

**Laurel Henderson**  
Heat, Light, and Sound Research  
3366 N. Torrey Pines Court, Suite 310  
La Jolla, CA 92037-1025  
(858) 457-0800 x108 (work), (858) 652-2242 (cell)  
[laurel@hlsresearch.com](mailto:laurel@hlsresearch.com)

Citizenship: U.S.

Security Clearance: Secret

**INTERESTS:**

Scientific programming with applications in seafloor geology, underwater acoustics, marine mammal acoustics, and oceanography.

**EDUCATION:**

Ph.D., Geological Sciences, Northwestern University, 1985  
M.S., Geological Sciences, Northwestern University, 1982  
B.S., Geochemistry, California Institute of Technology, 1980

**EMPLOYMENT:**

**Senior Scientist**

HLS Research  
September, 2009 – Present

Scientific Programming for Marine-Mammal acoustic modeling tool  
System Administrator for collection of servers and PC's running Windows, Linux, and Mac OS X

**Scientist**

Space and Naval Warfare Systems Center Pacific  
November, 1999 – September, 2009

- Acoustic modeling for glider experiments, tests of unmanned bistatic-active systems, and numerous other sonar systems and hydrophone arrays including ADS and SURTASS
- Technical liaison with Integrated Logistics Support for unmanned bistatic ASW systems
- Studies of wide-area clearance scenarios involving active sensors
- Array-element localization studies for numerous arrays
- Survey-Planning Working Group Lead for FDS-C which included lanning, coordinating, and participating in bathymetric and side-scan surveys prior to deployment of bottom arrays
- System Administration for UNIX, Linux, and Microsoft systems

**Programmer Analyst**

Scripps Institute of Oceanography  
1997 - 1998

- Software development for analysis and display of global climate predictions and seismological data

**Scientific Programmer**

Institute of Marine and Coastal Sciences, Rutgers University, NJ  
1992 - 1997

- Software and web-page development for
  - a)Analysis and display of data from oceanographic and meteorological sensors, including CTD's, and ADCP, BASS and S-4 current meters
  - b)Development of diagnostic tools for oceanographic models including 2D and 3D animated displays

### **Assistant Oceanographer**

SACLANT Undersea Research Centre, Italy  
1987 - 1991

- Oceanographic and Acoustic propagation modeling
- Software development
- Data-base management
- Analysis of Weathership data

### **National Research Council Post-Doc, Scientist**

NRL, Washington, DC  
1985 - 1987

- Seafloor characterization for geo-acoustic experiments
- Study of effects of mantle plumes on seafloor roughness and topography using digitized deep-tow data

### **SKILLS AND CERTIFICATIONS:**

- Programming Languages include Matlab, Fortran, UNIX Shell scripting, C
- Acoustics Models used include Kraken Suite, PAREQ, JPPE, RAM, S<sup>3</sup>, SPARS/ASAPS, PC-IMAT
- Oceanographic Models used include MOM, Mellor-Yamada 2.5, ROMS (then called SPEM)
- SSC-Pacific UNIX/Linux and Microsoft System Administration Certification Level 3
- Graphics systems include UNIRAS, (Matlab), CorelDRAW, NCAR Graphics, GMT

### **PUBLICATIONS**

#### *I. JOURNAL ARTICLES, TECHNICAL DOCUMENTS, CONFERENCES WITH FULL PUBLISHED PROCEEDINGS*

R. G. Gordon and L. J. Henderson, "Hotspots and the tectonic evolution of the Circum-Pacific margin", Stanford University Publications in the Geol. Sci., XVIII., Proceedings of the circum-Pacific Terrane Conference, eds. D. G. Howell, D. L. Jones, A. Cox, and A. Nur. pp. 103-104 (1984).

L. J. Henderson, R. G. Gordon and D. C. Engebretson, "Mesozoic aseismic ridges on the Farallon plate and southward migration of shallow subduction during the Laramide Orogeny", *Tectonics* 3 121-132 (1984).

S. Piacsek, L. Henderson, P. van Meurs, A. Warn-Varnas, "Operational prediction of upper ocean environmental parameters; Part 1: Analysis of TOPS output" NORDA Technical Note 379 (1988).

