

## Curriculum Vitae

Mark R. Abbott

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Occupation: Biological Oceanographer

Date of Birth: 25 March 1953

Position: Dean and Professor  
College of Oceanic and Atmospheric Sciences  
Oregon State University

Education: University of California, Berkeley  
B.S., Conservation of Natural Resources, 1974  
University of California, Davis  
Ph.D., Ecology, 1978

### Professional Experience:

2001-present	Dean Oregon State University Corvallis, OR 97331
1993-present	Professor Oregon State University Corvallis, OR 97331
1988-1993	Associate Professor Oregon State University Corvallis, OR 97331
1982-1988	Assistant Adjunct Professor Marine Life Research Group Scripps Institution of Oceanography University of California, San Diego La Jolla, CA 92093
1982-1988	Member, Technical Staff Oceanography Group Jet Propulsion Laboratory Pasadena, CA 91109
1980-1982	NATO/NSF Postdoctoral Fellow Ocean Ecology Institute of Ocean Sciences

Sidney, B.C., CANADA

- 1979-1980 Postgraduate Researcher  
Institute of Ecology  
University of California, Davis  
Davis, CA 95616
- 1978-1979 Acting Assistant Professor  
Section of Ecology and Systematics  
Cornell University  
Ithaca, NY 14853

### **Memberships**

American Geophysical Union  
The Oceanography Society  
American Society of Limnology and Oceanography  
Sigma Xi

### **Honors, Scholarships, Fellowships, Professional Activities**

#### **Fellowships**

NATO/NSF Postdoctoral Fellowship in biological oceanography, 1980 - 1982.

#### **Committee Service**

##### **NASA**

Earth Observing System (EOS) Investigators Working Group, 1989 - 2002.  
EOS Payload Panel, 1989 - 2000. (Chairman)  
EOS Science Executive Committee, 1995 - 2000.  
EOS Moderate Resolution Imaging Spectroradiometer Science Team, 1989 - 2004.  
Group Achievement Award, Aqua Mission Team, 2003  
Group Achievement Award, NASA Institute for Advanced Concepts, 2004

##### **National Science Foundation**

Joint Global Ocean Flux Study Science Steering Committee, 1995 - 1998.  
JGOFS Southern Ocean Planning Committee, 1991 - 1994.  
Joint Global Ocean Flux Study Science Executive Committee, 1998 - 2004.  
Joint Global Ocean Flux Study Science Steering Committee, 1999 - 2004. (Chairman)  
Ocean Information Technology Working Group, 2002 - 2004.  
National Science Board, 2006 - present.  
    Committee on Programs and Plans, 2006 - present  
    Committee on Audit and Oversight, 2006 - present  
    Executive Committee, 2007 - 2009  
    Task Force on Cost Sharing, 2007 - present  
    Task Force on Sustainable Energy, 2007 - 2009  
    Subcommittee on Facilities, 2009 - present

##### **National Academy of Sciences**

Committee on Data Management and Computation, 1986 - 1988.  
Committee on Global Change, Ocean Modeling Subgroup, 1989.  
Panel to Review EOSDIS, 1993.  
Committee on Earth Studies, 1996 - 2001. (Chairman)

Space Studies Board, 1996 - 2001.  
Steering Committee on Space Applications and Commercialization, 1999 – 2001.  
Committee on NASA/NOAA Transition from Research to Operations, 2002 – 2003.  
National Associate Member, NAS, 2002.  
Panel on Land-use Change, Ecosystem Dynamics and Biodiversity, 2005 – 2006.  
Committee on Earth Studies, 2008 – present.  
Committee on the Role and Scope of Mission-Enabling Activities in NASA's Space and Earth Science, 2008 – 2009.  
Committee on Indicators for Understanding Global Climate Change, 2009 – present. (Chairman)

#### **National Oceanic and Atmospheric Administration**

Council on Long-Term Climate Monitoring, 2001 – 2003.  
Climate Working Group, 2003 – 2006. (Co-chairman)  
Coastal Ocean Applications and Science Team (GOES-R), 2004 – 2007. (Chairman)  
Ecosystem Research Review Team, 2005 – 2006.

#### **Jet Propulsion Laboratory**

Director's Advisory Council, 2001 – 2007.

#### **Joint Oceanographic Institutions, Inc.**

Board of Governors, 2001 – 2007.  
Executive Committee, 2003 – 2004.

