ONC data supports latest research in tsunami modeling

Submitted by Virginia Keast Sun, 2015-03-29 16:50

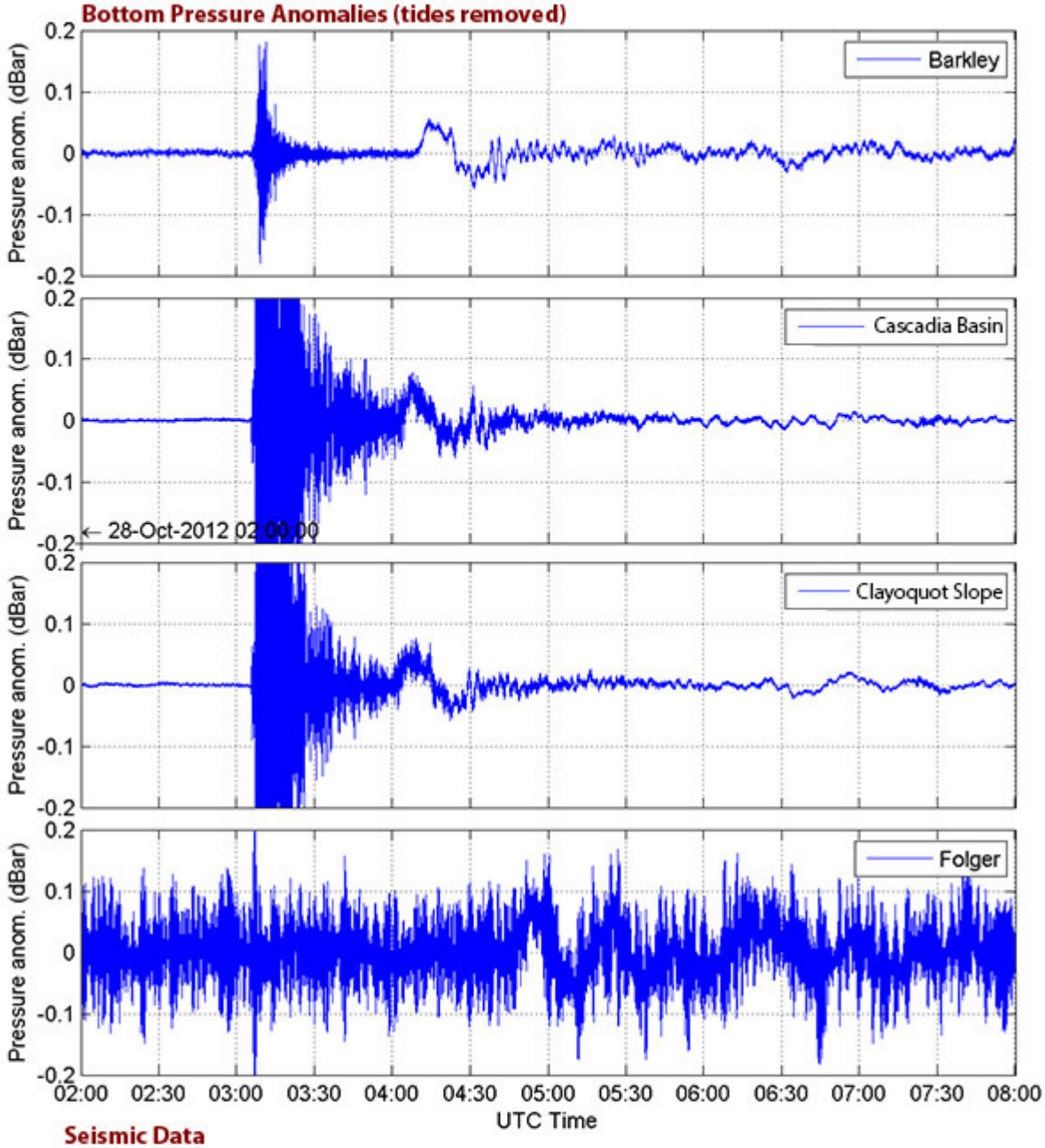
Ali Abdolali is a young tsunami scientist and doctor in coastal engineering at the University of Delaware, with a passion for pursuing mysteries of the unexplored deep sea. His findings were recently highlighted in the *Journal of Geophysical Research: Oceans, March 2015*.

