# Prof. Leonardo Uieda

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Instituto de Astronomia, Geofísica e Ciências Atmosféricas

Departamento de Geofísica

Universidade de São Paulo

## Professional Appointments

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| 2023–on | **Professor Doutor**, Universidade de São Paulo, Brazil |
| 2019–2023 | **Lecturer**, University of Liverpool, UK |
| 2017–2019 | **Visiting Researcher**, University of Hawai'i at Mānoa, USA |
| 2014–2018 | **Professor Assistente**, Universidade do Estado do Rio de Janeiro, Brazil |

## Community Service

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| 2024–on | **Embaixador**, Rede Brasileira de Reprodutibilidade, www.reprodutibilidade.org |
| 2024–on | **Advisory Council Member**, EarthArXiv, eartharxiv.org |
| 2022–on | **Board Member**, Software Underground, softwareunderground.org |
| 2022–2023 | **Advisory Committee Member**, pyOpenSci, www.pyopensci.org |
| 2019–2022 | **Topic Editor**, Journal of Open Source Software, joss.theoj.org |

## Education

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| 2011–2016 | **PhD in Geophysics**, Observatório Nacional, Brazil. doi:10.6084/m9.figshare.16883689 |
| 2010–2011 | **MSc in Geophysics**, Observatório Nacional, Brazil. doi:10.6084/m9.figshare.16882300 |
| 2004–2009 | **BSc in Geophysics**, Universidade de São Paulo, Brazil. doi:10.6084/m9.figshare.963547 |

## Open Research Software

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| 2010–on | **Fatiando a Terra** \| www.fatiando.org |
| | *Python tools for geophysical data processing, forward modeling, and inversion* |
| | Role: Project founder, core developer, Steering Council Member |
| 2017–on | **The Generic Mapping Tools (GMT)** \| www.generic-mapping-tools.org |
| | *A data processing and mapping toolbox for the Earth, Ocean, and Planetary Science* |
| | Role: Community stewardship advisor, set up the website + forum + GitHub workflow |
| 2022–on | **xlandsat** \| www.compgeolab.org/xlandsat |
| | *Load Landsat remote sensing scenes in Python and xarray* |
| | Role: Creator and sole developer |
| 2017–2021 | **PyGMT** \| www.pygmt.org |
| | *A Python interface for the Generic Mapping Tools* |
| | Role: Project founder, developer, advisor |
| 2009–2016 | **Tesseroids** \| tesseroids.leouieda.com |
| | *Forward modeling of gravitational fields in spherical coordinates* |
| | Role: Creator and sole developer |

## Open Educational Resources

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| 2022 | **A Quick Introduction to Machine Learning**. leouieda/ml-intro. |
| 2023 | **Remote Sensing with Python**. leouieda/remote-sensing. |
| 2023 | **Lithosphere Dynamics with Python**. leouieda/lithosphere. |
| 2022 | **Terrestrial Gravimetry with Python**. leouieda/gravity-processing. |

## Grants and Fellowships

**2022–on**  **Towards individual-grain paleomagnetism: Translating regional-scale geophysics to the nascent field of magnetic microscopy**.
Royal Society. Uieda, L (PI); Trindade, RIF. Award: IES\R3\213141

**2020–on**  **A Sustainable Plan for the Future of the Generic Mapping Tools**.
NSF-EAR. Wessel, P (PI); Uieda, L. Award: 1948602.

**2020–2023**  **SSI Fellowship Programme**.
Software Sustainability Institute. Uieda, L (PI). Award: software.ac.uk/about/fellows

**2018–2024**  **The EarthScope/GMT Analysis and Visualization Toolbox**.
NSF-EAR. Wessel, P (PI); Uieda, L; Smith-Konter, B. Award: 1829371.

## Selected Invited Presentations

**2021**  **Design useful tools that do one thing well and work together: rediscovering the UNIX philosophy while building the Fatiando a Terra project**.
AGU 2021. Uieda, L; Li, L; Soler, SR; Pesce, A. ⦿ fatiando/agu2021.

**Open-science for gravimetry: tools, challenges, and opportunities**.
GFZ Helmholtz Centre Potsdam. Uieda, L; Soler, SR; Pesce, A. ⦿ leouieda/2021-06-22-gfz.

**Fatiando a Terra: Open-source tools for geophysics**.
Geophysical Society of Houston. Uieda, L; Soler, SR; Pesce, A. ⦿ fatiando/2021-gsh.

**2020**  **Geophysical research powered by open-source**.
Christian Albrechts Universität zu Kiel. Uieda, L. ⦿ leouieda/2020-07-01-kiel.

## Publication Highlights

**2025**  **Euler inversion: Locating sources of potential-field data through inversion of Euler's homogeneity equation**.
Uieda, L; Souza-Junior, GF; Uppal, I; Oliveira Jr, VC. EarthArXiv. doi:10.31223/X5T41M
Open science: ⦿ compgeolab/euler-inversion | 📊 doi:10.6084/m9.figshare.26384140

**2024**  **Full vector inversion of magnetic microscopy images using Euler deconvolution as prior information**.
Souza-Junior, GF; Uieda, L; *et al*. Geochemistry, Geophysics, Geosystems. doi:10.1029/2023GC011082
Open science: ⦿ compgeolab/micromag-euler-dipole | 📊 doi:10.6084/m9.figshare.22672978

**2021**  **Gradient-boosted equivalent sources**.
Soler, SR; Uieda, L. Geophysical Journal International. doi:10.1093/gji/ggab297
Open science: ⦿ compgeolab/eql-gradient-boosted | 📊 doi:10.6084/m9.figshare.13604360

**2020**  **Pooch: A friend to fetch your data files**.
Uieda, L; Soler, SR; Rampin, R; van Kemenade, H; *et al*. Journal of Open Source Software. doi:10.21105/joss.01943
Open science: ⦿ fatiando/pooch | 📊 doi:10.5281/zenodo.3515030

**2019**  **The Generic Mapping Tools, Version 6**.
Wessel, P; Luis, J; Uieda, L; *et al*. Geochemistry, Geophysics, Geosystems. doi:10.1029/2019GC008515
Open science: ⦿ GenericMappingTools/gmt

**2019**  **Gravitational field calculation in spherical coordinates using variable densities in depth**.
Soler, SR; Pesce, A; Gimenez, ME; Uieda, L. Geophysical Journal International. doi:10.1093/gji/ggz277
Open science: ⦿ pinga-lab/tesseroid-variable-density | 📊 doi:10.6084/m9.figshare.8239622

**2018**  **Verde: Processing and gridding spatial data using Green's functions**.
Uieda, L. Journal of Open Source Software. doi:10.21105/joss.00957
Open science: ⦿ fatiando/verde | 📊 doi:10.5281/zenodo.1478244

**2017**  **Fast non-linear gravity inversion in spherical coordinates with application to the South American Moho**.
Uieda, L; Barbosa, VCF. Geophysical Journal International. doi:10.1093/gji/ggw390
Open science: ⦿ pinga-lab/paper-moho-inversion-tesseroids | 📊 doi:10.6084/m9.figshare.3987267

**2016**  **Tesseroids: forward modeling gravitational fields in spherical coordinates**.
Uieda, L; Barbosa, VCF; Braitenberg, C. Geophysics. doi:10.1190/geo2015-0204.1
Open science: ⦿ pinga-lab/paper-tesseroids | 📊 doi:10.6084/m9.figshare.786514