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EDUCATIONAL BACKGROUND

| Degree | Institution Conferring | Field | Year |
|---------------|-------------------------------|--------------------|-------------|
| B.S. | Eastern Washington University | Biology | 1987 |
| M.S. | Oregon State University | Biochem/Statistics | 1989 |
| Ph.D. | Oregon State University | Oceanography | 1993 |

PROFESSIONAL BACKGROUND

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|---|-----------|
| Research Scientist, AScI Corp. U.S. Environmental Protection Agency | 1989-93 |
| Assistant Scientist, Hatfield Marine Science Center | 1993-94 |
| Post-Doctoral Research Associate, Brookhaven National Laboratory | 1994-97 |
| Adjunct Professor, Southampton College, Long Island University | 1996 |
| Assistant Scientist, Brookhaven National Laboratory | 1997-98 |
| Assistant Professor, Institute of Marine & Coastal Sciences, Rutgers University | 1998-99 |
| Scientist, NASA Goddard Space Flight Center | 1999-2004 |
| Full Professor, Dept. Botany & Plant Pathology, Oregon State University | 2005- |

AWARDS

NASA/GSFC Performance Award (2001)

NASA/GSFC Performance Award (2002)

NASA/GSFC, Code 970, Outstanding Publication Award (2002)

NRC Senior Resident Research Assistant, Dr. O. Prasil (2002-03)

CURRENT RESEARCH INTERESTS

Physiological-ecology of marine algae, biogeochemical cycles, remote sensing of the biosphere, novel optical approaches to understanding algal ecology/physiology, biochemistry & biophysics of photosynthesis, physiological responses of plants to environmental stresses, regional & global ecological modeling, climate change, and carbon cycling.

PUBLICATIONS

- T. Westberry, M.J. Behrenfeld, D.A. Siegel, E. Boss. 2006. Carbon-based primary productivity modeling with vertically resolved photophysiology.. *Global Biogeochem. Cycles*. Submitted
- M.J. Behrenfeld, R.O'Malley, D.Siegel, C. McClain, J. Sarmiento, G. Feldman, A. Milligan, P. Falkowski, R. Letelier, E. Boss. 2006. Climate-driven trends in contemporary ocean productivity. *Nature* In press.
- M.J. Behrenfeld, K. Worthington, Z. Kolber, R.M. Sherrell, F. Chavez, P. Strutton, M. McPhaden, D. Shea. 2006. Nutrient regulation of tropical Pacific ocean productivity. *Nature* doi:10.1038/nature05083.
- M-E Carr, M.A Friedrichs, M. Schmeltz, M.N. Aita, D. Antoine, K.R. Arrigo, I. Asanuma, O. Aumont, R. Barber, M. Behrenfeld, R. Bidigare, E.T. Buitenhuis, J. Campbell, A. Ciotti, H. Dierssen, M. Dowell, J. Dunne, W. Esaias, B. Gentili, W. Gregg, S. Groom, N. Hoepner, J. Ishizaka, T. Kameda, C. Le Quere, S. Lohrenz, J. Marra, F. Melin, K. Moore, A. Morel, T.E. Reddy, J. Ryan, M. Scardi, T. Smyth, K. Turpie, G. Tilstone, K. Waters, Y. Yamanaka. 2006. A comparison of global estimates of marine primary production from ocean color. *Deep Sea Res.* 53, 741-770
- M.J. Behrenfeld, E. Boss. 2006. Beam attenuation and chlorophyll concentration as alternative optical indices of phytoplankton biomass. *J. Mar. Res.* 64, 431-451.
- Lutz, M.J., K. Caldaira, R.B. Dunbar, M.J. Behrenfeld. 2005. Seasonal efficiency of the biological pump to transport particulate organic carbon into the ocean's interior. *J. Geophys. Res.* In press.
- P. Schultz, P., A.R. Jacobson, M.J. Behrenfeld, J.L. Sarmiento. 2005. Observing large-scale ocean ecosystem structure from space: New constraints for ocean ecosystem models. *Global Biogeochem. Cycles*. Submitted
- D.A. Siegel, S. Maritorena, N.B. Nelson, M.J. Behrenfeld, C.R. McClain. 2005. Colored dissolved organic matter and its influence on the satellite-based characterization of the ocean biosphere. *Geophys. Res. Lett.* 32, L20605, doi:10.1029/2005GL024310
- D.A. Siegel, S. Maritorena, N.B. Nelson, M.J. Behrenfeld. 2005. Independence and interdependences of global ocean optical properties viewed using satellite color imagery. *J. Geophys. Res.* 110, C07011, doi:10.1029/2004JC002527
- M.J. Behrenfeld, E. Boss, D. A. Siegel & D. M. Shea 2005. Carbon-based ocean productivity and phytoplankton physiology from space. *Global Biogeochem. Cycles*, 19, GB1006, doi:10.1029/2004GB002299 (also cited as Editor's Choice in *Science* 307: 646)
- F. Bruyant, M. Babin, B. Genty, O. Prasil, M.J. Behrenfeld, H. Claustre, A. Bricaud, J. Holtendorff, M. Koblizek, L. Garczareck & F. Partensky. 2005. Diel variations in the photosynthetic parameters of Prochlorococcus strain PCC 9511: combined effects of light