#### **Consortium for Oceanographic Research and Education**

Board of Governors, 2001 – 2007.  
Executive Committee, chair, 2003 – 2007.

#### **1201 Group, LLC (a joint CORE/JOI entity)**

Board of Managers, chair, 2003 – 2007.

#### **Consortium for Ocean Leadership**

Board of Trustees, 2007 – 2008; 2010 – present.

#### **Northrop-Grumman Space and Mission Systems, Inc.**

NPOESS Science Advisory Team, 2003 – 2006.

#### **National Association of State Universities and Land Grant Colleges**

Board on Oceans and Atmosphere, 2001 – 2008.  
BOA Executive Committee, 2001 – 2006. (Co-chair, 2002-2004)

#### **State of Oregon**

Governor's Climate Change Integration Group, 2006 – 2008. (Co-chairman)  
Global Warming Commission, 2008 – present. (vice-chair, non-voting)

#### **University Corporation for Atmospheric Research**

Board of Trustees, 2008 – present.

## Publications

- Leigh-Abbott, M.R., J.A. Coil, T.M. Powell, and P.J. Richerson, 1978, Effects of a coastal front on the distribution of chlorophyll in Lake Tahoe, California-Nevada, *J. Geophys. Res.*, 83, 4668-4672.
- Richerson, P.J., T.M. Powell, M.R. Leigh-Abbott, and J.A. Coil, 1978, Spatial heterogeneity in closed basins, p.239-276, In: J.H. Steele (ed.), *Spatial pattern in plankton communities*. Plenum.
- Abbott, M.R., T.M. Powell, and P.J. Richerson, 1980, The effect of transect direction on observed spatial patterns of chlorophyll in Lake Tahoe, *Limnol. Oceanogr.*, 25, 534-537.
- Abbott, M.R., P.J. Richerson, and T.M. Powell, 1982, In situ response of phytoplankton fluorescence to rapid variations in light, *Limnol. Oceanogr.*, 27, 218-225.
- Abbott, M.R., T.M. Powell, and P.J. Richerson, 1982, The relationship of environmental variability to the spatial patterns of phytoplankton biomass in Lake Tahoe., *J. Plankton Res.*, 4, 927-941.
- Abbott, M.R., and P.M. Zion, 1984, Coastal Zone Color Scanner (CZCS) imagery of near-surface phytoplankton pigment concentrations from the first Coastal Ocean Dynamics Experiment (CODE-1), March-July 1981. Jet Propulsion Laboratory Publication 84-42.
- Abbott, M.R., K.L. Denman, T.M. Powell, P.J. Richerson, R.C. Richards, and C.R. Goldman, 1984, Mixing and the dynamics of the deep chlorophyll maximum in Lake Tahoe, *Limnol. Oceanogr.*, 29, 862-878.
- Strub, T., T.M. Powell, and M.R. Abbott, 1984, Temperature and transport patterns in Lake Tahoe: satellite imagery field data, and a hydrodynamical model, *Int. Ver. Theor. Angew. Limnol.*, 22, 112-118.
- Abbott, M.R., and P.M. Zion, 1985, Satellite observations of phytoplankton variability during an upwelling event, *Cont. Shelf. Res.*, 4, 661-680.
- Hill, S.H., M.R. Abbott, and K.L. Denman, 1985, A computer-controlled turbidostat for the culture of planktonic algae, *Can. J. Fish. Aquat. Sci.*, 42, 744-753.
- Eppley, R.W., E. Stewart, M.R. Abbott, and U. Heyman, 1985, Estimating ocean primary production from satellite chlorophyll. Introduction to regional differences and statistics for the Southern California Bight, *J. Plankton Res.*, 7, 57-70.
- Mackas, D.L., K.L. Denman, and M.R. Abbott, 1985, Plankton patchiness; biology in the physical vernacular, *Bull. Mar. Sci.*, 37, 652-674.
- Leigh-Abbott, M.R., J.A. Coil, T.M. Powell, and P.J. Richerson, 1978, Effects of a coastal front on the distribution of chlorophyll in Lake Tahoe, California-Nevada, *J. Geophys. Res.*, 83, 4668-4672.
- Eppley, R.W., E. Stewart, M.R. Abbott, and R.W. Owen, 1987, Estimating ocean production from satellite-derived chlorophyll: Insights from the EASTROPAC data set, *Oceanologica Acta, spec. vol. 6*, 109-113.
- Eert, J., G. Holloway, J.F.R. Gower, K. Denman, and M. Abbott, 1987, Inference of physical/biological dynamics from synthetic ocean color images, *Adv. Space Res.*, 7, 89-93.
- Denman, K.L., and M.R. Abbott, 1988, Time evolution of surface chlorophyll patterns from cross spectrum analysis of satellite color images, *J. Geophys. Res.*, 93, 6789-6798.
- Balch, W.B., M.R. Abbott, and R.W. Eppley, 1989a. Remote sensing of primary production: I. A comparison of empirical and semi-analytical algorithms. *Deep-Sea Res.*, 36, 281-295.

