

SAMUEL YNIESTA

Associate Professor, Department of Civil, Geological and Mining Engineering, Polytechnique Montréal

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AREAS OF EXPERTISE

Geotechnical Earthquake Engineering, Risk Analysis, Ground Response Analysis, Probabilistic Seismic Hazard Analysis, Numerical Simulations

EDUCATION

University of California, Los Angeles (UCLA) Los Angeles, CA	Ph.D. in Civil and Environmental Engineering <u>Major:</u> Geotechnical Earthquake Engineering <u>Super Minor:</u> Structural Engineering <u>Advisor:</u> Scott Brandenberg <u>Dissertation:</u> Constitutive Modeling of Peat in Dynamic Simulations	2016
	M.S. in Civil and Environmental Engineering <u>Major:</u> Geotechnical Earthquake Engineering	2012
Ecole Spéciale des Travaux Publics (ESTP) Paris, France	M.S. in Civil Engineering <u>Major:</u> Public Works	2012
Université Claude Bernard Lyon 1 – Institut Universitaire de Technologie A Villeurbanne, France	D.U.T. (Technical University Diploma) in Civil Engineering (2-year Degree) <u>Major:</u> Public Works	2009

PROFESSIONAL CERTIFICATIONS

Professional Engineer – Ordre des Ingénieurs du Québec – No. 5079221

AWARDS

Thomas A. Middlebrooks Award (2022) – Awarded by the American Society of Civil Engineers
 Shah Family Innovation Prize (2021) – Awarded by the Earthquake Engineering Research Institute
 Polytechnique's Foundation Award for New Professors (2017)

PUBLICATIONS AND PRESENTATIONS

Journal Publications (* student advised):

Razavi, K.*, & Yniesta, S. (2023). "PolySand-Wfines Model – Extended PolySand Model to Simulate the Monotonic Behaviour of Granular Materials with Different Fines Content." *Submitted to the International Journal of Geomechanics*

Razavi, K.*, & Yniesta, S. (2023). "PolySand Model, a Modified Cambridge Type NorSand Model to Simulate the Monotonic Behavior of Granular Materials" *Submitted to the International Journal of Geotechnical Engineering*.

Contreras, C.*, Yniesta, S., and Aubertin, M. (2023). "Improvement of tailings impoundment seismic and post-seismic stability using densification and waste rock inclusions." *Canadian Geotechnical Journal*. 60 (11), 1629-1644. <https://doi.org/10.1139/cgj-2022-0196>

Razavi, K.*, & Yniesta, S. (2023). "Implementation of a nonlinear state-dilatancy law in the NorSand Model" *Submitted to the International Journal of Geomechanics*

