

Shunguo Wang

Postdoctoral Scholar

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Employment

- 2018 - **Green Scholar (postdoc)**, Scripps Institution of Oceanography, UC San Diego
Collaborator: Steven Constable
- 2019, 2020 **Lecturer**, Scripps Institution of Oceanography, UC San Diego
- 2018 **Visiting postdoc**, Memorial University of Newfoundland
Collaborators: Colin G. Farquharson, Hormoz Jahandari
- 2014, 2016 **EM geophysicist**, Geological Survey of Sweden
Collaborators: Mehrdad Bastani, Lena Persson
- 201711-201802 **Leave**

Education

- 2013 - 2017 **Ph.D.**, Solid-Earth Geophysics, Uppsala University
Advisors: Mehrdad Bastani, Thomas Kalscheuer, Alireza Malehmir, Laust Pedersen
- 2017 **Visiting graduate**, Scripps Institution of Oceanography, UC San Diego
Host: Steven Constable
- 2016 **Visiting graduate**, Leicester University
Host: Max Moorkamp
- 2012 - 2013 **Ph.D. candidate**, Applied Geophysics, Central South University
Advisor: Shikun Dai
- 2009 - 2012 **M.S.**, Applied Geophysics, Central South University
Advisors: Bin Xiong, Jishan He
- 2011 **Master exchange program**, Guilin University of Technology
- 2005 - 2009 **B.S.**, Applied Geophysics, Central South University

Publications

- *Undergoing journal papers/books (* corresponding author)*

- [3] **Wang S.**, Constable, S., Orange, A.S., 2020. Influences of air wave on the marine controlled source electromagnetic data. *In preparation*
- [2] Rychert, C.A., Harmon, N., Kendall, J.M., Constable, S., Tharimena, S., **Wang S.**, Bogiatzis, P., Schlaphorst, D., Agius, M., Hicks, S., 2020. A dynamic lithosphere-asthenosphere boundary dictated by variations in melt generation and migration. *To be submitted*

[1] Zhao, D., Dai, S., **Wang, S.** *, Li, K., 2020. Three-dimensional magnetotelluric modelling in a mixed space-wavenumber domain. *In submission*

- Peer-reviewed journal papers/books (* corresponding author)

