

STEVEN CONSTABLE – CURRICULUM VITAE

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CONTACT:

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EDUCATION:

1983 Ph.D., Geophysics, Australian National University
1979 Bachelor of Science, Geology (Honors), University of Western Australia

POSITIONS HELD:

2016– Distinguished Professor
1998–2016 Professor
Scripps Institution of Oceanography (SIO)
1985–1998 SIO, Research Geophysicist (Assistant through Full)
1983–1985 SIO, Postdoctoral Research Oceanographer

PROFESSIONAL SOCIETIES:

Royal Astronomical Society
American Geophysical Union (supporting life member)
Society of Exploration Geophysicists (lifetime member)
European Association of Geoscientists and Engineers

AWARDS, PRIZES:

Rex T. Prider Medal (1979); G.W. Hohmann Award (2003);
SEG Distinguished Achievement Award (for Scripps) (2007);
Hon. Mention, Best Paper, *The Leading Edge* (2007);
R&D 100 Award (with Quasar Geophysical Technologies) (2010)
2015 Bullard Lecturer (AGU section lecture for GPE)
SEG/AAPG Distinguished Lecturer, Fall 2016
SEG Reginald Fessenden Award, 2016
AGU Fellowship, 2016

RESEARCH INTERESTS:

Application of marine EM methods to tectonics and resource exploration.
Electromagnetic sounding of the crust and mantle.
Laboratory studies of electrical conductivity of rocks and minerals.

SUMMARY:

99 publications, 5 patents, 801 days at-sea experience, ISI h-index=32

PUBLICATIONS:

- Weitemeyer, K., S. Constable, D. Shelander, and S. Haines, 2017. Mapping the resistivity structure of Walker Ridge 313 in the Gulf of Mexico using the marine CSEM method. *Marine and Petroleum Geology*, **88**, 1013–1031, /doi.org/10.1016/j.marpetgeo.2017.08.039.
- Sherman, D., P. Kannberg, and S. Constable, 2017. Surface towed electromagnetic system for mapping of subsea Arctic permafrost. *Earth and Planetary Science Letters*, **460**, 97–104.
- Bloomer, S., P. Kowalczyk, S. Constable, and E. Keisuke, 2016. Test results and applications of an AUV-borne controlled source electromagnetic (CSEM) system. *IEEE/OES Autonomous Underwater Vehicles (AUV)*, , 90–94.
- Naif, S., K. Key, S. Constable, and R.L. Evans, 2016. Porosity and fluid budget of a water-rich megathrust revealed with electromagnetic data at the Middle America Trench. *Geochemistry, Geophysics, Geosystems*, **17**, 4495–4516.
- Constable, S., P. K. Kannberg, and K. Weitemeyer, 2016. Vulcan: A deep-towed CSEM receiver. *Geochemistry, Geophysics, Geosystems*, **17**, 1042–1064, doi:10.1002/2015GC006174.

