Canadian Association for Earthquake Engineering (CAEE)
L'Association Canadienne du Génie Parasismique (ACGP)

NEWSLETTER

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From the Editor's Desk

by Tuna Onur

CAEE Member Voula Pantazopoulou was elected to serve as an Executive of the International Association of Earthquake Engineering from 2022 to 2026. Congratulations Voula!

This quarter our Earthquake Waves column covers another past "surprise" earthquake, this time in Atlantic Canada, demonstrating once again that major earthquakes can happen anywhere in Canada. In addition to its large magnitude and the strong shaking it caused, this earthquake was also accompanied by a large tsunami caused by the earthquake triggering a submarine slump. You can read the details of this important earthquake in the Earthquake Waves Column.

CAEE started a Distinguished Webinar Series in May on Earthquake Engineering and Seismology. Two interesting topics have already been presented as part of this series. The next one will be hosted in December on "Displacement-based design of structures". You can find more information on past and future CAEE Webinar Series in our News column. The link for the next Webinar will be posted on the CAEE web site closer to the date.

As always, we encourage you to share short articles, news or other items related to earthquake engineering to be published in our Newsletter. Please send your contributions to secretary@caee-acgp.ca

INSIDE THIS ISSUE

Voula Pantazopoulou of CAEE Elected to IAEE Executive!

by Lydell Wiebe

CAEE Member and York University Professor, Dr. Voula (S. J.) Pantazopoulou has been appointed as a New Director of the International Association of Earthquake Engineering (IAEE). The objective of the IAEE is to promote international cooperation among scientists, engineers and other professionals in the broad field of earthquake engineering through interchange of knowledge, ideas, results of research and practical experience. Among other things, the IAEE is the sponsor of the World Conference on Earthquake Engineering and the journal Earthquake Engineering & Structural Dynamics. Voula's expertise is in structural mechanics and earthquake engineering with particular emphasis in performance-based engineering, including for the assessment and retrofit of reinforced concrete structures. Voula was elected to join the Executive Committee of IAEE after nomination and voting by members of the IAEE, and will serve from 2022 to 2026.

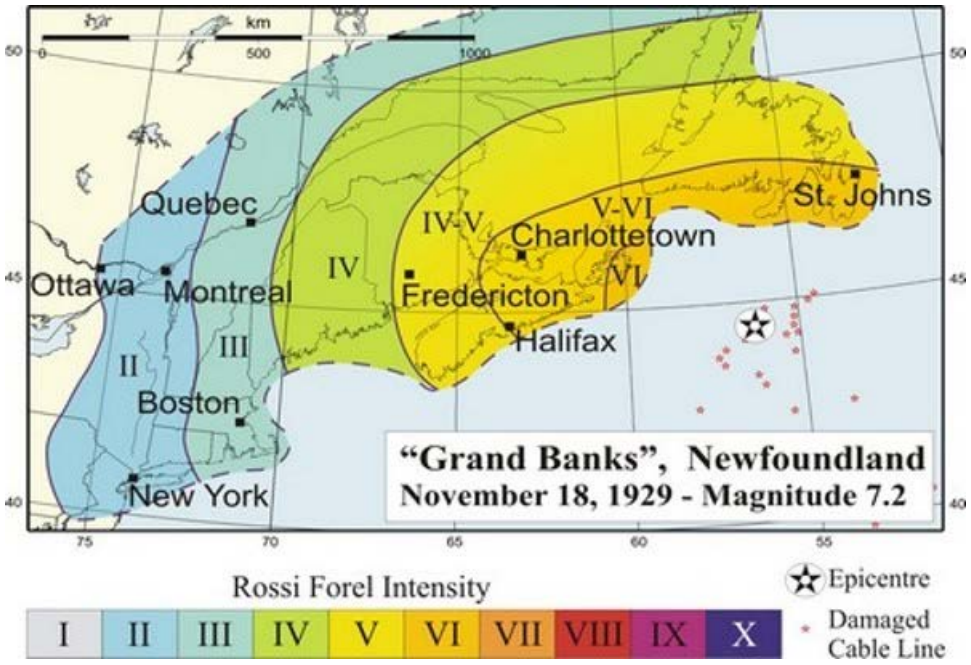
Earthquake Waves: Large Earthquakes on the Atlantic Coast? Yes – Newfoundland, 1929