- and cell cycle. *Limnol. Oceanogr.* 50(3): 850-863
- H. Havelková-Doušová, O. Prášil, & M. Behrenfeld. 2004. Photoacclimation of *Dunaliella tertiolecta* (chlorophyceae) to natural light fluctuations simulating vertical mixing. *Photosynthetica*. 42:273-281.
- M.J. Behrenfeld, O. Prasil, M. Babin & F. Bruyant. 2004. In search of a physiological basis for covariations in light-limited and light-saturated photosynthesis. *J. Phycology*. 40:4-25.
- M.J. Behrenfeld, E. Boss. 2003. The beam attenuation to chlorophyll ratio: an optical index of phytoplankton photoacclimation in the surface ocean? *Deep Sea Research*. 50:1537-1549.
- E. Marañón, M.J. Behrenfeld, N. González, B. Mouriño & M.V. Zubkov. 2003. Variability in primary production in low-nutrient, low-chlorophyll regions of the central Atlantic ocean. *Mar. Ecol. Prog. Ser.* 257:1-11.
- M.J. Behrenfeld, W.E. Esaias & K. Turpie. 2002. Assessment of primary production at the global scale. In: [P.J. Williams, D.N. Thomas & C.S. Reynolds, eds] *Phytoplankton Productivity: Carbon Assimilation in Marine and Freshwater Ecosystems*. **Blackwell**. pp 156-186.
- M.J. Behrenfeld, E. Marañón, D.A. Siegel & S.B. Hooker. 2002. A photoacclimation and nutrient based model of light-saturated photosynthesis for quantifying oceanic primary production. *Mar. Ecol. Prog. Ser.* 228: 103-117.
- J. Campbell, Antoine, D., Armstrong, R., Arrigo, K., Balch, W., Barber, R., Behrenfeld, M.J., Bidigare, R., Bishop, J., Carr, M-E., Esaias, W., Falkowski, P.G., Hoepffner, N., Iverson, R., Kiefer, O., Lohrenz, S., Marra, J., Morel, A., Ryan, J., Vedernikov, V., Waters, K., Yentsch, C., & Yoder, J. 2002. Comparison of algorithms for estimating primary productivity from surface chlorophyll, temperature and irradiance. *Global Biogeochem. Cycles* 16(3): 10.1029.
- C.R. McClain, F.G. Hall, J. Collatz, S. Kawa, W. Gregg, J. Gervin, J. Abshire, A. Andrews, C. Barnet, M.J. Behrenfeld, P. Caruso, A. Chekalyuk, L. Demaio, A. Denning, J. Hansen, F. Hoge, R. Knox, J. Masek, K. Mitchell, J. Moisan, T. Moisan, P. Pawson, M. Rienecker, S. Signorini & J. Tucker. 2002. Science and observation recommendations for future NASA carbon cycle research. *NASA Tech. Mem. Ser.* #210009, pp 145.
- M.J. Behrenfeld, J. Randerson, C. McClain, G. Feldman, S. Los, C. Tucker, P. Falkowski, C. Field, R. Frouin, W. Esaias, D. Kolber & N. Pollack. 2001. Biospheric primary production during an ENSO transition. *Science* 291: 2594-2597.
- C. Steglich, M.J. Behrenfeld, M. Koblizek, H. Claustre, S. Penno, O. Prasil, F. Partensky & W. Hess. (2001) Nitrogen deprivation strongly affects Photosystem II but not phycoerythrin