- Naif, S., K. Key, S. Constable, and R.L. Evans, 2015. Water-rich bending faults at the Middle America Trench. *Geochemistry, Geophysics, Geosystems*, **16**, 2582–2597.
- Du Frane, W., L.A. Stern, S. Constable, K.A. Weitemeyer, M.M. Smith, and J.J. Roberts, 2015. Electrical properties of methane hydrate + sediment mixtures. *Journal of Geophysical Research*, **120**, 4773–4787, doi:10.1002/2015JB011940.
- Constable S., 2015. Geomagnetic Induction Studies. In “*Treatise on Geophysics, 2nd edition*”, ed. Gerald Schubert, Oxford: Elsevier, pp. 219-254.
- Wheelock, B., S. Constable, and K. Key, 2015. The advantages of logarithmically scaled data for electromagnetic inversion. *Geophysical Journal International*, **201**, 1765–1780.
- Myer, D., K. Key, and S. Constable, 2015. Marine CSEM of the Scarborough gas field, Part 2: 2D inversion. *Geophysics*, **80**, E187–E196.
- Constable, S., A. Orange, and K. Key, 2015. And the geophysicist replied: “Which model do you want?”. *Geophysics*, **80**, E197–E212.
- Ray, A., K. Key, T. Bodin, D. Myer, and S. Constable, 2014. Bayesian inversion of marine CSEM data from the Scarborough gas field using a transdimensional 2-D parameterization. *Geophysical Journal International*, **199**, 1847–1860, doi: 10.1093/gji/ggu370.
- Weitemeyer, K., and S. Constable, 2014. Navigating marine electromagnetic transmitters using dipole field geometry. *Geophysical Prospecting*, **62**, 573–593, doi: 10.1111/1365-2478.12092.
- Myer, D., S. Constable, and K. Key, 2013. Magnetotelluric evidence for layered mafic intrusions beneath the Vøring and Exmouth rifted margins. *Physics of the Earth and Planetary Interiors*, **220**, 1–10, doi: 10.1016/j.pepi.2013.04.007.
- Key, K., S. Constable, L. Liu, and A. Pommier, 2013. Electrical image of passive mantle upwelling beneath the northern East Pacific Rise. *Nature*, **495**, 499–502.
- Naif, S., K. Key, S. Constable, and R.L. Evans, 2013. Melt-rich channel observed at the lithosphere-asthenosphere boundary. *Nature*, **495**, 356–359.
- Constable, S., 2013. Review paper: Instrumentation for marine magnetotelluric and controlled source electromagnetic sounding. *Geophysical Prospecting*, **61**, 505–532.
- Key, K., S. Constable, T. Matsuno, R.L. Evans, and D. Myer, 2012. Electromagnetic detection of plate hydration due to bending faults at the Middle America Trench. *Earth and Planetary Science Letters*, **351–352**, 45–53, doi:10.1016/j.epsl.2012.07.020.
- Myer, D., S. Constable, K. Key, M.E. Glinesky, and G. Liu, 2012. Marine CSEM of the Scarborough gas field, Part 1: Experimental design and data uncertainty. *Geophysics*, **77**, E281–E299, doi:10.1190/GEO2011-0380.1.
- Weitemeyer, K.A., S. Constable, S. and A.M. Trehu, 2011. A marine electromagnetic survey to detect gas hydrate at Hydrate Ridge, Oregon. *Geophysical Journal International*, **187**, 45-62.
- Du Frane, W.L., L.A. Stern, K.A. Weitemeyer, S. Constable, J.C. Pinkston, J.J. Roberts, 2011. Electrical properties of polycrystalline methane hydrate. *Geophysical Research Letters*, **38**, doi:10.1029/2011GL047243.
- Van Beusekom, A.E., R.L. Parker, R.E. Bank, P.E. Gill, and S. Constable, 2011. The 2-D magnetotelluric inverse problem solved with optimization. *Geophysical Journal International*, **184**, 639–650.
- Key, K., and S. Constable, 2011. Coast effect distortion of marine magnetotelluric data: Insights from a pilot study offshore northeastern Japan. *Physics of the Earth and Planetary Interiors*, **184**, 194–207.
- Myer, D., S. Constable, and K. Key, 2011. Broad-band waveforms and robust processing for marine CSEM surveys. *Geophysical Journal International*, **184**, 689–698.
- Zhdanov, M.S., L. Wan, A. Gribenko., M. Cuma, K. Key, and S. Constable, 2011. Large-scale 3D inversion of marine magnetotelluric data: Case study from the Gemini prospect, Gulf of Mexico. *Geophysics*, **76**, F77-F87.
- Weitemeyer, K., G. Gao, S. Constable, and D. Alumbaugh, 2010. The practical application of 2D inversion to marine controlled-source electromagnetic sounding. *Geophysics*, **75**, F199–F211.
- Constable, S., 2010. Ten years of marine CSEM for hydrocarbon exploration. *Geophysics*, **75**, 75A67–75A81.
- Weitemeyer, K., and S. Constable, 2010. Mapping shallow geology and gas hydrate with marine CSEM surveys. *First*

