Leonardo Uieda

Department of Earth, Ocean and Ecological Sciences
School of Environmental Sciences
University of Liverpool
Jane Herdman Building, 4 Brownlow Street
Liverpool, L69 3GP, United Kingdom

Last updated: October, 2019
ORCID: 0000-0001-6123-9515
email: leouieda@gmail.com
Website (group): compgeolab.org
Website: leouieda.com

PROFESSIONAL APPOINTMENTS

2019– **Lecturer**
Department of Earth, Ocean and Ecological Sciences
School of Environmental Sciences
University of Liverpool, UK

2018– **Affiliate Researcher**
Department of Earth Sciences
School of Ocean and Earth Science and Technology
University of Hawai'i at Mānoa, USA

2017–2018 **Visiting Research Scholar**
Department of Earth Sciences
School of Ocean and Earth Science and Technology
University of Hawai'i at Mānoa, USA

2014–2018 **Assistant Professor**
Departamento de Geologia Aplicada
Faculdade de Geologia
Universidade do Estado do Rio de Janeiro, Brazil

EDUCATION

2016 **PhD in Geophysics**, Observatório Nacional, Brazil

2011 **MSc in Geophysics**, Observatório Nacional, Brazil

2009 **BSc in Geophysics**, Universidade de São Paulo, Brazil

2008 **International Exchange**, York University, Canada

GRANTS & FELLOWSHIPS

2018–2020 NSF-EAR: "The EarthScope/GMT Analysis and Visualization Toolbox". PI: Wessel, P, **co-PI**: **Uieda, L**, co-PI: Smith-Konter, B. *University of Hawai'i at Mānoa*. Amount: $174,975.00. Award ID: 1829371.

AWARDS & HONORS

2017 Brazilian Geophysical Society (SBGf) Award for **Best PhD Thesis** of 2015 – 2017

2016 Universidade do Estado do Rio de Janeiro, Brazil, School of Geology **Teaching Award** given by the graduating class of 2016

2014–2018 QUALITEC/UERJ Grant for training a technician for the Laboratory of Exploration Geophysics - Universidade do Estado do Rio de Janeiro

2011–2015 Brazilian Ministry of Education CAPES **PhD Research Scholarship**

2011 SEG Near Surface Geophysics Section **Student Travel Grant** to present at the SEG Annual Meeting, San Antornio, TX, USA

2011 EAGE **PACE Student Travel Grant** to present at the 73rd EAGE Conference & Exhibition, Vienna, Austria

2010–2011 Brazilian Ministry of Education CAPES **Masters Research Scholarship**

2008 Brazilian Geophysical Society (SBGf) **Undergraduate Research Scholarship**

2005 São Paulo Research Foundation (FAPESP) **Undergraduate Research Scholarship**

PUBLICATIONS

PEER-REVIEWED

2019 Wessel, P, Luis, J, **Uieda, L**, Scharroo, R, Wobbe, F, Smith, WHF, Tian, D. The Generic Mapping Tools, Version 6. *Geochemistry, Geophysics, Geosystems*. doi:10.1029/2019GC008515.

Soler, SR, Pesce, A, Gimenez, ME, **Uieda, L**. Gravitational field calculation in spherical coordinates using variable densities in depth. *Geophysical Journal International*. doi:10.1093/gji/ggz277. preprint: doi.org/10.31223/osf.io/3548g

Zhao, G, Chen, B, **Uieda, L**, Liu, J, Kaban, MK, Chen, L, Guo, R. Efficient 3D large-scale forward-modeling and inversion of gravitational fields in spherical coordinates with application to lunar mascons. *Journal of Geophysical Research: Solid Earth*. doi:10.1029/2019jb017691. preprint: doi.org/10.31223/osf.io/dzf9j

2018 **Uieda, L**. Verde: Processing and gridding spatial data using Green's functions. *Journal of Open Source Software*. doi:10.21105/joss.00957.

2017 **Uieda, L**, Barbosa, VCF. Fast non-linear gravity inversion in spherical coordinates with application to the South American Moho, *Geophysical Journal International*, doi:10.1093/gji/ggw390. preprint: doi.org/10.31223/osf.io/9ba4m

2016 **Uieda, L**, Barbosa, VCF, Braitenberg, C. Tesseroids: forward modeling gravitational fields in spherical coordinates, *Geophysics*, doi:10.1190/geo2015-0204.1.