Balch, W.M., R.W. Eppley, and M.R. Abbott. 1989b, Remote sensing of primary production: II. A semi-analytical algorithm based on pigments, temperature, and light, *Deep-Sea Res.*, 36, 1201-1217.

Balch, W.M., R.W. Eppley, M.R. Abbott, and F.M.H. Reid, 1989, Bias in satellite-derived pigment measurements due to coccolithophores and dinoflagellates, *J. Plankton Res.*, 11, 575-581.

Fu, L.-L., W.T. Liu, and M.R. Abbott, 1990, Satellite remote sensing of the ocean. In: *The Sea*, vol. 9, edited by B. Le Mehaute and D.M. Hanes, pp. 1193-1236, Wiley Interscience, New York.

Abbott, M.R., K.H. Brink, C.R. Booth, D. Blasco, L.A. Codispoti, P.P. Niiler, and S.R. Ramp, 1990, Observations of phytoplankton and nutrients from a Lagrangian drifter off northern California, *J. Geophys. Res.*, 95, 9393-9409.

Hood, R., M.R. Abbott, P.M. Kosro, and A. Huyer, 1990, Relationships between physical structure and biological pattern in the surface layer of a northern California upwelling system, *J. Geophys. Res.*, 95, 18,081-18,094.

Strub, P.T., C. James, A.C. Thomas, and M.R. Abbott, 1990, Seasonal and non-seasonal variability of satellite-derived surface pigment concentration in the California Current, *J. Geophys. Res.*, 95, 11,501-11,530.

Abbott, M.R., and B. Barksdale, 1991, Wind forcing and phytoplankton pigment patterns off central California, *J. Geophys. Res.*, 96, 14,649-14,667.

Hood, R.R., M.R. Abbott, and A. Huyer, 1991, Phytoplankton biomass, species composition, and photosynthetic light response in the coastal transition zone in June 1987, *J. Geophys. Res.*, 96, 14,769-14,780.

Paden, C.A., M.R. Abbott, and C.D. Winant, 1991, Tidal and atmospheric forcing of the upper ocean in the Gulf of California, Part 1: Sea surface temperature variability, *J. Geophys. Res.*, 96, 18,33-18,359.

Brink, K.H., R.C. Beardsley, P.P. Niiler, M.R. Abbott, A. Huyer, S. Ramp, T. Stanton, and D. Stuart, 1991, Statistical properties of near surface currents in the California coastal transition zone, *J. Geophys. Res.*, 96, 14,693-14,706.

Abbott, M.R., and D.B. Chelton, 1991, Advances in passive remote sensing of the ocean, *Rev. Geophys. supplement*, U.S. Nat Rep. IUGG, 571-589.

Kosro, P.M., A. Huyer, S.R. Ramp, R.L. Smith, F.P. Chavez, T.J. Cowles, M.R. Abbott, P.T. Strub, R.T. Barber, P. Jessen, and L.F. Small, 1991, The structure of the transition zone between coastal waters and the open ocean off northern California, winter and spring 1987, *J. Geophys. Res.*, 96, 14,707-14,730.

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Swenson, M.S., P.P. Niiler, K.H. Brink, and M.R. Abbott, 1992, Drifter observations of a cold filament off Point Arena, California, *J. Geophys. Res.*, 97, 3593-3610.

Abbott, M.R., and M.H. Freilich, 1992, Report of the EOS oceans panel to the payload panel, *Paleogeography, Paleoclim., Paleoecol. (Global and Planetary Change)*, 98, 25-28.

Abbott, M.R., 1993, Phytoplankton patchiness: ecological implications and observation methods, In: Patch Dynamics, S.A. Levin, T.M. Powell, and J.H. Steele, eds., Springer Verlag, pp. 37-49.