- [19] Rychert, C.A., Harmon, N., Constable, S., **Wang, S.**, 2020. Nature of the Lithosphere-Asthenosphere Boundary. *Journal of Geophysical Research: Solid Earth*
- [18] **Wang, S.**, Constable, S., Rychert, C.A., Harmon, N., 2020. A lithosphere-asthenosphere boundary and partial melt resolved using marine magnetotelluric data. *Geochemistry Geophysics Geosystems*, **21**(9). <https://doi.org/10.1029/2020GC009177>
- [17] **Wang, S.**, Constable, S., Reyes-Ortega, V., Jahandari, H., Farquharson, C., Avilés-Esquivel, T., 2020. Two-dimensional determinant inversion of marine magnetotelluric data and a field example from the Gulf of California, Mexico. *Geophysics (in print)*
- [16] **Wang, S.**, Constable, S., Reyes-Ortega, V., Rychert, C.A., 2020. A marine magnetotelluric coast effect sensitive to the lithosphere-asthenosphere boundary. *Geophys. J. Int.*, **218**(2), 978-987. DOI:10.1093/gji/ggz202
- [15] **Wang, S.**, Bastani, M., Constable, S., Kalscheuer, T., Malehmir, A., 2019. Using boat-towed radio-magnetotelluric and controlled-source audio-magnetotelluric data to resolve fracture zones at Äspö Hard Rock Laboratory site, Sweden. *Geophys. J. Int.*, **218**(2), 1008-1031. DOI:10.1093/gji/ggz162
- [14] Dai, S., Zhao, D., **Wang, S.***, Xiong, B., Zhang, Q., Li, K., Chen, L., Chen, Q., 2019. Three-dimensional numerical modeling of gravity and magnetic anomaly in a mixed space-wavenumber domain. *Geophysics*, **84**(4), G41-54. DOI: 10.1190/geo2018-0491.1
- [13] Li, K., Dai, S., Chen, Q., Zhang, Q., Zhao, D., **Wang, S.**, Ling, J., 2019. Three-dimensional modeling of magnetic anomaly integral solution in a mixed space-wavenumber domain. *Chinese J. of Geophys.*, **62**(11): 4437-4450, doi:10.6038/cjg2019M0362.
- [12] Bastani, M., Lundin, I. A., **Wang, S.**, Jönberger, J., 2017. Integrated Modelling of Geophysical and Petrophysical Data for Imaging Deeper Crustal Structures in Northern Sweden. *In "Proceedings of Exploration 17: Sixth Decennial International Conference on Mineral Exploration" edited by V. Tschirhart and M.D. Thomas*, 701–714. EAGE Best Papers.
- [11] **Wang, S.**, Kalscheuer, T., Bastani, M., Malehmir, A., Pedersen, L.B., Dahlin T., Meqbel, N., 2018. Joint inversion of lake-floor electrical resistivity tomography and boat-towed radio-magnetotelluric data illustrated on synthetic data and an application from the Äspö Hard Rock Laboratory site, Sweden. *Geophys. J. Int.*, **213**(1), 511-533.
- [10] **Wang, S.**, 2017. *Joint inversion and integration of multiple geophysical data for improved models of near-surface structures*. PhD thesis, Uppsala University, Uppsala. ISBN: 978-91-513-0018-4
- [9] Brodic, B., Malehmir, A., Bastani, M., Mehta, S., Juhlin, C., Lundberg, E. and **Wang, S.**, 2017. Multi-component digital-based seismic landstreamer and boat-towed radio-magnetotelluric acquisition systems for improved subsurface characterization in the urban environment. *First Break*, **35**(8), 41-47.
- [8] **Wang, S.**, Malehmir, A., Bastani, M., 2016. Geophysical characterization of areas prone to quick-clay landslides using radio-magnetotelluric and seismic methods. *Tectonophysics*, **677**, 248-260.

- [7] Malehmir, A., **Wang, S.**, Lamminen, J., Brodic, B., Bastani, M., Vaittinen, K., Juhlin, C., Place, J., 2015. Delineating structures controlling sandstone-hosted base-metal deposits using high-resolution multicomponent seismic and radio-magnetotelluric methods: a case study from Northern Sweden. *Geophys. Prospect.*, **63**(4), 774-797.
- [6] Dai, S., **Wang, S.***, Zhang, Q., Xue, D., 2013. 2.5D forward and inversion of CSEM in frequency domain. *The Chinese Journal of Nonferrous Metals (in Chinese with English abstract)*, **23**(9), 2513-2523.
- [5] **Wang, S.**, Xiong, B., Dai, S., 2013. Resolution ability to E-Ex arrangement wide field electromagnetic method studied on 1-D modeling and inversion. *Journal of Central South University (in Chinese with English abstract)*, **44**(9), 3766-3775.
- [4] **Wang, S.**, 2012. *2.5D forward modeling of wide field electromagnetic method with vertical magnetic dipole source*. Master thesis (in Chinese with English abstract), Central South University, Changsha.
- [3] **Wang, S.**, Xiong, B., Wang Y., Li C., 2012. Wave-number domain features of primary field of H-Hz arrangement wild field electromagnetic method. *Journal of Guilin University of Technology (in Chinese with English abstract)*, **32**(2), 179-183.
- [2] **Wang, S.**, Xiong, B., 2012. Numerical calculation methods of wide field apparent resistivity. *Computing Techniques for Geophysical and Geochemical Exploration (in Chinese with English abstract)*, **34**(4), 380-383.
- [1] **Wang, S.**, Xiong, B., 2010. Electromagnetic coupling effect in double frequencies surveys over multi-layer earth. *Computing Techniques for Geophysical and Geochemical Exploration (in Chinese with English abstract)*, **32**(6), 617-620.

