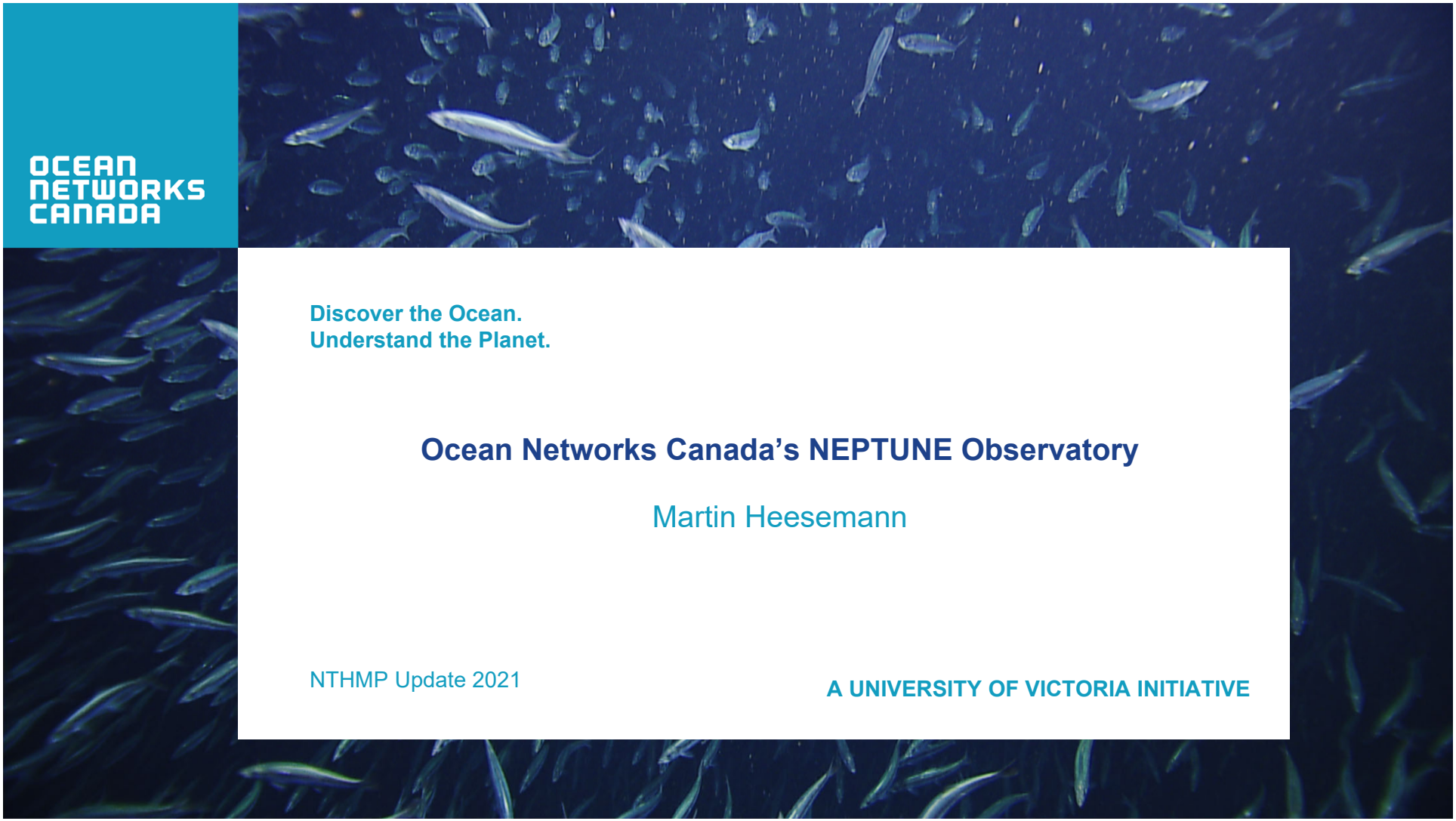


OCEAN NETWORKS CANADA

Discover the Ocean.
Understand the Planet.

Ocean Networks Canada's NEPTUNE Observatory

Martin Heesemann

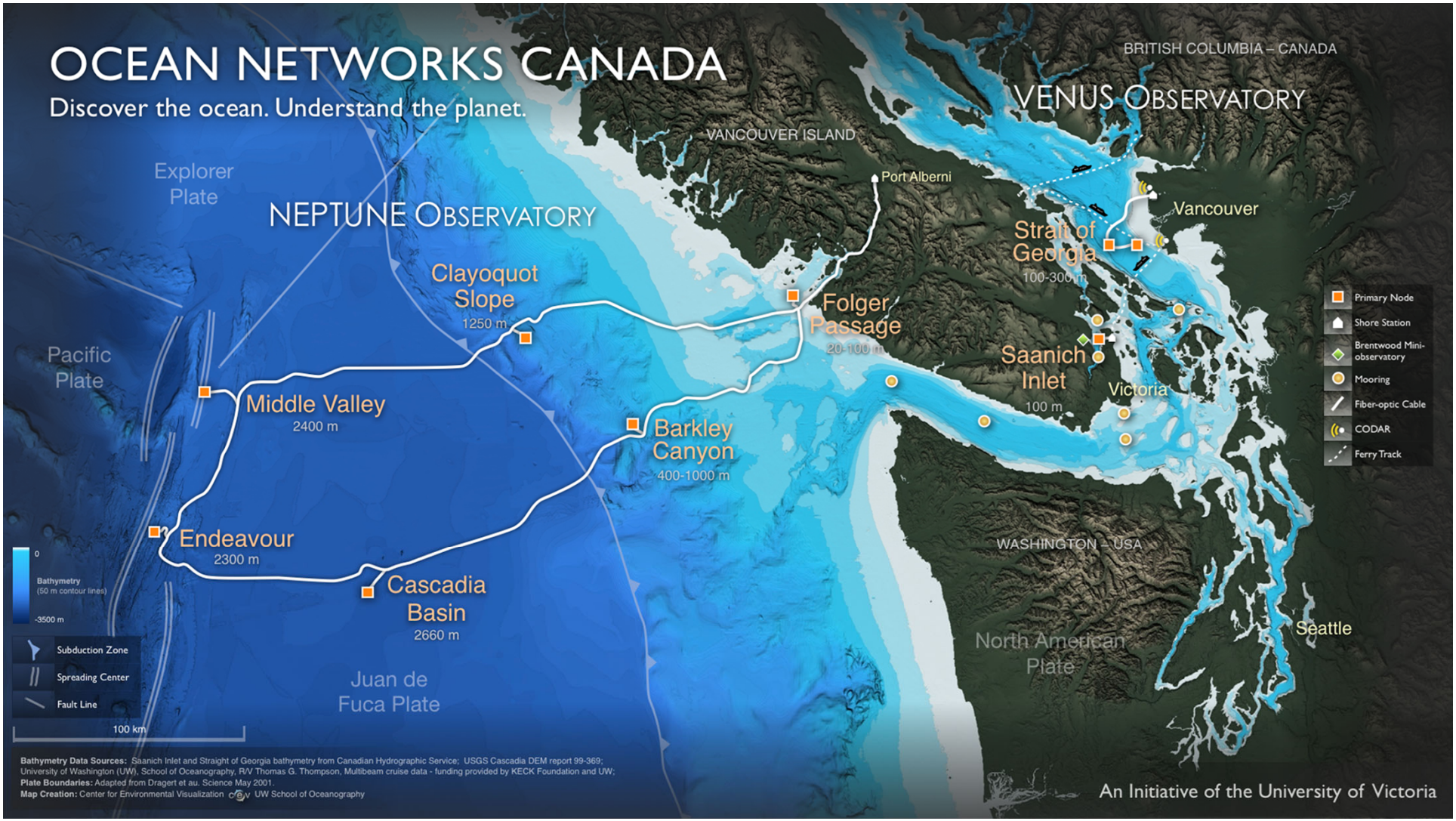
NTHMP Update 2021

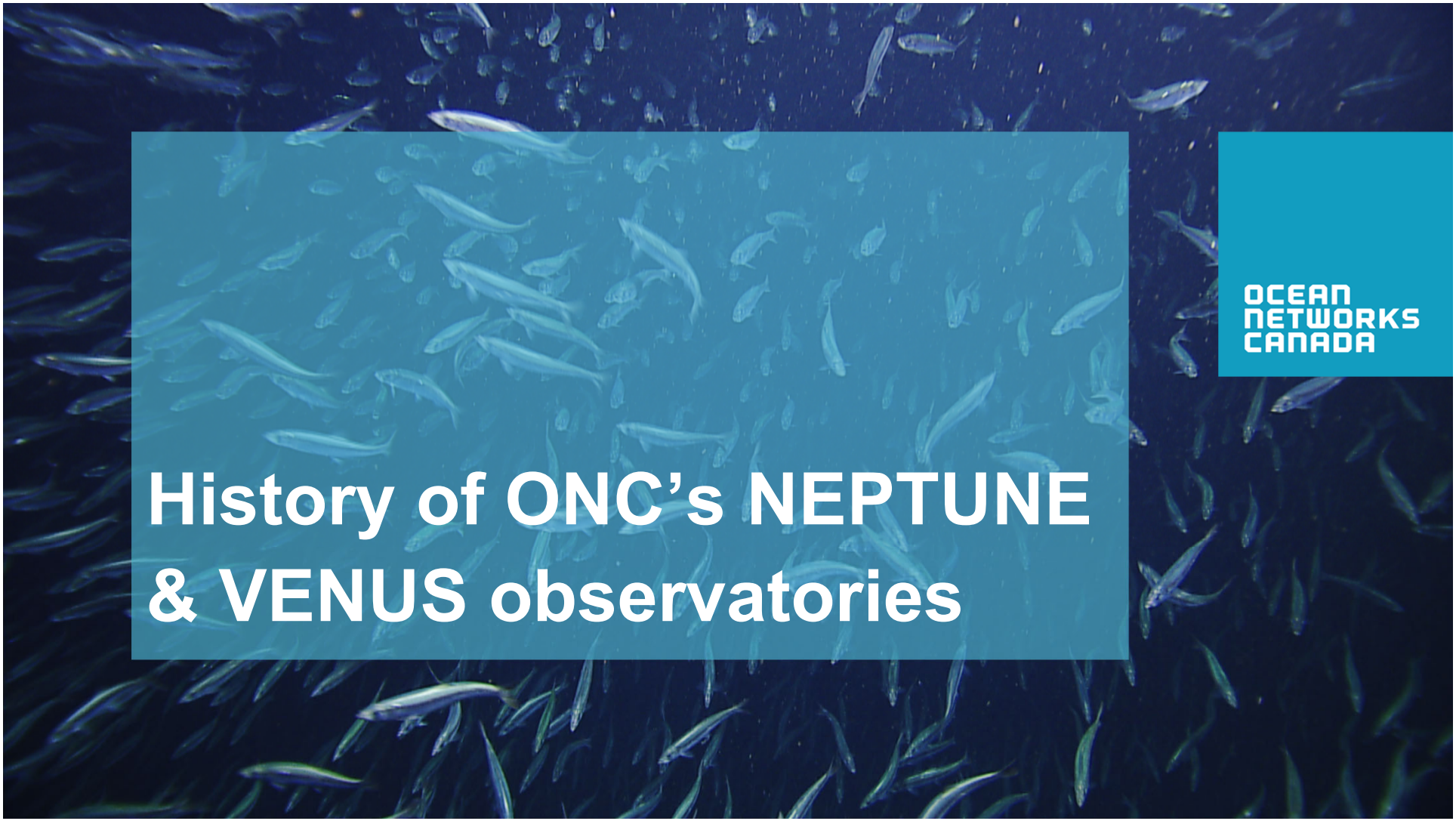
A UNIVERSITY OF VICTORIA INITIATIVE


OCEAN NETWORKS CANADA
CANADIAN INFRASTRUCTURE & PARTNERS
Grise Fiord
To Cape Herschel, CFS Alert & Thule Research Station
Arctic Research Station
Resolute
Gascoyne Inlet
Clyde River
Pond Inlet
Qikiqtarjuaq
Arctic Drifter Buoys
Coastal Community Ocean Observers Program
Greenland Institute of Natural Resources
Canadian Ranger Ocean Watch Program
Cambridge Bay
Existing Installation
Funded Installation
Potential Installation
Existing Mobile Asset
Potential Mobile Asset
Industry Partner
Science Partner
Data Centre
Ship-based Observing
Data Transfer Line
Fibre-optic Cable
Bathymetry (50 m contour lines)
-3500 m
AN INITIATIVE OF University of Victoria
Line Papa
Prince Rupert
Kitamaat Village
Hudson Bay
Churchill
SmartBay
Campbell River
Defence Research Hydrophone Experiment
Salish Sea Marine Survival Program
NEPTUNE
Tofino
University of Victoria
VENUS
Neutrino Observatory
Mill Bay
Defence Research & Development Canada CODARs
FORCE
OTN/DFO Halifax Line
PACIFIC OCEAN
Great Lakes
ATLANTIC OCEAN
University of Waterloo

Community Observatories

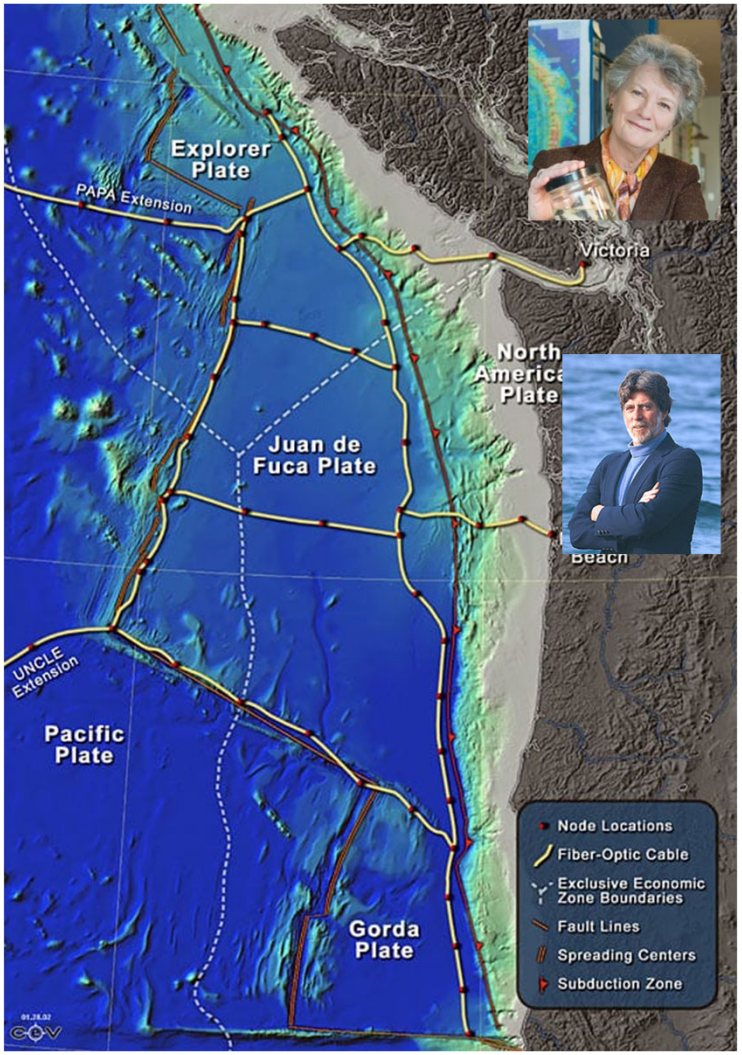
- Water Properties
- Soundscape
- Currents
- Camera
- Ice thickness

