The Hakai Institute Oceanography program (www.hakai.org)

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Outline

• Introduction to the Hakai Institute
• Overview of Hakai programs
• Locations of the Hakai Institute Oceanography Program
• Types of oceanographic data collected
• Results – seasonal, interannual and spatial variation
• Summary
The Hakai Institute (www.hakai.org)

• The Hakai Institute is a scientific research institution that conducts long-term research at remote locations on the coastal margin of British Columbia, Canada

• The Hakai Institute is solely funded by the Tula Foundation which supports:
  – The Hakai Institute
  – Hakai Magazine
  – Tula Salud

• The Hakai Institute includes the following elements:
  – Two research stations
  – Dedicated scientific staff and equipment
  – A large network of affiliated collaborators at universities, government agencies, and with First Nations
Hakai research axes
BRITISH COLUMBIA COASTAL OBSERVATORIES

Quadra Island

Calvert Island

Quadra Island

Longitude

Latitude
Since 2012, about 10,000 CTD profiles have been collected
Hakai have 5 RBR CTDs and 2 Seabird 19+ CTDs
Typical auxiliary sensors are fluorescence, dissolved oxygen, PAR, turbidity, and transmission (beam attenuation)
Niskin bottles collect water to study nutrients, CO2, O2, POM, DOC, DIC, chlorophyll, phytoplankton, bacteria, and viruses
Zooplankton tows collect data to measure biomass, isotopes and fatty acids
• Discovery Islands data collection started 2014 and all stations are sampled year-round
• Johnstone Strait data collection started 2015 and stations are sampled April to July
• Calvert Island data collection started 2012 and stations sampled daily March to October and every 3-6 weeks through winter
Hakai marine sensor array (www.data.hakai.org)

- About 40-50 temperature TidBits deployed at 5 m below the low tide zone in Calvert Island area
- MapCO$_2$ mooring about to be deployed in Fitz Hugh Sound, east of Calvert Island
- Bellingham to Ketchikan ferry has been instrumented with a throughflow system that includes CO$_2$ measurements
- Cabled observatory (Limpet) off Quadra Island measures temperature, conductivity, oxygen and fluorescence
- About 20 atmospheric weather stations throughout study regions
Temporal variability
Calvert Island
Spatial variability Calvert Island

- Temperature (°C)
- Salinity
- Fluorescence (mg/L)
Comparison of properties
summer 2016
Summary

• The Hakai Institute began collecting oceanographic data on British Columbia’s central coast in 2012
  – To date about 10,000 CTD profiles have been collected
• Frequent (daily to monthly) biological, chemical and physical data are collected year-round from small boats
• These data can resolve the seasonal cycle, interdecadal variability, and submesoscale (~ 5 km) processes
• The Hakai Institute are interested in collaboration, particularly on research projects that examine the coastal margins of the North Pacific

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