

Marine Seismology Workshop

Dalhousie University, Halifax, Canada

May 22 – 26, 2023

Organized by the National Facility for Seismological
Investigations (NFSI)

Program

NFSI



**DALHOUSIE
UNIVERSITY**

Workshop information

Organizers:

- Pascal Audet, pascal.audet@uottawa.ca
- Mladen Nedimović, mladen@nfsi.ca

Location:

- Dalhousie University, Life Sciences Centre (LSC)
- Lecture room: C334 (3rd floor)
- Computer room: LSC2012 (2nd floor)

Sponsoring programs:

- NFSI: National Facility for Seismological Investigations (<https://nfsi.ca>)
- iIMAGE: NSERC-CREATE training program in marine geodynamics and georesources (<https://image-create.ca>)
- NORRAM: Norway-Russia-North America training program on Arctic volcanism and tectonics (<https://norramarctic.wordpress.com>)

Other funding:

- Canada Foundation for Innovation (<https://www.innovation.ca>)
- Dalhousie University (<https://www.dal.ca>)

Scope:

Provide training in marine seismology, including passive and controlled source methods, ocean-bottom seismic instrumentation, deployment/recovery and location on the seafloor, data collection, data processing, and survey proposal planning.

Participation:

39 participants, primarily NFSI, iIMAGE, and NORRAM trainees, but also including external participants. Even though a background in geophysics/seismology is not required, this workshop offers technical training in seismology with active participation expected. Some activities will require a laptop computer.

Keynote speakers



Juan Pablo Canales

Woods Hole Oceanographic Institution

[Website](#)

Prof. Canales uses geophysical methods such as 2D/3D seismic tomography, seismic reflection imaging, waveform inversion, and potential fields to investigate processes along tectonic plate boundaries and the evolution of the oceanic lithosphere.

Prof. Canales has done extensive work on the structure of subduction zones including Cascadia, mid-ocean ridge systems, etc. He has led several scientific expeditions and is a leader in controlled source marine seismology



Helen Janiszewski

University of Hawai'i at Mānoa

[Website](#)

Prof. Janiszewski's uses seismic imaging to learn about the structure of the Earth's interior. Her research group uses terrestrial and marine instrumentation to understand the relationships between structure and earthquake behaviour at subduction zones, and to characterize magma transport beneath volcanoes.

Prof. Janiszewski studies the Cascadia, Alaska-Aleutians, and Vanuatu subduction zones, as well as Hawaiian volcanism. She has been involved in several deployments of broadband ocean-bottom seismic instruments and is a leader in advances in amphibious and marine seismology

Addresses and directions

Useful information:

Gerard Hall:

5303 Morris St, Halifax, NS B3J 0H5

<https://goo.gl/maps/f5rtiCJBA1xiy3UE9>

Dalhousie University, Life Sciences Centre:

1355 Oxford St, Halifax, NS B3H 3Z1

Drop pin to entrance:

<https://goo.gl/maps/U5xxbTPexKBoRAEQ9>

Halifax Airport to Gerard Hall:

<https://goo.gl/maps/aLW45mLbjyERf4qc8>

Gerard Hall



Life (Ocean) Sciences Centre



Day 0, May 21, Sunday Icebreaker

6:00 PM to 9:00 PM

Mother's Pizza (<https://motherspizzahalifax.ca>)

5710 Young St, Halifax, NS B3K 4L5, Canada

<https://goo.gl/maps/hKsTnz1y4iHQPabP6>

30-minute walk from Gerard Hall

15-minute bus ride using route 7A or 7B (same route in reverse direction)

<https://www.halifax.ca/transportation/halifax-transit/routes-schedules>



Day 1, May 22nd, Monday

Lectures

Schedule:

Time	Topic	Lecturer
0845	Welcome and workshop overview	M. Nedimovic P. Audet
0900	Lecture: Intro to earthquakes, seismic waves and Earth structure	Q. Liu & Y. Liu
1030	Morning break	
1045	Lecture: Passive source seismology	A. Frederiksen & F. Darbyshire
1215	Lunch	
1345	Lecture: Controlled source seismology	K. Welford
1515	Afternoon break	
1530	Keynote: Investigating Tectonic and Magmatic Processes at the Boundaries of Oceanic Plates using Short-Period Ocean Bottom Seismometers	P. Canales
1700	Day close	

Details:

Room C334 (3rd floor) in Life Sciences Centre

Day 2, May 23rd, Tuesday

Instrumentation

Schedule:

Time	Topic	Lecturer
0830	Lecture: Intro to OBS instrumentation	G. Cairns
0930	Lecture: Intro to passive source seismic data, metadata and data access	A. Schaeffer
1030	Morning break	
1045	Lecture: OBS survey design	M. Nedimovic & others
1215	Lunch	
1345	Tour: NFSI facility at Dalhousie	K. Bosman & J. Thibodeau
1515	Afternoon break	
1530	Keynote: Finding the Signal Through the Noise Using Broadband Ocean Bottom Seismometers	H. Janiszewski
1700	Day close	

Details:

Room C334 (3rd floor) in Life Sciences Centre

Day 3*, May 24th, Wednesday

Field trip

Schedule:

Time	Details
0700	Group 1 – Leave Life Sciences Parking lot to New Harbour docks
0800	Group 1 – Onboard vessel for OBS deployment Group 2 – Leisure
1100	Group 2 – Leave Life Sciences Parking lot to New Harbour docks
1200	Groups 1 & 2 – Lunch at New Harbour docks
1300	Group 2 – Onboard vessel for OBS deployment
1300	Group 1 – Bus back to Dalhousie
1700	Group 2 – Bus back to Dalhousie
1730	Day close

*Groups 1 and 2 in Day 3 are swapped for Groups 3 and 4 in Day 4

Details:

Markie Bus Tours company

Day 4*, May 25th, Thursday

Tutorials

Schedule:

Time	Topic	Lecturer
0830	Tutorial: Intro to computing environment + OBS data processing	P. Audet
1030	Morning break	
1045	Tutorial: OBS data processing – continued	P. Audet
1215	Lunch	
1315	Tutorial: Earthquake detection + location	M. Zhang
1515	Afternoon break	
1530	Tutorial: Earthquake detection + location – continued	M. Zhang
1700	Day close	

*Groups 1 and 2 in Day 3 are swapped for Groups 3 and 4 in Day 4

Details:

Room LSC2012 in Life Sciences Centre

Day 5, May 26th, Friday

Proposals & closing reception

Schedule:

Time	Topic	Details
0830	Activity: Proposal brainstorming	Senior members in each group act as mentors
1030	Morning break	
1045	Activity: Proposal writing session	Template provided
1215	Lunch	
1315	Activity: Proposal competition	Groups pitch their ideas and proposal plans.
1415	Day close	
Closing Reception		
1445	Bus departure from Life Sciences building to Wolfville for a stroll	
1730	Bus departure from Wolfville to Lightfoot & Wolfville Vineyard	
2000	Leave Lightfoot & Wolfville Vineyard back to Dalhousie	
2100	Workshop ends	

Details:

Markie Bus Tours company