

**Troy Unrau, B.Sc., G.I.T.,
Geophysics | Research and Development**

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Purpose:

As of June, 2015, I am currently gainfully employed and enjoying my job. However, that isn't to say I am immune to entertaining offers if the right match comes along, especially if I can learn new R&D skills and contribute to the advancement of the state of the art.

Education:

- M.Sc. Planetary Science (Geophysics) candidate (University of Western Ontario) started Sept. 2009; currently on hold.
 - Grad average: 84% in graded coursework
 - Thesis topic: Ground penetrating radar (GPR) for planetary applications
- B.Sc.G.Sc.(Hons.) Geophysics (University of Manitoba)
 - Undergrad GPA 2005-2009: 3.6 (an A is 4.0 at the U of M)
 - Thesis topic: Synthetic Aperture Radar (SAR) for geologic mapping

Related Work and Research Experience:

Project Geophysicist, Aurora Geosciences Ltd., Jan 2014 – present.

Full time geophysical consultant for small geoscience consulting firm. Crew lead, field data collection, analysis, programming, and R&D for exploration activities. Techniques used include, ground penetrating radar, gravity, magnetics, VLF, capacitively coupled resistivity, and ELF (AFMAG). R&D tasks include programming (Python and Java), physics simulations, and instrument design for a novel capacitively coupled resistivity device.

Geophysicist, WorleyParsons Canada Services Ltd., Jan 2012 – Dec 2013.

Full time geophysical consultant for large engineering consulting firm. Budgeting, proposals, field data collection, analysis, reporting and client interaction relating to environment, infrastructure, and resources. Techniques used include, but are not limited to, GPR, frequency domain EM, resistivity, shallow seismics, magnetics, VLF, and downhole geophysics.

Exploration Geophysics, Lamontagne Geophysics Ltd., May 2011 – July 2011.

Field data collection and initial analysis of time-domain EM data.

Researcher, UWO., May. 2009 – Jan 2011.

Researcher focused on radar methods including SAR, InSAR and GPR. Participation in Canadian Space Agency lunar cratering analogue mission control, with an instrument specialization in GPR.

Teaching Assistant, UWO., Sept. 2009 to May 2010 & Sept. 2010 to April 2011.

Lab coordinator for first year lab exercises in geology and geophysics. Branding and marketing coordination for the Centre for Planetary Science and Exploration.

Software and Other Skills:

- Current and previous experience with: ArcGIS, AutoCAD, Eclipse, Office, Apache, GAMMA (SAR processing), NEST (Next ESA SAR Toolbox), Isis 3 (USGS/NASA), and many geophysics software packages, notably: Oasis Montaj.
- Programming in Python, C, C++, Java, MATLAB and other languages as needed, with experience using Qt, SQL, numerical processing, GIS/drafting, embedded systems, Android, and web technologies
- Worked on the KDE open source software project 1999-2009
- Expert in Linux and Unix computing
- Transferable skills in marketing and promotion, running conferences, coordinating press, speaking and presentations, writing and distilling technical subjects for press
- Intermediate French, Introductory Spanish comprehension

Memberships and Associations:

- Member-in-training, Association of Professional Engineers and Geoscientists of Alberta (APEGA).
 - Application for full P.Geol. is pending review.

Current Licenses and Certifications:

- NWT class 5 and 6 driver's license
- First Aid and CPR

Conferences and Workshops:

- AGU Fall Meeting 2014, San Francisco
- PDAC 2013, Toronto
- GPRslice workshop, Los Angeles, 2012
- International Workshop on Advanced GPR 2011, Aachen, Germany
- PDAC 2011, Toronto
- AGU Fall Meeting 2010, San Francisco
- Sensors and Software 3-Day GPR Short Course 2010, Mississauga
- LPI: Nördlingen 2010, Nördlingen, Germany
- GPR 2010, Lecce, Italy
- CMOS-CGU Joint Congress 2010, Ottawa

Bibliography:

Antonenko, I., G. R. Osinski, M. Battler, M. Beauchamp, L. Cupelli, A. Chanou, R. Francis, M. M. Mader, C. Marion, E. McCullough, A. E. Pickersgill, L. J. Preston, B. Shankar, T. Unrau, D. Veillette (2013), Issues of geologically-focused situational awareness in robotic planetary missions: Lessons from an analogue mission at Mistastin Lake impact structure, Labrador, Canada. *Advances in Space Research*, volume 52, issue 2, pp. 272 – 284.

Unrau, T., G. R. Osinski, R. G. Pratt and K. F. Tiampo (2011), The effect of scattering processes on high frequency ground penetrating radar surveys on impact melt breccia: early results from an arctic field campaign at the Haughton impact structure, Devon Island, Canada. *IEEE IWAGPR 2011*.

Unrau, T., G. Osinski, K. F. Tiampo, G. Pratt and M. Beauchamp (2011), Ground penetrating radar field campaigns at Canadian impact craters in support of planetary science. *GAC-MAC 2011, Abstract #247*.

Beauchamp, M., G. R. Osinski, T. Unrau, C. Marion, M. Mader, I. Antonenko and T. Barfoot (2011), Ground penetrating radar (GPR) investigations of the Mistastin Lake impact structure: a case for GPR on the Moon. 42Nd LPSC, Abstract 2147.

Unrau, T., K.F. Tiampo, R.G. Pratt and G. Osinski (2010), A Ground Penetrating Radar Lunar Analogue Field Campaign in the Houghton Impact Structure, Canada. Eos Trans. AGU, Fall Meet. Suppl., Abstract P23A-1619.

Unrau, T., C. Tycholiz, I.J. Ferguson, A.W. Frederiksen and M. Serzu (2008) 2007 Geophysical Surveys of the Birds Hill Esker-Delta Complex at Birds Hill Provincial Park, Manitoba. Dept. of Geological Sciences, University of Manitoba, 23 pages.

Frederiksen, A.W., J. McCutcheon, T. Unrau and O. Idowu (2007), The Manitoba Teleseismic Array: Examining the Westward Extent of the Superior Craton in Canada. Eos Trans. AGU, 88(52), Fall Meet. Suppl., Abstract T23A-1200.

Additional author credits listed on my website.