- Contreras, C.*, **Yniesta, S.**, Jahanbakhshzadeh, A., and Aubertin, M. (2023). "Calibration of the PM4Sand Model for Hard-Rock Mine Tailings Based on Laboratory and Field Tests." *Canadian Geotechnical Journal*. 60(7): 966-977. <https://doi.org/10.1139/cgj-2021-0257>
- Contreras, C.*, **Yniesta, S.**, and Aubertin, M. (2022). "Seismic and Post Seismic Stability of Tailings Impoundments with Upstream Dikes." *In revisions for the International Journal of Geotechnical Engineering*.
- Bessette, C.*, & **Yniesta, S.** (2022). "Assessment of the Prediction of Ground Motion Parameters in 1D Ground Response Analysis Using Data from Seismic Arrays and Centrifuge Experiments." *Earthquake Spectra*. 2023;39(2):1140-1165. doi:10.1177/87552930221150828
- Zarrabi, M.*, Eslami, M. M., & **Yniesta, S.** (2022). "Application of an Optimization Algorithm for Calibrating Soil Bounding Surface Plasticity Models for Cyclic Loading." *International Journal of Geomechanics*, 22(5), 04022037.
- Zafarani, A. R.*, **Yniesta, S.**, and Aubertin, M. (2022). "A dynamic numerical investigation to assess the optimal configuration of waste rock inclusions for seismic stability of tailings impoundments." *In revision for the Canadian Geotechnical Journal*.
- Zafarani, A. R.*, **Yniesta, S.**, and Aubertin, M. (2022). "Numerical procedure and design guidelines for seismic stability of tailings impoundments with waste rock inclusions." *In revision for the Geotechnical and Geological Engineering journal*.
- Bessette, C.*, & **Yniesta, S.** (2021). "Investigation of the Performance of Simplified Constitutive Models in Nonlinear 1D Effective Stress Ground Response Analysis." *Bulletin of the Seismological Society of America*, 111 (4): 1954–1973.
- Lemnitzer, A., **Yniesta, S.**, Cappa, R. & Brandenburg, S.J. (2021). "Settlement Rate Increase in Organic Soils Following Cyclic Loading." *Journal of Geotechnical and Geoenvironmental Engineering*, 147(2).
- Yniesta, S.** & Janati-Idrissi, M.* (2020). "Integration of Viscoplastic Effects in a One-Dimensional Constitutive Model for Ground Response Analysis". *Canadian Geotechnical Journal*. 58(4), 468-478.
- Afacan, K.B. , Shafiee, A., **Yniesta, S.**, Stewart, J.P., and Brandenburg, S.J (2019) "Total Stress Analysis of Soft Clay Ground Response in Centrifuge Models" *Journal of Geotechnical and Geoenvironmental Engineering*, Vol. 145, 10
- Yniesta, S.**, Brandenburg, S.J., and Shafiee A. (2017) "One-dimensional Non-linear Model for Ground Response Analysis" *Soil Dynamics and Earthquake Engineering*, 102, 75-85.
- Yniesta, S.**, Brandenburg, S.J., (2016) "Stress-Ratio-Based Interpretation of Modulus Reduction and Damping Curves" *Journal of Geotechnical and Geoenvironmental Engineering* 10.1061/(ASCE)GT.1943-5606.0001585 , 06016021.
- Lemnitzer, A., Cappa, R., **Yniesta, S.** and Brandenburg, S.J. (2016) "Centrifuge Testing of Model Levees atop peaty soils: experimental data". *Earthquake Spectra* August 2016, Vol. 32, No. 3, pp. 1903-1924.
- Yniesta, S.**, Lemnitzer, A., Cappa, R., and Brandenburg, S.J. (2015) "Vacuum Pluviation Device for Achieving Saturated Sand" *Geotechnical Testing Journal*, 38 (3), 355-360

Conference Papers (* student advised):

- Razavi, K.*, Hadidi, K., and **Yniesta, S.** (2023). "Influence of material damping characteristics on the seismic behavior of rock-fill dams." Proceedings, GeoSaskatoon, Saskatoon Canada, Oct. 1-4 2023
- Razavi, K.*, & **Yniesta, S.** (2023). "On the numerical issues of the NorSand model in the simulation of undrained behavior of granular soils." Proceedings, GeoSaskatoon, Saskatoon Canada, Oct. 1-4 2023
- Zafarani, A. R.*, **Yniesta, S.**, and Aubertin, M. (2021). "On the selection of ground motion intensity measures to evaluate the seismic stability of tailings impoundments." Proceedings, GeoNiagara, Niagara Falls, Canada, Sept. 26-29 2021

