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person.