Shunguo Wang

Researcher

Department of Electronic Systems
Norwegian University of Science and Technology
Trondheim, 7041, Norway
Email: shunguo.wang@ntnu.no
wangshunguo@yeah.net
ORCID: https://orcid.org/0000-0001-6573-840X
Google Scholar: https://scholar.google.com/citations?user=ysA5F_kAAAAJ&hl=en
Homepage: https://shunguowang.github.io

Employment

2020 - **Researcher**, Norwegian University of Science and Technology
Collaborator: Ståle Johansen, Martin Landrø

2018 - 2020 **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

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. *Submitted*

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

- 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.* DOI: 10.1029/2018JB016463

[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*, **86**(1), doi: 10.1190/GEO2019-0735.1

[16] **Wang, S.**, Constable, S., Reyes-Ortega, V., Rychert, C.A., 2019. 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 controlledsource 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.DI11A-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 Electromagneitc 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 Frontiers; Pure and Applied Geophysics; Energies; Earth, Planets and Space; Geophysical Journal International; Journal of Ocean University of China; Tectonophysics; Applied Sciences; 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)

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 - 2020 Seminar organizer of Institute of Geophysics and Planetary Physics
2018 - 2020 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 Jänes 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)