

## The 7th International Symposium on Three-Dimensional Electromagnetics

Earth Science Building, University of British Columbia  
2207 Main Mall, Vancouver, BC V6T 1Z4

....

### Sunday, November 12

6pm - 8pm      Informal gathering at Browns Crafthouse UBC  
*101 - 6111 University Blvd*

### Monday, November 13

8:30 - 9:00      Registration  
9:00 - 9:30      Welcome and Introductory Remarks  
9:30 - 10:30     Forward Modelling (part 1)  
10:30 - 11:00    Coffee Break  
11:00 - 12:00    Forward Modelling (part 2)  
12:00 - 1:30     Lunch  
1:30 - 3:00      Data: Physics & Theory  
3:00 - 3:30      Coffee Break  
3:30 - 4:15      Poster Lightning Talks  
4:15 - 6:30      Poster Reception

### Tuesday, November 14

9:00 - 10:30     Inversion (part 1)  
10:30 - 11:00    Coffee Break  
11:00 - 12:00    Inversion (part 2)  
12:00 - 1:30     Lunch  
1:30 - 3:00      Data Acquisition & Instrumentation (part 1)  
3:00 - 3:15      Group Photo  
3:15 - 3:45      Coffee Break  
3:45 - 5:15      Data Acquisition & Instrumentation (part 2)  
5:30 - 10:00     Banquet at Cecil Green Park House  
*6251 Cecil Green Park Rd*

### Wednesday, November 15

9:30 - 10:30     Case Studies (part 1)  
10:30 - 11:00    Coffee Break  
11:00 - 12:00    Case Studies (part 2)  
12:00 - 12:30    Concluding remarks

## Locations

### Sessions: ESB 1012

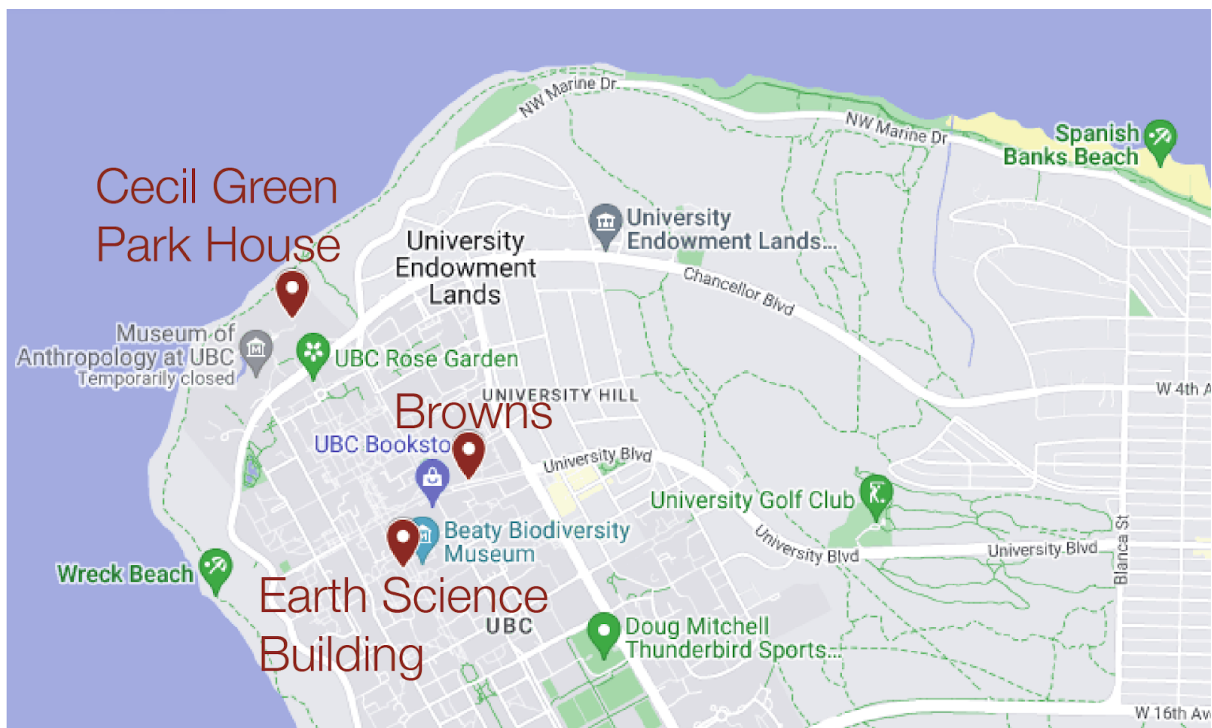
Earth Science Building at UBC  
2207 Main Mall, Vancouver, BC V6T 1Z4