- Aubertin, M., Jahanbakhshzadeh, A., Saleh Mbemba, F., **Yniesta, S.**, and Pednault, C. (2021). "General guidelines for the design and construction of waste rock inclusions in tailings impoundment." Proceedings, GeoNiagara, Niagara Falls, Canada, Sept. 26-29 2021
- Zafarani, A., **Yniesta, S.**, Aubertin, M. (2020) "Effect of Height and Downstream Slope on the Seismic Behavior of Tailings Impoundments Reinforced With Waste Rock Inclusions." Proceedings, Geovirtual, Sept. 14-16 2020
- Contreras, C., **Yniesta, S.**, Aubertin, M. (2020) "Seismic and post-seismic stability of tailings impoundments, considering the effect of reinforcement inclusions." Proceedings, Geovirtual, Sept. 14-16 2020
- Huo-Kang, J. & **Yniesta, S.** (2020) "Impact of Seismic Hazard on the Ground Response in Eastern North America." Proceedings, Geovirtual, Sept. 14-16 2020
- Bessette, C., & **Yniesta, S.** (2020) "Prediction of ground motion parameters in 1D ground response analysis." Proceedings, Geovirtual, Sept. 14-16 2020
- Zhang Z., **Yniesta S.**, & Plaisant A. (2020) "The importance of Site-Specific Seismic Nonlinear Ground Analysis in Eastern Canada." Proceedings, Geovirtual, Sept. 14-16 2020
- Zarrabi, M., Shi, Z., **Yniesta, S.**, Buscarnera, G., (2020) "Simulation of the Cyclic Response of Anisotropic Clay through Bounding Surface Viscoplasticity." Proceedings, Geovirtual, Sept. 14-16 2020
- Bessette, C. *, **Yniesta, S.** (2019) "Evaluation of existing constitutive models in nonlinear 1D effective stress ground response analysis" Proceedings GeoSt.John's 2019, St John's, NL, September 29th to October 2nd 2019
- Zarrabi, M. *, **Yniesta, S.** (2019) "Recent Advanced Constitutive Models for Liquefaction and Cyclic Softening Analysis" Proceedings GeoSt.John's 2019, St John's, NL, September 29th to October 2nd 2019
- Jahanbakhshzadeh A., Aubertin, M., **Yniesta, S.**, Zafarani, A. * (2019) "On the seismic response of tailings dikes constructed with the upstream and center-line methods" Proceedings GeoSt.John's 2019, St John's, NL, September 29th to October 2nd 2019
- Lemnitzer A., Cappa R., **Yniesta S.**, Stewart J., Brandenburg S. (2019) "Post-Earthquake Settlement of Levees on Peat" XVII European Conference on Soil Mechanics and Geotechnical Engineering, Reykjavík, Iceland, September 1-4 2019
- Aubertin, M., Jahanbakhshzadeh A, **Yniesta, S.** (2019) "The effect of waste rock inclusions on the seismic stability of a tailings impoundment" Proceedings 7ICEGE, Roma, Italy, June 17-20 2019
- Yniesta, S.** (2019) "Ground response in the September 19th 2017 Mw = 7.1 central Mexico earthquake" Proceedings 7ICEGE, Roma, Italy, June 17-20 2019
- Eslami, M. M., Zarrabi, M. *, **Yniesta, S.** (2019). "Evaluation of two constitutive models in predicting cyclic behavior of a natural clay." Proceedings 7ICEGE, Roma, Italy, June 17-20 2019
- Lo, R., **Yniesta, S.** (2019) "Geoscience Aspect of September 19, 2017 Mexico Puebla-Morelos Earthquake" Proceedings 12th Conference on Earthquake Engineering, Québec City, QC, June 17-20 2019
- Eslami, M.M., Zarrabi, M. *, **Yniesta, S.** (2019). "Performance of Bounding Surface Constitutive Models in Predicting Cyclic Behavior of Low-Plasticity Fine-Grained Soils." Proceedings Geo-Congress 2019, Philadelphia, Pennsylvania (pp. 57-66), February 25-28 2019
- Janati-Idrissi*, M., **Yniesta, S.**, 2018 Integration of Viscoplastic Effects in Nonlinear Ground Response Analysis, Geotechnical Earthquake Engineering and Soil Dynamics V conference, Austin, TX, June 10-13 2018 (accepted)
- Yniesta, S.**, Brandenburg, S.J. 2018 A Constitutive Model Controlling Damping for 2D and 3D Site Response, Geotechnical Earthquake Engineering and Soil Dynamics V conference, Austin, TX, June 10-13 2018 (accepted)
- Yniesta, S.**, Brandenburg, S.J. 2017 Influence of Misfit of Desired Damping Response in Nonlinear Ground Response Analysis, *Proceedings*, 3rd International Conference on Performance-Based Design in earthquake Engineering (PBD-III), Vancouver, Canada, July 16-19 2017

Lemnitzer, A., Cappa, R., **Yniesta, S.**, Stewart, J.P. and Brandenburg, S.J. 2017 Post-Cyclic Settlements of a Levee Structure on Organic Soil during Centrifuge Testing, *Proceedings*, 3rd International Conference on Performance-Based Design in earthquake Engineering (PBD-III), Vancouver, Canada, July 16-19 2017

