

# Sinan Özaydın

PhD, MSc, BS

BIO	I am an Earth scientist specialising in magnetotellurics. My research targets how the electrical conductivity distribution of the lithospheric mantle, as it is acquired from magnetotelluric models, can be related to tectonic and magmatic processes. I try to do this via quantified interpretations, combining the knowledge from geochemistry, petrology and magnetotellurics.
EMPLOYMENT	<b>Research Associate at University of South Australia</b> 2021-
EDUCATION	<b>PhD in Geophysics at Macquarie University</b> 2018 - 2021 Sydney, Australia <b>Thesis Title:</b> "Three-dimensional magnetotelluric constraints on compositional variations of the Southern African mantle." <b>Supervisors:</b> Kate Selway (Primary), William L. Griffin (Associate)  <b>MSc in Geophysics at Boğaziçi University</b> 2015 - 2017 Istanbul, Turkey <b>Thesis Title:</b> "The role of crustal fluids in tectonics of north-central Turkey, inferred from three-dimensional magnetotellurics." <b>Supervisors:</b> S. Bülent Tank  <b>BS. in Geophysical Engineering at Istanbul Technical University</b> 2009-2015 Istanbul, Turkey
RESEARCH INTERESTS	Magnetotellurics, geophysical inversion, geochemistry, quantified interpretations of mantle electrical conductivities.
PUBLICATIONS	6 - <b>Özaydın, Sinan</b> , Selway, Kate, Griffin, William L. (2021). "Are xenoliths from southwestern Kaapvaal Craton representative of the broader mantle? Constraints from magnetotelluric modeling", <i>Geophysical Research Letters</i> , 48, <a href="https://doi.org/10.1029/2021GL092570">doi:10.1029/2021GL092570</a> .  5 - <b>Özaydın, Sinan</b> , Selway, Kate, "MATE: An analysis tool for the interpretation of magnetotelluric models of the mantle" (2020). <i>Geochemistry, Geophysics, Geosystems</i> , 21, <a href="https://doi.org/10.1029/2020gc009126">doi:10.1029/2020gc009126</a> .  4 - Selway, Kate, O'Donnell, J. P., <b>Özaydın, Sinan</b> (2019). "Upper Mantle Melt Distribution From Petrologically Constrained Magnetotellurics", <i>Geochemistry, Geophysics, Geosystems</i> , 20, <a href="https://doi.org/10.1029/2019GC008227">doi:10.1029/2019GC008227</a> .  3 - Tank, S. Bülent, <b>Özaydın, Sinan</b> , Karas, Mustafa (2018). "Revealing the electrical properties of a gneiss dome using three-dimensional magnetotellurics: Burial and exhumation cycles associated with faulting in Central Anatolia, Turkey", <i>Physics of the Earth and Planetary Interiors</i> , 283, <a href="https://doi.org/10.1016/j.pepi.2018.07.010">doi:10.1016/j.pepi.2018.07.010</a> .

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2 - **Özaydın, Sinan**, Tank, S. Bülent, Karas, Mustafa (2018). “Electrical resistivity structure at the North-Central Turkey inferred from three-dimensional magnetotellurics.”, *Earth, Planets and Space*, 70(49), doi:10.1186/s40623-018-0818-4.

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1 - Karas, Mustafa, Tank, S. Bülent, **Özaydın, Sinan** (2017). “Electrical conductivity of a locked fault: investigation of the Ganos segment of the North Anatolian Fault using three-dimensional magnetotellurics.”, *Earth, Planets and Space*, 69(107), doi:10.1186/s40623-017-0695-2.

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PUBLICATIONS  
IN PROGRESS

Moorkamp, Max, **Özaydın, Sinan**, Selway, Kate, Jones, Alan G., (2021). “Probing the southern African lithosphere with magnetotellurics, Part I, model construction.”, *Journal of Geophysical Research: Solid Earth*, Submitted, in review. Preprint doi: [10.1002/essoar.10507968.1](https://doi.org/10.1002/essoar.10507968.1)

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**Özaydın, Sinan**, Selway, Kate, Griffin, William L., Moorkamp, Max (2021). “Probing the southern African lithosphere with magnetotellurics, Part II, linking electrical conductivity, composition and tectono-magmatic evolution.”, *Journal of Geophysical Research: Solid Earth*, Submitted, in review. Preprint doi: [10.1002/essoar.10507861.1](https://doi.org/10.1002/essoar.10507861.1)

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Takenaka, L.B., **Özaydın, Sinan**, Ciardelli, Caio, Griffin, W.L., Ganade, C. E., Jacob, D., Baise, M. A. S., Assumpção, M, O'Reilly, S. Y. (2021), “Survivors of metasomatism: Diamonds and mantle domains on the SW margin of the São Francisco Craton.”, *Geology*, Submitted, in review.