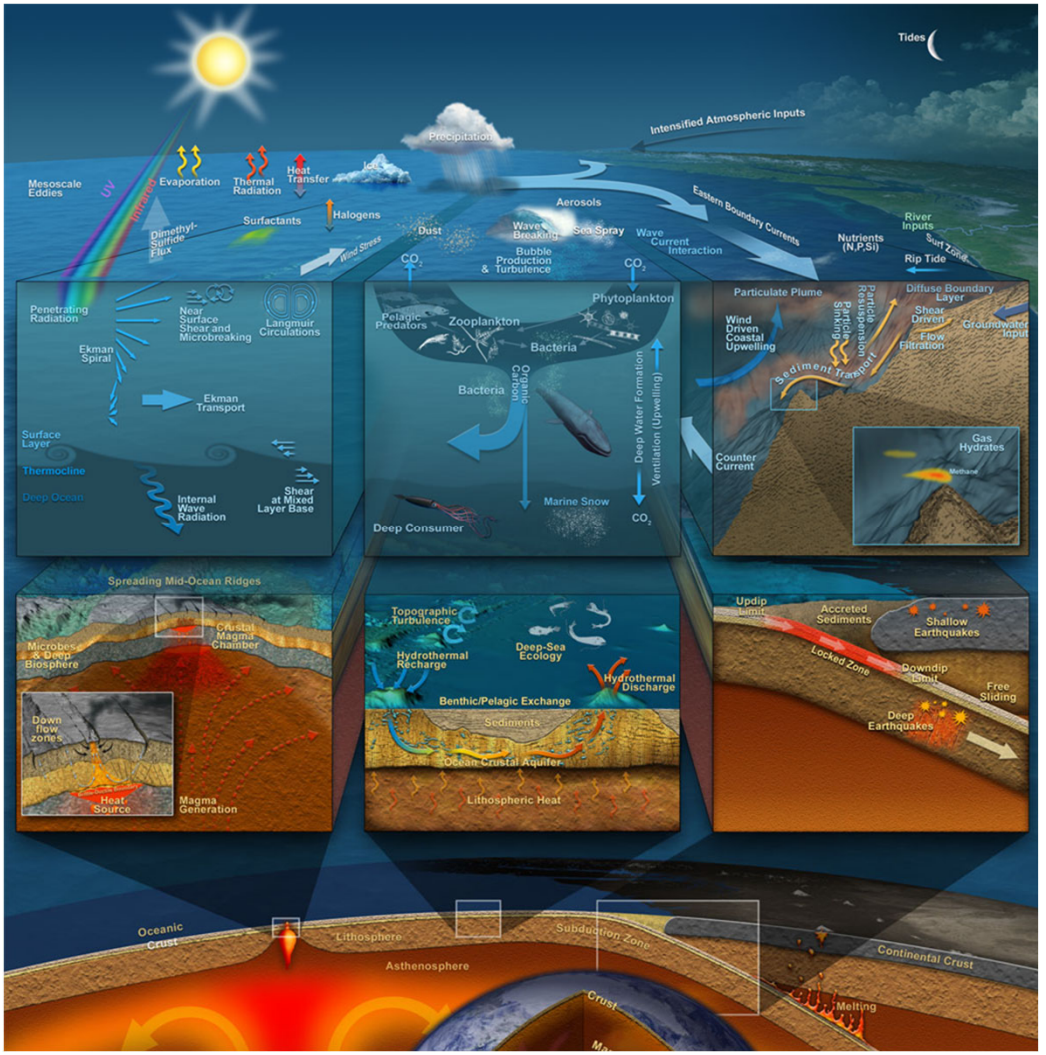

OCEAN NETWORKS CANADA
Discover the ocean. Understand the planet.
BRITISH COLUMBIA – CANADA
VENUS OBSERVATORY
VANCOUVER ISLAND
Explorer Plate
NEPTUNE OBSERVATORY
Port Alberni
Vancouver
Strait of Georgia
100-300 m
Clayoquot Slope
1250 m
Folger Passage
20-100 m
Pacific Plate
Saanich Inlet
100 m
Victoria
Middle Valley
2400 m
Barkley Canyon
400-1000 m
Endeavour
2300 m
WASHINGTON – USA
Cascadia Basin
2660 m
North American Plate
Seattle
Juan de Fuca Plate
Primary Node
Shore Station
Brentwood Mini-observatory
Mooring
Fiber-optic Cable
CODAR
Ferry Track
0
Bathymetry
(50 m contour lines)
-3500 m
Subduction Zone
Spreading Center
Fault Line
100 km
Bathymetry Data Sources: Saanich Inlet and Straight of Georgia bathymetry from Canadian Hydrographic Service; USGS Cascadia DEM report 99-369; University of Washington (UW), School of Oceanography, R/V Thomas G. Thompson, Multibeam cruise data - funding provided by KECK Foundation and UW;
Plate Boundaries: Adapted from Dragert et au. Science May 2001.
Map Creation: Center for Environmental Visualization UW School of Oceanography
An Initiative of the University of Victoria

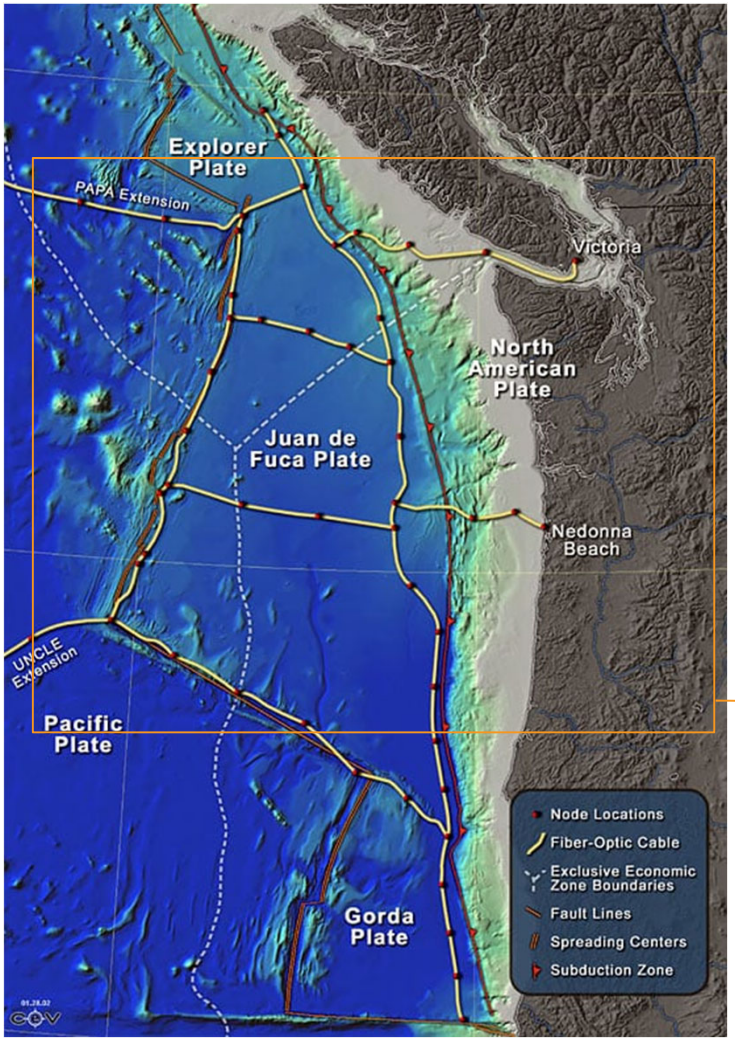


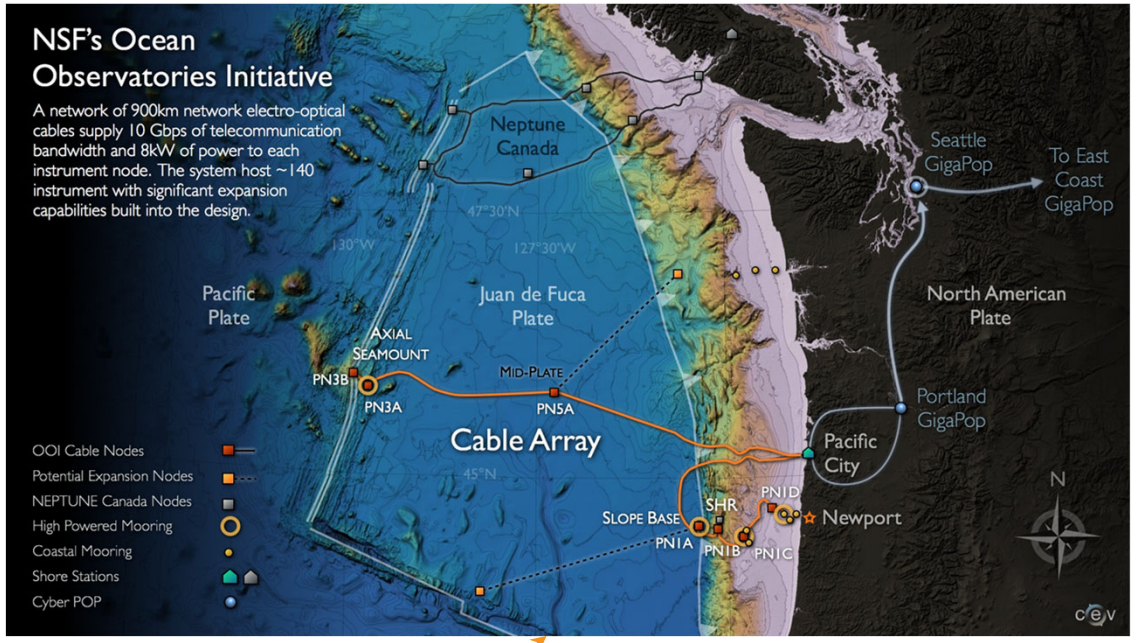
History of ONC's NEPTUNE & VENUS observatories

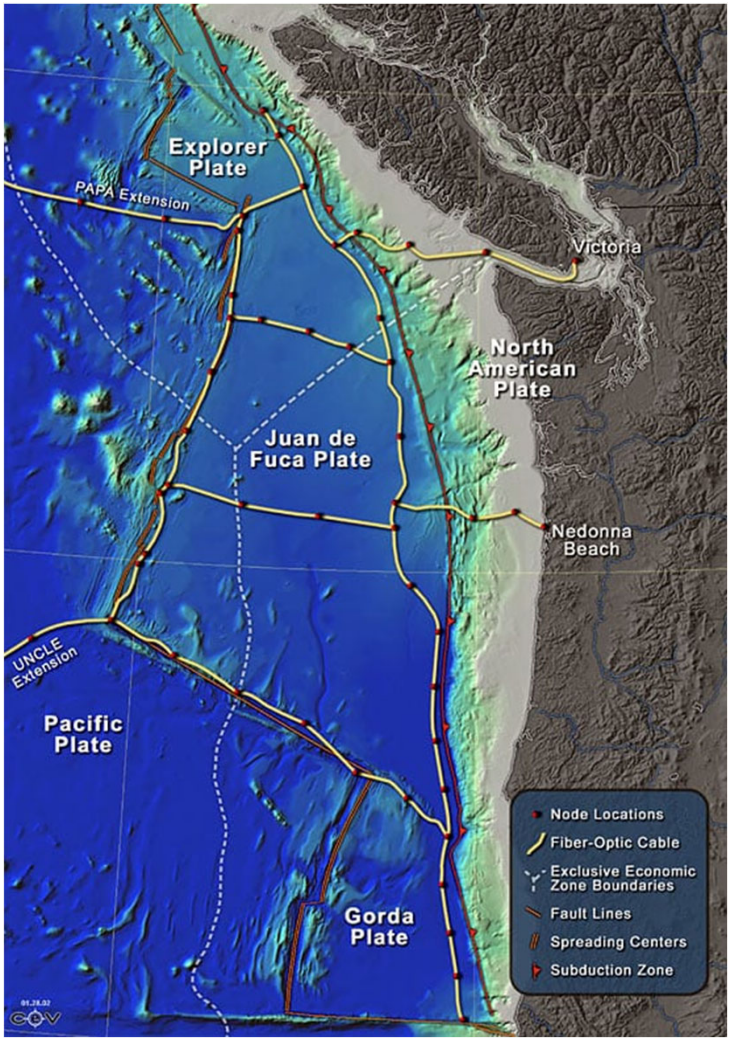
OCEAN NETWORKS CANADA

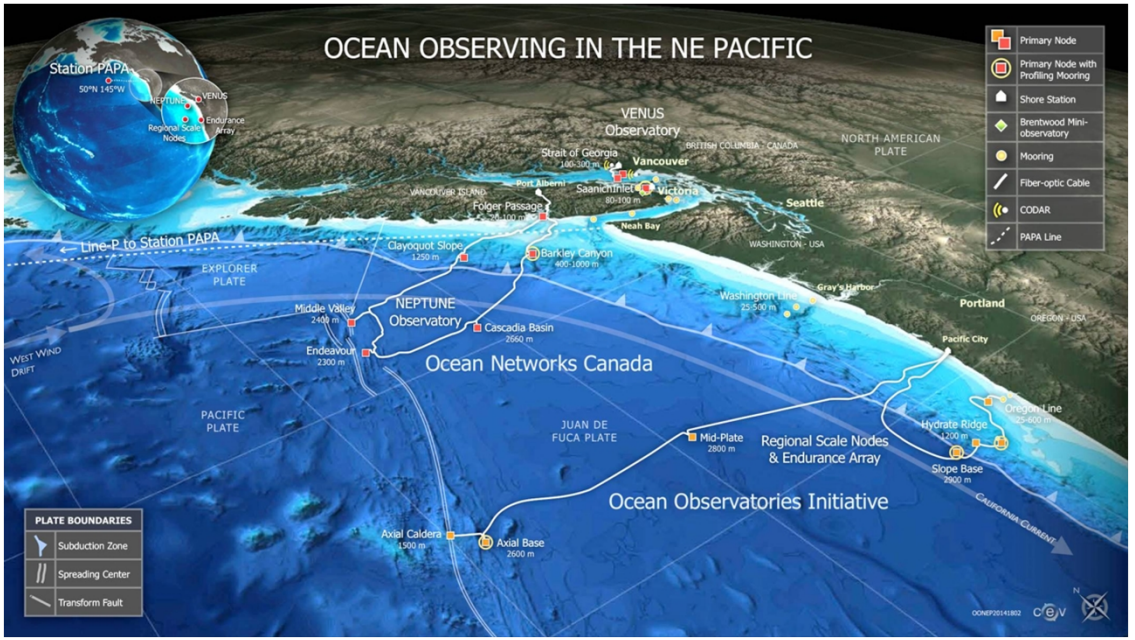

Explorer Plate
PAPA Extension
Victoria
North America Plate
Juan de Fuca Plate
Beach
UNCLE Extension
Pacific Plate
Gorda Plate
Node Locations
Fiber-Optic Cable
Exclusive Economic Zone Boundaries
Fault Lines
Spreading Centers
Subduction Zone


Tides
Precipitation
Intensified Atmospheric Inputs
Mesoscale Eddies
UV
Infrared
Evaporation
Thermal Radiation
Heat Transfer
Ice
Aerosols
Eastern Boundary Currents
River Inputs
Surf Zone
Rip Tide
Nutrients (N,P,Si)
Halogens
Surfactants
Dimethyl-Sulfide Flux
Wind Stress
Dust
Wave Breaking
Sea Spray
Wave Current Interaction
Bubble Production & Turbulence
Penetrating Radiation
Near Surface Shear and Microbreaking
Langmuir Circulations
Ekman Spiral
Ekman Transport
Surface Layer
Thermocline
Deep Ocean
Internal Wave Radiation
Shear at Mixed Layer Base
Phytoplankton
Pelagic Predators
Zooplankton
Bacteria
Organic Carbon
Deep Water Formation
Ventilation (Upwelling)
Marine Snow
Deep Consumer
Particulate Plume
Wind Driven Coastal Upwelling
Particle Sinking
Particle Resuspension
Diffuse Boundary Layer
Shear Driven
Flow Filtration
Groundwater Input
Sediment Transport
Counter Current
Gas Hydrates
Methane
Spreading Mid-Ocean Ridges
Microbes & Deep Biosphere
Crustal Magma Chamber
Down flow zones
Heat Source
Magma Generation
Topographic Turbulence
Hydrothermal Recharge
Deep-Sea Ecology
Hydrothermal Discharge
Benthic/Pelagic Exchange
Sediments
Ocean Crustal Aquifer
Lithospheric Heat
Updip Limit
Accreted Sediments
Shallow Earthquakes
Locked Zone
Downdip Limit
Free Sliding
Deep Earthquakes
Oceanic Crust
Lithosphere
Asthenosphere
Subduction Zone
Continental Crust
Crust
Melting


Explorer Plate
PAPA Extension
Victoria
North American Plate
Juan de Fuca Plate
Nedonna Beach
UNCLE Extension
Pacific Plate
Gorda Plate
Node Locations
Fiber-Optic Cable
Exclusive Economic Zone Boundaries
Fault Lines
Spreading Centers
Subduction Zone


NSF's Ocean Observatories Initiative
A network of 900km network electro-optical cables supply 10 Gbps of telecommunication bandwidth and 8kW of power to each instrument node. The system host ~140 instrument with significant expansion capabilities built into the design.
Neptune Canada
47°30'N
130°W
127°30'W
Pacific Plate
Juan de Fuca Plate
North American Plate
Axial Seamount
PN3B
PN3A
Mid-Plate
PN5A
Cable Array
Seattle GigaPop
To East Coast GigaPop
Portland GigaPop
Pacific City
45°N
SHR
PNID
Slope Base
Newport
PN1A
PN1B
PN1C
OOI Cable Nodes
Potential Expansion Nodes
NEPTUNE Canada Nodes
High Powered Mooring
Coastal Mooring
Shore Stations
Cyber POP
N





WORLD LEADING DISCOVERIES AT A CRITICAL TIME

OCEAN NETWORKS CANADA

15 YEARS OF OCEAN INTELLIGENCE

2006

2006

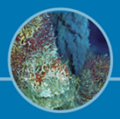
First seafloor observatory is installed in Vancouver Island's Saanich Inlet—a deep glacial fjord with seasonally varying oxygen levels.

