

Adrian Benedict Burd

Curriculum Vitae

March 2014

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Education & Qualifications

1983	B.Sc. (Hons)	Astronomy	University College, London, UK
1984	M.A.St.	Applied Mathematics & Theoretical Physics	University of Cambridge, UK
1987	D.Phil.	Astronomy	University of Sussex, UK

Academic Positions

2008 – present	Associate Professor, Dpt. of Marine Sciences, University of Georgia, USA
2002 – 2008	Assistant Professor, Dpt. of Marine Sciences, University of Georgia, USA
1997 – 2002	Assistant Research Scientist, Dpt. of Oceanography, Texas A&M University, USA
1994 – 1997	Postdoctoral Research Associate, Dpt. of Oceanography, Texas A&M University, USA
1993 – 1994	Postdoctoral Research Associate, Dpt. of Oceanography, Dalhousie University, Canada
1992	Lecturer, Dpt. of Applied Mathematics, University of Cape Town, South Africa
1991 – 1992	Postdoctoral Research Associate, Dpt. of Physics, Washington University, St. Louis, USA
1990 – 1991	Lecturer, School of Mathematical Sciences, Queen Mary College, University of London, UK
1987 – 1990	Postdoctoral Associate, School of Mathematical Sciences, University of London, UK

Teaching

I am currently advising two graduate students and one postdoctoral researcher and I am on the committees of three other students. I have had one graduate student graduate, been on the committees of 6 students who have graduated from UGA and been the invited external committee member for two students. I have also supervised two undergraduates in research. I have developed and taught the following courses.

Undergraduate Courses

- Cosmology (Queen Mary College, University of London)
- Mathematical Methods; General Relativity (University of Cape Town)
- Chemical and Biological Oceanography (50%); Marine Biology; Life in Fluids (50%); Life in Air, Life in Water; Earth, the Ocean Planet (University of Georgia)

Graduate Courses

- Computational Dynamics (Queen Mary College, University of London)
- Modeling Marine Systems; Quantitative Methods in Marine Science; Biological Oceanographic Processes (50%); Climate, Oceans and the Marine Biosphere (40%) (University of Georgia)

Other Courses

- Developed and taught adult education courses in Astronomy and Cosmology, Sussex Adult Education, UK (1985–1987).
- Organizer of a two-week workshop for middle and high school teachers on using oceanographic data in the classroom, 2008–2011 (funded by NSF).
- Instructor for the 2008 NSF Antarctic Field Biology Course.
- Invited 3 day POLARMAR graduate level short course, *Modeling Particles in the Ocean*, Alfred Wegner Institute, Germany, June, 2013.

Invited Talks

- *Particle models and particles in models*, invited talk in “Perspectives in Particle Flux” Workshop, Ocean Sciences Meeting, Honolulu, HI, February 2014.

- *The fate of particulate organic material in the oceans*, talk at NCAR ASP Researcher Workshop “Key uncertainties in the global carbon cycle”, Boulder, CO, USA, August 2013.
- *Physical and biological drivers of marine snow formation in the ocean*, talk at IAHA-IAPSO-IASPEI joint meeting, Göthenburg, Sweden, July 2013.
- *Modeling marine particles and biogeochemistry*, talk at GEOMAR, Kiel, Germany, July 2013.
- *Particles in the oceans: A tale of many models*, talk at Old Dominion University, Virginia, USA, December 2012.
- *How complicated a model do we need to model particle processes in the ocean?* plenary talk at the 2nd International Workshop on Marine Aggregates, Bremen, Germany, August 2012.
- *Particles in the ocean: Complex and simple models*, talk at Bigelow Marine Laboratories, Maine, USA, July 2012.
- *Particle dynamics in the ocean: Marine particle processes and their representation*, keynote talk at 3rd GEO-TRACES Data-Model Synergy Workshop, Barcelona, Spain, November 2011.
- *Modeling ecosystem complexity and its relationship to the real world*, Gordon Research Conference on Polar Marine Science, Ventura, CA, USA, March 2011.
- *Particle export flux measurements and models: Some thoughts on future directions*, talk at CONFLUX-3 meeting, Croatia, October 2009.
- *Modeling processes in the bathypelagic*, talk at IMBER IMBIZO meeting, Miami, Florida, November 2008.
- *Particle flux measurements and models: What are we measuring?* talk at ALSO meeting, Santa Fe, New Mexico, February 2007.
- *Particle size spectra, carbon fluxes, and thorium*, talk at National Institute of Water and Atmosphere, Wellington, New Zealand, February 2006.
- *Particles, carbon flux and food*, talk at LUMCON, Louisiana, USA, March 2005.
- *The role of particle size in determining POC flux*, talk at SUNY, Stony Brook, New York, September 2004.
- *Marine aggregates, carbon and thorium: that sinking feeling*, talk at CABE, University of Geneva, Switzerland, October 2003.