- Break*, **28**, 97–102.
- Myer, D., S. Constable, and K. Key, 2010. A marine EM survey of the Scarborough gas field, Northwest Shelf of Australia. *First Break*, **28**, 77–82.
- Li, Y.G., and S. Constable, 2010. Transient electromagnetic in shallow water: insights from 1D modeling. *Chinese Journal of Geophysics*, **53**, 737–743.
- Constable, S., K. Key, and L. Lewis, 2009. Mapping offshore sedimentary structure using electromagnetic methods and terrain effects in marine magnetotelluric data. *Geophysical Journal International*, **176**, 431–442.
- Orange, A., K. Key, and S. Constable, 2009. The feasibility of reservoir monitoring using time-lapse marine CSEM. *Geophysics*, **74**, F21–F29.
- Constable, S., 2007. Geomagnetism. In “*Treatise on Geophysics, Volume 5*”, ed. G. Schubert and M. Kono, Elsevier, doi:10.1016/B978-044452748-6.00092-4 , pp. 237–276.
- Constable, S., 2007. Conductivity, ocean floor measurements. In “*Encyclopedia of Geomagnetism and Paleomagnetism*”, ed. D. Gubbins and E. Herrero-Bervera, Springer, pp. 71–73.
- Constable, S., 2007. Induction from satellite data. In “*Encyclopedia of Geomagnetism and Paleomagnetism*”, ed. D. Gubbins and E. Herrero-Bervera, Springer, pp. 413–416.
- Medin, A.E., R.L. Parker, and S. Constable, 2007. Making sound inferences from geomagnetic sounding. *Phys. Earth Planet. Int.*, **160**, 51–59.
- Li, Y., and S. Constable, 2007. 2D marine controlled-source electromagnetic modeling: Part 2 – The effect of bathymetry. *Geophysics*, **72**, WA63–WA71.
- Constable, S., and L.J. Srnka, 2007. An introduction to marine controlled source electromagnetic methods for hydrocarbon exploration. *Geophysics*, **72**, WA3–WA12.
- Constable, S., 2006. SEO3: A new model of olivine electrical conductivity. *Geophys. J. Int.*, **166**, 435–437.
- Constable, S., 2006. Marine electromagnetic methods—A new tool for offshore exploration. *The Leading Edge*, **25**, 438–444.
- Weitemeyer, K., S. Constable, and K. Key, 2006. Marine EM techniques for gas-hydrate and hazard mitigation. *The Leading Edge*, **25**, 629–632.
- Weiss, C.J., and S. Constable, 2006. Mapping thin resistors in the marine environment, Part II: Modeling and analysis in 3D. *Geophysics*, **71**, G321–G332.
- Weitemeyer, K.A., S.C. Constable, K.W. Key, and J.P. Behrens, 2006. First results from a marine controlled-source electromagnetic survey to detect gas hydrates offshore Oregon. *Geophysical Research Letters*, **33**, L03304, doi:10.1029/2005GL024896.
- Constable, S., and C.J. Weiss, 2006. Mapping thin resistors (and hydrocarbons) with marine EM methods: Insights from 1D modeling. *Geophysics*, **71**, G43–G51.
- Key, K.W., S.C. Constable, and C.J. Weiss, 2006. Mapping 3D salt using 2D marine MT: Case study from Gemini Prospect, Gulf of Mexico. *Geophysics*, **71**, B17–B27.
- Constable, C.G. and S.C. Constable, 2004. Satellite magnetic field measurements: Applications in studying the deep Earth. In “*The State of the Planet: Frontiers and Challenges in Geophysics, Geophysical Monograph 150*”, ed. R.S.J. Sparks and C.T. Hawkesworth, American Geophysical Union, pp. 147–159.
- Constable, S. and G. Heinson, 2004. Hawaiian hot-spot swell structure from seafloor MT sounding. *Tectonophysics*, **389**, 111–124.
- deGroot-Hedlin, C. and S. Constable, 2004. Inversion of magnetotelluric data for 2D structure with sharp resistivity contrasts. *Geophysics*, **69**, 78–86.
- Constable, S., and C. Constable, 2004. Observing geomagnetic induction in magnetic satellite measurements and associated implications for mantle conductivity. *Geochem. Geophys. Geosys.*, **5**, Q01006, doi:10.1029/2003GC000634.
- Korte, M., S.C. Constable, and C.G. Constable, 2003. Separation of external magnetic signal for induction studies. In “*First CHAMP Mission Results for Gravity, Magnetic and Atmospheric Studies*”, ed. C. Reigber, H. Lhr, and P. Schwintzer, Springer-Verlag, Berlin, pp. 315–320.

