

David Talmy

Research Scientist

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Education

- 2009-2013 **PhD Environmental Science**
School of Biological Sciences, University of Essex
- 2008-2009 **MRes Mathematics in the Living Environment (with Distinction)**
Departments of Biology and Mathematics, University of York
- 2004-2008 **MMath Mathematics**
School of Mathematical and Physical Sciences, University of Sussex

Professional Experience

- 2016-Present **Research Scientist**
Department of Earth, Atmosphere and Planetary Science, Massachusetts Institute of Technology
- 2013-2016 **Postdoctoral Associate**
Department of Earth, Atmosphere and Planetary Science, Massachusetts Institute of Technology
- 2010-2013 **Graduate Research Assistant**
Plymouth Marine Laboratory

Research Interests

Microbial physiology and metabolism, microbial ecosystem interactions, marine biogeochemistry, organic matter elemental composition

Forthcoming Publications

Omta, A.W., Talmy, D., Sher, D., Finkel, Z.V., Irwin, A.J., Inomura, K., Follows, M.J. (*in review*). Rapid algal turnover of phosphorus.

Våge, S., Talmy, D., Follows, M.J., Thingstad, T.F. (*in preparation*) Linking microbial and macroecology – Costs and benefits of resistance may underlay global patterns in the biosphere.

Talmy, D., Beckett, S.J., Taniguchi, D.A.A. (*in preparation*). Viruses vs. grazers: A simple, explanatory model of competition for microbial resources.

Talmy, D., Follett, C.L., Follows, M.J. (*in preparation*). Viral regulation of dissolved organic matter elemental composition.

Thamatrakoln, K., Haramaty, L., Talmy, D., Maniscalco, C., Latham, J., Natale, F., Coolen, M.J.L., Follows, M.J., Bidle, K.D. (*in preparation*). Light-dependent regulation of coccolithophore host-virus interactions.

Nissimov, J.I., Talmy, D., Haramaty, L., Fredricks, H., Zelzion, U., Eren, M., Gardella, R., Laber, C., More, K.D., Bhattacharya, D., Follows, M.J., Coolen, M.J.L., Van Mooy, B.A.S., Bidle, K.D. (*in preparation*) "Survival of the slowest": Biochemical diversity of coccolithovirus-derived serine palmitoyltransferase and its impact on host demise.

Peer Reviewed Publications

Omta, A.W., Talmy, D., Sher, D., Finkel, Z.V., Irwin, A.J., Follows, M.J. (2017). Extracting phytoplankton physiological traits from batch and chemostat culture data. *Limnology and Oceanography: Methods*, 15, 453-466.

Record, N.R., Talmy, D., Våge, S. (2016). Quantifying tradeoffs for marine viruses. *Frontiers in Marine Science*, 3, 251.

Li, G., Talmy, D., Campbell, D.A. (2016) Diatom responses to photoperiod and light are predictable from diel reductant generation. *Journal of Phycology*, 10.1111/jpy.12483-16-032.

Lopez, J.S., Garcia, N.S., Talmy, D., Martiny, A.C. (2016) Diel variability in the elemental composition of the marine cyanobacterium *Synechococcus*. *Journal of Plankton Research*, fbv120.

Talmy, D., Martiny, A.C., Hill, C.N., Hickman, A.E., Follows, M.J. (2016) Microzooplankton regulation of surface ocean POC:PON ratios. *Global Biogeochemical Cycles*, 30, 1-22.

Talmy, D., Blackford, J., Hardman-Mountford, N., Polimene, L. Follows, M.J. Geider, R.J., (2014) Flexible C:N ratio enhances metabolism of large phytoplankton when resource supply is intermittent. *Biogeosciences*, 11, 601-602.

Talmy, D., Blackford, J., Hardman-Mountford, N., Dumbrell, A.J., Geider, R.J., (2013) An optimality model of phytoplankton photoadaptation in contrasting aquatic light regimes. *Limnology and Oceanography*, 58, 1802-1818.

Presentations

Talmy, D., Follett, C.L., Follows, M.J. Does viral lysis influence dissolved organic matter elemental composition? Aquatic Sciences Meeting, Honolulu, Hawaii, USA, Feb 28th, 2017.

Talmy, D., Thamatrakoln, K., Bidle, K.D., Follows, M.J. How does viral infection of *Emiliania huxleyi* depend on ambient irradiance? Monteiro group meeting, University of Bristol, Bristol, UK, July 26th, 2016.

Talmy, D., Follett, C.L., Follows, M.J. Viral regulation of dissolved organic matter elemental composition. Viruses of Microbes Meeting, Liverpool, UK, July 19th, 2016.

Talmy, D., Hussain, F., Follows, M.J. The influence of lytic vs. lysogenic viral reproduction on host-virus populations. 8th Aquatic Virus Workshop, Plymouth, UK, July 11th, 2016.