by John Cassidy

Canada has remained quiet in terms of significant earthquakes during the past few months. As a result, this column will again highlight a significant historic Canadian earthquake – this one along the Atlantic coast.

At 5:02 p.m. (Newfoundland time) on November 18, 1929, a M7.2 earthquake occurred approximately 250 km south of Newfoundland along the southern edge of the Grand Banks. This earthquake was felt as far away as New York and Ottawa (both ~1500 km away). The isoseismal map in the figure below shows the distribution of shaking intensity. A number of chimneys were damaged or destroyed on Cape Breton Island (~350 km away), items were knocked from shelves and some highways were blocked by minor landslides. A few aftershocks (some as large as magnitude 6) were felt in Nova Scotia and Newfoundland but caused no damage.

The most significant and deadly impact of this earthquake was the triggering of a large submarine slump (an estimated volume of 200 cubic kilometres of material was moved on the Laurentian slope) which ruptured 12 transatlantic cables in multiple places and generated a large tsunami. Southern Newfoundland (especially the Burin Peninsula) bore the brunt of the tsunami, some homes were washed out to sea and 28 people were killed. Run-up heights of 13+ m were observed in some Newfoundland communities (details can be found at: *www.heritage.nf.ca/articles/politics/tsunami-1929.php*). The tsunami was recorded along the eastern seaboard as far south as South Carolina, and across the Atlantic in Portugal. Some minor tsunami damage was reported in Bermuda.



Isoseismal Map

Earthquake Waves… *Continued from Page 2*

This earthquake serves as another reminder that rare, damaging earthquakes strike even in those parts of Canada that we do not generally associate with earthquakes (like the Atlantic coast). It is also a reminder of the "secondary effects" of earthquakes – it is not just ground shaking that causes damage, but tsunami impacts, liquefaction, landslides, and more. Lessons learned from rare earthquakes such as this one have been incorporated into our seismic hazard models and National Building codes – but Canada currently has no design provisions for tsunamis, and we still have much to learn.

Code Corner: Coming Soon: NBC 2020

by Tuna Onur

While delayed, the 2020 Edition of the National Building Code (NBC) of Canada is due to be released soon. And there are some major changes in Subsection 4.1.8 (Earthquake Loads and Effects).

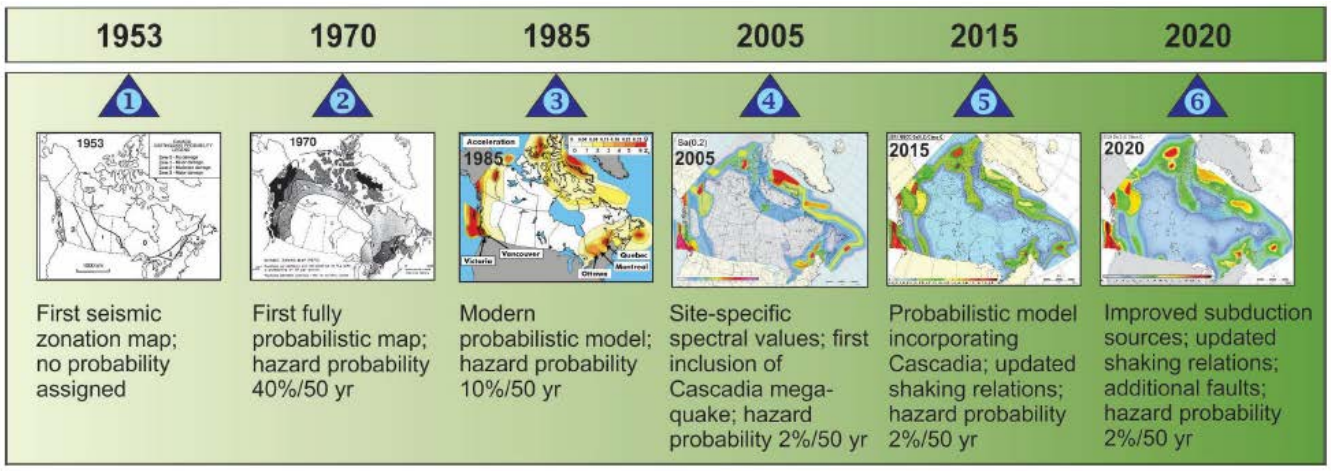
In future issues, we will cover these changes in more detail, but until then, here are some highlights:

- **New seismic hazard values:** Geological Survey of Canada released the 6th Generation Seismic Hazard Model for Canada (CanadaSHM6), that will be the basis for seismic loads in NBC 2020. You can see the progression of hazard models in NBC over time in the figure below, from Kolaj et al. (2020), presented in the 17th World Conference on Earthquake Engineering: *earthquakescanada.nrcan.gc.ca/hazard-alea/recpubs-en.php*.

- **New approach to how site amplification is treated:** Site amplification is now integrated into the hazard calculations. In other words, NBC 2020 does away with site amplification factors, F(T). Once a site designation is determined, either directly as a V_{s30} value or Site Class, the hazard values are provided directly for that designation.

- **More explicit performance goals at multiple hazard levels for a subset of buildings:** While previous Editions of NBC had implicit performance goals beyond life safety for post-disaster and High Importance Category buildings, NBC 2020 for the first time includes some explicit requirements for these buildings and a subset of Normal Importance Category buildings over a certain height at two different hazard levels.

Stay tuned for more details in future Code Corner columns!



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News

Distinguished Webinar Series from the CAEE

In May, CAEE started hosting the Distinguished Webinar Series on Earthquake Engineering and Seismology. The series kicked off with Michel Bruneau's "Perspectives on structural engineering resilience" (*caee.ca/m.bruneau/*), followed by Michal Kolaj, John Adams and Stephen Halchuk presenting on "Seismic hazard assessment in Canada for engineering applications: best practices and recent updates" (*caee.ca/seismic-hazard-assessment-in-canada-for-engineering-applications/*).

The next Distinguished Webinar will be in early December (see Upcoming Events), on "Displacement-based design of structures", to be delivered by Professor Mervyn Kowalsky (Christopher W. Clark Distinguished Professor of North Carolina State University).

News and Upcoming Events

While COVID-19 pandemic caused a shift towards online events globally, many conferences are gradually switching back to in-person format. Below, we provide information on upcoming events of both formats.

Upcoming events

EERI Distinguished Lecture Series: Lifeline Infrastructure System Functional Recovery and Operability
10 November 2021
Online
eeri.org/what-we-offer/webinars

CAEE Distinguished Webinar Series: Displacement-Based Design of Structures
1 December 2021
Online
The link will be posted on caee.ca/

Seismological Society of America (SSA) Annual Meeting
19 – 23 April 2022
Bellevue, WA
meetings.seismosoc.org/

8th Canadian Conference on Geotechnique and Natural Hazards
12 – 15 June 2022
Quebec City, QC
geohazards8.ca/

3rd European Conference on Earthquake Engineering and Seismology
19 – 24 June 2022
Bucharest, Romania
3ecees.ro/

12th US National Conference on Earthquake Engineering (NCEE) and 2022 EERI Annual Meeting
Paper submission deadline extended: 5 November 2021
27 June – 1 July 2022
Salt Lake City, UT
12ncee.org/