- Everett, M.E., S. Constable, and C.G. Constable, 2003. Effects of near-surface conductance on global satellite induction responses. *Geophys. J. Int.*, **153**, 277-286.
- Key, K., and S. Constable, 2002. Broadband marine MT exploration of the East Pacific Rise at 950°N. *Geophys. Res. Lett.*, **29**, 10.1029/2002GL016035.
- Ellingsrud, S., T. Eidesmo, S. Johansen, M.C. Sinha, L.M. MacGregor, and S. Constable, 2002. Remote sensing of hydrocarbon layers by seabed logging (SBL): Results from a cruise offshore Angola. *The Leading Edge*, **21**, 972-982.
- Constable, S., and A. Duba, 2002. Diffusion and mobility of electrically conducting defects in olivine. *Phys. Chem. Min.*, **29**, 446-454.
- Eidesmo, T., S. Ellingsrud, L.M. MacGregor, S. Constable, M.C. Sinha, S. Johanson, F.N. Kong, and H. Westerdahl, 2002. Sea Bed Logging (SBL), a new method for remote and direct identification of hydrocarbon filled layers in deepwater areas. *First Break*, **20**, 144-152.
- MacGregor, L., M. Sinha, and S. Constable, 2001. Electrical resistivity structure of the Valu Fa Ridge, Lau Basin, from marine controlled-source electromagnetic sounding. *Geophys. J. Int.*, **146**, 217-236.
- Füllekrug, M. and S. Constable, 2000. Global triangulation of intense lightning discharges. *Geophys. Res. Lett.*, **27**, 333-336.
- Heinson, G., S. Constable, and A. White, 2000. Episodic melt transport at a mid-ocean ridge inferred from magnetotelluric sounding. *Geophys. Res. Lett.*, **27**, 2317-2320.
- Hoversten, G.M., S. Constable, and H.F. Morrison, 2000. Marine magnetotellurics for base salt mapping: Gulf of Mexico field-test at the Gemini structure. *Geophysics*, **65**, 1476-1488.
- Popkov, I., A. White, G. Heinson, S. Constable, P. Milligan, and F.E.M. Lilley, 2000. Electromagnetic investigation of the Eyre Peninsula conductivity anomaly. *Exploration Geophysics*, **31**, 187-191.
- Heinson, G., A. White, S. Constable, and K. Key, 1999. Marine self potential exploration. *Bull. Aust. Soc. Explor. Geophys.*, **30**, 1-4.
- Everett, M.E., and S. Constable, 1999. Electric dipole fields over an anisotropic seafloor: theory and application to the structure of 40 Ma Pacific Ocean lithosphere. *Geophys. J. Int.*, **136**, 41-56.
- MacGregor, L.M., S. Constable, and M.C. Sinha, 1998. The RAMESSES Experiment III: Controlled source electromagnetic sounding of the Reykjanes Ridge at 57°45' N. *Geophys. J. Int.*, **135**, 773-789.
- Sinha, M.C., S. Constable, C. Peirce, A. White, G. Heinson, L.M. MacGregor, and D.A. Navin, 1998. Magmatic processes at slow spreading ridges: Implications of the RAMESSES Experiment at 57°45' North on the Mid-Atlantic Ridge. *Geophys. J. Int.*, **135**, 731-745.
- Hoversten, G.M., H.F. Morrison and S. Constable, 1998. Marine magnetotellurics for petroleum exploration Part 2. Numerical analysis of subsalt resolution. *Geophysics*, **63**, 826-840.
- Constable, S., A. Orange, G.M. Hoversten, and H.F. Morrison, 1998. Marine magnetotellurics for petroleum exploration Part 1. A seafloor instrument system. *Geophysics*, **63**, 816-825.
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- Anderson, G., S. Constable, H. Staudigel, and F.K. Wyatt, 1997. A seafloor long baseline tiltmeter. *J. Geophys. Res.*, **102**, 20,269-20,285.
- Tolstoy, M., S. Constable, J. Orcutt, H. Staudigel, F.K. Wyatt, and G. Anderson, 1997. Short and long baseline tiltmeter measurements on Axial Seamount, Juan de Fuca Ridge. *Phys. Earth Planet. Inter.*, **108**, 129-141.
- Sinha, M.C., D.A. Navin, L.M. MacGregor, S. Constable, C. Peirce, A. White, G. Heinson, and M.A. Inglis, 1997. Evidence for accumulated melt beneath the slow-spreading mid-Atlantic ridge. *Phil. Trans. A Roy. Soc.*, **355**, 233-253.
- Constable, S., and J.J. Roberts, 1997. Simultaneous modeling of thermopower and electrical conduction in olivine. *Phys. Chem. Min.*, **24**, 319-325.
- Heinson, G., S. Constable and A. White, 1996. Seafloor magnetotelluric sounding above axial seamount. *Geophys. Res. Lett.*, **23**, 2275-2278.