Carlos, DU, **Uieda, L**, Barbosa, VCF. How two gravity-gradient inversion methods can be used to reveal different geologic features of ore deposit - A case study from the Quadrilátero Ferrífero (Brazil), *Journal of Applied Geophysics*, doi:10.1016/j.jappgeo.2016.04.011.

2015 Oliveira Jr, VC, Sales, DP, Barbosa, VCF, **Uieda, L**. Estimation of the total magnetization direction of approximately spherical bodies, *Nonlinear Processes in Geophysics*, doi:10.5194/npg-22-215-2015.

2014 Carlos, DU, **Uieda, L**, Barbosa, VCF. Imaging iron ore from the Quadrilátero Ferrífero (Brazil) using geophysical inversion and drill hole data, *Ore Geology Reviews*, doi:10.1016/j.oregeorev.2014.02.011.

2013 Melo, FF, Barbosa, VCF, **Uieda, L**, Oliveira Jr, VC, Silva, JBC. Estimating the nature and the horizontal and vertical positions of 3D magnetic sources using Euler deconvolution, *Geophysics*, doi:10.1190/geo2012-0515.1.

Oliveira Jr, VC, Barbosa, VCF, **Uieda, L**. Polynomial equivalent layer, *Geophysics*, doi:10.1190/geo2012-0196.1.

2012 **Uieda, L**, Barbosa, VCF. Robust 3D gravity gradient inversion by planting anomalous densities, *Geophysics*, doi:10.1190/geo2011-0388.1.

PEER-REVIEWED CONFERENCE PROCEEDINGS

2014 Melo, FF, Barbosa, VCF, **Uieda, L**, Oliveira Jr, VC, Silva, JBC. A Single Euler Solution Per Anomaly, *76th EAGE Conference and Exhibition 2014*, doi:10.3997/2214-4609.20140891.

2013 **Uieda, L**, Oliveira Jr, VC, Barbosa, VCF. Modeling the Earth with Fatiando a Terra, *Proceedings of the 12th Python in Science Conference*.

2012 **Uieda, L**, Barbosa, VCF. Use of the "shape-of-anomaly" data misfit in 3D inversion by planting anomalous densities, *SEG Technical Program Expanded Abstracts*, doi:10.1190/segam2012-0383.1.

Carlos, DU, **Uieda, L**, Li, Y, Barbosa, VCF, Braga, MA, Angeli, G, Peres, G. Iron ore interpretation using gravity-gradient inversions in the Carajás, Brazil. *SEG Technical Program Expanded Abstracts*, doi:10.1190/segam2012-0525.1.

2011 **Uieda, L**, Bomfim, EP, Braitenberg, C, Molina, E. Optimal forward calculation method of the Marussi tensor due to a geologic structure at GOCE height, *Proceedings of the 4th International GOCE User Workshop*. doi:10.6084/m9.figshare.92624.

Uieda, L, Barbosa, VCF. Robust 3D gravity gradient inversion by planting anomalous densities, *SEG Technical Program Expanded Abstracts*, doi:10.1190/1.3628201.

Uieda, L, Barbosa, VCF. 3D gravity inversion by planting anomalous densities. *12th International Congress of the Brazilian Geophysical Society*, doi:10.1190/sbgf2011-179.

Uieda, L, Barbosa, VCF. 3D gravity gradient inversion by planting density anomalies. *73th EAGE Conference and Exhibition incorporating SPE EUROPEC*, doi:10.3997/2214-4609.20149567.

Carlos, DU, **Uieda, L**, Barbosa, VCF, Braga, MA, Gomes, AAS. In-depth imaging of an iron orebody from Quadrilatero Ferrifero using 3D gravity gradient inversion, *SEG Technical Program Expanded Abstracts*, doi:10.1190/1.3628219.

Carlos, DU, Barbosa, VCF, **Uieda, L**, Braga, MA. Inversão de Dados de Aerogradiometria Gravimétrica 3D-FTG Aplicada a Exploração Mineral na Região do Quadrilátero Ferrífero, *12th International Congress of the Brazilian Geophysical Society*, doi:10.1190/sbgf2011-243.