2007-2008

Additional networks are installed in the Strait of Georgia, a busy shipping route and home to endangered southern resident killer whales.

2009

An 800-km deep-sea network is installed from Canada's west coast to the outer edge of a tectonic plate, reaching a depth of 2.6 km.



2010

Canada's first marine protected area is instrumented to understand life, vent flow, earthquakes and more at the 350 degree hydrothermal vents.

2011

First land-based coastal radar is installed in the Strait of Georgia to measure ocean current speeds and direction, and first BC Ferries vessel continuously monitors ocean surface properties.

2012

First community-based observatory is installed at Cambridge Bay, Nunavut to monitor changing ocean and sea ice conditions in this remote and vulnerable arctic environment.

2013

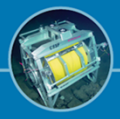
AML Oceanographic of BC demonstrates a new commercial UV-based anti-biofouling system on ONC's network, resulting in global sales.

2014

ONC hosts Atlantic Ocean data on behalf of a Bay of Fundy tidal energy facility; in 2019, adds data from the mouth of the Saint Lawrence River.

2015

An underwater listening station is installed in the Strait of Georgia to monitor the impact of shipping on marine mammals.



2016

18 kilometres of cable extensions triple the sensor capacity at Endeavour; community observatories are installed in Tofino, Campbell River, Kitamaat Village and Prince Rupert.

2017

A cabled mooring is installed to monitor ocean acidification in Baynes Sound where over 50% of BC's shellfish are farmed.

2021

2020

Community observatories are installed in Burrard Inlet, Hartley Bay and China Creek; a new hydrophone array is installed in the Strait of Georgia.

2019

Specialized instruments arrays are installed on ONC's deep-sea network to explore the potential for a full-scale neutrino observatory at Cascadia Basin.

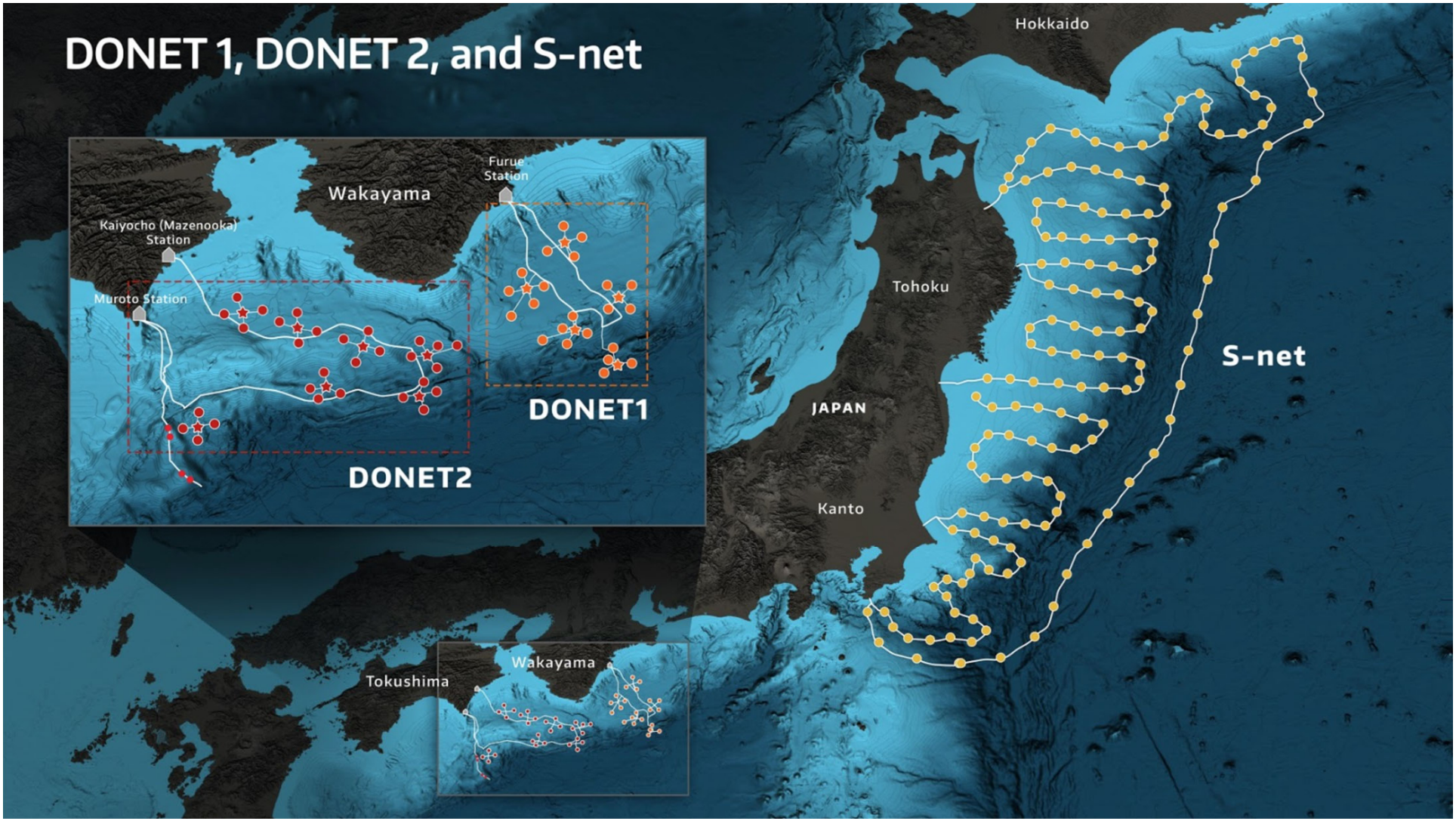
2018

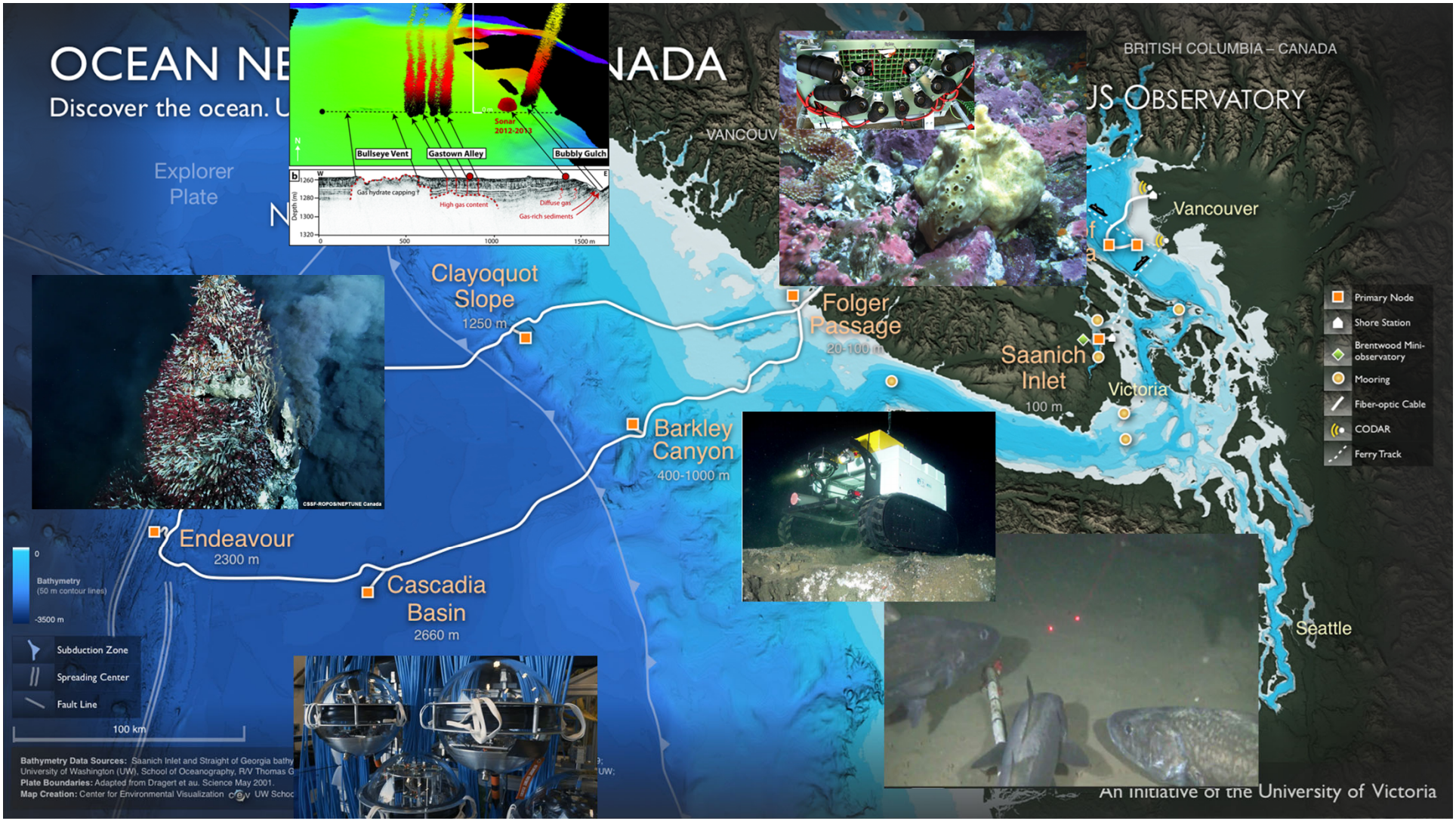
The final of eight earthquake early warning sensors is installed on the Cascadia subduction zone; an autonomous mooring is installed on the Dellwood Seamount.

OCEAN NETWORKS CANADA

RITICAL TIME

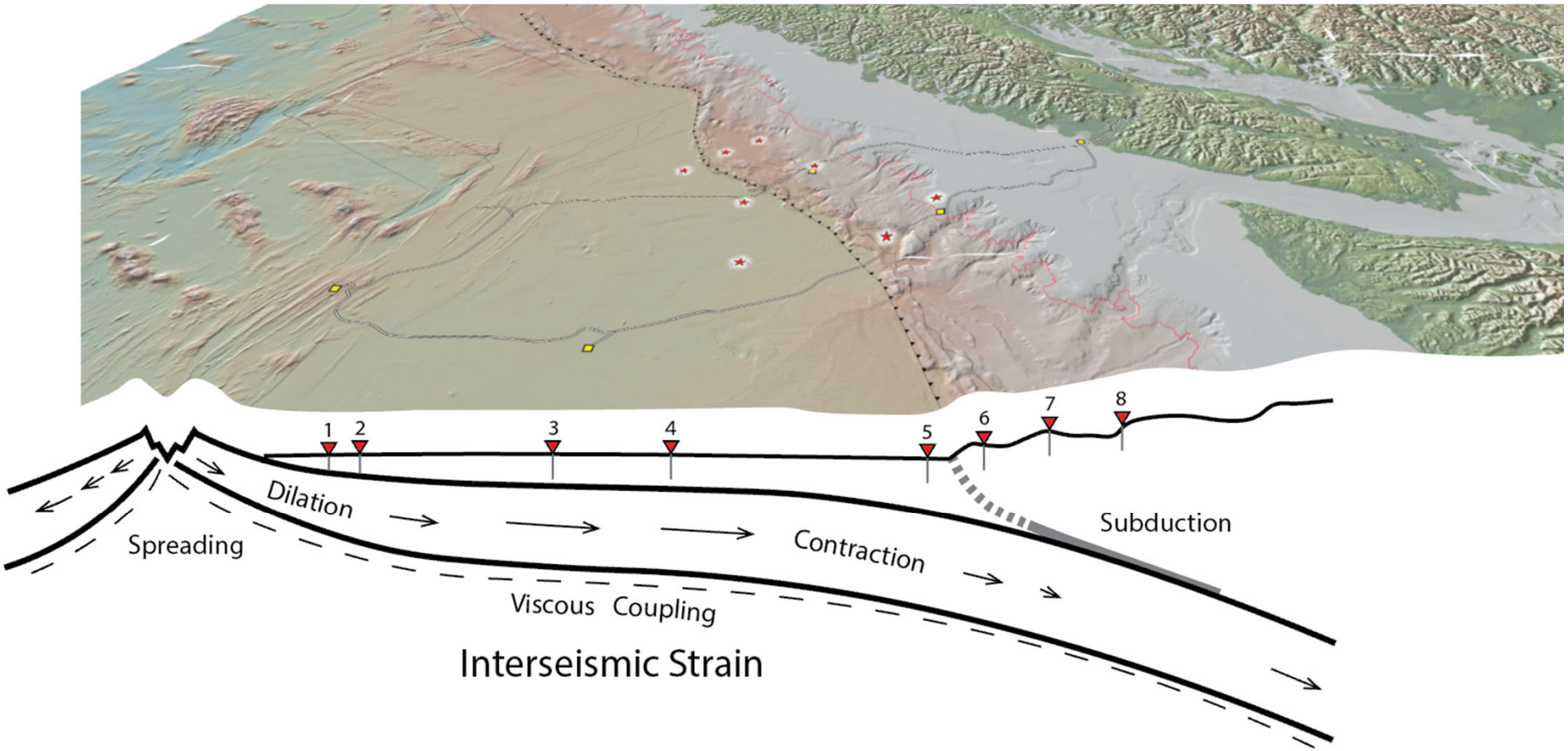
OCEAN NETWORKS CANADA

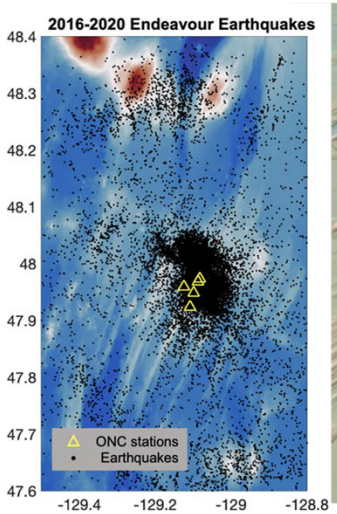

DONET 1, DONET 2, and S-net
Hokkaido
Wakayama
Furue Station
Kaiyocho (Mazenooka) Station
Muroto Station
Tohoku
S-net
DONET1
JAPAN
DONET2
Kanto
Wakayama
Tokushima

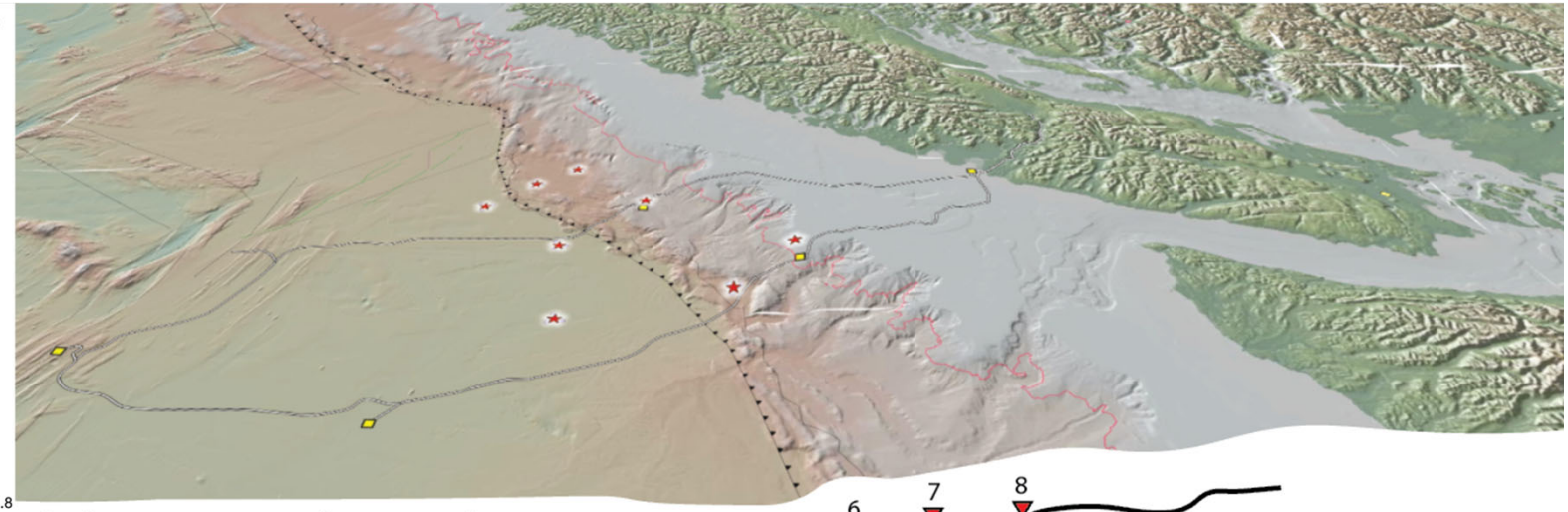

OCEAN NE
NADA
Discover the ocean. U
Explorer
Plate
BRITISH COLUMBIA – CANADA
JS OBSERVATORY
VANCOUV
Vancouver
Victoria
Seattle
Saanich
Inlet
100 m
Folger
Passage
20-100 m
Clayoquot
Slope
1250 m
Barkley
Canyon
400-1000 m
Endeavour
2300 m
Cascadia
Basin
2660 m
Bullseye Vent
Gastown Alley
Bubbly Gulch
Sonar
2012-2013
Gas hydrate capping ?
High gas content
Diffuse gas
Gas-rich sediments
Depth (m)
1500 m
CSSF-ROPOS/NEPTUNE Canada
Primary Node
Shore Station
Brentwood Mini-observatory
Mooring
Fiber-optic Cable
CODAR
Ferry Track
Bathymetry
(50 m contour lines)
-3500 m
Subduction Zone
Spreading Center
Fault Line
100 km
Bathymetry Data Sources:
Plate Boundaries: Adapted from Dragert et au. Science May 2001.
Map Creation: Center for Environmental Visualization
An Initiative of the University of Victoria