### Ice Breaker: Browns Craffhouse UBC

6111 University Blvd Unit 101, Vancouver, BC V6T 0C7

### Banquet: Cecil Green Park House

6251 Cecil Green Park Rd, Vancouver, BC V6T 1X8



Thanks to the sponsors of 3DEM-7



And thanks to the organizers



## Monday, November 13

- 8:30 - 9:00 Registration
- 9:00 - 9:30 Welcome and Introductory Remarks  
*Lindsey Heagy and David Alumbaugh*
- 9:30 - 10:30 Forward Modelling (part 1)  
*chair: Dikun Yang*
- FEMALY: A Finite Element MAtlab LibrarY for Electromagnetics  
*Klaus Spitzer, Jan Blechta, Jana Börner, Ralph-Uwe Börner, Michael Eiermann, Oliver Ernst, and Mathias Scheunert*
- An adaptive finite element solver for three-dimensional electromagnetic inductions  
*Jianbo Long*
- 10:30 - 11:00 Coffee Break
- 11:00 - 12:00 Forward Modelling (part 2)  
*chair: Evan Um*
- On the Robustness, Efficiency and Scalability of an Iterative Framework in Combination With the Block-Based PREconditioner For Square Blocks PRESB Applied To Controlled-Source Electromagnetic Modelling  
*Michael Weiss, Thomas Kalscheuer, and Maya Neytcheva*
- Rapid 3D finite-difference modelling for magnetotellurics based on Reduced Basis Method  
*Hao Dong and Yijie Cui*
- 12:00 - 1:30 Lunch
- 1:30 - 3:00 Data: Physics & Theory  
*chair: Klaus Spitzer*
- Understanding problems in old MT data using modern methods  
*Alan G. Jones, Randall Mackie, and Wolfgang Soyer*
- Negative transients in central-loop time-domain electromagnetic data: Induced polarization or 3D coupling effect?  
*Dikun Yang, Ming Cheng, and Qiang Luo*
- Impacts of magnetic permeability on electromagnetic data collected in settings with steel-cased wells  
*Lindsey J. Heagy and Douglas W. Oldenburg*
- 3:00 - 3:30 Coffee Break
- 3:30 - 4:15 Poster Lightning Talks
- 4:15 - 6:30 Poster Reception
- 3D inversion of semi-airborne magnetometric resistivity data  
*Zhongchang Chen and Dikun Yang*
- Conductivity structure beneath Australia constrained by 3-D inversion of MT Tippers in spherical geometry  
*Filippo Cicchetti*
- 3D AMT/MT case histories from Brazil  
*Patricia de Lugão*
- 3D minimum-structure inversion for CSEM problems using potentials and

unstructured tetrahedral grids

*K.B. Kara and C.G. Farquharson*

Targeting epithermal Au-Ag using helicopter VTEM 1D resistivity and 3D magnetic inversion results, and radiometric data at Lawyers Project, North-Central BC, Canada

*Karl Kwan, Jean Legault, Jim Greig, Ewan Webster and Mark Hanki*

A parallel adaptive finite-element method for 3-D large-scale controlled-source electromagnetic forward modelling with hierarchical tetrahedral grids

*Z. Liu, Z. Ren, H. Uao, J. Tang, X. Lu, and C.G. Farquharson*

Fast 3D magnetotelluric forward modeling using survey decomposition

*Lian Liu, Dikun Yang*

Using convolutional neural networks to classify UXO with multicomponent electromagnetic induction data

*Jorge Lopez-Alvis, Lindsey J. Heagy, Douglas W. Oldenburg, Stephen Billings and Lin-Ping Song*

2.5D Inversion of frequency-domain Land CSEM data using Broyden's method

*Ali Mohand-Said*

DESMEEX - Evolution of Semi-airborne Controlled-source Electromagnetics for Mineral Exploration and Beyond

*The DESMEEX Team*

3D Casing-Source Electromagnetic Modeling for CO<sub>2</sub> Plumes and Enhanced Geothermal Systems Monitoring

*Evan Schankee Um and David L. Alumbaugh*

Petrophysically constrained joint inversion of multi-physical data using the extended alternating direction method of multipliers

*Ke Wang, Dikun Yang*

Reparametrizing the Geophysical Inverse Problem using a Convolutional Neural Network

