

SPAHR C. WEBB

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Profession Preparation:

B.S. 1978, Massachusetts Institute of Technology, Physics, and Earth and Planetary
Science
Ph.D. 1984, University of California, San Diego, Oceanography

Professional Appointments:

2008-Present Jerome Paros Senior Research Scientist, Lamont-Doherty Earth Observatory,
Columbia University, Palisades, N.Y.
2000-2008 Langseth-PGI Senior Research Scientist, Lamont-Doherty Earth Observatory,
Columbia University, Palisades, N.Y.
2000-Present Adjunct Professor, Department of Earth and Environmental Science,
Columbia University
1997-2002 Research Oceanographer, Scripps Institution of Oceanography, University of
California, San Diego, La Jolla, CA. (on leave 2000-2002)
1993-1997 Associate Research Oceanographer, Scripps Institution of
Oceanography, University of California, San Diego, La Jolla, CA
1986-1993 Assistant Research Oceanographer, Scripps Institution of
Oceanography, University of California, San Diego, La Jolla, CA.
1984-1986 Postdoctoral Scholar, Woods Hole Oceanographic Institution,
Woods Hole, MA.

Research Activities:

Broad band marine seismology, structure of oceanic mantle and crust.
Marine geodesy focused on long term hazard of subduction zones, and detection of slow slip events
and volcanic eruptions.
Structure and seismicity of subduction zones, ridge crests and seafloor hydrothermal systems.
Propagation and sources of microseisms, infragravity waves and the "hum of the Earth".
Marine instrumentation for geophysical, geodetic and oceanographic applications.

Professional Societies:

American Geophysical Union, Seismological Society of America.

Graduate Students Supervised (SIO):

Mark A. Mc Donald, Ph.D 1994
Wayne C. Crawford, Ph.D 1994
Robert A. Sohn, Ph.D 1996
Robert Prescott
Charles Golden PhD. 2000.

Graduate Students Supervised (LDEO):

R. Chadwick Holmes, PhD 2009
Yang Zha, PhD 2015

PhD Defense Committees

Sarah Little (WHOI, 1986)
Milton Garces (SIO, 1996)

Graham Cairns (U. Toronto, 1998)
Nancy Kanjorski (SIO)
Nick Harmon (Brown, 2006)
Ran Qin (2008)
Milena Marjanovic (2013)
Anna Foster (2014)
Jiyao Li (2016)
Kira Olsen (2019)
Josh Russel, (2020)
Christine Chesley (2021)

Habilitation à diriger des recherches (HDR) defense for Wayne Crawford, Paris, France, 2014.

Postdoctoral Associates:

Vallerie Ballu , 1994
Wayne Crawford, 1994-1995
Scott Nooner 2006-2008

Recent Classroom Teaching

Quantitative Methods on Data Analysis, Fall 2002, 2004, 2006
Senior Thesis Seminar Fall 2010, 2011, 2012, 2014, Spring 2011, 2012, 2015, 2021
Seismology Group Seminar 2010-2021

Recent Community Service:

Chair, OBSIP management committee 2002 (member 2000- 2005).
Chair, Interridge Underwater Technology Working Group 2002
Co-Chair, 2003 Ocean Bottom Seismometers (OBS), Technology and Opportunities Meeting, Taipei
Ridge2000 Steering Committee (2008-2011)
Workshop for Developing a Broadband Ocean Bottom Seismometer Pool in the UK, Southampton (2009)
LDEO search Committees, various
LDEO Graduate admissions committee (2001-2006, 2008, 2009, 2010, 2013, 2015)
LDEO Post Doc committee (2001-2004)
LDEO PGI Junior Chair committee (2015)
LDEO OTIC committee co-chair, (2011-2017)
LDEO Promotions and Careers Committee (2017-2020)

Recent Research Cruises:

February 2000. (ship: Melville), San Diego to Manzanillo, active source electromagnetic sounding (MOSES) using deployed magnetometer array (20 OBM) and vertical electrical dipole. Extensive compliance measurements between 9-03, 9-50N, EPR (EM w/Evans, Compliance w/Crawford).
February 2000, (ship: Ewing), Littleton-Suva, recovery of Woodlark OBS array.
May 2001, (ship: Endeavor), Narragansett, testing of AUVOBS (APOGEE) prototype, w/ Sohn.
July 2001, (ship, Weatherbird), Bermuda, testing of AUVOBS (APOGEE) prototype, w/ Sohn.
Nov.- Dec. 2001, (ship: Melville), Papeete-Easter, deploy 28 OBS, seismic refraction, gravity, seabeam, dredging, gross grain ridge expedition (w/Forsyth).
Oct.- Nov.- 2002, (ship: Melville), Arica-Valparaiso, recover OBS, gravity, seabeam, dredging, GLIMPSE expedition (w/Forsyth).
May 2003 (ship:Ewing) Gulfport. Ewing source level measurements.
Sept. 2003 (ship: Weatherbird) Bermuda Compliance meter tests.
Nov.. 2005 (ship Sproul) San Diego, compliance meter, buried sensor tests
Dec. 2005 (ship Oceanus) Woods Hole, buried sensor tests
June 2003: (ship: Kaiyo): Tokyo-Saipan 50 OBS deployment for Wiens in Marianas.

Nov. 2003: (ship: Ewing): San Juan-Bermuda, active source OBS for Sohn, also test compliance sensors.

May 2004: (ship: Wecoma) Saipan-Guam, OBS recovery leg for Marianas

October 2004 (ship: Universtatis) Milazzo, Sicily, OBS deployment Calabria

January 2005 (ship Hesperides) Ushauia, Arg. Punta Arenas Chile, Deception Island OBS

February 2005 (ship: Las Palmas) Ushuai, OBS recovery

August 2005, (ship: Universtatis) Milazzo, Sicily, OBS recovery Calabria

Nov. 2005 (ship Sproul) San Diego, compliance meter, buried sensor tests

Dec. 2005 (ship Oceanus) Woods Hole, buried sensor tests

Sept. 2006 (ship: Sproul) San Diego, compliance meter and bottom pressure recorder tests

Nov. 2006 (ship: Sproul) San Diego, compliance meter and bottom pressure recorder tests

Feb.-Mar. 2007 (ship: Atlantis) Manzanillo, compliance study of EPR ridge crest from 9 to 10 N, and deployment of 19 bottom pressure recorders

May, 2007 (ship: Seward Johnson), Granada, deployment of a radio- telemetered ocean shelf ocean bottom seismometer system (with WHOI collaborators).

Dec. 2007, (ship- R/V Langseth) airgun source level measurements

Jan. 2008, (ship- R/V Langseth) airgun source level measurements.

June 2008 (ship: Atlantis) Manzanillo- San Diego, Alvin geodetic benchmark observations, w/Nooner.

Sept. 2008, 2009 (ship; Seawolf), New York, tests of SOBs (shielded OBS), w/Barclay.

Nov. 2009 (ship: Revelle) Nuku'alofa, Tonga- Suva, Fiji, OBS deployment for Lau basin OBS experiment (w/Wiens).

Dec. 2009 (ship: Atlantis) Manzanillo- Puerto Caldera (CR), Alvin geodetic benchmark observations, BPR recoveries, w/Nooner.

June 2010 (ship; Seawolf), Stonybrook, tests of SOBs (shielded OBS), w/Barclay.

Nov. 2010 (ship: Kilo Moana) Suva, Fiji - Nuku'alofa, Tonga-, OBS recovery for Lau basin OBS experiment (w/Wiens).

June-August 2011 (ship: R/V Langseth) Kodiak-Dutch Harbor, MCS, Active Source OBS study of Aleutian subduction zone, w/ Shillington.

October, 2011 (ship: Atlantis), San Diego- Balboa Panama, Geodetic work, mapping with S. Nooner, R. Buck, V. Ferrini.

