




# Matthew D. TANKERSLEY

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OBJECTIVE: A recent Ph.D. graduate specialized in airborne geophysical analysis and inversion applied to the cryosphere, with a dedication to conducting open-source and reproducible science.

## EDUCATION

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### Geophysics — *Ph.D. (submitted)*

SEPTEMBER 2019 - PRESENT

Airborne geophysical investigation beneath Antarctica's Ross Ice Shelf  
Antarctic Research Center, Victoria University of Wellington, New Zealand

### Geology — *Bachelor of Arts (with distinction)*

AUGUST 2014 - MAY 2018

distinction in Geology (GPA 3.7) and a minor in Physics (GPA 3.9)  
Thesis: "Aerogeophysical analysis of crustal structures under the Ross Ice Shelf"  
Colorado College, Colorado Springs, USA

## PUBLICATIONS

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| 2022 | <b>Basement topography and sediment thickness beneath Antarctica's Ross Ice Shelf</b> , <i>Geophysical Research Letters</i><br>Matthew Tankersley, Huw Horgan, Christine Siddoway, Fabio Caratori Tontini, and Kirsty Tinto.<br>doi: 10.1029/2021GL097371<br>5 citations   |
| 2019 | <b>Ross Ice Shelf response to climate driven by the tectonic imprint on seafloor bathymetry</b> , <i>Nature Geoscience</i><br>Kirsty Tinto, Laurence Padman, Christine Siddoway, Scott Springer, ... Matthew Tankersley<br>doi: 10.1038/s41561-019-0370-2<br>104 citations |

## SELECTED PRESENTATIONS

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### ORAL PRESENTATIONS

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| 2023 | <b>Addressing bathymetry uncertainty beneath the Ross Ice Shelf</b> , <i>New Zealand-Australia Antarctic Science Conference, Christchurch, NZ</i><br>Slides: <a href="https://doi.org/10.6084/m9.figshare.24412021.v1">https://doi.org/10.6084/m9.figshare.24412021.v1</a> |
| 2021 | <b>Sediment thickness and basement depths beneath the Ross Ice Shelf from aeromagnetic data</b> , <i>New Zealand Antarctic Science Conference, Christchurch, NZ</i>  |

### POSTER PRESENTATIONS

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| 2023 | <b>Gravity inversion as a method to recover sub-ice shelf bathymetry; applied to the Ross Ice Shelf</b> , <i>Scientific Committee on Antarctic Research, Instabilities &amp; Thresholds in Antarctica, Trieste, Italy</i><br>Poster: <a href="https://doi.org/10.6084/m9.figshare.24117420.v2">https://doi.org/10.6084/m9.figshare.24117420.v2</a>   |
|      | <b>Antarctic-Plots: a Python package to help conduct Antarctic research</b> ,<br>1) <i>Scientific Committee on Antarctic Research, Instabilities &amp; Thresholds in Antarctica, Trieste, Italy</i><br><b>Awarded best poster</b><br>2) <i>New Zealand-Australia Antarctic Science Conference, Christchurch, NZ</i><br><b>Awarded 2nd best poster</b><br>Poster: <a href="https://doi.org/10.6084/m9.figshare.21183931.v3">https://doi.org/10.6084/m9.figshare.21183931.v3</a> |

- 2022      **Revealing sub-ice shelf sediment basins with airborne magnetics**, *West Antarctic Ice Sheet Conference and Workshop, Estes Park, CO, USA*  
Poster: <https://doi.org/10.6084/m9.figshare.21172042.v2>
- Antarctic-Plots: a Python package to help download, visualize, and present Antarctic datasets**,  
    1) *West Antarctic Ice Sheet Conference and Workshop, Estes Park, CO, USA*  
    2) *The Future of Geodetic-Geophysical Observational Networks in Antarctica Workshop (SCAR-INSTANT), Fort Collins, CO, USA*  
Poster: <https://doi.org/10.6084/m9.figshare.21183931.v3>

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## OPEN-SOURCE SOFTWARE DEVELOPMENT

- Since 2022      **Fatiando a Terra: Open source tools for geophysics**  
Contributor  
<https://www.fatiando.org>
- Since 2022      **Antarctic-Plots: Functions to automate Antarctic data visualization**  
Founder and core-maintainer  
<https://antarctic-plots.readthedocs.io/en/latest/>

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## TECHNICAL SKILLS

**Programming** Python, GMT  
**Python packages** Pandas, Xarray, NumPy, SciPy, Dask, PyGMT, Matplotlib, Plotly, Pooch, Verde, Harmonica, Optuna, GeoPandas, Shapely  
**Markup** Markdown, L<sup>A</sup>T<sub>E</sub>X, Curvenote  
**OS** Linux, Windows  
**Other tools** Geosoft Oasis Montaj, Jupyter Notebooks, git, GitHub, VS Code, Binder, ReadTheDocs, QGIS, LibreOffice Suite, Microsoft Office Suite

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## FIELD WORK

- Geophysical field assistant — *Antarctica - Kamb Ice Stream***      NOVEMBER 2019 - DECEMBER 2019
- Worked within a team of 5 stationed in a remote field camp on the Ross Ice Shelf conducting an **active source seismic survey** and a **gravity survey**.
  - Included training and extensive use of snowmobiles, Hagglund tracked vehicles, transport, wiring, and detonation of explosive charges, operation of a hot water drill for emplacing charges at a 20m depth, and deploying a 1 km array of geophones.
  - Other duties included **planning and executing the gravity survey**, GNSS surveying the gravity and seismic stations, and setting up and maintaining camp infrastructure.
- Geophysical field assistant — *Antarctica - Discovery Deep***      DECEMBER 2021 - FEBRUARY 2022
- Similar to above but in a field camp consisting of just our team of 5. Additional survey methods included seismic surveying with a streamer of geophones and surface detonation of det-cord.
  - Shared all duties of our self-contained camp (cooking, cleaning, camp safety etc.).
- Marine Seismic Assistant — *RV Tangaroa - TAN2006***      JULY 2020 - AUGUST 2020
- Worked aboard the RV Tangaroa conducting a **marine seismic** and **multibeam bathymetry** survey of the Chatham Rise, New Zealand.
  - Duties included monitoring seismic data collection and pre-processing of multibeam bathymetry data.
- Geologic Fieldwork — *Western USA***      2014 - 2018
- Over 100 days of geologic fieldwork throughout the Western USA during my undergraduate degree. This included geologic and structural mapping, stratigraphic profiles, and soil and rock sample collection.