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**Özaydın, Sinan**, Griffin, William L., “XenoChem: A python library to calculate thermobarometric calculations.”, *Journal of Open Source Software*, In preparation.

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REVIEWED  
MANUSCRIPTS IN

Geophysical Journal International

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RESEARCH  
PROJECTS

**Improving the quantitative interpretations made on tectonically stable mantle** 2018 - 2022  
Researcher / PhD Candidate

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**Summit Station Magnetotellurics (SUMMAT)** 2018  
Researcher

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**Continental Dynamics / Central Anatolian Tectonics (CD-CAT)** 2014-2018  
Intern / Researcher

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**Imaging the Shallow Crustal Structure of Ganos Fault by Magnetotellurics** 2015-2017  
Researcher

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CONFERENCE  
PROCEEDINGS  
(1<sup>st</sup> AUTHOR  
ONLY)

**Özaydın, Sinan**, Selway, Kate “Laboratory results coded in MATE.”, Oral Presentation (Invited Speaker), *EM-Community Webinar Series*, Virtual Conference, International.

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**Özaydın, Sinan**, Selway, Kate, Griffin, William L. (2021). “Composition and evolution of the southern African lithosphere from combined xenocryst and magnetotelluric data”, Oral Presentation, *AESC2021*, Virtual Conference, Australia.



Özaydın, Sinan, Selway, Kate (2020). “Interpretation of conductivity variations in magnetotelluric models of cratonic lithospheric mantle with the new open-source software MATE.”, Oral Presentation, *AGU2020*, Virtual Conference, USA.

Özaydın, Sinan, Selway, Kate (2019). “Utilising 3-D magnetotelluric models of southern African mantle to constrain hydrogen content and compositional variations.”, Oral Presentation, *AEGC2019*, Perth, Australia.

Özaydın, Sinan, Selway, Kate (2018). “Measuring the hydrogen content variations in Southern African mantle.”, Poster Presentation, *EMIW2018*, Helsingör, Denmark.

Özaydın, Sinan, Tank, S. Bülent, Karas, Mustafa, Sandvol, Eric (2017). “Resolving the deep electrical resistivity structure at Central Pontides, Northern Turkey by three-dimensional magnetotelluric modeling.”, Poster Presentation, *EGU2017*, Vienna, Austria.

## AWARDS & ACHIEVEMENTS

Awarded the Australian Research Council PhD research scholarship 2018-2021

## SCIENTIFIC SOFTWARE

**MATE** - <https://github.com/sinanozaydin/MATE>

A software to make quantified interpretations of the magnetotelluric models of the mantle. Published in G-cubed.

**XenoChem** - <https://github.com/sinanozaydin/XenoChem>

A python library to analyse chemical data from xenocrysts and xenoliths with thermobarometric methods and other classification schemes. At initial development stage.

## COMPUTER SKILLS

**Languages:** Python, Matlab, Fortran, Bash, L<sup>A</sup>T<sub>E</sub>X

**MT Inversion:** ModEM, jif3D, WS3DINV, MARE2DEM, rjmcemcmt

**MT Processing:** EMTF, BIRRP

**Geoscience Software:** QGIS, GMT, PerpleX

**Visualisation:** Paraview, Inkscape, Gimp

**Operating systems:** Linux proficient

## FIELDWORK EXPERIENCE

**Greenland Summit Station Fieldwork**

2018

Installation of broad-band and long-period MT stations in Greenland ice sheet.

**CD-CAT Fieldwork in Central Anatolia**

2014-2018

Installation of nearly 150 broad-band and long-period MT stations in Central Anatolia.

## OTHER INTERESTS

Philosophy (Philosophy and history of science, differential ontology & process philosophy, post-structuralism), Music production (Multi-instrumentalist), Cinema.