March, 2014, (ship R/V Connecticut) testing of BPR and OBS instrumentation.

May, 2014, (ship R/V Tangaroa), Wellington, N.Z., OBS/BPR array to study slow slip events (SSE) on the Hikurangi subduction zone, w L. Wallace (lead), A. Sheehan, S. Schwartz (and Japanese collaborators).

June, 2014 (ship R/V Thompson), Newport, OR. Development of seafloor geodetic GPS- acoustic (GPSA) benchmarks for use with ROVs, w/ C.D. Chadwell (lead) and S.L Nooner

June, 2015, (ship R/V Revelle), Wellington, N.Z., OBS/BPR array to study slow slip events (SSE) on the Hikurangi subduction zone, w L. Wallace (lead), A. Sheehan, S. Schwartz (and Japanese collaborators).

August, 2015, (ship R/V Connecticut) testing of BPR and OBS instrumentation.

April 24-26, 2017 (ship R/V Connecticut) deployment of OBS with pressure gradient sensors, Groton CT.

Aug. 2017 (ship R/V Connecticut) recovery of OBS with pressure gradient sensors, Groton CT.

May 9-29, 2018 (ship R/V Sikuliaq) Seward, Alaskan Amphibious Seismic Community Experiment (AASCE)-45 OBS deployed, 3 GPSA sites established, and 2 new POBS deployed

August 23-24 and Sept. 5-6 (ship R/V Connecticut) Deploy, recover shielded OBS with horizontal pressure gauges. Also deploy, recover two POBSs.

Oct 1-19, 2018 (ship R/V Tangaroa), Wellington NZ. deploy Absolute pressure gauges, three POBSs strong motion/pressure instruments and two GPSA sites offshore of Hawkes Bay, New Zealand studying slow slip events.

Aug. 9-29, 2019 (ship R/V Sikuliaq w/Jason) Seward to Kodiak, Alaskan Amphibious Seismic Community Experiment (AASCE)- recovery of OBSs and POBSs, GPSA replace benchmark recovery SVG-2.

Oct 28-Nov. 8, 2019 (ship R/V Tangaroa), Wellington NZ. recover Absolute pressure gauges, three POBSs strong motion/pressure instruments offshore of Hawkes Bay, New Zealand studying slow slip events.

Sept. 1- 20, 2020 (ship R/V Thompson) Newport OR, testing of new compliance instruments for monitoring of magma chamber evolution beneath Axial Volcano, Juan de Fuca ridge.

Fall 2020 (two cruises done remotely), R/V Sikuliaq, Seward, Alaskan GPSA.

Recent Lectures and Conferences

"Seismic studies in the Tonga-Lau region using ocean bottom seismographs", meeting on Dynamics of lithospheric convergence, Miyagi, Japan, Sept. 1995.

"Marine Seismology", lecture at SIO, Oct. 1997

"A transient electromagnetic survey of Middle Valley", lecture at SIO, Mar. 1997.

"Microearthquakes observed on intermediate and fast spreading ridges using OBS arrays", Summer school on active processes, Lake Myvatn, Iceland, Aug. 1997.

Event detection and response workshop, Lynnwood Wa., Mar. 1997.

International workshop on Scientific use of submarine cables, Okinawa, Japan, Feb. 1997.

"Ocean Floor Seismology", lecture at Caltech, Oct. 1998.

"Results from observations of teleseismic arrivals at the TOES array spanning the 9°-10° segment", 9°-10° Results symposium, Santa Barbara, Sept. 1998.

"Monitoring seismicity associated with hydrothermal vent fields: lessons from the East Pacific Rise and Juan de Fuca ridge", MOMAR meeting, Lisbon, Portugal, Oct. 1998.

"Seismic results from 9°50'N EPR", lecture at Lamont Doherty Earth Observatory, Columbia University, Nov. 1998.

"Deep Tow magnetics in Middle Valley", lecture at Lamont Doherty Earth Observatory, Columbia University, January, 2000.