PREPRINTS

2019 Barba, LA, Bazan, J, Brown, J, Guimera, RV, Gymrek, M, Alex Hanna, Heagy, LJ, Huff, KD, Katz, DS, Madan, CR, Moerman, KM, Niemeyer, KE, Poulson, JL, Prins, P, Ram, K, Rokem, A, Smith, AM, Thiruvathukal, GK, Thyng, KM, **Uieda, L**, Wilson, BE, Yehudi, Y. Giving software its due through community-driven review and publication. *OSF Preprints*. doi:10.31219/osf.io/f4vx6

OPEN DATASETS

2017 **Uieda, L**, Barbosa, VCF. A gravity-derived Moho model for South America: source code, data, and model results from "Fast non-linear gravity inversion in spherical coordinates with application to the South American Moho". doi:10.6084/m9.figshare.3987267

OPEN-SOURCE SOFTWARE

2017– **PyGMT** – www.pygmt.org
A Python interface for the Generic Mapping Tools.
Creator and main developer.

2017– **The Generic Mapping Tools (GMT)** – www.generic-mapping-tools.org
A data processing and mapping toolbox for the Earth, Ocean, and Planetary Science.
Core development team.

2010– **Fatiando a Terra** – www.fatiando.org
Python tools for geophysical data processing, forward modeling, and inversion.
Creator and main developer.

2009–2016 **Tesseroids** – www.tesseroids.org
Forward modeling of gravitational fields in spherical coordinates.
Creator and sole developer.

TEACHING

UNDERGRADUATE

2019– ENVS363: Geophysical Exploration Techniques [field]
University of Liverpool

2014–2016 Special Mathematics I: Introduction to Programming and Numerical Analysis
BSc in Oceanography, *Universidade do Estado do Rio de Janeiro*

2014–2016 Geophysics I: Gravity and magnetic methods
BSc in Geology, *Universidade do Estado do Rio de Janeiro*

2014–2016 Geophysics II: Exploration Seismology
BSc in Geology, *Universidade do Estado do Rio de Janeiro*

2015 Introduction to Geology
BSc in Oceanography, *Universidade do Estado do Rio de Janeiro*

WORKSHOPS & SHORT COURSES

future Become a Generic Mapping Tools Contributor Even If You Can't Code
AGU Fall Meeting 2019

2019 The Generic Mapping Tools for Geodesy
Scripps Institution of Oceanography

InSAR Processing and Theory with GMTSAR
Scripps Institution of Oceanography

2018 Best Practices for Modern Open-Source Research Codes
AGU Fall Meeting 2018

InSAR Processing and Theory with GMTSAR
Scripps Institution of Oceanography

Git and Github: What are their uses? Are they worth the effort? Let's find out!
ASPRS UHM Student Chapter, University of Hawai'i at Mānoa

2017 Introduction to Python
Department of Geology and Geophysics, University of Hawai'i at Mānoa

2016 Python for Geologists
Faculdade de Geologia, Universidade do Estado do Rio de Janeiro

Python for Earth Scientists
Departamento de Geofísica, Universidade de São Paulo

2014 Introduction to Geophysical Inversion
Instituto de Geociências, Universidade de Brasília

2011 Introduction to Geophysical Inversion
Departamento de Geofísica, Universidade de São Paulo

STUDENT SUPERVISION

2017– Santiago R. Soler (PhD student – co-Advisor)
Instituto Geofísico Sismológico Volponi, Universidad Nacional de San Juan, Argentina.
Advisor: Mario E. Gimenez

2015–2017 Vinicius V. Riguete (Undergraduate research – Advisor)
Faculdade de Geologia, Universidade do Estado do Rio de Janeiro, Brazil.

OUTREACH

I maintain a blog about my research, geoscience, and programming at leouieda.com/blog

2018 Interviewed by the geoscience podcast *Don't Panic Geocast*, episode 166 *"You are headed to a warm and sunny place"*: dontpanicgeocast.com/?p=638

2017 Volunteer for the *Hour of Code* at Salt Lake Elementary School, Honolulu, USA.

2016 Interviewed by the geoscience podcast *Undersampled Radio*, episode *"Open Sourcery"*: undersampledrad.io/home/2016/7/open-sourcery

Geophysical tutorials for the SEG publication *The Leading Edge*:

2017 **Uieda, L**. Step-by-step NMO correction, *The Leading Edge*, doi:10.1190/tle36020179.1.