- Selected conference publications (* corresponding author)

- [18] **Wang, S.**, Constable, S., Reyes-Ortega, V., 2020. Using marine magnetotelluric determinant data in LAB studies at Middle Atlantic Ridge and Mendocino Fracture Zone to study the oceanic upper mantle. *AGUFM, 2020. Oral*
- [17] **White paper coauthor**, 2020. Early Career Community Vision For Future Magnetotelluric Facility.
- [16] Rychert, C., Harmon, N., Constable, S., Kendall, J.M., Tharimena, S., **Wang, S.**, Agius, M.R., Bogiatzis, P., Schlaphorst, D. and Hicks, S.P., 2019. A global view on mantle melt dynamics from the lithosphere-asthenosphere boundary the transition zone, insights from the PI-LAB experiment. *AGUFM, 2019*, pp.D111A-05.
- [15] **Wang, S.**, Constable, S., Rychert, C. and Harmon, N., 2019. A dynamic lithosphere-asthenosphere boundary revealed using marine magnetotelluric data. *AGUFM, 2019*, T43F-0516.
- [14] Rychert, C., Harmon, N., Constable, S., Kendall, J.M., Tharimena, S., **Wang, S.**, Bogiatzis, P., Agius, M.R., Schlaphorst, D. and Hicks, S.P., 2019. A dynamic lithosphere-asthenosphere boundary dictated by variations in melt generation and migration: Results from the PI-LAB Experiment in the Equatorial Mid Atlantic. *AGUFM, 2019*, T41B-02.
- [13] Rychert, C.A., Harmon, N., Kendall, M., Constable, S., Tharimena, S., Agius, M., Bogiatzis, P., Schlaphorst, D. and **Wang, S.**, 2019, January. A dynamic plate base at the slow spreading Mid-Atlantic Ridge from the PI-LAB Experiment. In *Geophysical Research Abstracts* (Vol. 21).