*Anran Xu and Lindsey Heagy*

## Tuesday, November 14

- 9:00 - 10:30    Inversion (part 1)  
*chair: Toshi Uchida*
- Resolving bottlenecks of 3D controlled-source electromagnetic Gauss-Newton inversion  
*Anna Avdeeva, Rune Mittet and Ole Martin Pedersen*
- Surface geometry inversion of TEM data for thin, dipping conductors  
*Xushan Lu, Colin Farquharson and Peter Lelièvre*
- Including geological orientation information into geophysical inversions with unstructured tetrahedral meshes  
*Mitra Kangazian, and Colin G. Farquharson*
- 10:30 - 11:00    Coffee Break
- 11:00 - 12:00    Inversion (part 2)  
*chair: Colin Farquharson*
- Hybrid OCCAM-Conjugate Gradients Inversion Algorithms with Applications to Marine CSEM data  
*Gary D. Egbert, Naser Meqbel and Paulo Werdt*
- 3D inversion of frequency-domain controlled source electromagnetic data for hydraulic fracturing fluid imaging with the effect of steel casings  
*Ying Hu, and Dikun Yang*
- 12:00 - 1:30    Lunch
- 1:30 - 3:00    Data Acquisition & Instrumentation (part 1)  
*chair: Alan Jones*
- A Modeling Assessment of Using Optical Fiber Devices For Electric Field Measurements  
*David Alumbaugh, Evan Um, Michael T. V. Wylie and Bjorn Paulsson*
- Copper permalloys for fluxgate magnetometer sensors  
*B. Barry Narod, David M. Miles*
- Interferographic TEM Beamforming Resolution  
*Bryan James, Kyubo Noh, Andrei Swidinsky, Johannes Stoll, and Daryl Ball*
- 3:00 - 3:15    Group Photo
- 3:15 - 3:45    Coffee Break
- 3:45 - 5:15    Data Acquisition & Instrumentation (part 2)  
*chair: Jean Legault*
- UAV-based semi-airborne CSEM for mineral exploration - 3D joint inversion of scalar and vector magnetometer data  
*Raphael Rochlitz, Philipp Kotowski, Thomas Günther, and Michael Becken*
- Enhancing Subsurface Imaging in Mineral Exploration through Optimized large-scale Semi-Airborne Surveys: Synthetic Modelling and field Data  
*Saeed Nazari, Raphael Rochlitz, and Thomas Günther*
- Airborne Natural Source Electromagnetics Using an Arbitrary Base Station  
*Devin C. Cowan, Lindsey J. Heagy and Douglas W. Oldenburg*
- 5:30 - 10:00    Banquet at Cecil Green Park House  
6251 Cecil Green Park Rd, Vancouver, BC V6T 1X8

## Wednesday, November 15

9:30 - 10:30 Case Studies (part 1)  
*chair: Patricia de Lugao*

Comparison of 3D finite-element and finite-difference inversion of magnetotelluric data in Okuaizu geothermal area, northern Japan  
*Toshihiro Uchida and Yusuke Yamaya*

3D inversion of onshore controlled source electromagnetic data in the Kusatsu-Shirane Volcano  
*Keiichi Ishizu, Yasuo Ogawa, Kuo Hsuan Tseng, Takahiro Kunitomo, Norihiro Kitaoka, Grant Caldwell, Takuto Minami, Sohei Serita, Hiroshi Ichihara, Ted Bertrand, and Wiebke Heise*

10:30 - 11:00 Coffee Break

11:00 - 12:00 Case Studies (part 2)  
*chair: Raphael Rochlitz*

3D ZTEM Airborne Natural Field EM & Magnetic Inversion and Mineral Targeting Results over the Berg Porphyry Copper Project, near Houston, British Columbia  
*Jean M. Legault, Karl Kwan, and Shane Ebert*

AEM Surveys Applied for Iron Formation Mapping: A Proxy for Iron Ore Exploration  
*Marco Antonio Couto Junior, Dionisio Uendro Carlos and Raphael Fernandes Prieto*

12:00 - 12:30 Concluding Remarks

## About 3DEM

The 3DEM symposium is organized by the Hohmann-Wannamaker Trust (<https://www.hohmannwannamakertrust.org>).

The Hohmann-Wannamaker Trust (HWT) was established in December 2022 as the continuation of the Gerald W. Hohmann Trust for Teaching and Research in Electromagnetic Geophysics, following the tragic death of trustee Phil Wannamaker in August 2022.

The Hohmann-Wannamaker Trust also laments the loss of another founding trustee as a result of the untimely death of Louise Pellerin in March 2023.

3DEM-7 will be dedicated to honoring Phil's and Louise's legacies in the worldwide EM community as scientists, educators, colleagues, and friends.