"Long term observations in the oceans", Mt. Fuji, Japan. Jan. 2001

Ocean Bottom Seismometers (OBS), Technology and Opportunities, Taipei, Taiwan, Mar. 2003

OBSIP Annual Meeting, Woods Hole, May 2003.

IRIS Annual Workshop, Yosemite, June 2003

Fall AGU meeting, San Francisco Dec. 2003.

ORION meeting, San Juan, Jan 2004.

Mid Atlantic Ridge meeting, Providence, Feb. 2004.

Very Broad Band Seismology conference, Lake Tahoe, Mar. 2004.

CATSCAN meeting, May 2004 Calabria

Fall AGU meeting, San Francisco Dec. 2004.

Ridge Cyprus field trip, May 2005

Ridge 2000 meeting, Vancouver, October, 2005,

Fall AGU meeting, San Francisco, December 2005,

ORION Design & Implementation Workshop, SLC, March 2006

EPR ISS science and planning meeting, LDEO, April 2006.

Fall AGU meeting, San Francisco Dec. 2006.

"The Earth's hum", lecture at Princeton U. April 2007.

Fall AGU meeting, San Francisco Dec. 2007.

Ridge MAR Implementation workshop, March 2008.

Ridge Spring Steering committee meeting, March, 2008.

Ridge Lau ISS Integration and synthesis workshop, Sept. 2008.

Ridge EPR ISS Integration and synthesis workshop, Sept. 2008.

Ridge Fall Steering committee meeting, Nov. 2008.

Fall AGU meeting, San Francisco Dec. 2008.

Earthscope Annual meeting, May, 2009.
Ridge Annual Meeting, Oct. 2009
Margins Successor meeting, San Antonio, Feb, 2010.
Seismological Society Meeting. Portland, April 2010.
Experiments with Portable Seismometers. Salt Lake City, Sept. 2010, "Ocean Pressure Sensors"
Cascadia Initiative Workshop, Portland, Sept. 2010, "New Sensors: Bottom Pressure Sensors"
Fall AGU meeting, San Francisco Dec. 2010.
Geoprisms Cascadia Jan. 2011, Austin
Earthscope May, 2011, Austin
Geoprisms Alaska Workshop Sept. 22-24, 2011Portland
Fall AGU meeting, San Francisco Dec. 2011.
Cascadia OBS AGU pre-meeting- 2012. "Cascadia LDEO OBS Data Overview"
Fall AGU meeting, San Francisco Dec. 2012.
New Zealand Geoprisms Workshop, April, 15-17, 2013
LDEO MG&G seminar "Shallow water seismology", Oct. 2013
IRIS OBS Workshop "Shallow Water Seismology in Cascadia" Oct, 2013,
Fall AGU meeting, San Francisco Dec. 2013.
Fall AGU meeting, San Francisco Dec. 2014.
Future Seismic and Geodetic Facility Needs in the Geosciences, Leesburg, VA, May 2015.
OBS Symposium, presented: "Improving data on OBS horizontal components", Vancouver, WA. Oct. 2015.
GeoPRISMS Theoretical and Experimental Institute on Subduction Cycles and Deformation, Redondo Beach, Oct. 2015.
"Offshore Geophysical Monitoring of Cascadia for Early Warning and Hazards Research" meeting, Seattle, Mar. 2017.
"2017 OBS Symposium", Portland, ME, Sept. 18-19. Poster: "Future OBS"
Fall AGU meeting, New Orleans, Dec. 11-15, 2017.
Meeting/visit at Kyoto U. organized by Yoshiro Ito on seafloor geodesy/seismology, Kyoto, Jan 22-26, talk: Columbia U (LDEO) "Marine studies of subduction zones".
Seafloor Sensors Workshop, Gleneden Beach, Oregon, July 2018, Monitoring contemporary deformation and seismicity at the offshore Hikurangi subduction margin.
Fall AGU meeting, Washington, D.C., Dec. 10-14, 2018.
GeoPRISMS Synthesis & Integration TEI, Feb 27-Mar. 1, 2019, San Antonio.
Fall AGU meeting, San Francisco Dec. 2019.
Scientific and monitoring priorities for cabled infrastructure offshore New Zealand, Wellington NZ, (remotely attended), Feb 2021.