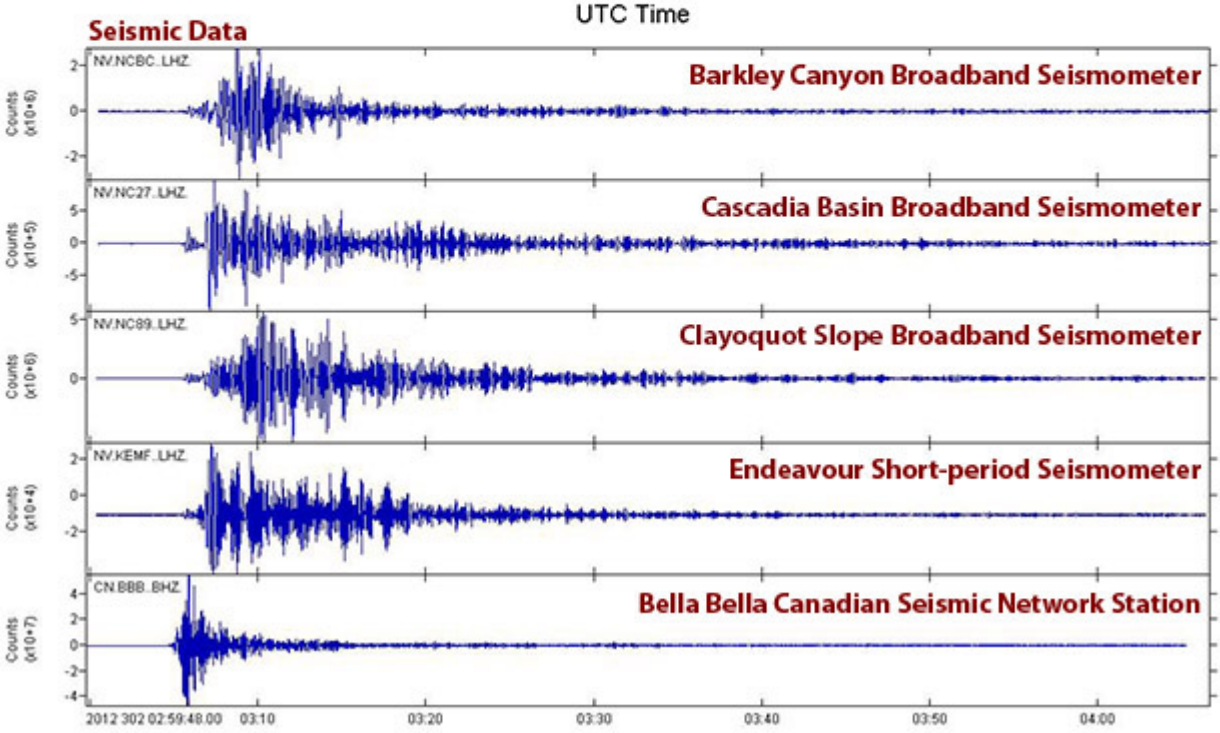
Abdolali?s research group uses Ocean Networks Canada (ONC) data collected and archived during the 2012 Haida Gwaii tsunami off Canada?s west coast to examine how precursor or ?pressure? waves may inform tsunami early warning systems.

?ONC infrastructure at NEPTUNE observing stations provided a unique dataset,? says Dr. Abdolali. ?It is really easy to access the raw data, visualize the data online and download them?.

The objective of tsunami modeling is to apply real data to develop reliable forecasts of tsunamis that propagate through the ocean and strike coastal communities. These models allow scientists to solve complex mathematical equations?requiring high performance computers?that can be applied to specific locations.

According to Dr. Abdolali, there are few deep sea observatories like ONC that are equipped with bottom pressure recorders and hydrophones, but are also capable of providing the required sampling frequency he needed for his research.