L. Henderson and S. Piacsek, "Model Statistics of Inertial Shear from Multi-Year Simulations at Weathership MIKE" SACLANT Undersea Research Centre Memorandum SM-241 (1990).

M. B. Porter, S. Piacsek, L. Henderson and F. Jensen, "Acoustic impact of upper ocean models", SACLANT Undersea Research Centre Memorandum, SM-227 (1989).

M. B. Porter, S. Piacsek, L. Henderson and F. Jensen, "Combined Oceanographic and Acoustic Modeling", *J. Acoust. Soc. Amer.*, Suppl. 1. Vol. 86 (1989).

M. B. Porter, S. Piacsek, L. Henderson and F. Jensen, "Acoustic Impact of Upper Ocean Models", in *Computational*

Acoustics: Ocean-Acoustic Models and Supercomputing, Proceedings of the 2nd IMACS Symposium on Computational Acoustics in Princeton, ed. D. Lee, A. Cakmak, R. Vichnevetsky, North-Holland pp. 217-237(1990).

Michael B. Porter, S. Piacsek, L. Henderson and Finn Jensen, "Surface duct propagation and the ocean mixed layer", Oceanography and Acoustics: Prediction and Propagation Models, eds. Allan R. Robinson and Ding Lee, American Inst. of Physics, pp. 50-76 (1994).

Glenn, S., H. Arango, R. Chant, E. Creed, L. Henderson, A. Munchow O. Schofield, J. Wiggins, "A Project-Driven Data Management System for the Institute of Marine and Coastal Sciences. Rutgers University", Contribution 95-31. IMCS, Rutgers, the State University of New Jersey, New Brunswick, NJ (1995)

## II. ABSTRACTS, PRESENTATIONS

L. J. Henderson and R. G. Gordon, "Oceanic plateaus and the motion of the Pacific plate with respect to the hotspots", EOS Trans. Amer. Geophys. Un., 62 (45): 1028 (1981).

L. J. Henderson and R. G. Gordon, "Fixed hotspots and recurrent volcanism along the Line Islands chain", Geol. Soc. Amer. Abs. with Progs., 14 (7): 513 (1982).

L. J. Henderson and R. G. Gordon, "Volcanic edifices of the Farallon plate and cordilleran tectonics", EOS Trans. Amer. Geophys. Un., 63 (45): 912 (1982).

L. J. Henderson and R. G. Gordon, "Pacific-hotspot motion and circum-Pacific tectonics", EOS Trans. Amer. Geophys. Un., 64 (45): 687 (1983).

D. C. Engebretson, A. Cox, M. Debiche, R. G. Gordon, and L. J. Henderson, "Pacific Basin plate motions, reconstructions and the displacement of terranes since the Jurassic", 27th IGC Conference, Moscow, 1984.

L. J. Henderson and R. G. Gordon, "Motion of the Pacific plate relative to the hotspots" (Invited paper), 1986 Geodynamics Symposium on Mesozoic and Cenozoic Plate Reconstructions, Texas A and M University, April, 1986.

L. Henderson, S. Piacsek, A. Warn-Varnas, and J. French, "Seasonal distribution of mixed-layer properties in the northern hemisphere" Annales Geophysicae, E.G.S. XIII General Assembly, 73, March 1988.

O. Diachok, J. Shaffer, and L. Henderson, "Low-frequency scattering from the upper crust", J. Acoust. Soc. Am. Suppl. 1, 83 (S79), Spring 1988.

S. A. Piacsek, L. Henderson, F. B. Jensen, and M. B. Porter, "Sensitivity of acoustic model predictions to mixed-layer model output", Second IMACS Symposium on Computational Acoustics, March 1989.

M. B. Porter, S. Piacsek, L. Henderson, and F. B. Jensen, "Combined Oceanographic and Acoustic Modeling", J. Acoust. Soc. Am. Suppl. 1, 86, (1989).

S. A. Piacsek, L. Henderson, and A. Warn-Varnas, "Diagnostic Modelling of the circulation in the southern Norwegian Sea", Annales Geophysicae, E.G.S. XV General Assembly, April 1990.