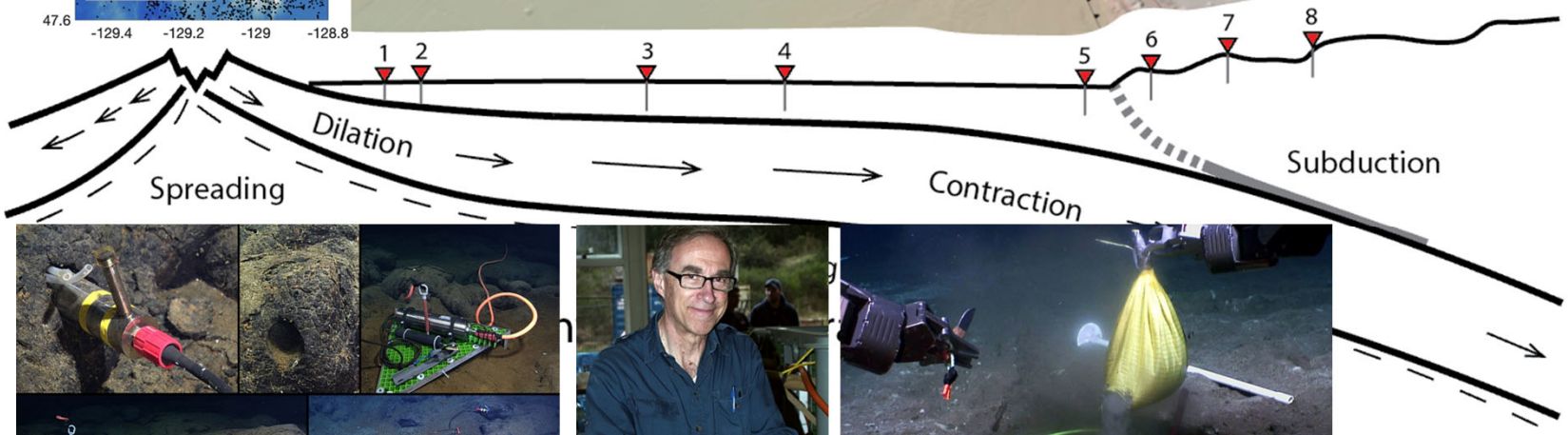
What has ONC to offer for Tsunami Hazard Mitigation?

OCEAN NETWORKS CANADA


1
2
3
4
5
6
7
8
Dilation
Spreading
Contraction
Subduction
Viscous Coupling
Interseismic Strain

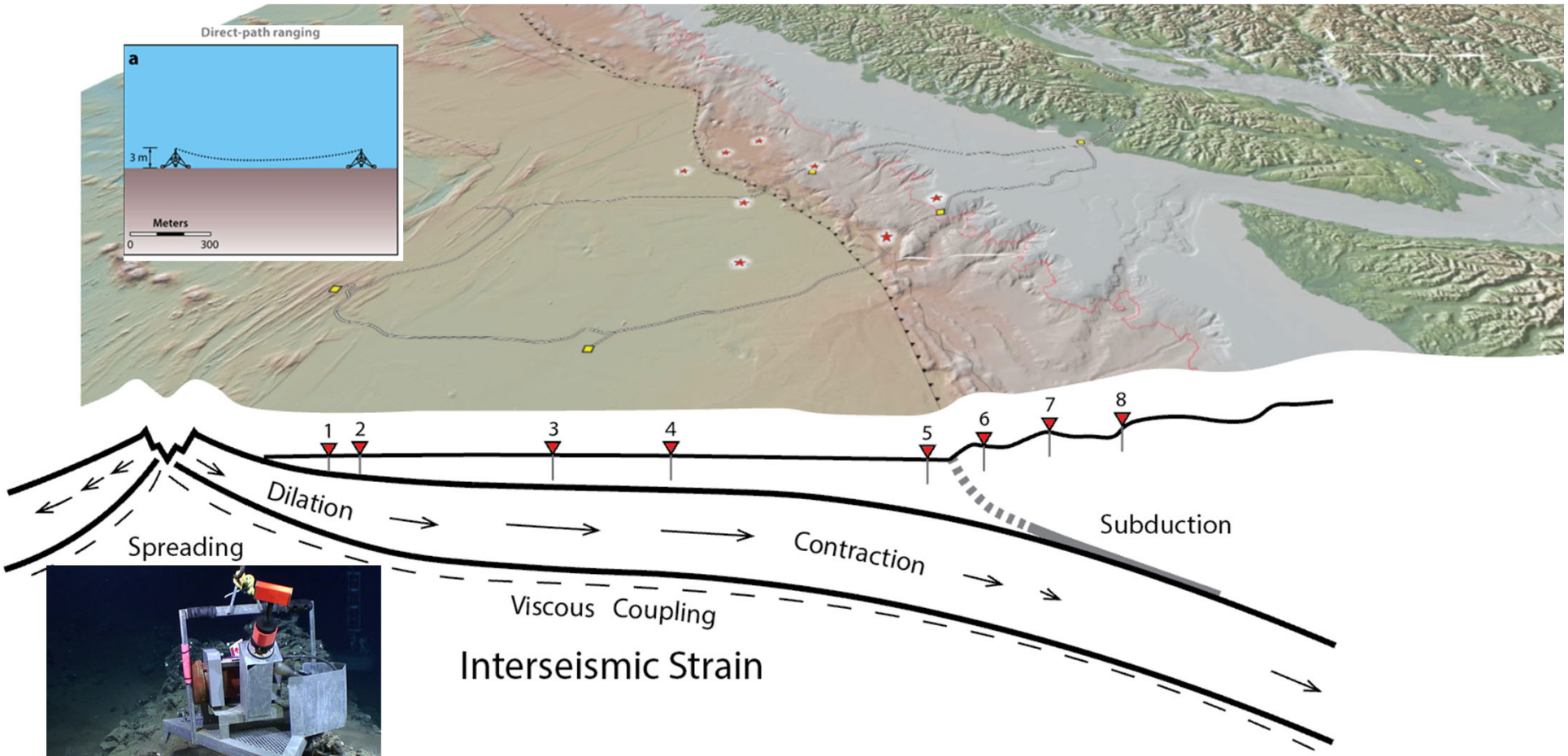


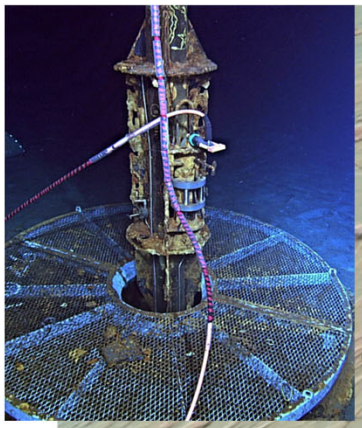


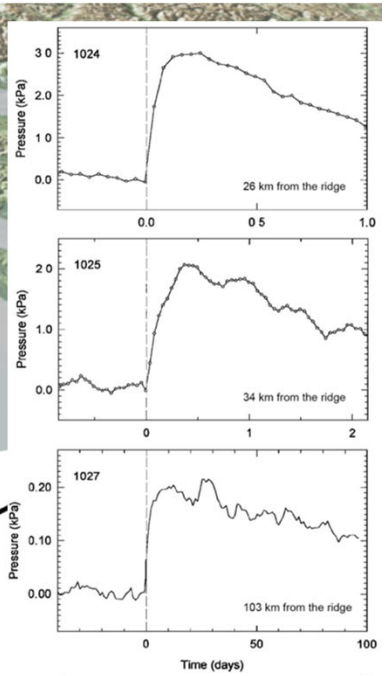


LEADING DISCOVERIES AT A CRITICAL TIME

OCEAN NETWORKS CANADA


Direct-path ranging
a
3 m
Meters
0
300
1
2
3
4
5
6
7
8
Dilation
Spreading
Contraction
Subduction
Viscous Coupling
Interseismic Strain





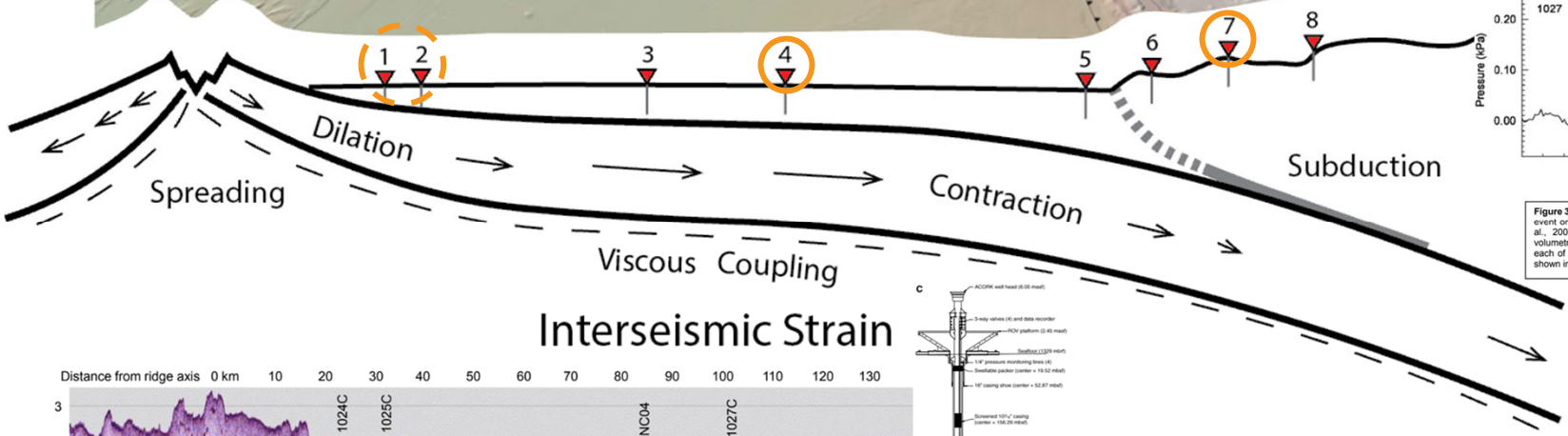
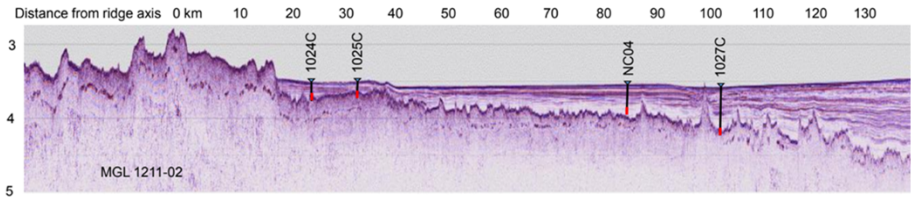
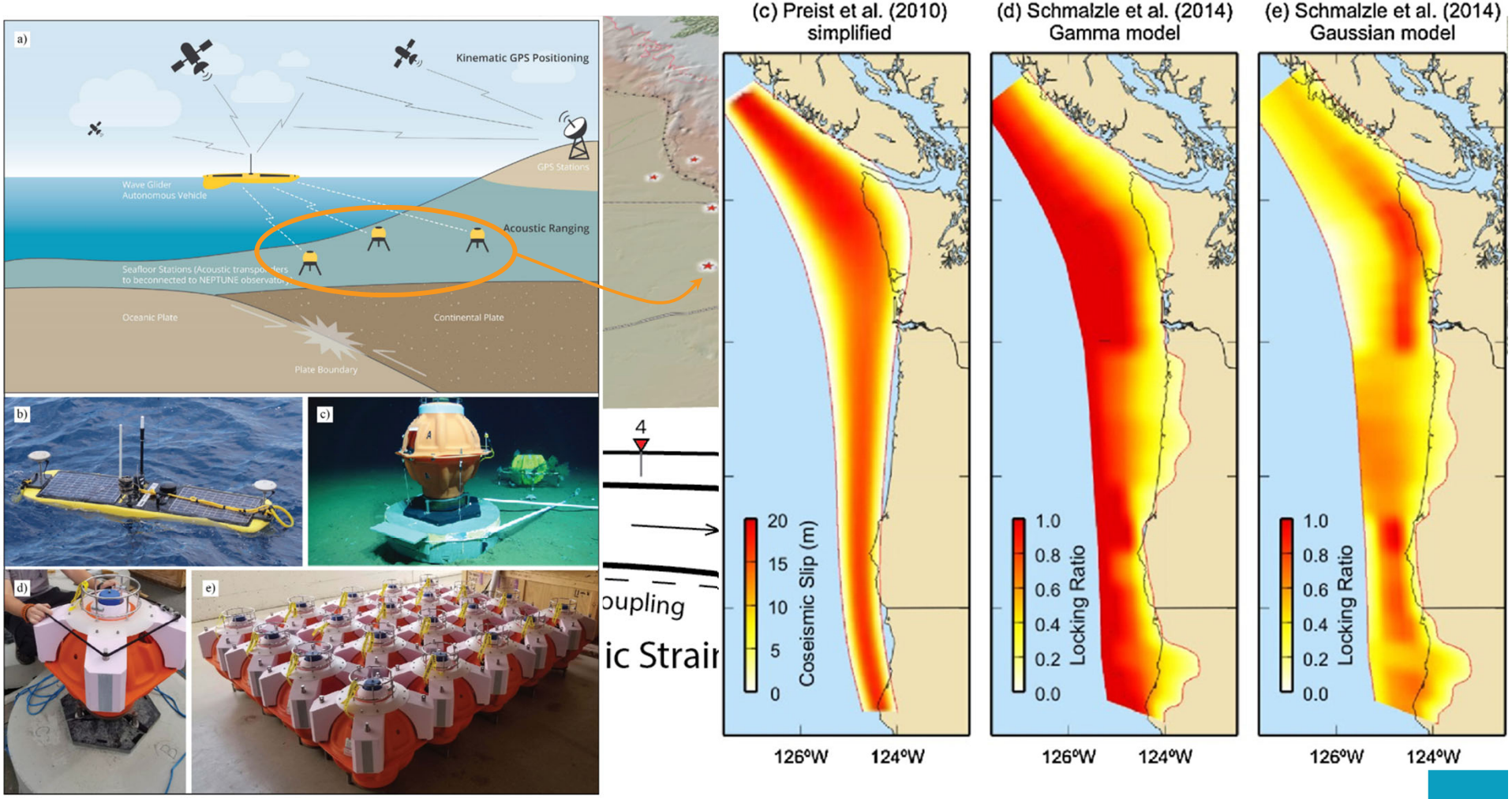


Figure 3. Pressure anomalies associated with a seafloor spreading event on the northern Juan de Fuca Ridge in 1999 (from Davis et al., 2001). Using the relationship shown in Fig. 2d, inferred volumetric strain is estimated at -0.2, -0.1, and -0.01 microstrain at each of the three sites. The CORK observatory site locations are shown in Figure 6.