Publications

Refereed research papers

1. Burd, A. B. (2013). Modeling particle aggregation using size class and size spectrum approaches. *Journal of Geophysical Research* **118**, 3431–3443.
2. Sheldon, J. and A. Burd (2013). Alternating effects of climate drivers on river discharge to coastal Georgia. *Estuaries and Coasts*.
3. Burd, A. B., D. A. Hansell, D. K. Steinberg, T. R. Anderson, J. Arístegui, F. Baltar, S. R. Beupré, K. O. Bueseler, F. DeHairs, G. A. Jackson, D. C. Kadko, R. Koppelman, R. S. Lampitt, T. Nagata, T. Reinthaler, C. Robinson, B. H. Robison, C. Tamburini, and T. Tanaka (2010). Assessing the apparent imbalance between geochemical and biochemical indicators of meso- and bathypelagic biological activity: What the @!\$# is wrong with present calculations of carbon budgets? *Deep-Sea Research II* **57**, 1557–1571.
4. Brew, H., S. Moran, M. Lomas, and A. Burd (2009). Plankton community composition, organic carbon and thorium-234 particle size distributions, and particle export in the Sargasso Sea. *Journal of Marine Research* **67**, 845–868.
5. Burd, A. B. and G. A. Jackson (2009). Particle Aggregation. *Annual Review of Marine Science* **1**, 65–90.
6. First, M. R., H. L. Miller III, P. J. Lavrentyev, J. L. Pinkney, and A. B. Burd (2009). Effects of microzooplankton growth and trophic interactions on herbivory in coastal and offshore environments. *Aquatic Microbial Ecology* **54**, 255–267.

7. Lepore, K., S. Moran, A. Burd, G. Jackson, J. Smith, R. Kelly, H. Kaberi, S. Stavrakakis, and G. Assimakopoulou (2009). Sediment trap and in-situ pump size-fractionated POC/ ^{234}Th ratios in the Mediterranean Sea and Northwest Atlantic: Implications for POC export. *Deep-Sea Research I* **56**, 599–613.
8. Aumack, C. F., K. H. Dunton, A. B. Burd, D. W. Funk, and R. A. Maffione (2007). Linking light attenuation and suspended sediment loading to benthic productivity within an arctic kelp-bed community. *Journal of Phycology* **43**, 853–863.
9. Burd, A. B., G. A. Jackson, and S. Moran (2007). The role of the particle size spectrum in estimating POC fluxes from $^{234}\text{Th}/^{238}\text{U}$ disequilibrium. *Deep-Sea Research I* **54**, 897–918.
10. Miller III, H. L., C. Meile, and A. B. Burd (2007). A novel 2D model of internal O_2 dynamics and H_2S intrusion in seagrass. *Ecological Modelling* **205**, 365–380.
11. Buesseler, K., C. Benitez-Nelson, S. Moran, A. Burd, M. Charette, J. Cochran, L. Coppola, N. Fisher, S. Fowler, W. Gardner, L. Guo, Ö. Gustafsson, C. Lamborg, P. Masque, J. Miquel, U. Passow, P. Santschi, N. Savoye, G. Stewart, and T. Trull (2006). An assessment of particulate organic carbon to thorium-234 ratios in the ocean and their impact on the application of ^{234}Th as a POC flux proxy. *Marine Chemistry* **100**, 213–233.
12. Metcalfe, A. M., S. Stoll, and A. Burd (2006). The effect of inhomogeneous stickiness on polymer aggregation. *Journal of Colloid and Interface Science* **298**, 629–638.
13. Savoye, N., C. Benitez-Nelson, A. B. Burd, J. K. Cochran, M. Charette, K. O. Buesseler, G. A. Jackson, M. Roy-Barman, S. Schmidt, and M. Elskens (2006). ^{234}Th sorption and export models in the water column: A review. *Marine Chemistry* **100**, 234–239.
14. Speicher, E., S. Moran, A. Burd, R. Delfanti, H. Kaberi, R. Kelly, C. Papucci, J. Smith, S. Stavrakakis, L. Torricelli, and V. Zervakis (2006). Particulate organic carbon export fluxes and size-fractionated POC/ ^{234}Th ratios in the Ligurian, Tyrrhenian, and Aegean Seas. *Deep-Sea Research I* **53**, 1810–1830.
15. Eldridge, P. M., J. E. Kaldy, and A. B. Burd (2004). Stress response model for the tropical seagrass *Thalassia testudinum*: The interactions of light, temperature, sedimentation, and geochemistry. *Estuaries* **27**, 923–937.
16. Ianson, D., G. A. Jackson, M. V. Angel, R. S. Lampitt, and A. B. Burd (2004). Effect of net avoidance on estimates of diel vertical migration. *Limnology and Oceanography* **49**, 2297–2303.
17. Richardson, T. L., G. A. Jackson, and A. B. Burd (2003). Planktonic food web dynamics in two contrasting regions of Florida Bay, U.S. *Bulletin of Marine Science* **73**, 569–591.
18. Burd, A. B. and G. A. Jackson (2002). An analysis of water column distributions in Florida Bay. *Estuaries* **25**, 570–585.
19. Burd, A. B. and G. A. Jackson (2002). Modeling steady-state particle size spectra. *Environmental Science and Technology* **36**, 323–327.
20. Jackson, G. A. and A. B. Burd (2002). A model for the distribution of particle flux in the mid-water column controlled by subsurface biotic interactions. *Deep-Sea Research II* **49**, 192–217.
21. Burd, A. B. and K. Dunton (2001). Field verification of a light-driven model of biomass changes in the seagrass *Halodule wrightii*. *Marine Ecology Progress Series* **209**, 85–98.
22. Jackson, G. and A. B. Burd (1998). Aggregation in the marine environment. *Environmental Science and Technology* **32**, 2805–2814.
23. Mari, X. and A. Burd (1998). Seasonal size spectra of transparent exopolymeric particles (TEP) in a coastal sea and comparison with those predicted using coagulation theory. *Marine Ecology Progress Series* **163**, 63–76.
24. Burd, A. and G. Jackson (1997). Predicting particle coagulation and sedimentation rates for a pulsed input. *Journal of Geophysical Research* **102(C)**, 10545–10561.
25. Burd, A. and A. Coley (1994). Viscous fluid cosmology. *Classical and Quantum Gravity* **11**, 83–105.
26. Abolghasem, G., A. Burd, A. Coley, and R. van den Hoogen (1993). Qualitative analysis of soft inflation. *Physical Review* **D48**, 557–561.
27. Burd, A. (1993). Inflation in open FLRW universes. *Classical and Quantum Gravity* **10**, 1495–1505.
28. Burd, A. and R. Tavakol (1993). Invariant Lyapunov exponents and chaos in cosmology. *Physical Review* **D47**, 5336–5341.