BIBLIOGRAPHY - Spahr C. Webb

1. C. Wunsch and S. C. Webb, "The climatology of deep ocean internal waves," *J. Phys. Oceanog.* 9, 235-243, (1979).
2. T. P. Barnett, W. C. Patzert, S. C. Webb, and B. R. Bean, "Climatological usefulness of satellite determined sea surface temperatures in the tropical Pacific," *Bull. Amer. Meteor. Soc.* 60, 197-205 (1979).
3. S. C. Webb and S. C. Cox, "Electromagnetic field induced at the seafloor by Rayleigh-Stoneley waves," *J. Geophys. Res.* 87, 4093-4102 (1982).
4. C. S. Cox and S. C. Webb, "CMOS measurement system detects seismic activity on the seabed," *Digital Design*, 13 (7), 68-69 (1983).
5. C. S. Cox, T. Deaton, and S. C. Webb, "A deep sea differential pressure gauge," *J. Atm. Oceanic Tech.* 1, (3), 237-246 (1984).
6. S. C. Webb and C. S. Cox, "Pressure and electric fluctuations on the deep seafloor: Background noise for seismic detection," *Geophys. Res. Lett.* 11 (10), 967-970, (1984).
7. S. C. Webb, S. C. Constable, C. S. Cox, and T. Deaton, "A sea floor electric field instrument," *J. Geomag. Geoelectr.* 37, 1115-1125 (1985).
8. S. C. Webb and C. S. Cox, "Observations and modeling of seafloor microseisms," *J. Geophys. Res.* 91, 7343-7358, (1986).
9. S. C. Webb, "Coherent pressure fluctuations observed at two sites on the deep sea floor," *Geophys. Res. Lett.* 13 (1), 141-144 (1986).
10. C. S. Cox, S. C. Constable, A. D. Chave, and S. C. Webb, "Controlled source electromagnetic sounding of the oceanic lithosphere," *Nature* 320, 52-54 (1986).
11. S. C. Webb and S. C. Constable, "Microseism propagation between two sites on the deep seafloor," *Bull. Soc. Seismol. Amer.* 76 (5), 1433-1445 (1986).
12. Spahr C. Webb, "Long period acoustic and seismic measurements and ocean floor currents," *IEEE J. Oceanic Eng.* 13, 263-270 (1988).
13. S. C. Webb, X. Zhang, and W.C. Crawford, "Infragravity waves in the deep ocean," *J. Geophys. Res.* 96, 2723-2736 (1991).
14. Crawford, Wayne C., S.C. Webb, and J.A. Hildebrand, "Seafloor compliance observed by long period pressure and displacement measurements," *J. Geophys. Res.* 96, 16,151-16,160 (1991).
15. John Hildebrand, Spahr Webb, and LeRoy Dorman, "Monitoring ridge crest activity with ocean bottom microseismicity," *Ridge Events Newsletter* 2, 6-8 (1991).
16. S. C. Webb and A. Schultz, "Very low frequency ambient noise at the seafloor under the Beaufort Sea ice cap," *J. Acoust. Soc. Am.* 91, 1429-1439 (1992).
17. Spahr C. Webb, "The equilibrium oceanic microseism spectrum," *J. Acoust. Soc. Am.* 94,

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18. S. C. Webb, R. N. Edwards, and L. Yu, "First measurements from a deep tow transient sounding system," *Mar. Geophys. Res.* 15(1), 13-26 (1993).
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29. Webb, S.C., and D.W. Forsyth, "Structure of the upper mantle under the EPR from waveform inversion of regional events", *Science*, 280, 1227-1229, (1998).
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(2005).

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