Paden, C.A., C.D. Winant, and M.R. Abbott, 1993, Tidal and atmospheric forcing of the upper ocean in the Gulf of California, Part 2: Surface heat flux, *J. Geophys. Res.*, 98, 20,091-20,104.

Denman, K.L., and M.R. Abbott, 1994, Time scales of pattern evolution from cross-spectrum analysis of advanced very high resolution radiometer and coastal zone color scanner imagery, *J. Geophys. Res.*, 99, 7433-7442.

Abbott, M.R., K.H. Brink, C.R. Booth, D. Blasco, M. Swenson, C.O. Davis, and L. Codispoti, 1995, Scales of variability of bio-optical properties as observed from near-surface drifters, *J. Geophys. Res.*, 100, 13,345-13,367.

Abbott, M. R., and B. Barksdale, 1995, Variability in upwelling systems as observed by satellite remote sensing, In: Dahlem Workshop on Upwelling in the Ocean: Modern Processes and Ancient Records, C.P. Summerhayes et al., eds., John Wiley, New York. pp. 221-238.

Letelier, R.M., and M.R. Abbott, 1996, An analysis of chlorophyll fluorescence algorithms for the Moderate Resolution Imaging Spectrometer (MODIS), *Remote Sens. Environ.*, 58, 215-223.

Letelier, R.M., M.R. Abbott, and D.M. Karl, 1996, Southern Ocean optical drifter experiment, *Ant. J. United States*, 30, 108-110.

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Spitz, Y.H., J.R. Moisan, M.R. Abbott, and J.G. Richman, 1998, Data assimilation and a pelagic ecosystem model: Parameterization using time series observations., *J. Mar. Systems*, 16, 51-68.

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Jain, L.K., and M.R. Abbott, 1998, DOVE: distributed object-based scientific visualization environment. *Concurrency – Practice and Experience*, 10, 1087-1095.

Bartlett, J. S., M. R. Abbott, R. M. Letelier, and J.G. Richman, 1998, Chlorophyll concentration estimated from irradiance measurements at fluctuating depths, In: *Proceedings of SPIE (Ocean Optics XIV) CD-ROM*. Palos Verdes Estates, CA: SPIE.

Moore, J.K., M.R. Abbott, and J.G. Richman, 1999, Location and dynamics of the Antarctic Polar Front from satellite sea surface temperature data, *J. Geophys. Res.*, 104, 3059-3073.