- level in the divinyl-chlorophyll *b*-containing cyanobacterium *Prochlorococcus marinus*. *Biochim. Biophys. Acta*. 1503: 341-349
- W.W. Gregg, M.J. Behrenfeld, F.E. Hoge, W.E. Esaias, N.E. Huang, S.R. Long & C.R. McClain. (2000) NASA/GSFC Research activities for the global ocean carbon cycle: A prospectus for the 21st century. *NASA Tech. Mem. Ser.* #209882, pp 22.
- M.J. Behrenfeld & Z.S. Kolber. 1999. Widespread iron limitation of phytoplankton in the south Pacific ocean. *Science* 283: 840-843.
- C.B. Field, M.J. Behrenfeld, J.T. Randerson, P.G. Falkowski. 1998. Primary production of the biosphere: Integrating terrestrial and oceanic components. *Science* 281: 237-240.
- M.J. Behrenfeld, O. Prasil, Z.S. Kolber, M. Babin, & P.G. Falkowski. 1998. Compensatory changes in photosystem II electron turnover rates protect photosynthesis from photoinhibition. *Photosynth. Res.* 58:259-268
- M.J. Behrenfeld & P.G. Falkowski. 1997. A consumer's guide to phytoplankton primary productivity models. *Limnol. Oceanogr.* 42:1479-1491.
- M.J. Behrenfeld & P.G. Falkowski. 1997. Photosynthetic rates derived from satellite-based chlorophyll concentration. *Limnol. Oceanogr.* 42:1-20
- R.C. Swartz, S.P. Ferraro, J.O. Lamberson, F.A. Cole, R.J. Ozretich, B.L. Boese, D.W. Schults, M. Behrenfeld & G.T. Ankley. (1997) Photoactivation and toxicity of mixtures of PAH compounds in marine sediment. *Env. Tox. Chem.* 10:2151-2157.
- M.J. Behrenfeld, P.G. Falkowski, W.E. Esaias, W. Balch, J.W. Campbell, R.L. Iverson, D.A. Kiefer, A. Morel, & J. Yoder. 1998. Toward a consensus productivity algorithm for SeaWiFS. Chapter 2. SeaWiFS Technical Report Series. *NASA Tech. Mem. Ser.* #104566, Vol. 42.
- M.J. Behrenfeld, A.J. Bale, Z.S. Kolber, J. Aiken & P.G. Falkowski. 1996. Confirmation of iron limitation of phytoplankton photosynthesis in the equatorial Pacific Ocean. *Nature* 383:508-511.
- J.T. Hardy, A. Hanneman, M.J. Behrenfeld & R. Horner. 1996. Environmental biogeography of phytoplankton in the Southeast Pacific Ocean. *Deep-Sea Res.* 43(10):1-13.
- M.J. Behrenfeld, D.R.S. Lean & H. Lee II. 1995. Ultraviolet-B radiation effects on inorganic nitrogen uptake by natural assemblages of oceanic plankton. *J. Phycol.* 31:25-36
- M.J. Behrenfeld, H. Lee II & L.F. Small. 1994. Interactions between nutritional status and long-term responses to ultraviolet-B radiation stress in a marine diatom. *Mar. Biol.* 118:523-530.

M.J. Behrenfeld, J.W. Chapman, J.T. Hardy & H. Lee II. 1993. Is there a common response to ultraviolet-B radiation by marine phytoplankton? *Mar. Ecol. Prog. Ser.* 102:59-68.

M.J. Behrenfeld, J.T. Hardy, H. Gucinski, A. Hanneman, H. Lee II & A. Wones. 1993. Effects of ultraviolet-B radiation on primary production along latitudinal transects in the South Pacific Ocean. *Mar. Env. Res.* 35:349-363.

M.J. Behrenfeld, J.T. Hardy, & H. Lee II. 1992. Chronic effects of ultraviolet-B radiation on growth and cell volume of *Phaeodactylum tricornutum* (Bacillariophyceae). *J. Phycol.* 28:757-760.

M.J. Behrenfeld & J.W Chapman. 1990. Our disappearing ozone shield. *Current* 10(3):13-17.

ADVISORS

Dr. Paul G. Falkowski, Rutgers, The State University of New Jersey, Postdoctoral Mentor

Dr. Lawrence F. Small, Oregon State University, Ph.D. Advisor

Dr. John T. Hardy, Western Washington University, M.S. Advisor

CURRENT COLLABORATIONS

Philip Boyd (University of Otago, New Zealand); Emmanuel Boss (University of Maine); Zbigniew S. Kolber (MBARI), Paul G. Falkowski & Robert Sherrell (Rutgers, The State University of New Jersey); James T. Randerson (California Institute of Technology); Jorge Sarmiento (Princeton); Christopher Field (Carnegie Institute, Stanford); Ondrej Prasil (Institute of Microbiology, Třeboň, Czech Republic); Marcel Babin (Université Peirre et Marie Curie & CNRS, Villefranche-Sur-Mer, France); Allen Milligan (Oregon State University); Collin Roesler (Bigelow); Raghu Murtugudde (University of Maryland)

TECHNICAL REVIEWER FOR

National Science Foundation, National Aeronautics and Space Administration, *Science*, *Nature*, *Global Biogeochemical Cycles*, *Journal of Geophysical Research*, *Limnology and Oceanography*, *Journal of Phycology*, *Deep Sea Research*, *Journal of Plankton Ecology*, *Journal of Experimental Marine Biology and Ecology*, *Aquatic Microbial Ecology*, *Estuarine Coastal and Shelf Science*, *Plant Physiology*, *Marine Ecology Progress Series*.

Invited Lectures

Xth International Photosynthesis Congress, Montpellier, France (1995)

International Phycological Congress, Lieden, The Netherlands (1997)

Flinders University, Australia (1997)

Rutgers University (1999)

University of Massachusetts (1999)

University of Connecticut (1999)

Princeton (2000)

University of New Hampshire (2001)
Institute of Microbiology, Trebon, Czech Republic (2001)
Photosynthesis in the Sea Conference, Bangor, Wales (2002)
Presidential Science Advisor, Dr. Marburger (2002)
Assistant Director NSF's Geosciences Division, Dr. Leinen (2003)
OMB Inspector for NASA Code Y, Dr. Rothenberg (2003)
Princeton (2003)
University of Wisconsin, Milwaukee (2004)
University of Washington (2004)
Santiago de Compostela, Spain (2005)
Woods Hole Oceanographic Institution (2005)
American Society of Limnology and Oceanography, Victoria BC (2006)
Woods Hole Oceanographic Institution (2006)