

# MARIE FARSON

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ASSOCIATE PROFESSOR, DEPARTMENTS OF EARTH SCIENCE & ENGINEERING

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## EDUCATION

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### UNIVERSITY OF CALIFORNIA, SAN DIEGO - SCRIPPS INSTITUTION OF OCEANOGRAPHY

PhD in Oceanography (Ocean Engineering) from Applied Ocean Sciences Dept.

### POMONA COLLEGE - Claremont, CA

BA in Physics

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## PROFESSIONAL EXPERIENCE

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### ASSOCIATE PROFESSOR OF ENGINEERING & EARTH SCIENCES - PRINCIPIA COLLEGE

Associate Professor, July 2021 - Present

Teach courses in the Earth Sciences and Engineering. Serve as an advisor to new students and mentor students interested in Engineering and individualized majors in Earth Science.

### ASSISTANT PROFESSOR OF EARTH SCIENCES - PRINCIPIA COLLEGE

Assistant Professor, July 2016 - June 2021

Teach courses in the Earth Sciences and Engineering. Serve as an advisor to new students and mentor students interested in Engineering and individualized majors in Earth Science.

### INTERNATIONAL BACCALAUREATE PROGRAM - MARSHALL HIGH SCHOOL

Technology Education and Engineering Teacher, Sept 2014 - July 2016

Teach courses in IB Design Technology, STEM Engineering and Technical Drawing. Develop and mentor a FIRST robotics team at Marshall. Develop and teach a new honors level course on STEM Engineering, incorporating project based learning units on the Sea Perch submersible, 3D printing of prosthetic hands and CAD/CAM machining.

**Key Results:**

- ♦ Mentored our school's FIRST Robotics team which won Rookie High Seed and All Star awards at Regionals and competed at World's in St Louis in 2015.
- ♦ Organized and will lead a group of students to the Global Student Leaders Summit in the Hague on STEM Engineering solutions to Human Rights Issues.
- ♦ Arranged for students to deploy their submersibles in the US Navy's David Taylor Model Basin.
- ♦ Guided students through the manufacture of a 3D printed prosthetic hand for a handicapped child via the e-Nable Organization.
- ♦ Was recognized by the Rotary Club as a Fairfax County Engineering Teacher of the Year

### US DEPARTMENT OF STATE - US EMBASSY TRIPOLI, LIBYA

*Crisis Management and Support Services*

Community Liaison Officer, 2010 - 2011

Provide pre-arrival information, orientation and assistance to newly assigned employees and family members. Identify the needs of the embassy community and respond with effective programming, information, guidance and referral. Serve as an advocate for employees and family members and a liaison for education and employment issues. Advise post management on quality of life issues and recommend solutions. Provide crisis management and support services. TOP SECRET level clearance.

**Key Results:**

- ◆ Played a key role in the evacuation from Tripoli, Libya of US Embassy personnel and their families.
- ◆ Received an Exceptional Service Award for duties performed during evacuation.
- ◆ Served as a liaison between families and schools in Libya.

**ENGINEERING TECHNOLOGY CENTER - MYSTIC, CT**

*Developed acoustic analyses of submarine structures*

**Senior Engineer**, 1995 - 1998

Develop acoustic and vibration analyses of submarine structures. Development of continuous beam transfer impedance method codes including the implementation of matrix banding codes, sparse matrix solvers, Patran links, and post processing routines. Analyzed the noise transmission properties of the New Attack Submarine SIE cabinets. Conducted wavenumber analyses of the hull mounted truss response to assess the assumption of incoherence used in the Darby analyses. The wavenumber analyses included both conventional and minimum variance techniques. Applied the Darby Method of radiated and platform noise predictions to the New Attack Submarine. SECRET level clearance.

**Key Results:**

- ◆ My redesign of the evolving computer code, resulted in significantly greater speed of runs during research.
- ◆ I was able to increase confidence in the majority of results due to demonstrated complete understanding of the physics and modeling involved.
- ◆ Took initiative in contacting another department to collaborate on a passive acoustic ASW sea trial.

**TROY STATE UNIVERSITY - ST MARYS, GA**

*Physics Professor*

**Adjunct Professor**, 1995

Taught a physics class for Troy State University's program on the Kings Bay Naval Submarine Base, while simultaneously employed as Project Manager for SeaWorks.

**SEAWORKS, INC- SAN LEANDRO, CA**

*Project Management for Government Engineering Contracts*

**Project Manager**, 1992 - 1995

Managed the installation of underwater Magnetic Silencing Facilities at the Kings Bay Naval Submarine Base and at Mayport Naval Station, Florida. Responsibilities included: scheduling, contracting, technical and financial performance of the projects as well as interfacing with the client, prime contractor and the Government.

**Key Results:**

- Demonstrated innovative analytical skills in purchasing a fiberglass skiff instead of renting an aluminum john boat, thus saving Seaworks a significant amount of money over the course of the contract.
- Documented financial allocations meticulously, saving Sea Works from a financial loss when the Prime Contractor attempted to pass along losses
- Saved our leased barge from sinking while personally diving on a weekend to verify the quality of work completed by our dive crew during the previous week.
- Innovative design of our sensor rack resulting in time savings during installation and less breakage of components

**UNIVERSITY OF CALIFORNIA, BERKELEY - BERKELEY, CA**

*Teaching Marine Geophysics Course*

**Adjunct Professor**, 1991

Taught Marine Geophysics course for UC Berkeley's Adult Education Department, while simultaneously employed at Deep Ocean Engineering.