2014 **Uieda, L**, Oliveira Jr, VC, Barbosa, VCF. Geophysical tutorial: Euler deconvolution of potential-field data, *The Leading Edge*, doi:10.1190/tle33040448.1.

PRESENTATIONS

future **Uieda, L**, Wessel, P. PyGMT: Accessing the Generic Mapping Tools from Python, *AGU 2019*, San Francisco, USA.

2018 **Uieda, L**, Xu, X, Wessel, P, Sandwell, DT. Coupled Interpolation of Three-component GPS Velocities, *AGU 2018*, Washington DC, USA. doi:10.6084/m9.figshare.7440683.

Uieda, L. Machine Learning Lessons for Geophysics, *Department of Earth Sciences, University of Hawai'i at Mānoa*, Honolulu, USA. doi:10.6084/m9.figshare.7203344.

Uieda, L, Wessel, P. Building an object-oriented Python interface for the Generic Mapping Tools, *Scipy 2018*, Austin, USA. doi:10.6084/m9.figshare.6814052. recording: youtu.be/6wMtfZXfTRM

Uieda, L, Sandwell, DT, Wessel, P. Joint Interpolation of 3-component GPS Velocities Constrained by Elasticity, *AOGS* 15^{th} *Annual Meeting*, Honolulu, USA. doi:10.6084/m9.figshare.6387467.

Uieda, L, Wessel, P. Integrating the Generic Mapping Tools with the Scientific Python Ecosystem, *AOGS* 15^{th} *Annual Meeting*, Honolulu, USA. doi:10.6084/m9.figshare.6399944.

2017 **[Invited] Uieda, L**, Wessel, P. Nurturing reliable and robust open-source scientific software, *AGU Fall Meeting 2017*, New Orleans, USA. recording: youtu.be/0GO4ZZ5Ry6M

Uieda, L, Wessel, P. A modern Python interface for the Generic Mapping Tools, *AGU Fall Meeting 2017*, New Orleans, USA. doi:10.6084/m9.figshare.5662411.

Uieda, L, Wessel, P. Bringing the Generic Mapping Tools to Python, *Scipy 2017*, Austin, USA. doi:10.6084/m9.figshare.7635833. recording: youtu.be/93M4How7R24

Uieda, L. Inverting gravity to map the Moho: A new method and the open source software that made it possible, *Department of Geology and Geophysics, University of Hawai'i at Mānoa*, Honolulu, USA. doi:10.6084/m9.figshare.4779766.

2016 **[Invited] Uieda, L**. Fatiando a Terra: construindo uma base para ensino e pesquisa de geofísica, *Observatório Nacional*, Rio de Janeiro, Brazil.

2015 **[Invited] Uieda, L**. Fatiando a Terra: construindo uma base para ensino e pesquisa de geofísica, *Universidade de São Paulo*, São Paulo, Brazil. doi:10.6084/m9.figshare.1381870.

2014 **Uieda, L**, Oliveira Jr, VC, Barbosa, VCF. Using Fatiando a Terra to solve inverse problems in geophysics, *Scipy 2014*, Austin, USA. doi:10.6084/m9.figshare.1089987.

Uieda, L, Barbosa, VCF. Gravity inversion in spherical coordinates using tesseroids, *EGU General Assembly 2014*, Vienna, Austria. doi:10.6084/m9.figshare.1155457.

2013 **Uieda, L**, Oliveira Jr, VC, Barbosa, VCF. Modeling the Earth with Fatiando a Terra, *Scipy 2013*, Austin, USA. recording: youtu.be/Ec38h1oB8cc

Uieda, L, Barbosa, VCF. 3D magnetic inversion by planting anomalous densities, *AGU Meeting of the Americas*, Cancun, Mexico. doi:10.6084/m9.figshare.703651.