- [12] C. Rychert, N. Harmon, M. Kendall, S. Tharimena, M. Agius, P. Bogiatzis, B. Chichester, S. Hicks, S. Constable, **S. Wang**, 2018. Seismic Imaging of Oceanic Lithosphere: The PI-LAB Experiment at the Equatorial Mid-Atlantic and the VoiLA Experiment in the Lesser Antilles. *New Advances in Geophysics: The Future of Passive Seismic Acquisition*, the Royal Society of Edinburgh, UK
- [11] **Wang, S.**, Bastani, M., Constable S., Kalscheuer, T., Malehmir, A., 2018. Using boat-towed radio-magnetotelluric and controlled source audio-magnetotelluric data to resolve fracture zones at Äspö Hard Rock Laboratory site, Sweden. *24th Electromagnetic Induction Workshop*, Helsingør, Denmark.
- [10] **Wang, S.**, Bastani, M., Kalscheuer, T., Malehmir, A., Dynesius, L., 2017. Controlled source boattowed radio-magnetotellurics for site investigation at Äspö Hard Rock Laboratory, southeastern Sweden. *79th EAGE Conference and Exhibition*, Paris, France. *Oral*
- [9] Lundin, I.A., Bastani, M., **Wang, S.**, Jönberger, J., 2016. Imaging Deep Crustal Structures and Mineralised Zones by 3D Modeling of Potential Field and Magnetotelluric Data-Example. *Near Surface Geoscience 2016-First Conference on Geophysics for Mineral Exploration and Mining*, Barcelona, Spain.
- [8] Bastani, M., **Wang, S.**, Malehmir, A., 2016. Boat-towed RMT Measurements on the Water Surface over the Äspö Hard Rock Tunnel in Sweden. *Near Surface Geoscience 2016-Second Applied Shallow Marine Geophysics Conference*, Barcelona, Spain.
- [7] **Wang, S.**, Xiong B., Jiang Q., 2016. Wide field electromagnetic 2.5D modeling. *23rd Electromagnetic Induction Workshop*, Chiang Mai, Thailand.
- [6] **Wang, S.**, Kalscheuer, T., Bastani, M., Malehmir, A., Pedersen, L.B., Dahlin, T., Meqbel, N., 2016. Joint inversion of on-lake radio-magnetotelluric and lake-floor direct current resistivity data and its applications. *23rd Electromagnetic Induction Workshop*, Chiang Mai, Thailand. *Oral*
- [5] Bastani, M., **Wang, S.**, Lundin, I.A., 2016. 2D and 3D resistivity models from magnetotelluric measurements North East of Kiruna, Sweden. *32nd Nordic Geological Winter Meeting*, Helsinki, Finland.
- [4] Mehta, S., Bastani, M., Malehmir, A., **Wang, S.** and Pedersen, L., 2014. Shallow water radio-magnetotelluric (RMT) measurements in urban environment: A case study from Stockholm city. *EGUGA*, p.4196.
- [3] Malehmir, A., **Wang, S.**, Lamminen, J., Bastani, M., Juhlin, C., Vaittinen, K., Dynesius, L., Palm, H., 2014. High-resolution multicomponent hardrock seismic imaging of mineral deposits and their host rock structures. *76th EAGE Conference and Exhibition*, Amsterdam, Netherlands.
- [2] **Wang, S.**, Bastani, M., Malehmir, A., 2014. Integrated use of radio-magnetotelluric and high-resolution reflection seismic data to delineate near surface structures – two case studies from Sweden. *22nd Electromagnetic Induction Workshop*, Weimar, Germany. *Oral*
- [1] Xiong, B., **Wang, S.***, 2011. Wave-Number Domain Features of Primary Field of H-Hz Arrangement Wide Field Electromagnetic Method. *International Conference on Instrumentation, Measurement, Circuits and Systems*, Hong Kong, China.

Research Funding

2020 (In submission) Natural Science Foundation of US: Joint magnetotelluric and seismic

- study of the Hawaiian swell and plume (~ \$ 80,000 out of 1 million).
- 2018 - 2020 The Cecil H. and Ida M. Green Foundation: Develop 3D finite element modeling code for the marine magnetotelluric considering bathymetry (PI), \$ 60,000.
- 2016 - 2017 Byzantinska resestip: Develop boat-towed controlled-source radio-magnetotelluric inversion with source effect (PI), \$ 22,000.

Other Research Projects

- 2018 - 2020 Nature Science Foundation of the US: iLAB - Integrated Lithosphere-Asthenosphere Boundary Study (Participant).
- 2013 - 2017 Formas, BeFo, SBUF, Skanska, Boliden, FQM, Trafikverket, NGI: Multicomponent seismic and EM methods, <http://trust-geoinfra.se> (Participant).
- 2013 SEG-GWB project: Integration of geophysical, hydrogeological and geotechnical methods to aid monitoring landslide in Nordic countries (Participant).
- 2012 National High Technology Research and Development Program of China: Marine CSEM data processing and interpreting software (Participant).
- 2011 Natural Science Foundation of Guangxi Province: Wide field electromagnetic 2D and 3D modeling and inversion with adaptive finite element method (Participant).
- 2009 - 2010 Natural Science Foundation of China: 2.5D adaptive finite element modeling and inversion for TEM method with magnetic source (Participant).