**DEEP OCEAN ENGINEERING - SAN LEANDRO, CA***Design and Operation of Underwater Submersibles***Engineer**, 1989 - 1991

Solved engineering problems related to the design of remotely operated vehicles and instrumentation used to perform specialized tasks in various underwater environments including the open ocean, inland lakes and nuclear power plants. Conducted worldwide ROV operations: search & salvage (Singapore, Caribbean, California); photographic surveys of pipelines and outfalls (California, Hawaii, Gulf of Mexico); underwater video surveys of dam sites for the United Nations (India); fisheries population mapping and migration studies (Alaska, Gulf of Mexico) and military surveillance and mapping (Panama and Singapore). SECRET level clearance.

***Key Results:***

- ◆ Accomplished a field repair to an ROV in rural India during a dam survey for the United Nations, avoiding a long and costly delay
- ◆ Demonstrated initiative in learning more about electrical engineering after hours at work, to be better prepared to solve problems in the field. This knowledge proved invaluable while working in Singapore where I was able to complete an extensive field repair during Factory Acceptance Testing of an ROV for the Singapore Navy.

**NAVAL POSTGRADUATE SCHOOL - MONTEREY, CA***Research and Guidance to Graduate Students***Visiting Faculty Member**, 1998

Served as a resource for graduate students and participated in student research while completing my dissertation.

**SCRIPPS INSTITUTION OF OCEANOGRAPHY - LA JOLLA, CA***Engineering Research Assistant***Research Assistant**, 1982 - 1989

Conducted field and laboratory research using the deeply towed submersible, Deep Tow. Participated in more than a dozen sea-going research trips in the Pacific and Atlantic Oceans, primarily related to seafloor mapping, stress and strain build up at spreading centers, mapping hydrothermal vents, seamounts, and overlapping spreading centers. Participated in engineering development of precision sound velocity measurement system, necessary to the development of acoustic measurements of seafloor geodetic position with a precision of a part in 10<sup>5</sup>.

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**OF NOTE**

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**Tutoring**

Mathematics - McLean, VA. 2011 - 2014. Algebra and Geometry up through Calculus for grades 7-12

Mathematics and Physics - Old Mystic, CT. 1998 - 2001

Adult Literacy - Alameda, CA. 1990 - 1992

**Professional Certifications:**

Chapman Shaffer Award in Marine Geophysics

OSHA 40 Hr Hazmat Certification

PADI and NAUI Certified diver

Licensed Commercial pilot

Flight Instructor and Instrument Flight Instructor

Professional Engineering License

**Languages:**

Arabic - 1+,2+,1+ on DLPT V

Dutch - conversant reading, writing and speaking  
French - conversant reading, writing and speaking  
Spanish - conversant reading, writing and speaking

## PUBLICATIONS

**Osmon, M.C.**, 1982, "An electromagnetic flowmeter based on the Hall Effect." B.A. thesis, Pomona College, Physics Dept, 57 pp.

Lawson, A.C., **M.C. Osmon**, J.S. Henderson, and M. Dewees, 1982, "Superconductivity of (La,Th)Ru<sub>2</sub>, (La,Th)Os<sub>2</sub>, and La(Ru,Os)<sub>2</sub> alloys," Journal of the Less-Common Metals, vol. 86,p. L9-L11.

Spiess, F.N., C.D. Lowenstein, and **M.C. McIntyre**, 1984. "Analysis of a method for precisely relating a sea floor point to a distant point on land: a report under NASA Grant NAG 5-320," MPL-U-31, Marine Physical Lab of the Scripps Institution of Oceanography, University of California, San Diego, 21 pp.

**McIntyre, M.C.**, and D.E. Boegeman, 1986. "A new sound velocity measurement system," Proceedings, International Symposium on Marine Positioning, Marine Technology Society, USGS, Reston, Virginia, Oct 14-17, 1986, p. 317-327.

**McIntyre, M.C.**, 1987. "Improvements in sound velocity measurement," Journal of the Marine Technology Society, Vol. 21, no. 4, p. 68-74.

**McIntyre, M.C.**, 1989. "Design and testing of a seafloor geodetic system," PhD Thesis, MPL-U-48, Marine Physical Lab of the Scripps Institution of Oceanography, University of California, San Diego, 192 pp.

## PAPERS

**McIntyre, M.C.** and D.E. Boegeman, 1986. "A new sound velocity measurement system," Trans. Am. Geophys. Union, vol. 67, no. 44, p. 1001.

**McIntyre, M.C.**, and L. Dorman, 1987. "Modeling the gravity field due to a random source," Trans. Am. Geophys. Union, vol. 68, no. 44, p. 1248.

**McIntyre, M. C.**, 1988. "A seafloor positioning system," Pacific Congress on Marine Science and Technology Proceedings, Honolulu, Hawaii, May 16-20, 1988.

**McIntyre, M.C.**, 1988. "Using GPS in a system to measure seafloor geodynamics," Chapman Conference on GPS Measurements for Geodynamics, Ft. Lauderdale, Florida, Sept. 9-12, 1988.

**McIntyre, M.C.**, 1988. "Results of a seafloor positioning system sea-trial," Trans. Am. Geophys. Union, vol. 69, no. 44, p. 1150.

**McIntyre, M.C.**, 1989. "A sea floor positioning system," Oceans '89 Proceedings, Seattle, Washington, Sept. 18-21, 1989.

## POSTERS

**Farson, M.C.** 2019. "Oceanography 101: Drifter Deployment as Inquiry Based Learning" American Geophysical Union Fall Meeting, San Francisco, California, Dec. 9-13, 2019.

## MEMBERSHIPS

American Geophysical Union

American Society of Mechanical Engineers

Society of Women Engineers