- Petersons, H.F., and S. Constable, 1996. Global mapping of the electrically conductive lower mantle. *Geophys. Res. Lett.*, **23**, 1461–1464.
- Constable, S., and C.S. Cox, 1996. Marine controlled source electromagnetic sounding 2. The PEGASUS experiment. *J. Geophys. Res.*, **101**, 5519–5530.
- Flosadottir, A.H. and S. Constable, 1996. Marine controlled source electromagnetic sounding 1. Modeling and experimental design. *J. Geophys. Res.*, **101**, 5507–5517.
- Evans, R.L., M.C. Sinha, S.C. Constable, and M.J. Unsworth, 1994. On the electrical nature of the axial melt zone at 13°N on the east Pacific rise. *J. Geophys. Res.*, **99**, 577–587.
- Heinson, G., S. Constable and A. White, 1993. The electrical conductivity of the lithosphere and asthenosphere beneath the coastline of southern California. *Bull. Aust. Soc. Explor. Geophys.*, **24**, 195–200.
- deGroot-Hedlin, C. and S. Constable, 1993. Occam's inversion and the North American Central Plains electrical anomaly. *J. Geomag. Geoelect.*, **45**, 985–1000.
- Constable, S.C., 1993. Conduction by mantle hydrogen. *Nature*, **362**, 704.
- Constable, S.C., and G. Heinson, 1993. In defense of a resistive oceanic upper mantle: reply to a comment by Tarits, Chave and Schultz. *Geophys. J. Int.*, **114**, 717–723.
- Constable, S.C., 1993. Constraints on mantle electrical conductivity from field and laboratory measurements. *J. Geomag. Geoelect.*, **45**, 707–728.
- Duba, A. and S.C. Constable, 1993. The electrical conductivity of a lherzolite. *J. Geophys. Res.*, **98**, 11885–11899.
- Constable, S.C., Shankland, T.J. and Duba, A., 1992. The electrical conductivity of an isotropic olivine mantle. *J. Geophys. Res.*, **97**, 3397–3404.
- Vanyan, L.L., D.A. Kaoldayev, N.A. Palshin, and S.C. Constable, 1992. On anisotropy of electrical conductivity in the oceanic lithosphere. *Fizika Zemli*, **5**, 79–85.
- Heinson, G. and Constable, S.C., 1992. The electrical conductivity of the oceanic upper mantle. *Geophys. J. Int.*, **110**, 159–179.
- Constable, S.C., 1992. Electrical studies of the Australian lithosphere. *Geol. Soc. Aust. Spec. Publ.*, **17**, 121–140.
- Evans, R.L., S.C. Constable, M.C. Sinha, and C.S. Cox, 1991. Upper crustal resistivity structure of the East Pacific Rise near 13°N. *Geophys. Res. Lett.*, **18**, 1917–1920.
- Constable, S.C., 1991. Comment on 'Magnetotelluric appraisal using simulated annealing' by Dosso and Oldenburg. *Geophys. J. Int.*, **106**, 387–388.
- Chave, A.D., Constable, S.C., and Edwards, R.N., 1991. Electrical exploration methods for the seafloor. In *"Electromagnetic Methods in Applied Geophysics, Volume 2"*, ed. M. Nabighian, Soc. Explor. Geophys., Tulsa., pp. 931–966.
- deGroot-Hedlin, C. and Constable, S.C., 1990. Occam's inversion to generate smooth, two-dimensional models from magnetotelluric data. *Geophysics*, **55**, 1613–1624.
- Constable, S.C., 1990. Marine electromagnetic induction studies. *Surveys in Geophysics*, **11**, 303–327.
- Constable, S.C. and Duba, A., 1990. The electrical conductivity of olivine, a dunite, and the mantle. *J. Geophys. Res.*, **95**, 6967–6978.
- Constable, S.C., Parker, R.L., and Constable, C.G., 1987. Occam's Inversion: a practical algorithm for generating smooth models from EM sounding data. *Geophysics*, **52**, 289–300 (This paper has been reprinted in the S.E.G. volume *Inversion of Geophysical Data*, 1988: L.R.Lines, ed.).
- Webb, S.C. and Constable, S.C., 1986. Microseism propagation between two sites on the deep sea floor. *Bull. Seis. Soc. Am.*, **76**, 1433–1445.
- Cox, C.S., S.C. Constable, A.D. Chave, and S.C. Webb, 1986. Controlled source electromagnetic sounding of the oceanic lithosphere. *Nature*, **320**, 52–54.
- Webb, S.C., S.C. Constable, C.S. Cox, and T.K. Deaton, 1985. A sea-floor electric field instrument. *Geomagnetism and Geoelectricity*, **37**, 1115–1129.

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- McFadden, P.C. and Constable, S.C., 1983. The estimation and removal of a linear drift from stacked data. *J. Geophys.*, **53**, 52-58.

REPORTS, PATENTS, ETC:

- Constable, S., P. Kannberg, K. Callaway, and D. Ramirez Mejia, 2012. Mapping shallow geological structure with towed marine CSEM receivers. *SEG Technical Program Expanded Abstracts*, **2012**, 1–5. doi: 10.1190/segam2012-0839.1.
- Constable, S., and K. Key, 2012. *Method and system for detecting and mapping hydrocarbon reservoirs using electromagnetic fields*. US Patent no. 8,253,418.
- Du Frane, W.L., L.A. Stern, K.A. Weitemeyer, S. Constable, and J.J. Roberts, 2011. Electrical properties of methane hydrate + sediment mixtures. *Fire in the Ice, Methane Hydrate Newsletter, National Energy Technology Laboratory*, **11(2)**, 10-13.
- Weitemeyer, K., and S. Constable, 2010. Tests of a new marine EM survey method. *Fire in the Ice, Methane Hydrate Newsletter, National Energy Technology Laboratory*, **March 2010**, 13–17.
- Weitemeyer, K., and S. Constable, 2009. Cruise report: Imaging gas hydrate in the Gulf of Mexico using marine electromagnetic methods. *Fire in the Ice, Methane Hydrate Newsletter, National Energy Technology Laboratory*, **Winter 2009**, 4–6.
- Constable, S., and K. Key, 2009. *Three-axis marine electric field sensor for seafloor electrical resistivity measurement*. US Patent no. 7,482,813.
- Constable, S., 2006. Book Review, Practical Magnetotellurics by Simson and Bahr. *EOS, Trans. Am. Geophys. Union*, **87**, 44.
- Constable, S., 2006. *Method and system for seafloor geological survey using vertical electric field measurement*. US Patent no. 7,116,108.
- Constable, S., 2006. *System and method for hydrocarbon reservoir monitoring using controlled-source electromagnetic fields*. US Patent no. 7,109,717.
- Constable, S., 2005. Hydrocarbon Exploration Using Marine EM Techniques. Contributed paper at *2005 Offshore Tech. Conf.*, Houston, USA.
- Key, K., S. Constable, and J. Behrens, 2005. Mapping the northern EPR magmatic system using marine EM. *Ridge 2000 Events*, **3**, 35–37.
- Constable, S., 1998. *Seafloor Magnetotelluric System and Method for Oil Exploration*. US Patent no. 5,770,945.
- Constable, S., Sinha, M.C., L.M. MacGregor, D.A. Navin, C. Peirce, A. White, and G. Heinson, 1997. RAMESSES finds a magma chamber beneath a slow spreading ridge. *InterRidge News*, **6**, 18–22.
- Constable, S., H. Staudigel, and J. Orcutt, 1992. Seafloor tiltmeters for spatial characterization of ridge systems. *RIDGE Events*, **3**, 25–26.
- Constable, S., 1992. Controlled-source electromagnetic methods in the spatial characterization of ridge systems. *RIDGE Events*, **3**, 6–8.
- Constable, S.C., 1983. *Deep Resistivity Studies of the Australian Crust*. Ph.D. thesis, Australian National University.