Yniesta, S., and Brandenburg, S.J. "Unloading Reloading Rule for a One-dimensional Non-linear Model for Site Response Analysis" *Proceedings*, 6th International Conference on Earthquake Geotechnical Engineering (6ICEGE), Christchurch, New Zealand, November 1-4, 2015

Cappa, R., **Yniesta, S.**, Brandenburg, S.J and Lemnitzer, A. (2015) "Settlements and excess pore pressure generation in peaty soils under embankments during cyclic loading" *Proceedings*, 6th International Conference on Earthquake Geotechnical Engineering (6ICEGE), Christchurch, New Zealand, November 1-4, 2015

Cappa, R., **Yniesta, S.**, Lemnitzer, A., Brandenburg, S. and Shafiee, A. (2015). "Settlement Estimations of Peat during Centrifuge Experiments" *Proceedings*, International Foundations Congress and Equipment Exposition (IFCEE), San Antonio, Texas, March 17-21, 2015

Yniesta, S., Cappa, R., Lemnitzer, A. and Brandenburg, S. (2015). "Centrifuge Testing of Levees: Saturation Techniques during Model Construction" *Proceedings*, International Foundations Congress and Equipment Exposition (IFCEE), San Antonio, Texas, March 17-21, 2015

Cappa, R., **Yniesta, S.**, Lemnitzer, A., Brandenburg, S.J., and Stewart, J.P. (2014). "Centrifuge Experiments to Evaluate the Seismic Performance of Levees on Peaty Soils in the Sacramento-San Joaquin Delta" *Proceedings*, Dam Safety Conference, San Diego, CA, September 21-25, 2014

Reports:

Saatcioglu, M., Robert Lo, R., Yniesta, S., Lau, D., Cruz, C., Guzman Sanchez, O., Huffman, S. (2019) "September 19, 2017 Puebla-Morelos Earthquake in Mexico Reconnaissance Report" Canadian Association for Earthquake Engineering

Cappa R., **Yniesta S.**, Brandenburg S.J., Lemnitzer A., Stewart J.P. (2014). Averting an Impending Disaster. Data Report for Centrifuge Experiments 12L and 13L. *Data report for NEES* https://nees.org/groups/nees_2012_1161

Cappa R., **Yniesta S.**, Brandenburg S.J., Lemnitzer A., Stewart J.P. (2014). Averting an Impending Disaster. Data Report for Centrifuge Experiments 14L and 15L. *Data report for NEES* https://nees.org/groups/nees_2012_1161

Selected Presentations (Presenters are underlined):

Yniesta S. "Geotechnical Earthquake Engineering Practice in Eastern Canada", UCLA Geotechnical Seminar, December 2nd 2022 (Invited talk)

Yniesta S. "Réponse Sismique des Dépôts Sédimentaires dans la Conception de Ponts", Colloque sur la progression de la recherche québécoise sur les ouvrages d'art (MTQ), May 6th 2021 (in French)

Yniesta S. "Past, Present and Future Use of 1D Ground Response Analysis", Oregon State University Geotechnical Lecture Series, May 19th 2021 (Invited talk)

Yniesta S., Brandenburg S.J. "A Constitutive Model Controlling Damping for 2D and 3D Site Response", *Geotechnical Earthquake Engineering and Soil Dynamics V conference, Austin, TX, June 10-13 2018*

Yniesta S., Brandenburg S.J. "Influence of Misfit of Desired Damping Response in Nonlinear Ground Response Analysis." *3rd International Conference on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III), Vancouver BC, July 16-19 2017*

Yniesta S. "A Constitutive Model for Site Response." *Engineering Mechanics Institute Conference, San Diego CA, June 4-7 2017*

Lemnitzer A., Brandenburg S.J., Cappa R., **Yniesta S.** "Levees, peat, earthquakes – rethinking settlements of organic soils under cyclic loading" Invited Lecture, 16th World Conference on Earthquake Engineering, Santiago, Chile, January 10th 2017

Yniesta S. "Centrifuge Experiments to Evaluate the Seismic Performance of Levees on Peaty Soils in the Sacramento San Joaquin Delta." *Midi-Conference, Department of Civil, Geological and Mining Engineering, Ecole Polytechnique of Montréal. Montréal QC, October 24th 2016*