- Moore, J.K., M.R. Abbott, J.G. Richman, W.O. Smith, T.J. Cowles, K.H. Coale, W.D. Gardner, and R.T. Barber, 1999, SeaWiFS satellite ocean color data from the Southern Ocean, *Geophys. Res. Letters*, 26, 1465-1468.
- Moore, J.K., M.R. Abbott, J.G. Richman, and D.M. Nelson, 2000, The Southern Ocean at the Last Glacial Maximum: A strong sink for atmospheric carbon dioxide, *Global Biogeochem. Cycles*, 14, 455-475.
- Abbott, M.R., J.G. Richman, R.M. Letelier, and J.S. Bartlett, 2000, The spring bloom in the Antarctic Polar Frontal Zone as observed from a mesoscale array of bio-optical sensors, *Deep-Sea Res. II*, 47, 3285-3314.
- Moore, J.K., and M.R. Abbott, 2000, Phytoplankton chlorophyll distributions and primary production in the Southern Ocean, *J. Geophys. Res.*, 105, 28,709-28,722.
- Letelier, R.M., D.M. Karl, M.R. Abbott, P. Flament, M.H. Freilich, R. Lukas, and P.T. Strub, 2000, Role of late winter mesoscale events in the biogeochemical variability of the upper water column of the North Pacific Subtropical Gyre, *J. Geophys. Res.*, 105, 28,723-28,740.
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- Landry, M.R., S.L. Brown, K.E. Selph, M.R. Abbott, R.M. Letelier, S. Christensen, R.R. Bidigare, and K. Casciotti, 2001, Initiation of the spring phytoplankton increase in the Antarctic Polar Front Zone at 170°W, *J. Geophys. Res.*, 106, 13,903-13,916.
- Mengelt, C., M.R. Abbott, J.A. Barth, R.M. Letelier, C.I. Measures, and S. Vink, 2001, Phytoplankton pigment distribution in relation to the physics across the Antarctic Polar Front, 170°W, *Deep-Sea Res. II*, 48, 4081-4100.
- Abbott, M.R., J.G. Richman, J.S. Nahorniak, and B.S. Barksdale, 2001, Meanders in the Antarctic Polar Frontal Zone and their impact on phytoplankton, *Deep-Sea Res. II*, 48, 3891-3912.
- Fennel, K., Y.H. Spitz, R.M. Letelier, M.R. Abbott and D.M. Karl, 2001, A deterministic model for N<sub>2</sub> fixation at the HOT site in the subtropical North Pacific, *Deep-Sea Res. II*, 49, 149-174
- Nahorniak, J.S., M.R. Abbott, R.M. Letelier, and W.S. Pegau, 2001, Analysis of a method to estimate chlorophyll-a concentration from irradiance measurements at varying depths, *J. Atmos. Ocean. Tech.*, 18, 2063-2073.
- Laney, S.R., R.M. Letelier, R.A. Desiderio, M.R. Abbott, D.A. Kiefer, and C.R. Booth, 2001, Measuring the natural fluorescence of phytoplankton cultures, *J. Atmos. Ocean. Tech.*, 18, 1924-1934.
- Landry, M.R., K.E. Selph, S.L. Brown, M.R. Abbott, C.I. Measures, S. Vink, C.B. Allen, A. Calbet, S. Christensen, and H. Nolla, 2002, Seasonal dynamics of phytoplankton in the Antarctic Polar Front region at 170°W, *Deep-Sea Res. II*, 49, 1843-1865
- Moisan, J.R., T.A. Moisan, and M.R. Abbott, 2002, Modeling the effect of temperature on the maximum growth rates of phytoplankton populations, *Ecol. Modeling*, 153, 197-215.

- Moore, J.K., and M.R. Abbott, 2002, Surface chlorophyll concentrations in relation to the Antarctic Polar Front: Seasonal and spatial patterns from satellite observations, *J. Mar. Systems*, 37, 69-86.
- Fennel, K., M.R. Abbott, Y.H. Spitz, J.G. Richman, and D.M. Nelson, 2003, Modeling controls of phytoplankton production in the southwest Pacific sector of the Southern Ocean, *Deep-Sea Res. II*, 50, 769-798.
- Fennel, K., M.R. Abbott, Y.H. Spitz, J.G. Richman, and D.M. Nelson, 2003, Impacts of iron control on phytoplankton production in the modern and glacial Southern Ocean, *Deep-Sea Res. II*, 50, 833-851.
- Hoge, F.E., P.E. Lyon, R.N. Swift, J.K. Yungel, M.R. Abbott, R.M. Letelier, and W.E. Esaias, 2003, Validation of Terra-MODIS phytoplankton chlorophyll fluorescence line height. I. Initial airborne lidar results, *Appl. Optics*, 42, 2767-2771.
- Letelier, R.M., D.M. Karl, M.R. Abbott, and R.R. Bidigare, 2004, Light driven seasonal patterns of chlorophyll and nitrate in the lower euphotic zone of the North Pacific subtropical gyre, *Limnol. Oceanogr.*, 49, 508-519.
- Doney, S.C., M.R. Abbott, J.J. Cullen, D.M. Karl, and L. Rothstein, 2004, From genes to ecosystems: the ocean's new frontier, *Frontiers Ecology Environ.*, 2, 457-466.
- Laney, S.R., R.M. Letelier, and M.R. Abbott, 2005, Parameterizing the natural fluorescence kinetics of *Thalassiosira weissflogii*, *Limnol. Oceanogr.*, 50, 1499-1510.
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- Abbott, M.R., and C.E. Sears, 2006, The always-connected world and its impacts on ocean research, *Oceanography*, 19, 14-21.
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- Corno, G., R.M. Letelier, M.R. Abbott, D.M. Karl, and R. Bidigare, 2008, Temporal and vertical variability in photosynthesis in the North Pacific Subtropical Gyre, *Limnol. Oceanogr.*, 53: 1252-1265.
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- Abbott, M.R., 2009, A new path for science? In: *The Fourth Paradigm: Data-Intensive Scientific Discovery*, T. Hey, S. Tansley, and K. Tolle, eds., Microsoft Research, pp. 111-116.