Bottom Pressure Anomalies (tides removed)
Barkley
Cascadia Basin
Clayoquot Slope
Folger
Pressure anom. (dBar)
0.2
0.1
0
-0.1
-0.2
← 28-Oct-2012 02:00:00
02:00
02:30
03:00
03:30
04:00
04:30
05:00
05:30
06:00
06:30
07:00
07:30
08:00
UTC Time


Seismic Data
NV.NCBC..LHZ
Barkley Canyon Broadband Seismometer
NV.NC27..LHZ
Cascadia Basin Broadband Seismometer
NV.NC89..LHZ
Clayoquot Slope Broadband Seismometer
NV.KEMF..LHZ
Endeavour Short-period Seismometer
CN.BBB..BHZ
Bella Bella Canadian Seismic Network Station
Counts
2012 302 02:59:48.00
03:10
03:20
03:30
03:40
03:50
04:00

Real-time data from ONC?s seismometers and bottom pressure recorders recorded the Mw 7.8 Haida Gwaii earthquake at four separate locations: Cascadia Basin, Clayoquot Slope, Barkley Canyon and Folger Passage.

Abdolali?s research group also needed seafloor seismograms from study areas, to better understand the sea bottom motion and water column behavior. With ONC seismometers also operating at four different NEPTUNE observatory sites, ?we could interpret different time series and draw their correlations,? he notes, in a recent email conversation.

In March 2014, Abdolali was invited to participate in an ONC-hosted tsunami workshop held on the 50th anniversary of the magnitude 9.2 Alaska earthquake and tsunami that struck coastal B.C. communities on 27 March, 1964. This rare gathering of leading tsunami scientists from as far away as India, Japan, France, Germany and the U.S., featured recent achievements in tsunami modeling.

After his talk on the precursor component for enhancement of Tsunami Early Warning Systems (TEWS), Dr. Abdolali ?received many comments and much interest, which helped me a lot in determining my next steps.? His research group later extended their numerical model to improve the accuracy of the calculations.

Today, Dr. Abdolali is a post-doctoral research scholar, working with Professor James T. Kirby at the University of Delaware?s Center for Applied Coastal Research. He continues to work on the application of modeling tsunami and submarine landslide events, with an interest in international collaborations seeking to better understand the ocean?s mysteries.

Related links:

- Dr. Abdolali et al Feb 2015 paper: ?Hydro-acoustic and tsunami waves generated by the 2012 Haida Gwaii earthquake: Modelling and in situ measurements.?
- Learn more in this Q&A with Dr. Ali Abdolali

Ocean Networks Canada operates a network of bottom pressure recorders and seismometers on the NEPTUNE observatory that stretches from the inner continental shelf to the deep ocean. This realtime monitoring system also captured signals from the September 2009 Samoan, February 2010 Chilean, and April 2011 Tohoku earthquakes and tsunamis.

For further information about ONC data, infrastructure and support for tsunami research, please contact: Dr. Martin Heesemann, Staff Scientist.

Categories:

- News Stories

// FIXES AMPERSAND IN BREADCRUMB var ONC_breadcrumb =

Highlights

- Audio
- Data
- Learning
- Science
- Video

Reading Room

- Active Research
- Backgrounders
- FAQs
- Glossary
- News Briefs
- News Stories
- Newsletters
- Publications

Cool Stuff

- Apps
- Digital Fishers
- iBooks & e-Pubs
- Live Video
- Maps
- Images
- State of the Ocean

Data & Tools

- Apps
- Data Plots

- Data Search
- Data Policy
- Data Help
- OPeNDAP Web Services

Opportunities

- Calendar
- Educator Opportunities
- Global Partnerships
- Industry Network
- Jobs
- Staff List
- Technology Services

Sites & Instruments

- Arctic Sites
- Northeast Pacific Sites
- Salish Sea Sites
- Notice to Mariners

Follow Us

Sign up for our newsletter

Feedback

Send us your questions and comments *

How could we improve this page?

Your Name

Your Email *

Your Location

CAPTCHA
This question is for testing whether or not you are a human visitor and to prevent automated spam submissions.

What code is in the image? *
Enter the characters shown in the image.

(function () { var d = new Date; var year = d.getFullYear();
document.getElementById("copyright-date").innerHTML = year; })();