Yniesta S., Brandenburg S.J. "A Constitutive Model Controlling Dynamic Properties for 2D Site Response." *Engineering Mechanics Institute Conference, Nashville TN, May 22nd 2016*

Yniesta S., Brandenburg S.J. "Constitutive Modeling of Soil in Dynamic Simulations." *Geocongress, Phoenix AZ, February 17th 2016*

Yniesta S., and Brandenburg, S.J. "Unloading Reloading Rule for a One-dimensional Non-linear Model for Site Response Analysis" *6th International Conference on Earthquake Geotechnical Engineering (6ICEGE), Christchurch, New Zealand, November 1-4, 2015*

Yniesta S., Cappa R., Brandenburg S.J., Lemnitzer A., "Centrifuge Testing of Levees: Saturation Techniques during Model Construction." *Geocongress, San Antonio TX, March 19th 2015*

Yniesta S. "Soil Modeling in Site Response Analysis". *Geotech Round Table, UCLA, February 25th 2015*

Yniesta S. "Centrifuge Experiments to Investigate Levee Deformation Potential in the Sacramento San Joaquin Delta." *Presentation to the Department of Water Resources, Sacramento CA, October 23rd 2014*

Cappa R., **Yniesta S.**, (2014). "Centrifuge Experiments to Evaluate the Seismic Performance of Levees on Peaty Soils in the Sacramento San Joaquin Delta." *ASDSO Conference, San Diego CA, September 23rd 2014*

Yniesta S., **Cappa R.** (2014). "Centrifuge Experiments to Investigate Levee Deformation Potential in the Sacramento San Joaquin Delta." *CalGeo Expo, UCLA, May 30th 2014*

Lemnitzer A., **Cappa R.**, **Yniesta S.**, Brandenburg S., Schmutte C. (2014). "Centrifuge Experiments to Investigate Levee Deformation Potential in the Sacramento San Joaquin Delta." *ASCE Geoinstitute, San Diego CA, May 28th 2014*

Curated Datasets:

Cappa R., **Yniesta S.**, Brandenburg S.J., Stewart J.P., Lemnitzer A. (2014). "TEST 12L - RCK01: Part 1 - 9m radius centrifuge experiment on clayey levee behavior under ground motions", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D34M91B6S

Cappa R., **Yniesta S.**, Brandenburg S.J., Stewart J.P., Lemnitzer A. (2014). "TEST 13L - RCK01: Part 2 - 9m radius centrifuge experiment on sandy levee behavior under ground motion", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D30V89J2N

Cappa R., **Yniesta S.**, Brandenburg S.J., Stewart J.P., Lemnitzer A. (2014). "TEST 14M - RCK02 : Part 1 - 9m radius centrifuge experiment on clayey levee behavior under ground motions", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3W37KW7Z

Cappa R., **Yniesta S.**, Brandenburg S.J., Stewart J.P., Lemnitzer A. (2014). "TEST 15M - RCK02 : Part 2 - 9m radius centrifuge experiment on sandy levee behavior under ground motions", Network for Earthquake Engineering Simulation (distributor), Dataset, DOI:10.4231/D3RB6W337

IN THE NEWS

Medium	Title	Date
Le Devoir <i>Newspaper (in French)</i>	The debate on the aerial light rail downtown is not calming down <i>Le débat sur le REM aérien au centre-ville ne s'apaise pas</i>	2021-02-24
CAA-Québec <i>Website (in French)</i>	Do we really have the worst roads in Québec? <i>Avons-nous vraiment les pires routes au Québec?</i>	2019-05-08
Plan	From Mexico to Montréal : what we can learn from an earthquake	2018-05-01

Magazine (in French) *De Mexico à Montréal : ce que nous apprend un séisme*
 ABC 10, Sacramento
 TV Leading earthquake research lab at UC Davis

2014-03-17

STUDENTS

Current Students:

Ph.D. students:		<u>Since</u>
Mohamed Ben Romdhane	<i>Stability of retaining walls under high frequency loading</i>	01-2022
Abdelhalim Laouni	<i>Stone-columns design optimization</i>	01-2022
Simon Dufort Co-supervised with Prof. Françoise Bichai	<i>Resiliency of a water distribution network following an earthquake</i>	06-2021