TEACHING:

- Mining Geophysics* at SDSU in 1987
- Geophysics of Natural Resources* (two quarter course) at UCSD from 1993 to 2008 (with A. Harding)
- Special Topics in Geophysics* (Seminars in Marine Geophysics) at SIO in 1993
- Special Topics in Geophysics* (Field Studies in Marine EM Methods) at SIO in 2006

Special Topics in Geophysics (Electrical Methods for Groundwater Exploration) at SIO in 2008
Special Topics in Geophysics (Conductivity of the Deep Earth) at SIO in 2010
Electromagnetic Methods in Geophysics at SIO in 2001, 2003, 2007, 2013, 2017
Ethical and Professional Science at SIO from 2011 to present (with C. Constable)
Environmental and Exploration Geophysics at SIO from 2011 to present
Introduction to Geophysics at SIO from 2012 to present (with G. Masters)

GRADUATE STUDENTS:

Catherine deGroot-Hedlin (graduated 1991)
Kerry Key (graduated 2003)
James Behrens (graduated 2004)
Karen Weitemeyer (graduated 2008)
David Myer (graduated 2011)
Brent Wheelock (graduated 2012)
Samer Naif (with K. Key, graduated 2015)
Peter Kannberg (current)
Dallas Sherman (current)
Mike Sly (Masters, graduated 2015)
Valeria Reyes-Ortega (current)

COMMUNITY SERVICE:

Distributed the Occam inversion code, used widely throughout geophysics
AGU special session convener, 1991, 1998, 1999, 2009, 2015, 2017 Fall meetings
Associate Editor, *Geophysics*, 1999–2004
Secretary, GP section of the American Geophysical Union, 2001–2002
AGU Program Committee, 2001 & 2002 Fall meetings
AGU Corresponding Editor for EOS (GP section), 2003–2007.
SEG Continuing Education Instructor, 2005–present
MARELEC program committee, 2004, 2006, 2009, 2011, 2013, 2015 meetings
Invited Speaker, SPE 2007 Research and Development Conference
Invited Plenary speaker at German Geophysical Society Annual meeting, 2008.
Invited presentation, Japan 2009 RAEG meeting, Kyoto
Presented short course at AAPG/SEG West Coast Student Expo, Northridge, CA, 2010
Special Award Judge (SEG) at 2011 Intel Science Fair, Los Angeles
MARELEC meeting chair and host, 2011 meeting
Keynote speaker, ASEG-PESA meeting, 2013
Invited speaker, ASEG-PESA Inversion Forum, 2013
Short course speaker, 2nd IAGA summer school, Prague, 2015
Trustee, Gerald W. Hohmann Memorial Trust, 2016–present
Member, AGU College of Fellows Steering Team, 2017–present
Chair, AGU College of Fellows Subcommittee on Distinguished Traveling Lecture Series, 2017–present
Funding coordinator, Industry liaison, IAGA Division VI, 2016–present
Member, subcommittee on IAGA Division VI procedures, 2016–present
Co-chair, 3DEM-6 Symposium, Berkeley, CA, 2017
Member, AGU GPE honors committee, 2017

UNIVERSITY SERVICE:

SIO computer policy committee, 1986–1998 (chair 1994-97)
San Diego Supercomputer Center steering committee from 1994–1998
UCSD Vice-chancellor’s committee on information infrastructure, 1994
U.C. shipfunds subcommittee from 1995 (chair in 1996)–1997
Earth Sciences Undergraduate Program Steering Committee from 1996–2004
Frieman Prize Committee, 1999
SIO Geophysics Graduate Admissions Chair, 1999–2002
SIO Marine Operations committee, 2002–2013
UCSD Committee on Educational Policy 2002 to 2009 (vice-chair 2004/5, 2007/8; chair 2008/2009)
UCSD Senate Council , 2008/9
UCSD Senate Admin Council, 2008/9
UC Committee on Educational Policy, 2008/9
UCSD Committee on Educational Policy subcommittee on grade appeals, chair, 2004
UCSD Committee on Educational Policy subcommittee on online/distance learning, chair, 2004–2006
UCSD/LANL CARE steering committee, 2004
UCSD review of History Department, chair, 2006
UCSD review of Biology Division, chair, 2007
SIO search committee for Assistant Director, Ship Operations, chair, 2007
UCSD search committee, Assistant Vice Chancellor, Intellectual Property, 2007
SIO AGOR-28 naming committee, 2010
SIO Faculty search committee, 2010
UCSD Committee on Committees, 2010–2013
SIO Faculty, vice-chair, 2009/10, chair 2010/11
Speaker, SIO perspectives on Ocean Science, 2011
UCSD University-Industry Relations Task Force member, 2010–2011
Director Haymet’s 5-year review committee, 2011
UCSD Building Advisory Committee, Seaweed Canyon, 2011
SIO Geophysics Graduate Admissions Chair, 2011
SIO Committee on Academic Personnel, 2012–2015
UCSD search committee, Export Control Officer, 2012
SIO search committee, Director, Contracts and Grants, 2014
UCSD search committee, Associate Vice Chancellor Innovation Alliances, 2015
SIO member, UCSD Representative Assembly, 2011–2014
UCSD Committee on Planning and Budget, 2015–present (vice-chair, 2016/17; chair 2017/18)
UC Planning and Budget Committee, 2017/18
UCSD Senate Council , 2017/18
UCSD Senate Admin Council, 2017/18
Director, Institute of Geophysics and Planetary Physics, 2016–present
Chair, IGPP Green Selection Committee, 2016–present

CONSULTING EXPERIENCE:

Science advisor for AOA Geomarine Operations (not current)
Science advisor for Quasar Federal Systems (not current)
Technology Advisory Board, RSI Ltd. (not current)
Consultant on marine EM to various exploration, contractor, and legal companies

SEAGOING EXPERIENCE:

- 1983-1984: 3 weeks total on R.V. Ellen B. Scripps; testing E.M. equipment.
- Sept 1983: 4 week cruise on R.V. New Horizon; controlled source EM sounding.
- Sept 1984: 3 week cruise on R.V. New Horizon; controlled source EM sounding.
- May 1986: 3 week cruise on R.V. Sproul, "Chovy"; acoustic studies using E.M., low frequency pressure, and seismic instruments.
- July 1986: 1.5 week cruise on R.V. Sproul; "Chovy" recovery.
- March 1988: 1 week cruise on R.V. Sproul; testing E.M. and pressure instruments (chief scientist).
- May 1988: 3 week cruise on R.V. Sproul, "Nachos"; acoustic studies using E.M., low frequency pressure, and seismic instruments.
- Nov 1988: 3.5 week cruise on R.V. New Horizon, "Pegasus"; Controlled source E.M. sounding, low frequency pressure array, and seafloor gravity (co-chief scientist).
- June 1989: 3 week cruise on R.R.S. Charles Darwin; Controlled source E.M. sounding over the East Pacific Rise (co-chief scientist).
- June/Aug 1991: 2, 1 day legs on R.V. Sproul, tiltmeter testing (chief scientist).
- October 1991: 8 days R.V. Thomas Washington, Loihi tiltmeter and hydrophone deployment, dredging, seabeam (chief scientist).
- December 1991: 4 days R.V. Wecoma, Loihi tiltmeter and hydrophone recovery, (chief scientist).
- November 1992: 3 days R.V. Sproul, tiltmeter and OBS deployment (chief scientist).
- February 1993: 2 days R.V. Sproul, tiltmeter and OBS recovery (chief scientist).
- October 1993: 31 days R.R.S. Charles Darwin, Geophysical studies of Reykjanes Ridge (co-chief)
- February 1994: 2, 1 day legs on R.V. Sproul, tiltmeter and OBS testing (co-chief scientist).
- March 1994: 2, 1 day legs on R.V. Sproul, tiltmeter and magnetometer testing (chief scientist).
- July 1994: 5 days on R.V. Wecoma, JdF tiltmeter and OBS deployment (chief scientist).
- Sept 1994: 4 days on R.V. Wecoma, JdF tiltmeter and OBS recovery (co-chief scientist).
- April 1994: 2 days on R.V. Sproul, LCheapo testing (chief scientist).
- Oct 1995: 16 days on Maestrals Secondo, Magnetotelluric survey for AGIP-INTE (chief scientist).
- Nov 1995: 32 days on R.V. Ewing, Lau Basin EM/seismic survey (co-chief scientist).
- Aug 1996: 12 days on R.V. Pelican, Gulf of Mexico magnetotelluric survey (chief scientist).
- Oct/Nov 1996: 30 days on Maestrals Secondo, Magnetotelluric survey for AGIP-INTE (chief scientist).
- April 1997: 8 days on R.V. Moana Wave, SWELL MT deployments.
- June 1997: 14 days on R.V. Pelican, Gulf of Mexico magnetotelluric survey (chief scientist)
- April 1998: 14 days on R.V. Franklin, SWAGGIE marine magnetotelluric and self potential
- July 1998: 11 days on R.V. Pelican, Gulf of Mexico magnetotelluric survey (chief scientist)
- Oct 1999: 1 day instrument recovery off Kauai, Hawaii.
- June 2000: 3 days on Kaiyo, offshore Japan MT deployments
- November 2000: 42 days on R.R.V. Charles Darwin, oilfield characterization offshore West Africa
- January 2001: 2 days on R.V. Sproul, instrument tests offshore San Diego (chief scientist)
- February 2001: 29 days on R.V. Thompson, APPLE (chief scientist)
- March 2001: 6 days R.V. Longhorn, Gemini MT in Gulf of Mexico (chief scientist)
- June 2001: 11 days on S.V. Explorer, sub-basalt MT offshore Faroes (chief scientist)
- June 2001: 1 day on Acoustic Explorer, instrument recoveries offshore San Diego (chief scientist)
- August 2001: 10 days on R.V. New Horizon, APPLE recovery (chief scientist)
- October 2001: 3 days on R.V. Sproul, instrument tests offshore San Diego (chief scientist)
- Jan/Feb 2002: 21 days on R.R.V. Charles Darwin, oilfield characterization offshore West Africa
- March 2002: 2 days on R.V. Sproul, shallow water MT offshore San Diego (chief scientist)
- July 2002: 1 day on R.V. New Horizon, instrument tests offshore San Diego (chief scientist)