a)
Kinematic GPS Positioning
GPS Stations
Wave Glider
Autonomous Vehicle
Acoustic Ranging
Seafloor Stations (Acoustic transponders
to beconnected to NEPTUNE observatory)
Oceanic Plate
Continental Plate
Plate Boundary
b)
c)
d)
e)
4
oupling
ic Strain
(c) Preist et al. (2010)
simplified
(d) Schmalzle et al. (2014)
Gamma model
(e) Schmalzle et al. (2014)
Gaussian model
20
15
10
5
0
Coseismic Slip (m)
1.0
0.8
0.6
0.4
0.2
0.0
Locking Ratio
126°W
124°W


OCEAN NETWORKS CANADA
EARLY EARTHQUAKE WARNING STATION STATUS
Realtime GNSS
Titan Strong-motion
Titan Strong-motion
RBR APT
Geo-Seismic Sensors:
Accelerometer
GNSS
Station Computer
Tilt Meter
ONC ownership
NRCAN ownership
Planned installation
Other:
Node
Fibre-optic Cable
Fault Line
Subduction Zone
Spreading Centre
Bathymetry (50 m contour lines)
0
-3500 m
50 km
AN INITIATIVE OF University of Victoria
Data Sources: Plate margins estimated from fig. 2 in Hyndman, 1995, Can. J. Earth Sci.; Digital Elevation Model derived from Smith and Sandwell Global Altimetry, Natural Resources Canada topography, Canadian Hydrographic Service bathymetry.
Updated: 20 March 2019
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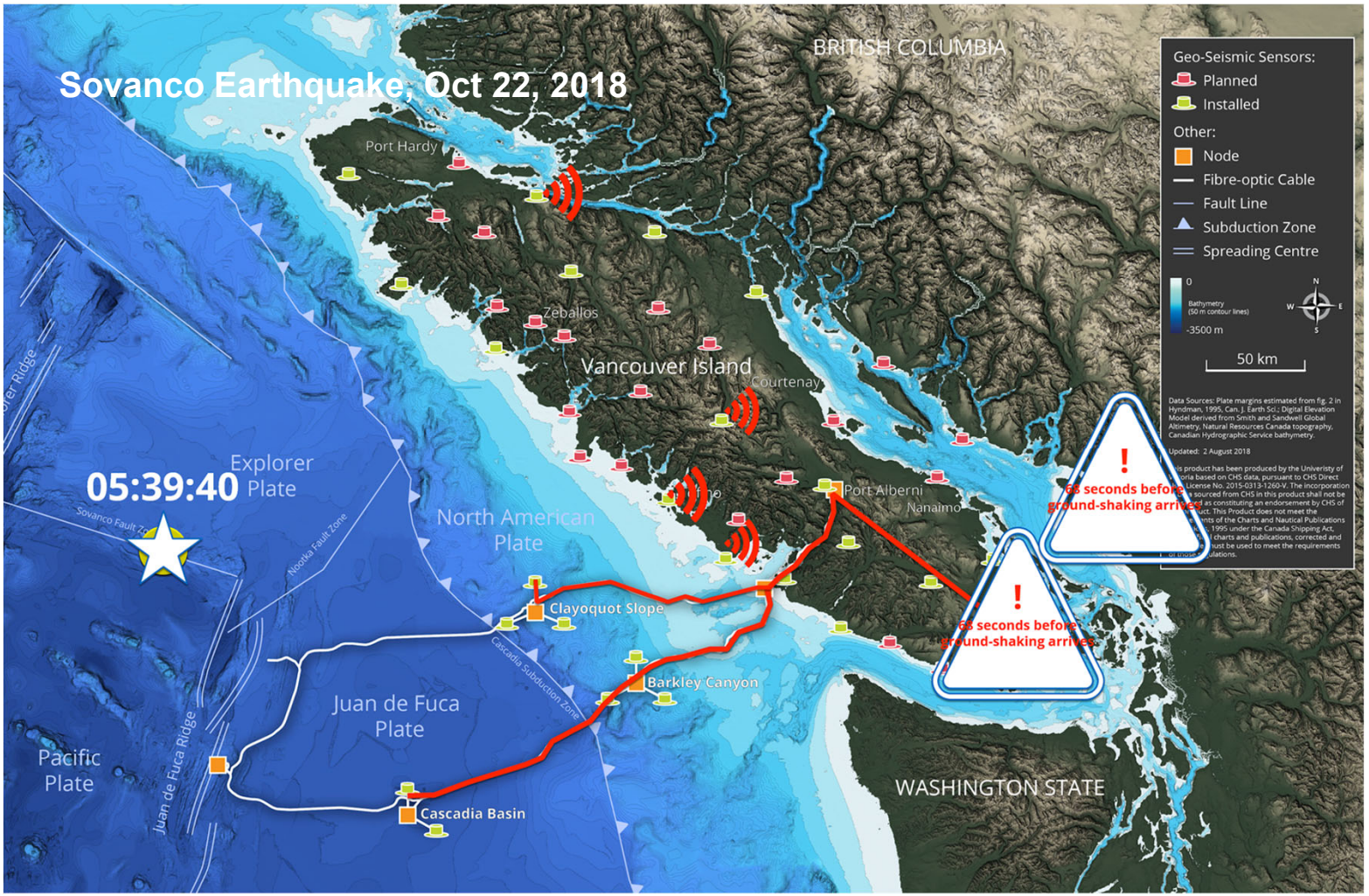
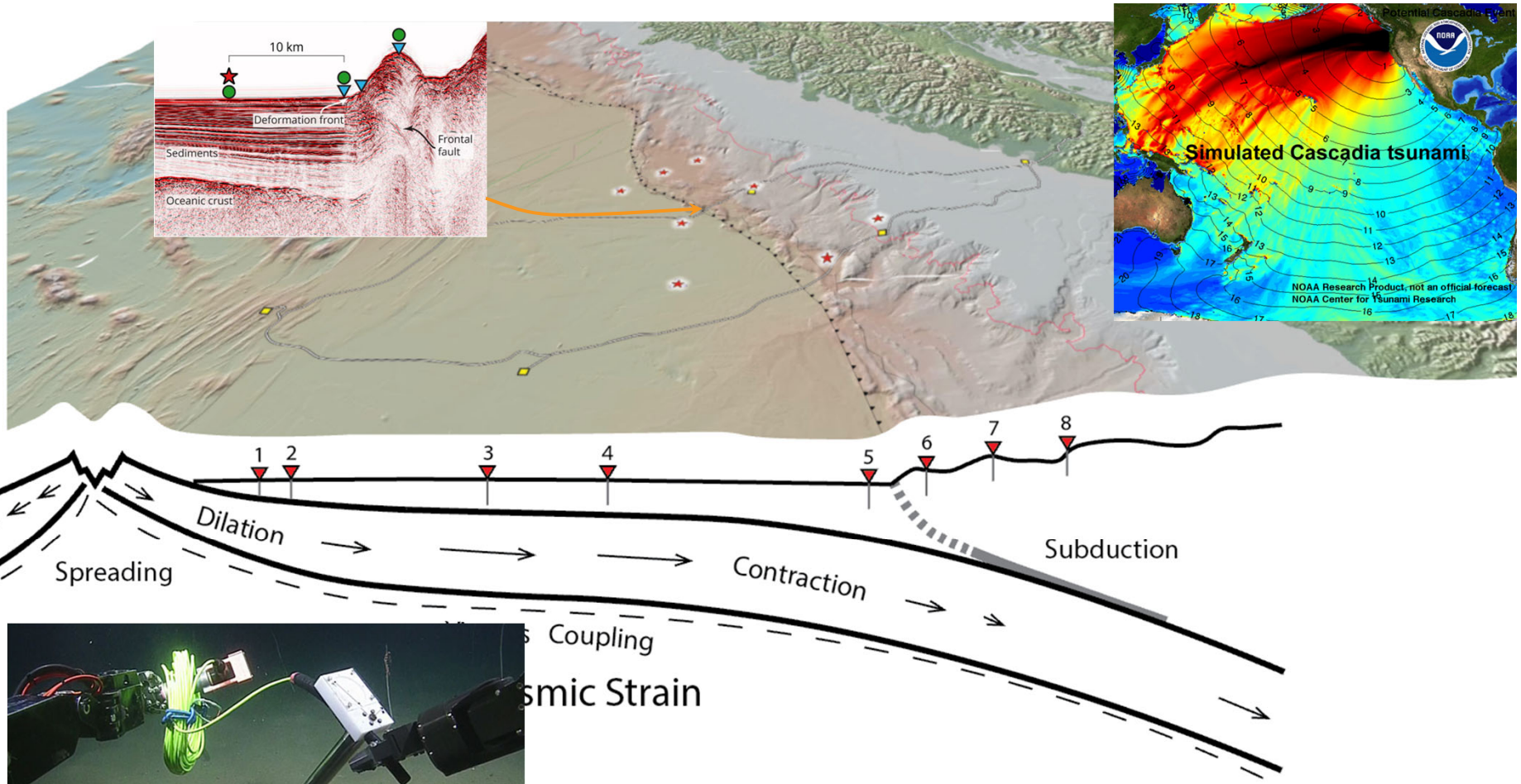
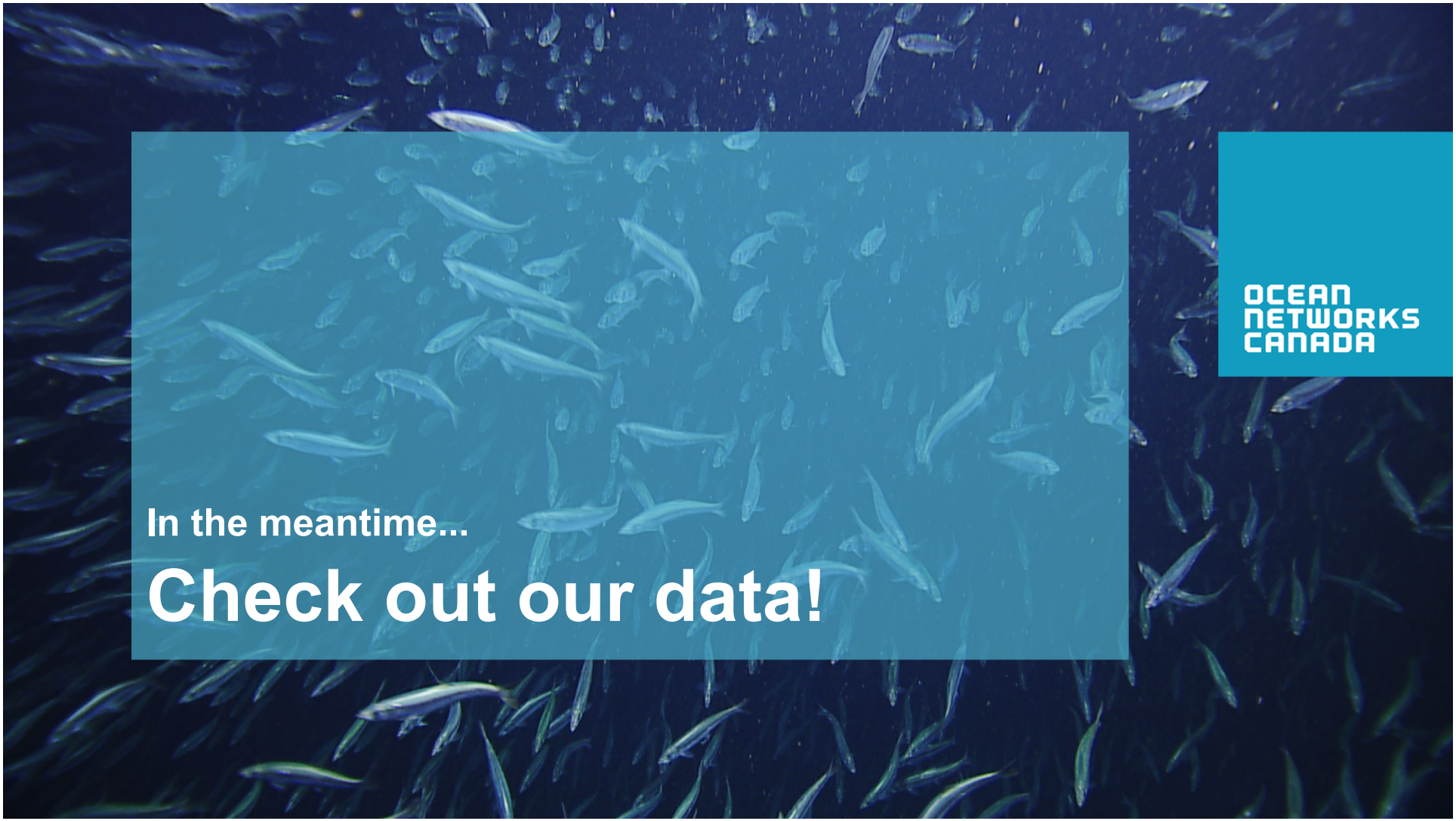
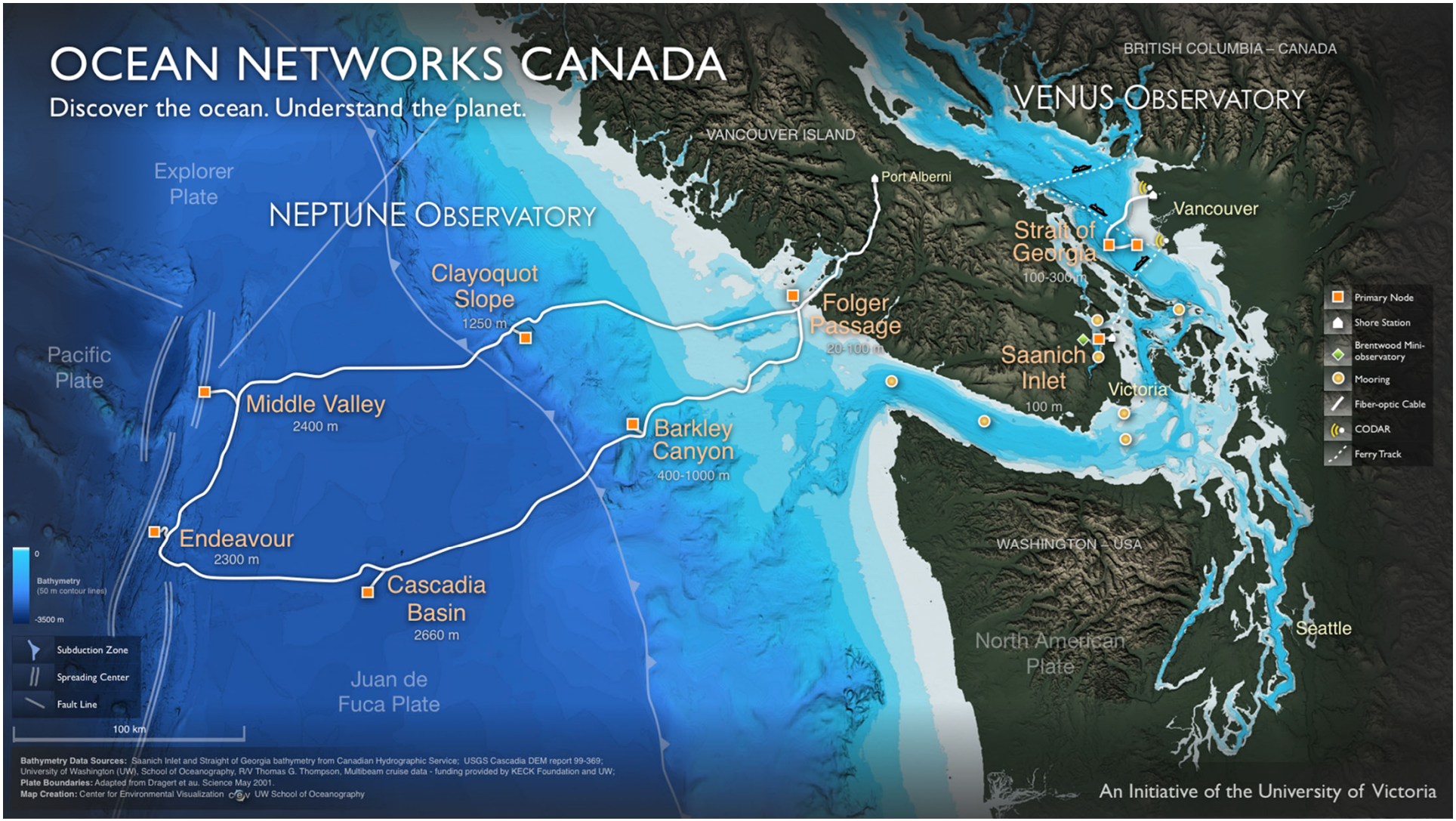
Holberg
Port Hardy
Port Alice
Beaver Cove
Mt. Maynard
Newcastle Ridge
Kwois Creek
Woss
Victoria Peak
Quadra Island
Brooks Peninsula
Fair Harbour
Zeballos
Tahsis
Strathcona Park
Eliza Dome
Gold River
Nootka Lighthouse
Cumberland
Myra Falls
Taylor River
Sharp Point
Nanoose Bay
Port Alberni
Vancouver
Tofino
Secret Beach
Mt. Grey
Ucluelet
Chemainus
Bamfield
Lake Cowichan
Clayoquot Slope
PGC
Port Renfrew
Survey
Barkley Canyon
Jordan River
Albert Head
Cascadia Basin
Explorer Plate
North American Plate
Juan de Fuca Plate
Pacific Plate
Explorer Ridge
Sovanco Fault Zone
Nootka Fault Zone
Cascadia Subduction Zone
Juan de Fuca Ridge