Former students

Ph.D. students:

Mohammad Zarrabi	<i>A viscoplastic constitutive model for cyclic clay behavior</i>	01-2017 to 01-2021
Ali Reza Zafarani Co-supervised with Prof. Michel Aubertin	<i>Design guidelines for the seismic stability of tailings impoundment</i> Winner of the Branko Ladanyi 2020 Competition and the best student paper award Geovirtual 2020.	01-2018 to 08-2022
Carlos Contreras Co-supervised with Prof. Michel Aubertin	<i>Seismic stability analysis of a tailings impoundment</i>	01-2018 to 05-2022
Seyyed Kazem Razavi	<i>Constitutive modeling of static liquefaction of tailings</i>	09-2020- to 12-2023

Master's students:

Arvin Yazdani	<i>Liquefaction due to mining-induced motions</i>	09-2021 to 12-2023
Simon Dufort Co-supervised with Prof. Françoise Bichai	<i>Consequences of a seismic event on a water distribution network</i>	06-2021 to 12-2022
Charles Parent-Lachance	<i>Static liquefaction of tailings impoundments</i>	05-2020 to 01-2022
Zi-Jing (Jim) Zhang	<i>Site-Specific Seismic Nonlinear Ground Analysis on Sample Soil Profiles in Eastern Canada</i>	01-2019 to 05-2021

Jessica Huo Kang	<i>Impact of seismic hazard on the performance on an earth dike in Eastern North America</i>	01-2019 to 05-2021
Caroline Bessette	<i>Evaluation of existing constitutive models in nonlinear 1D effective stress ground response analysis</i>	05-2018 to 01-2020
Mallak Janati Idrissi	<i>Integration of viscoplastic effects in nonlinear ground response analysis</i>	09-2016 to 04-2019
Undergraduate students:		
Simon Dufort	<i>Consequences of a seismic event on a water distribution network</i>	06-2020 to 09-2020
Chaymaà Kamal Alaoui	<i>Ground response analysis at the Delaney Park downhole array</i>	01-2019 to 06-2019
Filip Djogo	<i>Seismic stability of four clayey slopes in Québec</i>	09-2018 to 06-2019
Felipe Gomes Mestriner	<i>Seismic slope stability in sensitive clays</i>	09-2017 to 06-2018
Jérémie Vuong	<i>Effect of temperature on soil's dynamic properties</i>	06-2017 to 06-2018
Jorge Ramos	<i>Site period lengthening in strong events</i>	08-2017 to 12- 2017
Ibrahima Sylla	<i>Literature review of seismic slope stability in sensitive clays</i>	06-2017 to 08-2017

RESEARCH EXPERIENCE

Assistant Professor, Polytechnique Montréal, Montréal, QC, Canada **May 2016 – May 2022**

Associate Professor, Polytechnique Montréal, Montréal, QC, Canada **June 2022- Present**

Current Research Projects (non-exhaustive):

May 2016 - Present

- Study of seismically induced landslides in sensitive clay
- Seismic and static stability of tailings impoundments
- Stone-columns design optimization
- Mining-induced seismicity
- Consequences of an earthquake on a water distribution network

Funding:

- Funding program for new professors at Polytechnique Montréal (PIED) - \$50,000 - Oct. 2016/ Oct. 2018 - PI
- Grant of Polytechnique's Foundation for new professors – \$15,000 - Oct. 2017/ Oct. 2018- PI
- Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery – \$100,000 - April 2017/April 2022 - PI
- Fonds de Recherche du Québec Nature et Technologies (FRQNT) young researchers - \$86,000 – April 2018/April 2020 - PI
- Engage grant in collaboration with WSP - \$25,000 – May to December 2019 - PI
- Mitacs Acceleration in collaboration with Ménard Canada - \$125,000 – September 2022 to August 2025 - *Stone-columns design optimization* - PI
- FRQNT Programme de recherche en partenariat sur le développement durable du secteur minier - \$313,690 – May 2020 to April 2024 – New approaches to evaluate and reduce the geotechnical risks of active mines tailings stored at the surface - PI
- FRQNT Programme de recherche en partenariat sur le développement durable du secteur minier - \$ 483,000 - May 2020 to April 2024 – Development of hydrogeotechnical and operational criteria to improve the long term stability of waste rock disposal piles. – co-PI
- NSERC Alliance Grants - CNSC - Small Modular Reactors - March 2023 to May 2026 - \$360,000 - Geotechnical and Structural Paradigms for the Design, Implementation, and Operation of Small Modular Reactors in Canada's North – co-PI