- Talmy, D., Martiny, A.C., Hickman, A.E., Follows, M.J. Microzooplankton regulation of particulate organic matter elemental composition. Bigelow Laboratory For Ocean Sciences, Maine, USA, March 9th, 2016.
- Talmy, D., Martiny, A.C., Hickman, A.E., Hill, C.N., Follows, M.J. Microzooplankton regulation of surface ocean POC:PON ratios. Ocean Sciences Meeting, New Orleans, Louisiana, USA, Feb 25th, 2016.
- Talmy, D., Martiny, A.C., Hickman, A.E., Hill, C.N., Follows, M.J. Microzooplankton regulation of surface ocean POC:PON ratios. Departmental Seminar, Department of Marine and Coastal Sciences, Rutgers University, New Jersey, USA, Dec 15th, 2015.
- Talmy, D., Martiny, A.C., Hickman, A.E., Follows, M.J. Zooplankton regulation of particulate organic matter elemental composition. National Oceanography Center, Southampton, UK, Nov 10th, 2015.
- Talmy, D., Hussain, F., Follows, M.J. The influence of viral reproduction strategies on marine microbial community dynamics. Trait-based approaches to ocean life workshop, New Hampshire, USA, Oct 5th, 2015.
- Talmy, D., Hussain, F., Follows, M.J. The influence of viral reproductive strategies on marine microbial community dynamics. Aquatic Sciences Meeting, Granada, Spain, Feb 27th, 2015.
- Talmy, D., Hardman-Mountford, N.J., Blackford, J.C., Geider, R.J. Phytoplankton photoadaptation in contrasting aquatic light regimes. Ocean Sciences Meeting, Honolulu, Hawaii, USA, Feb 27th, 2014.
- Talmy, D., Hardman-Mountford, N.J., Blackford, J.C., Polimene, L., Hill, C.N., Follows, M.J., Geider, R.J. Phytoplankton photoadaptation in contrasting aquatic light regimes. Sack Lunch Seminar Series, Department of Earth, Atmosphere and Planetary Sciences, Massachusetts Institute of Technology, Massachusetts, USA, Oct 23rd, 2013.
- Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Adaptation to variable light determines resource allocation in phytoplankton. Ocean Sciences Meeting, Salt Lake City, Utah, USA, Feb 23rd, 2012.
- Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Phytoplankton optimal resource allocation in response to variable light intensity. Advances in Marine Ecosystem Modelling Research (AMEMR) Symposium, Plymouth, UK, June 28th, 2011.
- Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Modeling phytoplankton growth in non steady-state environments. Marine Sciences Seminar, Plymouth Marine Laboratory, Plymouth, UK, May 26th, 2011.
- Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Modeling phytoplankton productivity in the open ocean: including the effects of adaptation to different light regimes. Marine Science and Environmental Microbiology Seminar, University of Essex, Jan 26th, 2011.
- Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Optimality in phytoplankton growth models and the link with satellite data. Advanced School on Complexity, Adaptation and Emergence in Marine Ecosystems, Trieste, Italy, Oct 21st, 2010.

Talmy, D., Blackford, J., Hardman-Mountford, Geider, R.J. Optimality in phytoplankton growth models and the link with satellite data. NCEO Ocean Carbon Cycle Meeting, Plymouth, UK, July 15th, 2010.

Workshops and Summer Schools

- 2015 Trait-Based Approaches to Ocean Life Workshop, Waterville Valley, New Hampshire, USA
- 2015 Workshop for Development of macromolecular models of marine algae, Sackville, New Brunswick, Canada
- 2014 The Gordon and Betty Moore Foundation Research Associate and Postdoctoral Scholar Summit, Dorado, Puerto Rico
- 2014 North Atlantic Virus Infection of Coccolithophores Expedition (Na-VICE) post cruise meeting, Woods Hole Oceanographic Institution, Falmouth, Massachusetts, USA
- 2013 Trait and Resource Allocation Based Modeling of Microbial Communities, University of Exeter, UK
- 2013 Workshop for Understanding Microbial Macromolecular Composition, Haifa, Israel
- 2010 Advanced School on Complexity, Adaptation and Emergence in Marine Ecosystems, Trieste, Italy
- 2010 Earth System Science Spring School, Scarborough, UK
- 2010 Modeling Evolutionary and Ecological Processes in Biogeochemical Cycles, University of East Anglia, UK

Teaching Experience

- 2016 Invited lecturer, Hjort Summer school in Bergen, Norway: Complexity vs. simplicity in microbial ecology
- 2008 Associate Tutor, University of Sussex, UK. Courses taught: Linear algebra II and Introduction to Matlab
- 2007 High school classroom assistant as part of the Student Associate Scheme, Worthing High School, Worthing, East Sussex, UK

Professional Service and Outreach

- Ongoing Reviewer, *The ISME Journal*, *Limnology and Oceanography*, *Global Biogeochemical Cycles*, *Journal of Theoretical Biology*, *Marine Ecology Progress Series*, *PLOS ONE*, *Frontiers in Marine Science*
- Ongoing Volunteer, development of an interactive web app for high school students to learn about scientific modeling, with Janice McDonnell and Carrie Ferraro in the Department of Marine and Coastal Sciences (DMCS) at Rutgers University
- 2015-2016 Interviewee for outreach movie for high school students to learn about scientific modeling, collaboration between Tilapia Film (Los Angeles) and scientists in the DMCS at Rutgers University
- 2016 Demonstrator, The 6th Annual John Carlson Lecture, New England Aquarium
- 2016 Demonstrator, Oceans Alive! Display for MIT Open House
- 2014 Demonstrator, Nautical Night at the MIT Museum
- 2011-2012 STEMNET (Science, Technology and Engineering Network) Ambassador (various locations)

2011 Researcher in Residence, Ridgeway School (now Plympton Academy),
Plympton, UK

Grants and Awards

2015-2018 NSF Co-Principle Investigator award (\$326,864): *“Elucidating algal host-
virus dynamics in different nutrient regimes - mechanistic interactions and
biogeochemical impact.* ID number: OCE-1536521.

2009-2013 National Centre for Earth Observation PhD studentship

2009 NERC subsidy to attend Earth System Science Spring School

2008-2009 NERC Masters studentship