Sovanco Earthquake, Oct 22, 2018
BRITISH COLUMBIA
Port Hardy
Zeballos
Vancouver Island
Courtenay
Port Alberni
Nanaimo
05:39:40
Explorer Plate
North American Plate
Juan de Fuca Plate
Pacific Plate
Sovanco Fault Zone
Nootka Fault Zone
Cascadia Subduction Zone
Juan de Fuca Ridge
Clayoquot Slope
Barkley Canyon
Cascadia Basin
WASHINGTON STATE
68 seconds before ground-shaking arrives
68 seconds before ground-shaking arrives
Geo-Seismic Sensors:
Planned
Installed
Other:
Node
Fibre-optic Cable
Fault Line
Subduction Zone
Spreading Centre
Bathymetry (50 m contour lines)
0
-3500 m
50 km
Data Sources: Plate margins estimated from fig. 2 in Hyndman, 1995, Can. J. Earth Sci.; Digital Elevation Model derived from Smith and Sandwell Global Altimetry, Natural Resources Canada topography, Canadian Hydrographic Service bathymetry.
Updated: 2 August 2018


10 km
Deformation front
Sediments
Frontal fault
Oceanic crust
Potential Cascadia Event
Simulated Cascadia tsunami
NOAA Research Product, not an official forecast
NOAA Center for Tsunami Research
1
2
3
4
5
6
7
8
Spreading
Dilation
Contraction
Subduction
Coupling
smic Strain


In the meantime...
Check out our data!
OCEAN
NETWORKS
CANADA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Barkley Canyon
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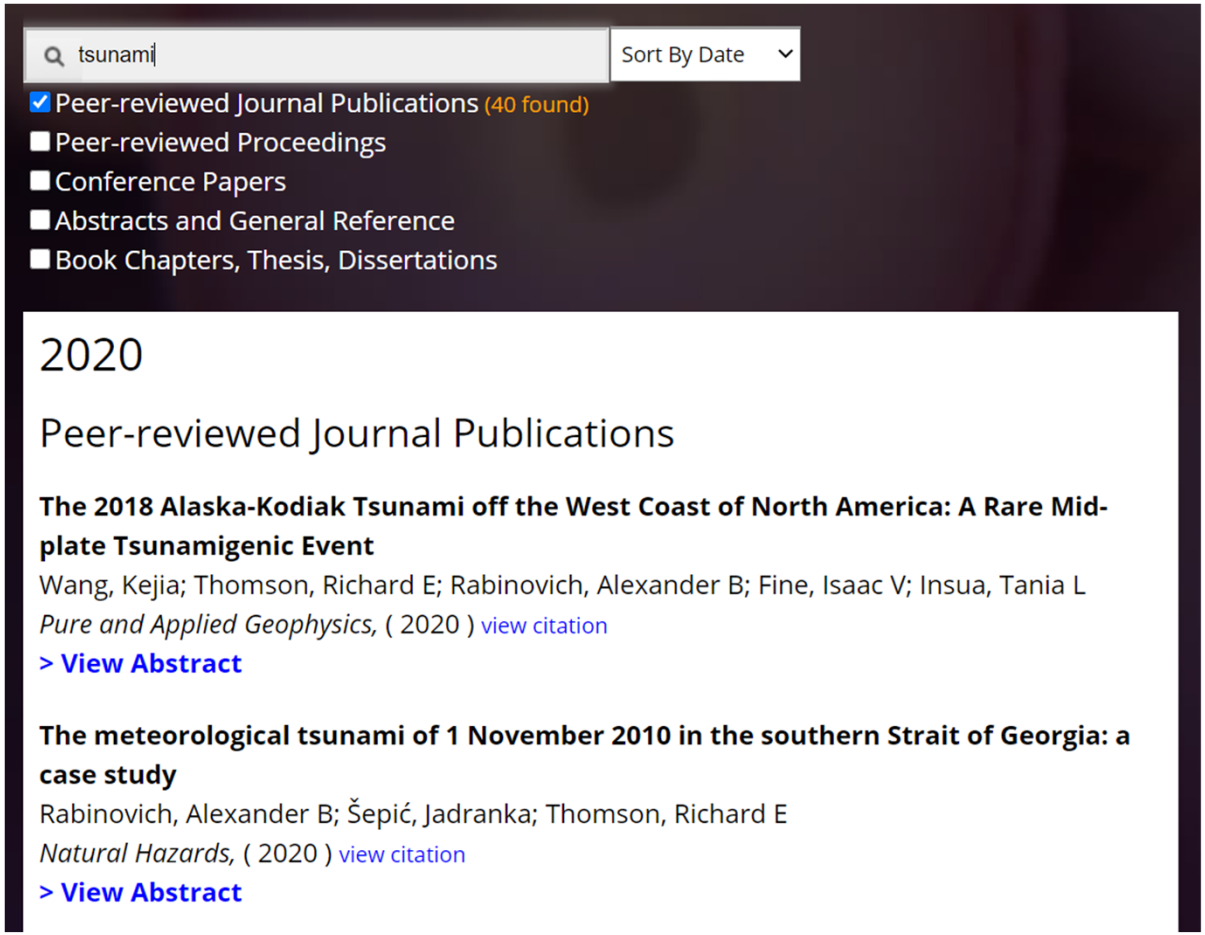
Endeavour
2300 m
WASHINGTON – USA
Cascadia Basin
2660 m
North American Plate
Seattle
Juan de Fuca Plate
Primary Node
Shore Station
Brentwood Mini-observatory
Mooring
Fiber-optic Cable
CODAR
Ferry Track
0
Bathymetry
(50 m contour lines)
-3500 m
Subduction Zone
Spreading Center
Fault Line
100 km
Bathymetry Data Sources: Saanich Inlet and Straight of Georgia bathymetry from Canadian Hydrographic Service; USGS Cascadia DEM report 99-369; University of Washington (UW), School of Oceanography, R/V Thomas G. Thompson, Multibeam cruise data - funding provided by KECK Foundation and UW;
Plate Boundaries: Adapted from Dragert et au. Science May 2001.
Map Creation: Center for Environmental Visualization UW School of Oceanography
An Initiative of the University of Victoria



https://www.oceannetworks.ca/science/publications/academic

- Modelling and observations
- HF Radar applications
- Hydro-acoustic waves
- ...

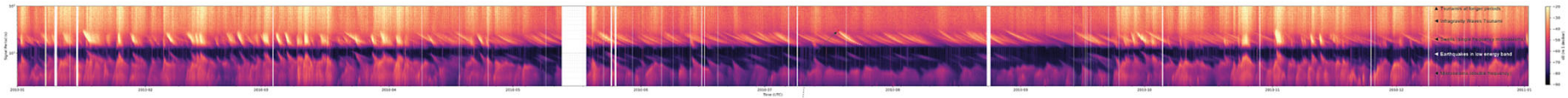
A Decade of High-resolution Ocean Bottom Pressure Measurements in the Northeast Pacific

The NEPTUNE Observatory Turns 10 years old

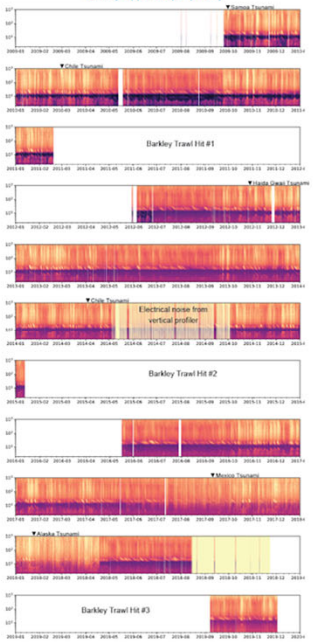
Martin Heesemann[1], Joseph Farrugia[2], Earl Davis[2], Richard Thomson[3], Steven Mihaly[1], Alexander Rabinovich[3], Isaac Fine[3]

[1]Ocean Networks Canada, University of Victoria, Victoria, BC, Canada | [2]Pacific Geoscience Center, Sidney, BC, Canada | [3]Institute of Ocean Sciences, Sidney, BC, Canada

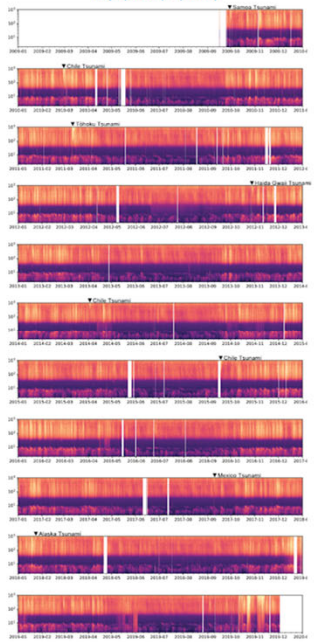
OCEAN NETWORKS CANADA



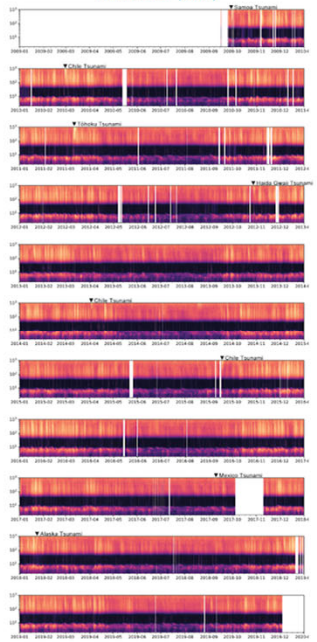
Barkley Upper Slope (400m)



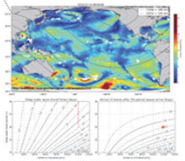
Clayoquot Slope (1250m)



Cascadia Basin (2660m)

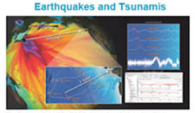


Dispersion Patterns



Swells (deep water waves) are dispersive. Longer period waves travel faster than shorter period waves. By comparing the difference of arrival between different period waves we can estimate the distance the swells travelled since they were generated. In the summer months, most swell originate from the southern hemisphere; a common time difference of about 1.5 days between 30s and 20s swells indicates that the waves travelled for about 12,000 km.

Earthquakes and Tsunamis



On September 30, 2009, just days after the first NEPTUNE instruments were installed, the first tsunami waves of 2.5-6.0 cm amplitude generated by the Mw 8.1 Samoa earthquake were recorded by six BPRs. More tsunamis we recorded in the following years as indicated in the spectrograms to the right. The figure above shows the 2011 Tōhoku-Oki earthquake and tsunami recorded be the ONC infrastructure.

Bottom Pressure Recorders

The Bottom Pressure Recorders (BPR) deployed on the observatory consist of DigiQuartz pressure sensors built by Paroscientific Inc. and low-power , high-precision frequency counters developed for the Pacific Geoscience Centre. They provide observations of nano-resolution pressure variations which correspond to millimeter scale surface height variations in several kilometers of water. RBR Ltd. took on the challenge to develop an off-the-shelf instrument based on the same technology (http://www.rbr-global.com/products/bpr).

Overview

The high-precision Bottom Pressure Recorders (BPRs) deployed on the Ocean Networks Canada NEPTUNE Observatory are capable of detecting a wide range of phenomena related to sea-level variations and hydro-acoustic waves.

Detected signals include Tides, storm surges,

- Tsunamis and Earthquakes,
- Infragravity Waves, Swells and Microseisms

As observed in the example from the BPR at Barkley Upper Slope shown above

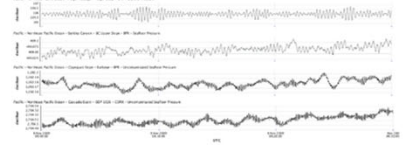
- infragravity waves (>30 s periods),
- swells (14-30 s periods),
- double frequency microseisms (2-10s), and
- earthquakes (stripes visible in the low energy band from ~8-14 s)

get recorded at about 400m water depth.

Dispersion Pattern from swells generated in the southern hemisphere are prominent during summer month in the swell and microseism band. Higher frequency microseisms in the range between 2-7 s period, indicative of regionally generated wind waves, are used to define a Microseism Based Upwelling Index.

Infragravity Waves, Swells, and Microseisms

Apart from tides, different pressure signals dominate the data depending on the water depth. The plots below show that Folger Deep (100 m) is dominated by swells. Infragravity waves and microseisms (at double the swell frequency) become noticeable in the unprocessed data at Barkley upper slope @400 m (see also spectrograms). At the deeper sites, swells are fully attenuated and the infragravity waves and microseisms dominate. Note, the scales differ considerably between the plots.



Microseism Based Upwelling Index

The biological productivity of coastal upwelling regions undergoes marked interannual variability as marine ecosystems respond to changes in the prevailing winds. Determination of the principal metrics that define the upwelling cycle—the spring transition, when ocean conditions switch from downwelling- to upwelling favorable, and the fall transition, when conditions returns to downwelling-favorable—is essential for understanding changes in coastal productivity. Thomson et al. (2014) argue that upwelling in the northern California Current System may be delineated by changes in microseism activity.

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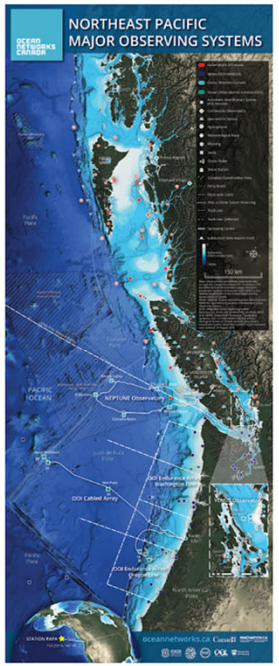

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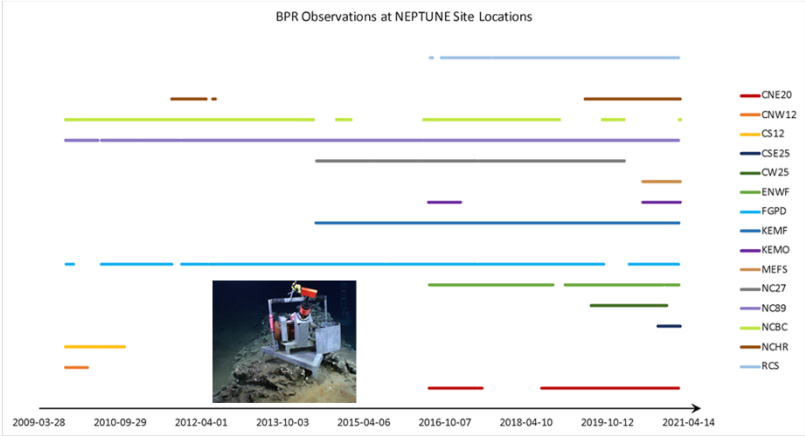
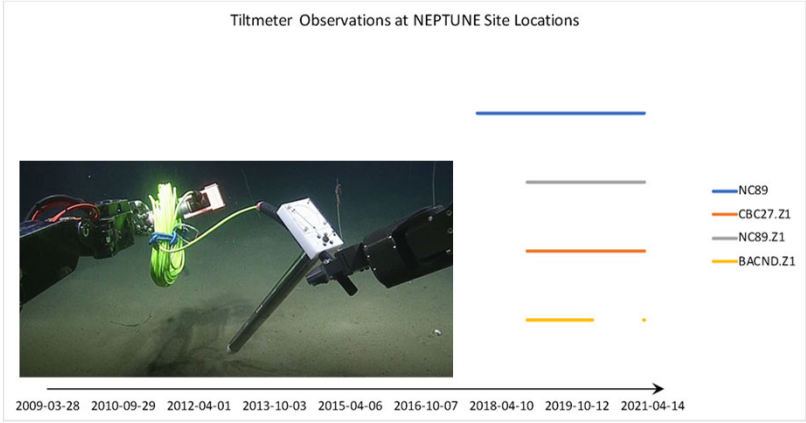

BPR Observations at NEPTUNE Site Locations
CNE20
CNW12
CS12
CSE25
CW25
ENWF
FGPD
KEMF
KEMO
MEFS
NC27
NC89
NCBC
NCHR
RCS
2009-03-28
2010-09-29
2012-04-01
2013-10-03
2015-04-06
2016-10-07
2018-04-10
2019-10-12
2021-04-14