Graduate Student Researcher, University of California Los Angeles

Sept. 2012 - March 2016

PI: Professeur Scott Brandenburg

Project Funded by NEESR: "Levees and Earthquakes: Averting an Impending Disaster"

NSF# 1208170 (\$651,000)

OTHER WORK (SELECTED)

Teaching and Mentoring:

Co-instructor of a 3h-course on the design of tailings impoundments – 2021 Symposium on mines and environment (CIM)

June 17th 2021

**Polytechnique Montréal - Department of Civil, Geological and Mining Engineering
Assistant Professor**

Since May 2016

- CIV3415 – Soil mechanics - 3rd year
- CIV3420 – Foundation engineering - 3rd year
- CIV6405 – Geotechnical engineering (co-instructor) – graduate level
- CIV6414 – Geotechnical earthquake engineering (created the course) :
 - Liquefaction
 - Cyclic Softening
 - Seismic Hazard Analysis
 - Site Response Analysis

**University of California, Los Angeles – Department of Civil and Environmental Engineering
Teaching Assistant (CEE123 Advanced Geotechnical Design)**

April. 2015 - June 2015

Engineering Consulting (non-exhaustive):

BBA

July 2023 – Present

- Training sessions in Geotechnical Earthquake Engineering

ENGLOBE

June 2021 – March 2022

- External Expert for Nonlinear Ground Response Analysis

FNX-Innov

March 2021 – Present

- External Expert for Nonlinear Ground Response Analysis

ABS

August 2021 – Present

- External Expert for Nonlinear Ground Response Analysis

Ménard Canada

June 2021 – Present

- Training sessions in Geotechnical Earthquake Engineering on:
 - Liquefaction
 - Ground Response Analysis (using Deepsoil)
 - 2D and 3D Site Response Analysis

Génitique

Feb 2018 – Apr 2018

- Static and seismic stability analysis of a water-retaining dyke

SERVICE

**Co-author of the Geotechnical Earthquake Engineering chapter of the Canadian
Foundation Engineering Manual for the following sections**

September 2019 - Present

- Elementary Seismology

- Seismic Hazard
- Site Response Analysis
- Liquefaction

Member of the Academic Committee	2022 – Present
Member of the Fraud Committee	2018 - Present
In charge of advising foreign exchange students within the department of Civil Engineering	September 2018 – 2023
Representative of the department of Civil, Geological and Mining Engineering, at the professors' association of Polytechnique board meeting (APEP)	May 2017 – 2023
Coordination of the Hiring Process of the Civil, Geological and Mining Department Chair	2021, 2022
Participation to the COCEP meetings, the Industry Advisory Board of the department	2019 - 2022
Member of the committee in charge of reviewing the programs within the department of Civil Engineering	2019 - 2022
Selection committee for the Quebec Infrastructures Company (SQI) for engineering professional services contracts in geotechnical engineering	2020
Judge for the annual student competition of the Canadian Geotechnical Society	2020
Member of the jury for the ACFAS competition – Natural Resources	2019
Member of the reconnaissance team of the Canadian Association of Earthquake Engineering following the September 19th earthquake in central Mexico.	October 2017
Scholarly review for more than 10 conferences and journals and for multiple grant application	Apr. 2013 - Present

AFFILIATIONS

Member of the multi-institutional strategic research cluster dedicated to the safety of civil engineering structures subjected to extreme effects induced by natural hazards – CEISCE (since 2018)
 Geotechnical Extreme Events Reconnaissance association – GEER (since 2017)
 Canadian Geotechnical Society – CGS (since 2016)
 Canadian Association of Earthquake Engineering - CAEE (since 2017)
 Earthquake Engineering Research Institute - EERI (since 2015)
 American Society of Civil Engineers – ASCE (since 2015)

LANGUAGES

English – Fluent
 French – Native
 Italian – Proficiency in reading and writing