

## ONC data supports latest research in tsunami modeling

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

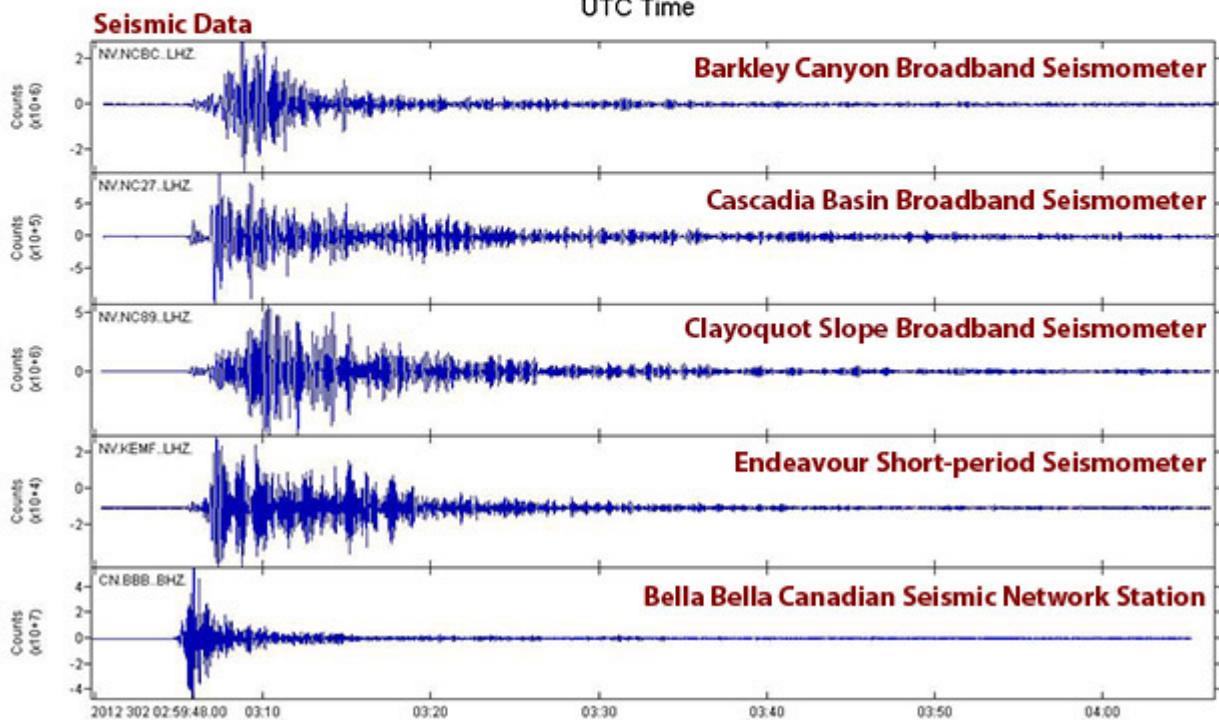
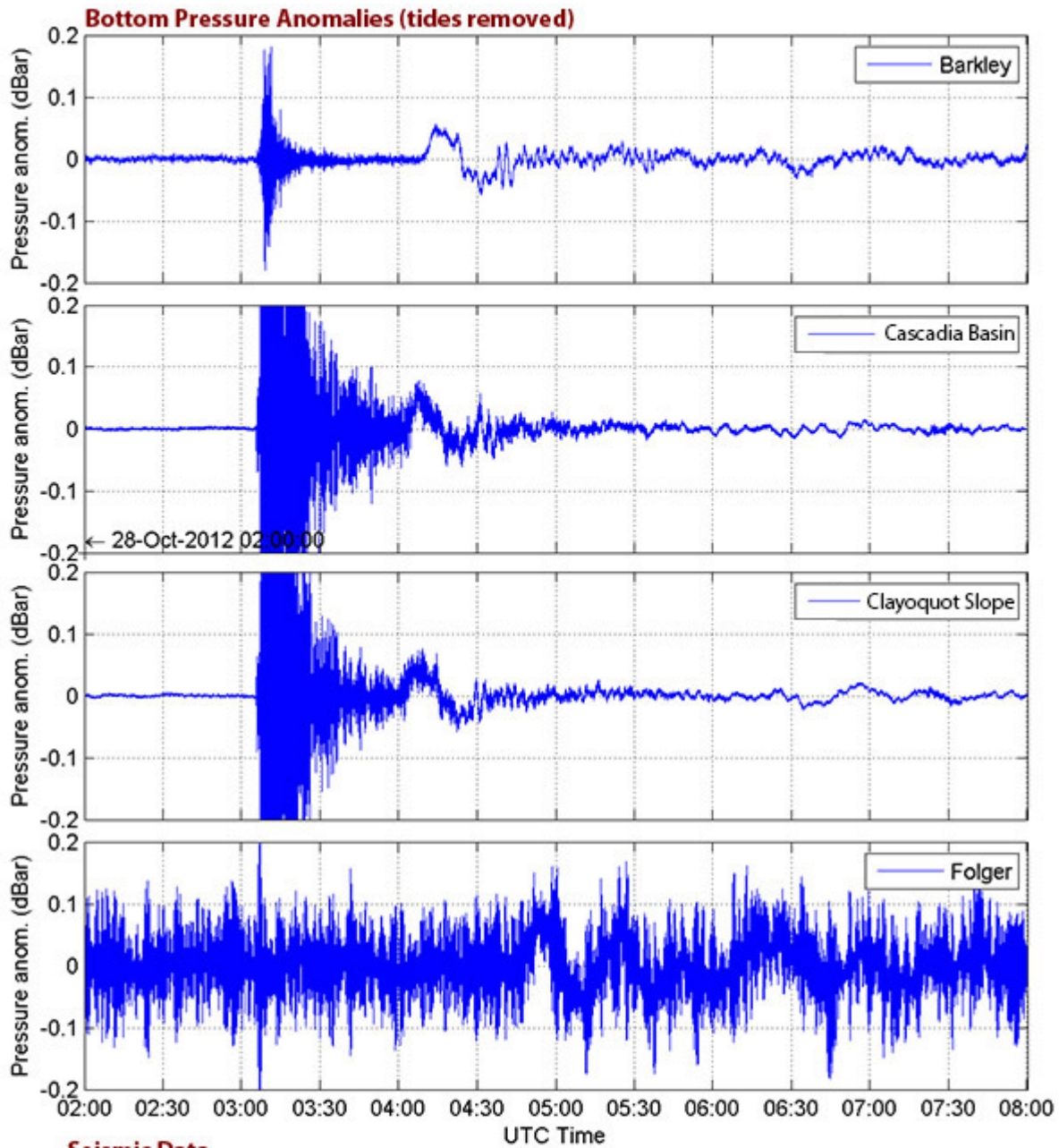
Ali Abdolali is a young tsunami scientist and doctor in [coastal engineering](#) at the University of Delaware, with a passion for pursuing mysteries of the unexplored deep sea. His findings were recently highlighted in the *Journal of Geophysical Research: Oceans, March 2015*.

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.



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.

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