Tiltmeter Observations at NEPTUNE Site Locations
NC89
CBC27.Z1
NC89.Z1
BACND.Z1
2009-03-28
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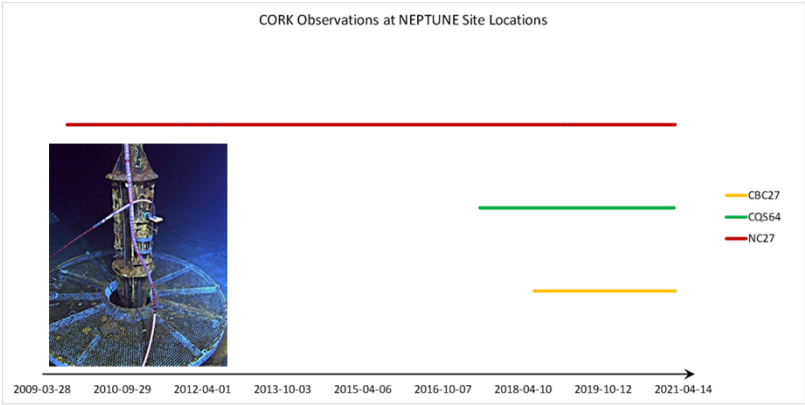
CORK Observations at NEPTUNE Site Locations
CBC27
CQS64
NC27
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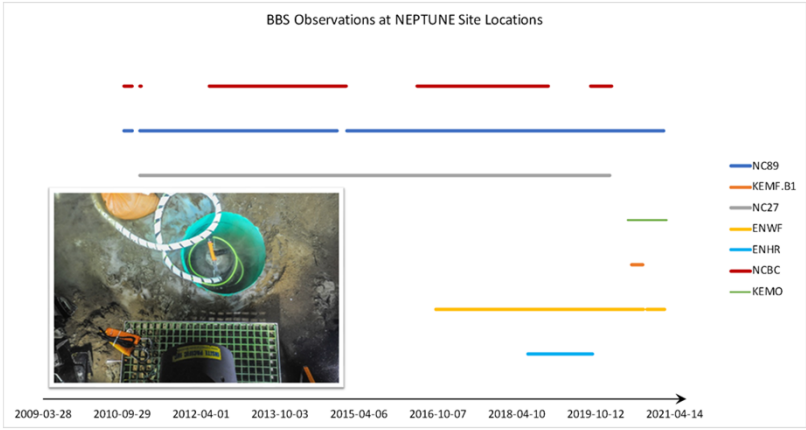
2018-04-10
2019-10-12
2021-04-14


BBS Observations at NEPTUNE Site Locations
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KEMF.B1
NC27
ENWF
ENHR
NCBC
KEMO
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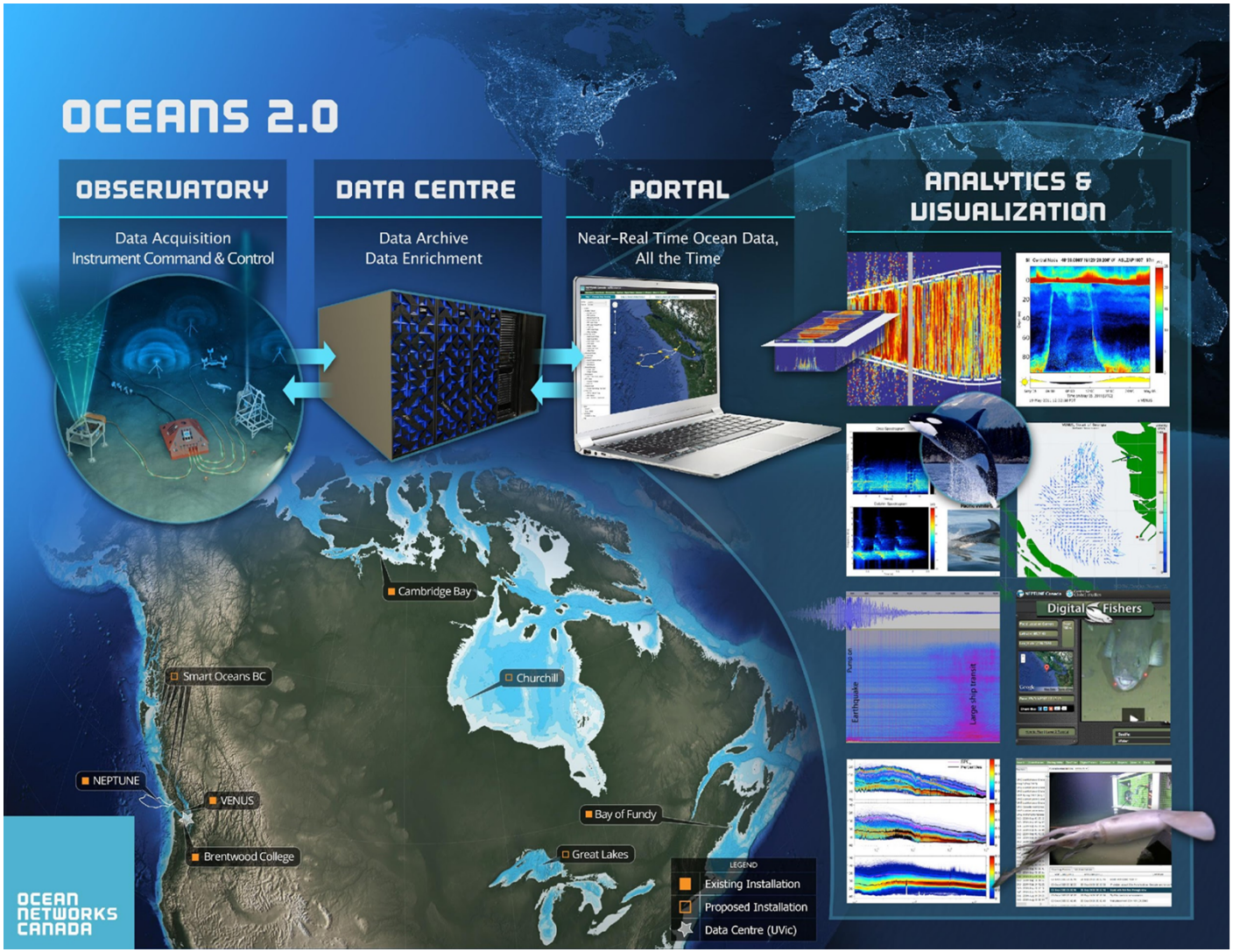
2021-04-14

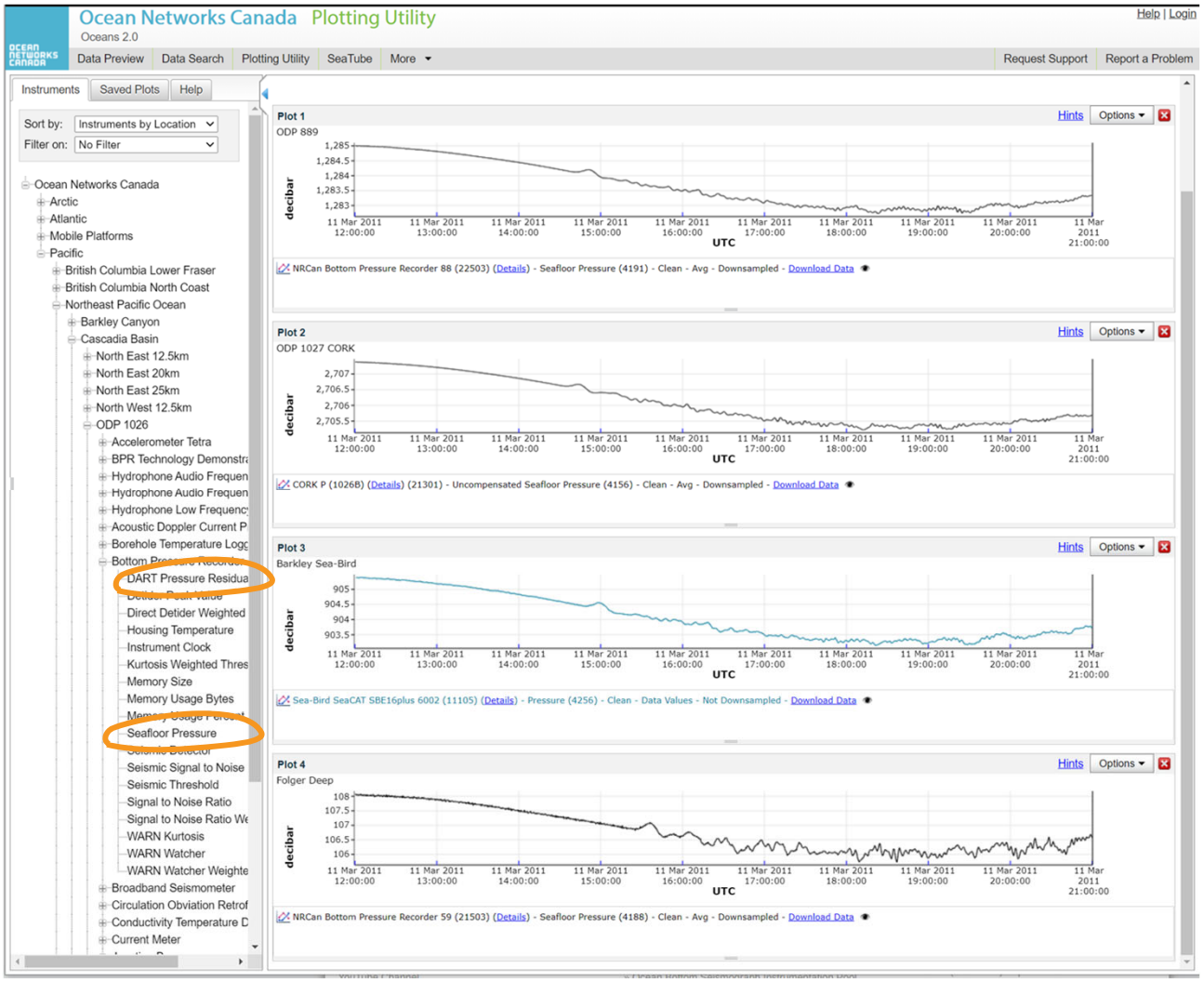


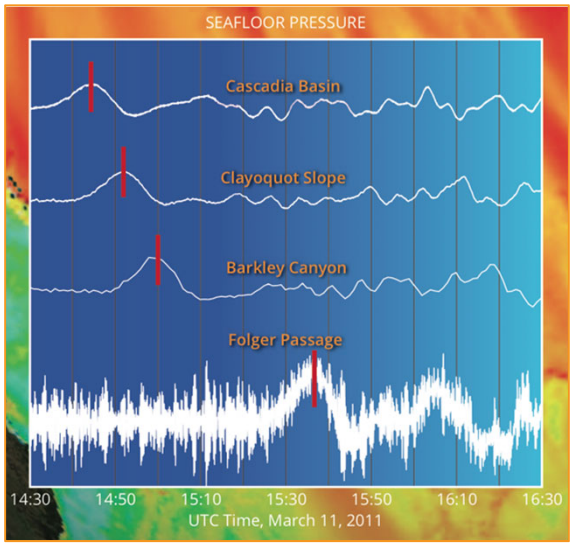
IRIS

"All" seismic data are available at IRIS.

