Sinan Özaydın

MSc., BS., Geophysics

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BIO

I am an Earth scientist specialising in magnetotellurics. I recently submitted my PhD thesis at Macquarie University. My research targets how the electrical conductivity distribution of the lithospheric mantle, as it acquired from magnetotelluric models, can be related to tectonic and magmatic processes. I try to do this by quantified interpretations by combining the knowledge from geochemistry, petrology and magnetotellurics.

EDUCATION

PhD in Geophysics at Macquarie University *2018 - 2021 (Expected)*
Sydney, Australia
Thesis Title: *"Three-dimensional magnetotelluric constraints on compositional variations of the Southern African mantle."*
Supervisors: Kate Selway, William L. Griffin

MSc in Geophysics at Boğaziçi University *2015 - 2017*
Istanbul, Turkey
Thesis Title: *"The role of crustal fluids in tectonics of north-central Turkey, inferred from three-dimensional magnetotellurics."*
Supervisors: S. Bülent Tank

BS. in Geophysical Engineering at Istanbul Technical University *2009-2015*
Istanbul, Turkey

RESEARCH INTERESTS

Magnetotellurics, geophysical inversion, geochemistry, quantified interpretations of mantle electrical conductivities.

PUBLICATIONS

Özaydın, Sinan, Selway, Kate, Griffin, William L. (2021). "Are xenoliths from southwestern Kaapvaal Craton representative of the broader mantle? Constraints from magnetotelluric modeling", *Geophysical Research Letters*, 48, doi:10.1029/2021GL092570.

Özaydın, Sinan, Selway, Kate, "MATE: An analysis tool for the interpretation of magnetotelluric models of the mantle" (2020). *Geochemistry, Geophysics, Geosystems*, 21, doi:10.1029/2020gc009126.

Selway, Kate, O'Donnell, J. P., **Özaydın, Sinan** (2019). "Upper Mantle Melt Distribution From Petrologically Constrained Magnetotellurics", *Geochemistry, Geophysics, Geosystems*, 20, doi:10.1029/2019GC008227.

Tank, S. Bülent, **Özaydın, Sinan**, Karaş, 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", *Physics of the Earth and Planetary Interiors*, 283, doi:10.1016/j.pepi.2018.07.010.

Özaydın, Sinan, Tank, S. Bülent, Karaş, 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.

Karaş, 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.

PUBLICATIONS IN PROGRESS

Özaydın, Sinan, Selway, Kate, Griffin, William L., Moorkamp, Max (2021). "Composition of the Southern African lithospheric mantle and its relevance to magnetotelluric models.", *Journal of Geophysical Research: Solid Earth*, In preperation.

Moorkamp, Max, Özaydın, Sinan, Selway, Kate, Jones, Alan G., (2021). "A large scale conductivity model for Southern Africa.", *Journal of Geophysical Research: Solid Earth*, In preperation.

RESEARCH PROJECTS

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

Summit Station Magnetotellurics (SUMMAT) *2018*
Researcher

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

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

CONFERENCE PROCEEDINGS (1st AUTHOR ONLY)

Özaydın, Sinan, Selway, Kate "Laboratory results coded in MATE.", Oral Presentation, *EM-Community Webinar Series*, Virtual Conference, International.

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, Selway, Kate (2019). "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 ARC 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.

COMPUTER SKILLS

Languages: Python, Matlab, Fortran, Bash, LaTeX
MT Inversion: ModEM, jif3D, WS3DINV, MARE2DEM, rjmcmcmt
MT Processing: EMTF, BIRRP
Geoscience Software: QGIS, GMT, PerpleX, Paraview
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

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