2012 Carlos, DU, **Uieda, L**, Li, Y, Barbosa, VCF, Braga, MA, Angeli, G, Peres, G. Iron ore interpretation using gravity-gradient inversions in the Carajás, Brazil, *SEG Annual Meeting 2012*, Las Vegas, USA. doi:10.6084/m9.figshare.156865.

Uieda, L, Barbosa, VCF. Use of the "shape-of-anomaly" data misfit in 3D inversion by planting anomalous densities, *SEG Annual Meeting 2012*, Las Vegas, USA. doi:10.6084/m9.figshare.156864.

Uieda, L, Barbosa, VCF. Rapid 3D inversion of gravity and gravity gradient data to test geologic hypotheses, *International Symposium on Gravity, Geoid and Height Systems*, Venice, Italy. doi:10.6084/m9.figshare.156859.

2011 **Uieda, L**, Barbosa, VCF. Robust 3D gravity gradient inversion by planting anomalous densities, *SEG Annual Meeting 2011*, San Antonio, USA. doi:10.6084/m9.figshare.156863.

Uieda, L, Barbosa, VCF. 3D gravity inversion by planting anomalous densities, *Internation Congress of the Brazilian Geophysical Society*, Rio de Janeiro, Brazil. doi:10.6084/m9.figshare.156861.

Uieda, L, Bomfim, EP, Braitenberg, C, Molina, E. Optimal forward calculation method of the Marussi tensor due to a geologic structure at GOCE height, *4th International GOCE User Workshop*, Munich, Germany. doi:10.6084/m9.figshare.92624.

Uieda, L, Barbosa, VCF. 3D gravity gradient inversion by planting density anomalies, *73th EAGE Conference and Exhibition incorporating SPE EUROPEC*, Vienna, Austria. doi:10.6084/m9.figshare.91511.

2010 **Uieda, L**, Ussami, N, Braitenberg, C. Computation of the gravity gradient tensor due to topographic masses using tesseroids, *AGU Meeting of the Americas*, Foz do Iguaçu, Brazil. doi:10.6084/m9.figshare.156858.

2008 **Uieda, L**, Ussami, N. Utilização de tesseróides na modelagem de dados de gradiometria gravimétrica, *XIII Simpósio de Iniciação Científica do IAG-USP*, São Paulo, Brazil. doi:10.6084/m9.figshare.4779760.

2006 **Uieda, L**, D'Agrella-Filho, MS. Paleomagnetismo e mineralogia magnética dos diques cambrianos de Maravilhas e Prata (PB), *XI Simpósio de Iniciação Científica do IAG/USP*, São Paulo, Brazil. doi:10.6084/m9.figshare.4779769.

ACADEMIC SERVICE & AFFILIATIONS

EDITOR

2019– Topic editor for the *Journal of Open Source Software*

REVIEWER

Geophysical Journal International – Journal of Geodesy – Pure and Applied Geophysics – Journal of Applied Geophysics – Geophysical Prospecting – Geophysics – Central European Journal of Geosciences – Computers & Geosciences – Journal of Open Source Software

COMMITTEES

2015 Chairman of the Election Committee for the deans of the University and the School of Geology, Universidade do Estado do Rio de Janeiro

2015–2017 Faculty Advisor for the Student Chapter of the Society of Exploration Geophysicists (SEG) at the Universidade do Estado do Rio de Janeiro.

CONVENER

future Townhall: Update and Future Directions of the Open-Source Software Initiative.
Uieda, L, Heagy, LJ, Krischer, L, Gassmoeller, R, Sullivan, CB.
AGU 2019, San Francisco, USA.

Session: NS21A - A Tour of Open-Source Software Packages for the Geosciences.
Heagy, LJ, Gassmoeller, R, **Uieda, L**, Klump, JF.
AGU 2019, San Francisco, USA.

2018 Townhall: The role of an open-source software initiative within the AGU.
Heagy, LJ, Krischer, L, **Uieda, L**.
AGU 2018, Washington DC, USA.

AFFILIATIONS

2010– American Geophysical Union

2011– Society of Exploration Geophysicists

2014– European Geosciences Union

LANGUAGES

Portuguese	Native
English	IELTS: CEFR Level C2 (mastery or proficiency) obtained in 2019