- Feb 2003: 12 days on R.V. Gyre, MT and CSEM in Gulf of Mexico (chief scientist)
- April 2003: 4 days on R.V. New Horizon, instrument tests offshore San Diego (chief scientist)
- Feb 2004: 30 days on R.V. Revelle, marine EM over the EPR (co-chief scientist)
- August 2004: 7 days on R.V. New Horizon, marine EM on Hydrate Ridge (chief scientist)
- September 2004: 3 days on R.V. New Horizon, EM transmitter tests (chief scientist)
- April 2005: 2 days on R.V. Sproul, deployment for SAIC (chief scientist)
- October 2005 13 days on the R.V. Pelican, GoM sub-salt MT survey (chief scientist)
- May 2006 5 days on R.V. New Horizon, marine CSEM and MT (chief scientist)
- July 2006 5 days on R.V. Revelle, Loihi seamount EM tomography (chief scientist)
- May 2007 2 days on R.V. New Horizon, CSEM/MT instrument tests (chief scientist)
- September 2007 15 days on Akademik Boris Petrov, Marine MT in the Gulf of Kutch (chief scientist)
- April 2008 2 days on R.V. Sproul, Instrument tests (chief scientist)
- October 2008 18 days on R.V. Roger Revelle, EM for gas hydrate in GoM (chief scientist)
- November 2008 10 days on R.V. New Horizon, Plate boundary marine EM (chief scientist)
- May/June 2009 32 days on R.V. Roger Revelle, EM studies of Scarborough gas field (co-chief scientist)
- August 2009 5 days on R.V. New Horizon, instrument tests off Newport, Oregon (chief scientist)
- April/May 2010 30 days on R.V. Melville, SERPENT; MT and CSEM off Nicaragua (co-chief scientist)
- May 2011 3 days R.V. Wecoma, instrument tests off Oregon (chief scientist)
- June 2011 1 day on R.V. Sproul, instrument tests (chief scientist)
- Dec 2011 7 days on R.V. New Horizon, hydrate survey in San Nicolas Basin (chief scientist)
- July 2012 2 days on R.V. Sproul, marine MT training (chief scientist)
- Dec 2012 2 days on R.V. New Horizon, instrument tests (chief scientist)
- March 2013 2 days on R.V. New Horizon, instrument tests (chief scientist)
- May 2013 3 days on R.V. New Horizon, hydrate survey in San Nicolas Basin (chief scientist)
- Jan/Feb 2014 28 days on R.V. Ocean Stalwart, offshore Uruguay (chief scientist)
- June 2014 7 days on R.V. New Horizon, hydrate survey in Santa Cruz Basin (chief scientist)
- July 2014 7 days on R.V. Ukpik, permafrost survey Prudhoe Bay (chief scientist)
- August 2014 4 days on Shin Nichi Maru, hydrate survey offshore Japan
- March 2015 2 days on R.V. New Horizon, instrument tests (chief scientist)
- May 2015 10 days on B.O. Alpha Helix, Sea of Cortez geothermal project
- July 2015 8 days on R.V. Ukpik, permafrost survey Prudhoe Bay (chief scientist)
- May 2016 7 days on B.O. Alpha Helix, Sea of Cortez geothermal project
- July 2017 10 days on the R.V. Point Sur, Gulf of Mexico gas hydrate studies (chief scientist)
- October 2017 6 days on R.V. Roger Revelle, Mendocino Fracture Zone study (chief scientist)