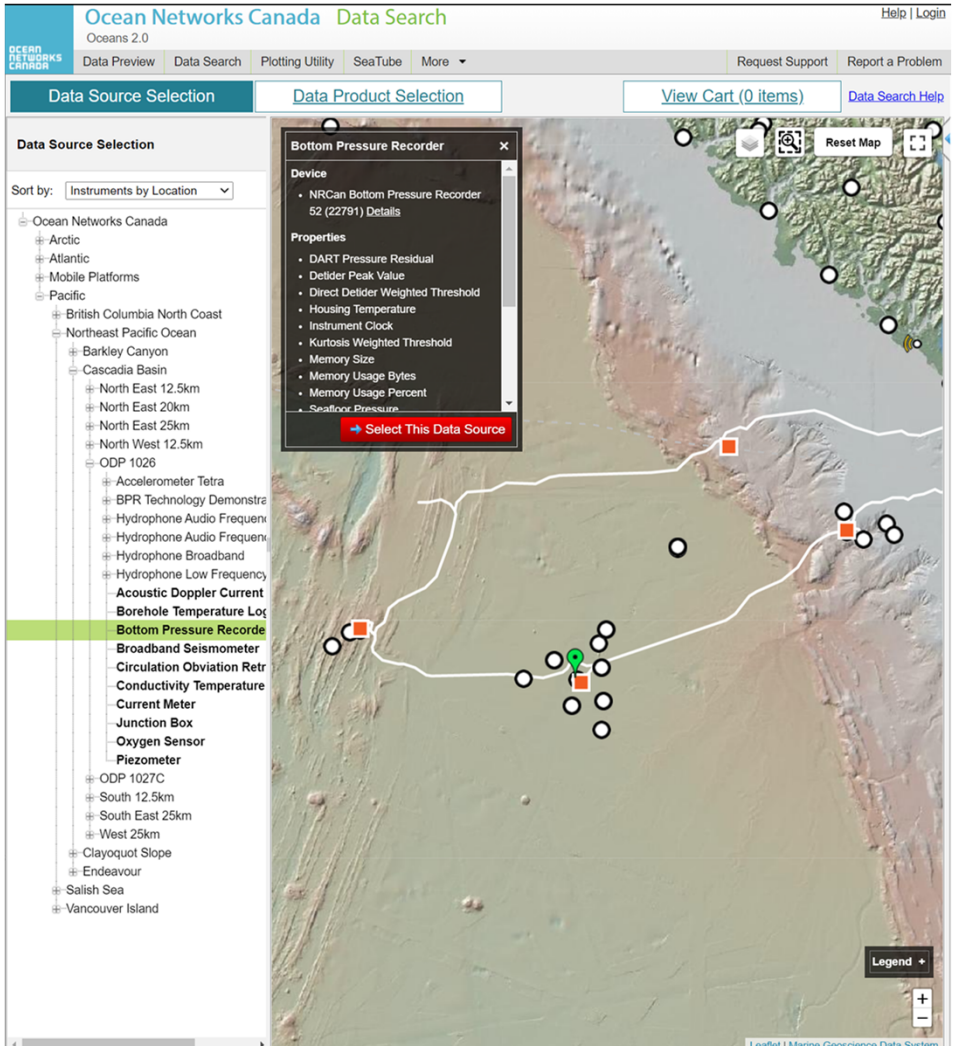
Network Code

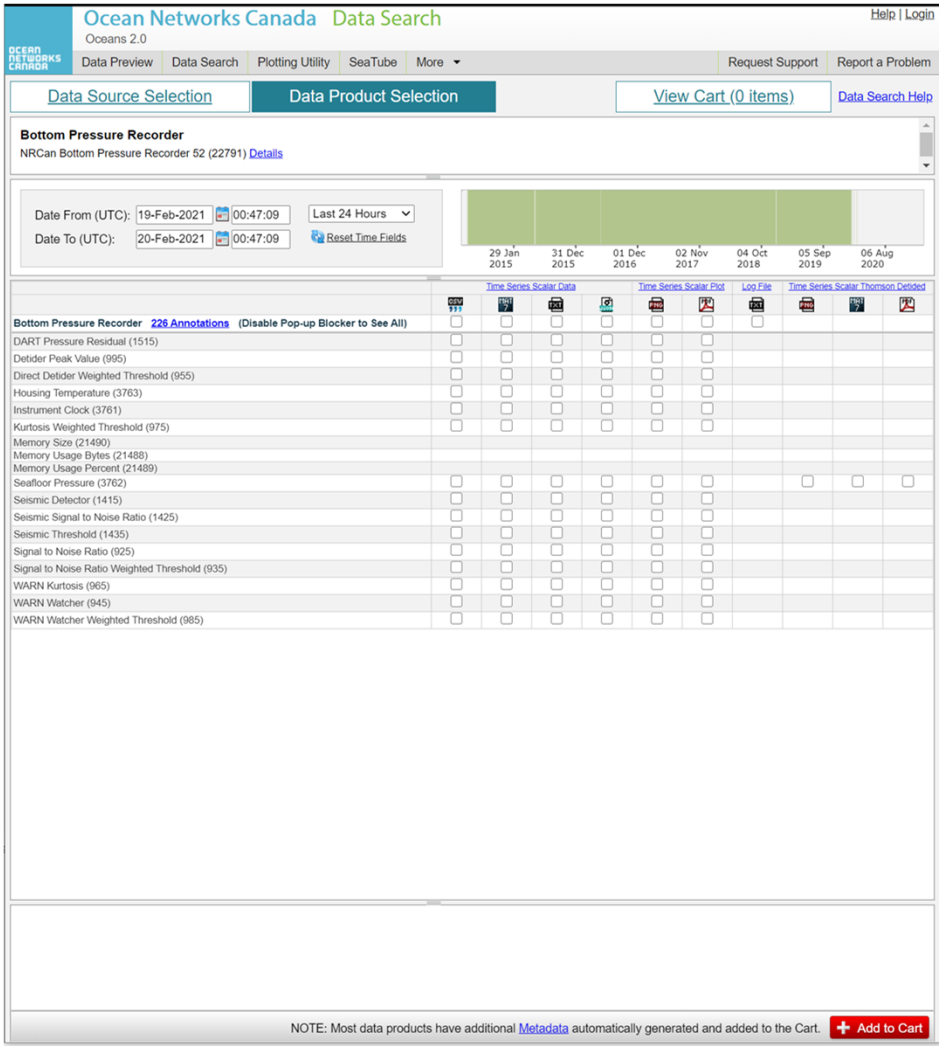
NV





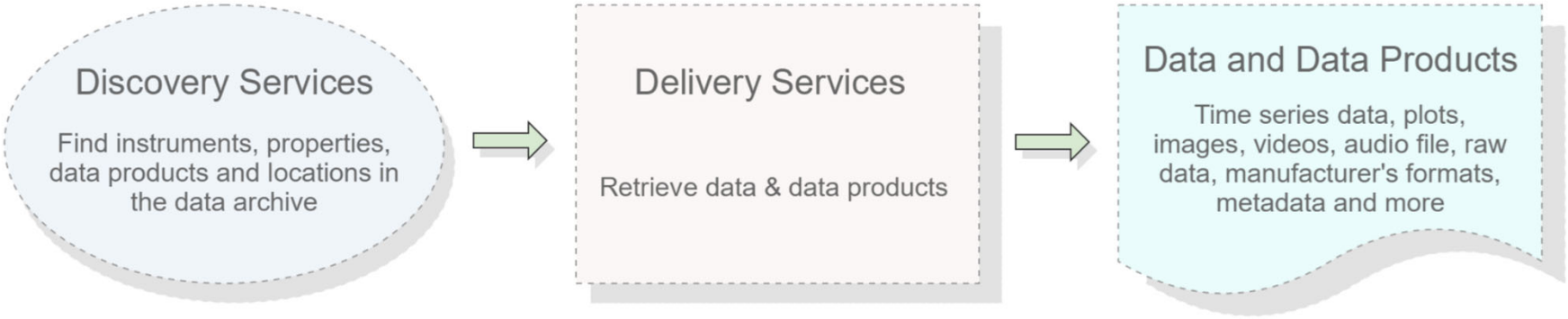
https://data.oceannetworks.ca/PlottingUtility


Ocean Networks Canada Data Search
Oceans 2.0
Help | Login
Data Preview
Data Search
Plotting Utility
SeaTube
More
Request Support
Report a Problem
Data Source Selection
Data Product Selection
View Cart (0 items)
Data Search Help
Data Source Selection
Sort by: Instruments by Location
Ocean Networks Canada
Arctic
Atlantic
Mobile Platforms
Pacific
British Columbia North Coast
Northeast Pacific Ocean
Barkley Canyon
Cascadia Basin
North East 12.5km
North East 20km
North East 25km
North West 12.5km
ODP 1026
Accelerometer Tetra
BPR Technology Demonstra
Hydrophone Audio Frequen
Hydrophone Audio Frequen
Hydrophone Broadband
Hydrophone Low Frequency
Acoustic Doppler Current
Borehole Temperature Log
Bottom Pressure Recorde
Broadband Seismometer
Circulation Obviation Retr
Conductivity Temperature
Current Meter
Junction Box
Oxygen Sensor
Piezometer
ODP 1027C
South 12.5km
South East 25km
West 25km
Clayoquot Slope
Endeavour
Salish Sea
Vancouver Island
Bottom Pressure Recorder
Device
NRCan Bottom Pressure Recorder 52 (22791) Details
Properties
DART Pressure Residual
Detider Peak Value
Direct Detider Weighted Threshold
Housing Temperature
Instrument Clock
Kurtosis Weighted Threshold
Memory Size
Memory Usage Bytes
Memory Usage Percent
Seafloor Pressure
Select This Data Source
Reset Map
Legend
Leaflet | Marine Geoscience Data System


Ocean Networks Canada Data Search
Oceans 2.0
Help | Login
Data Preview
Data Search
Plotting Utility
SeaTube
More
Request Support
Report a Problem
Data Source Selection
Data Product Selection
View Cart (0 items)
Data Search Help
Bottom Pressure Recorder
NRCan Bottom Pressure Recorder 52 (22791) Details
Date From (UTC): 19-Feb-2021 00:47:09
Date To (UTC): 20-Feb-2021 00:47:09
Last 24 Hours
Reset Time Fields
29 Jan 2015
31 Dec 2015
01 Dec 2016
02 Nov 2017
04 Oct 2018
05 Sep 2019
06 Aug 2020
Time Series Scalar Data
Time Series Scalar Plot
Log File
Time Series Scalar Thomson Detided
Bottom Pressure Recorder 226 Annotations (Disable Pop-up Blocker to See All)
DART Pressure Residual (1515)
Detider Peak Value (995)
Direct Detider Weighted Threshold (955)
Housing Temperature (3763)
Instrument Clock (3761)
Kurtosis Weighted Threshold (975)
Memory Size (21490)
Memory Usage Bytes (21488)
Memory Usage Percent (21489)
Seafloor Pressure (3762)
Seismic Detector (1415)
Seismic Signal to Noise Ratio (1425)
Seismic Threshold (1435)
Signal to Noise Ratio (925)
Signal to Noise Ratio Weighted Threshold (935)
WARN Kurtosis (965)
WARN Watcher (945)
WARN Watcher Weighted Threshold (985)
NOTE: Most data products have additional Metadata automatically generated and added to the Cart.
Add to Cart

Oceans 2.0 API Home

Created by Maia Hoeberechts, last modified by Dany A Cabrera on 30-Jan-20



The Oceans 2.0 API provides a collection of web services for programmatically unlocking access to the vast ONC data archive, whether it is scalar data, complex data or video and imagery. Use Discovery Services to find the data and Delivery Services to retrieve data.

Quick Reference

Guide

- Oceans 2.0 User's Guide

API Reference

Discovery

- locations
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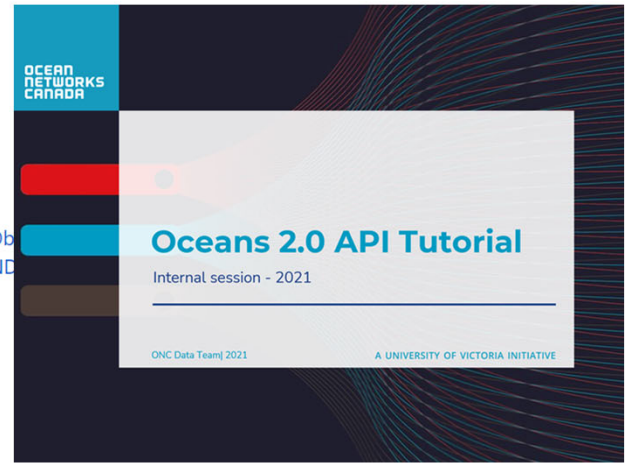
- deviceCategories
- properties
- dataProducts

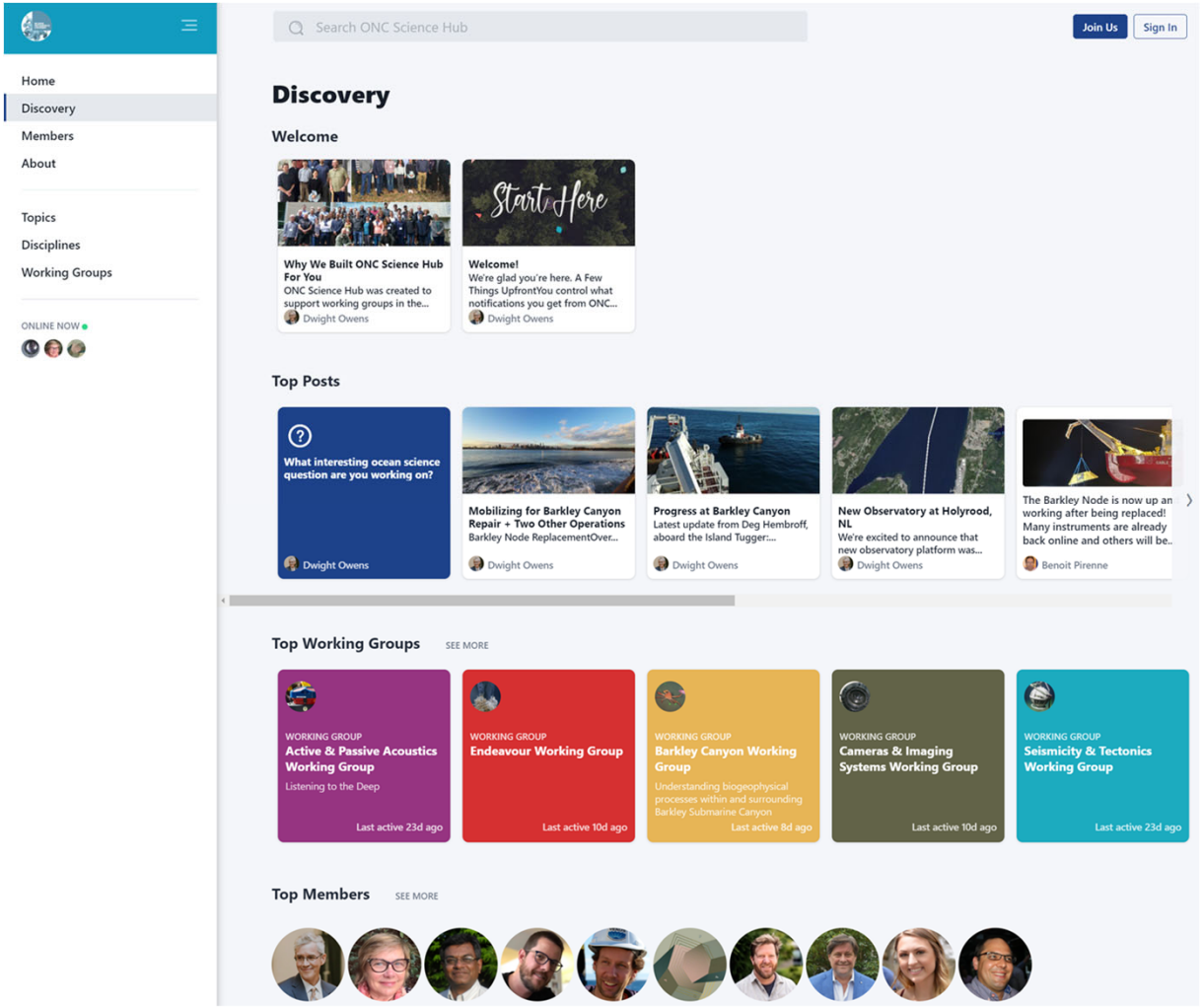
Delivery

- dataProductDelivery
- scalardata
- rawdata
- archivefiles

Interoperability

- SOS - Sensor Ob
- ERDDAP (OPeND

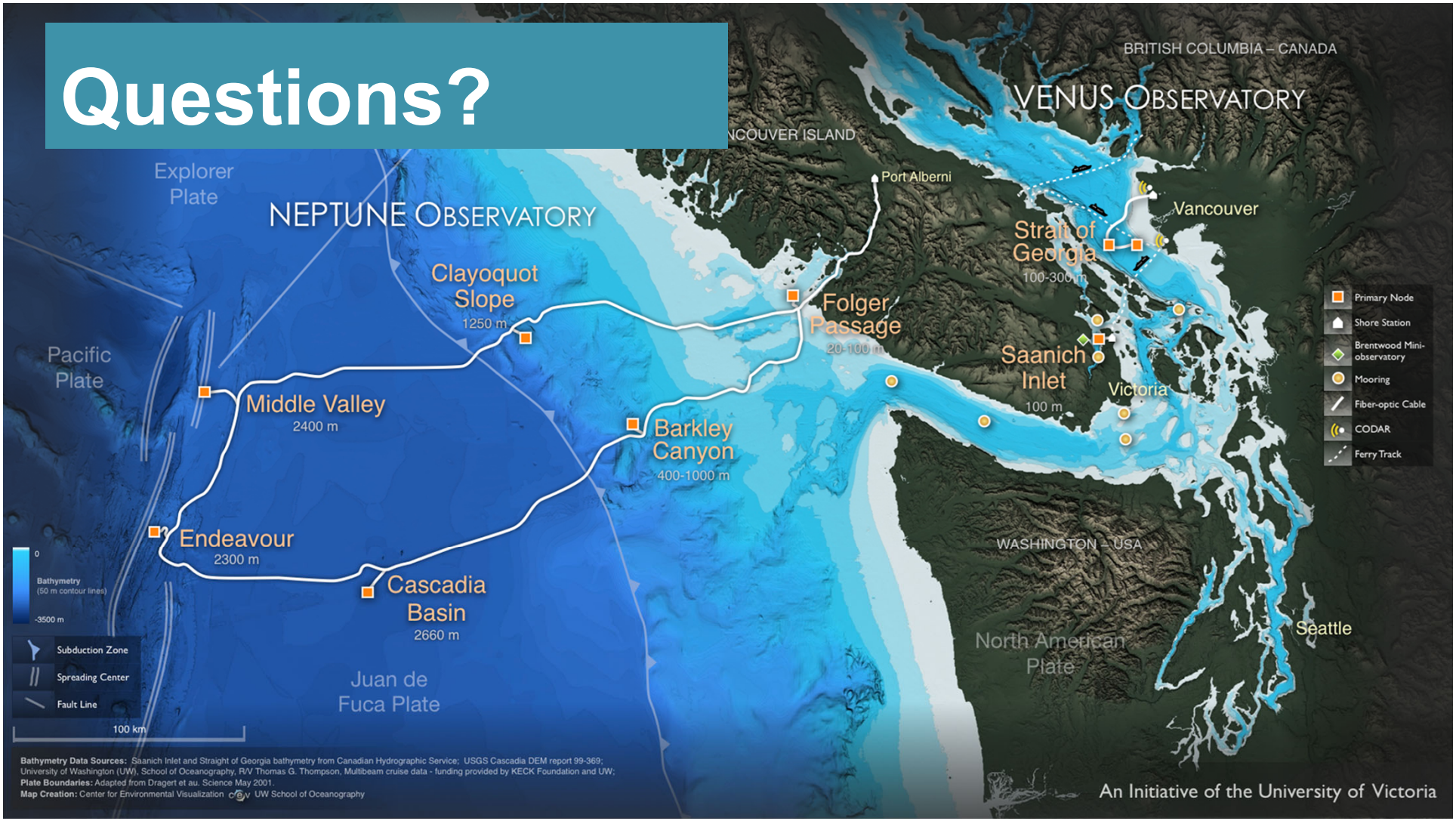




ONC Science Hub Community Portal

https://community.oceannetworks.ca/discovery

Questions?


BRITISH COLUMBIA – CANADA
VENUS OBSERVATORY
NCOUVER ISLAND
Port Alberni
Vancouver
Strait of Georgia
100-300 m
Explorer Plate
NEPTUNE OBSERVATORY
Clayoquot Slope
1250 m
Folger Passage
20-100 m
Pacific Plate
Middle Valley
2400 m
Barkley Canyon
400-1000 m
Saanich Inlet
100 m
Victoria
Endeavour
2300 m
Cascadia Basin
2660 m
WASHINGTON – USA
Seattle
North American Plate
Juan de Fuca Plate
Primary Node
Shore Station
Brentwood Mini-observatory
Mooring
Fiber-optic Cable
CODAR
Ferry Track
0
Bathymetry
(50 m contour lines)
-3500 m
Subduction Zone
Spreading Center
Fault Line
100 km
Bathymetry Data Sources: Saanich Inlet and Straight of Georgia bathymetry from Canadian Hydrographic Service; USGS Cascadia DEM report 99-369; University of Washington (UW), School of Oceanography, R/V Thomas G. Thompson, Multibeam cruise data - funding provided by KECK Foundation and UW;
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Map Creation: Center for Environmental Visualization UW School of Oceanography
An Initiative of the University of Victoria

WORLD LEADING DISCOVERIES AT A CRITICAL TIME

We thank our host Nations

We acknowledge and respect the Songhees, Esquimalt and W̱SÁNEĆ peoples on whose traditional territories the university stands and whose historical relationships to the land continue to this day.

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