Field Experience

- 201806 Test new acoustic capacity of OBEM instrument (2 days)
- 201606 Aquifer delineation on Öland using radio-magnetotellurics (2 weeks)
- 201606 Map fracture zones using boat-towed controlled-source radio-magnetotellurics (1 week)
- 201603 Map fracture zones using controlled-source radio-magnetotellurics on ice (2 days)
- 201505 Map fracture zones using boat-towed radio-magnetotellurics and seismics (1 week)
- 201508 Site investigation for energy storage using seismic method (1 week)
- 201407 Metal deposit investigation in Kiruna using magnetotellurics (2 weeks)
- 201402 Test seismic landstreamer, radio-magnetotellurics, and electrical resistivity tomography methods in Stockholm (1 week)
- 201310 Delineate metal deposit using seismic landstreamer and radio-magnetotellurics (2 weeks)
- 201310 Site investigation for waste storage using audio-magnetotellurics methods (3 days)
- 201206 Investigate a salt deposit using wide field electromagnetic method (2 weeks, team leader)
- 201106 Petro-Sonde method experiment (1 week)
- 201010 Delineate reservoir resistivity structure using wide field electromagnetic method (2 weeks)
- 201009 - 11 Investigate goaf at a coal mining area using wide field electromagnetic method (2 months)

Teaching & Mentorship

2020	Environmental and Exploration Geophysics (SIO 182A, guest-lecturer at Scripps Institution of Oceanography)
2019	Environmental and Exploration Geophysics (SIO 182A, co-lecturer at Scripps Institution of Oceanography)
2014 - 2016	Applied Geophysics (TA at Uppsala University)
2015 - 2016	Electromagnetic Geophysics (TA at Uppsala University)
2011	Ground Penetrating Radar (TA at Guilin University of Technology)
2018 -	Mentor of Valeria Reyes-Ortega (Scripps Institution of Oceanography)
2016 - 2017	Mentor of Mehdi Mohammadi Vizheh (Uppsala University)

Synergistic Activities

Reviewer:

Geophysics; Journal of Applied Geophysics; Journal of Environmental & Engineering Geophysics; Geoscience Frontier; Pure and Applied Geophysics; Energies; Earth, Planets and Space; Geophysical Journal International; Journal of Ocean University of China; Tectonophysics; Society of Exploration Geophysicists conference

Membership:

2019 -	American Geophysical Union
2019 -	Southern California Earthquake Center
2018 -	International Association of Geomagnetism and Aeronomy, Division VI
2014 -	Society of Exploration Geophysicists
2017 - 2018	European Association of Geoscientists and Engineers

Session Chair:

2020	AGU Fall Meeting (DI010, GP003-III)
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Attended Workshop and Conferences:

2020	InSAR Processing and Theory with GMTSAR
2019	SCEC Research Mentor Training Workshop
2019	Academic Laboratory Management & Leadership Symposium
2018	Electromagnetic Induction Workshop
2018	Explore Prepare Innovate Connect Postdoctoral Training Program
2017	European Association of Geoscientists and Engineers Annual Meeting (oral)
2016	Electromagnetic Induction Workshop (oral & poster)
2015	Surface-Wave Analysis Workshop; Joint Inversion in Geophysics Summer School
2014	Electromagnetic Induction Workshop (oral)

Invited Seminar/Talks:

2019	Southern University of Science and Technology
2018	Memorial University of Newfoundland
2018	Scripps Institution of Oceanography
2017	Sun Yat-Sen University
2017	Central South University

Committee Member:

- 2018 - Seminar organizer of Institute of Geophysics and Planetary Physics
2018 - Steward of UAW Local 5810, the union of 11,000 academic Scholars & Researchers

Awards & Scholarships & Travel Grants

- 2020 Outstanding graduate representative of Geosciences at Central South University
2018 Explore Prepare Innovate Connect Scholarship (\$ 100)
2017 European Association of Geoscientists and Engineers (\$ 180)
2016 Jānes Scholarship (\$ 1300)
2014 Electromagnetic Induction Workshop (\$ 570)
2013 - 2017 China Scholarship Council (\$ 63,000)
2011 East China Mineral Exploration and Development Scholarship (\$ 450)
2010 - 2011 He Jishan Foundation Scholarships (\$ 900)
2009 - 2012 Central South University Scholarships (\$ 4,900)
2005 - 2009 Central South University Scholarships (\$ 450)