29. Burd, A., N. Buric, and R. Tavakol (1991). Chaos, entropy, and cosmology. *Classical and Quantum Gravity* **8**, 123–133.
30. Burd, A. and A. Coley (1991). Extended inflation and generalized scalar-tensor theories. *Physics Letters* **B267**, 330–336.
31. Burd, A. and J. E. Lidsey (1991). An analysis of inflationary models driven by vector fields. *Nuclear Physics* **B351**, 679–694.
32. Burd, A., N. Buric, and G. Ellis (1990). A numerical analysis of chaotic behaviour in Bianchi IX models. *General Relativity and Gravitation* **22**, 349–363.
33. Burd, A. and P. Coles (1990). A stochastic cosmological model. *Physics Letters* **A144**, 65–70.
34. Skea, J. E. and A. Burd (1989). The instability of DeSitter space in scalar-tensor theories. *Physics Letters* **B232**, 452–456.
35. Burd, A. and J. D. Barrow (1988). Inflationary models with exponential potentials. *Nuclear Physics* **B308**, 929–945.
36. Stein-Schabes, J. and A. Burd (1988). Cosmic strings in an expanding spacetime. *Physical Review* **D37**, 1401–1405.
37. Barrow, J. D., A. Burd, and D. Lancaster (1986). Three-dimensional classical spacetimes. *Classical and Quantum Gravity* **3**, 551–567.

Peer reviewed book chapters

1. Pennings, S. C., M. Alber, C. R. Alexander, M. Booth, A. Burd, W.-J. Cai, C. Craft, C. B. Depratter, D. Di-Iorio, C. Hopkinson, S. B. Joye, C. D. Meile, W. S. Moore, B. Silliman, V. Thompson, and J. P. Wares (2012). “South Atlantic Tidal Wetlands”. In: *Wetland Habitats of North America*. Ed. by D. Batzer and A. Baldwin. University of California Press, Berkeley, CA, USA, pp.45–61.
2. Eldridge, P. M., J. Kaldy, and A. B. Burd (2003). “Seagrass stress response model: The importance of light, temperature, sedimentation and geochemistry”. In: *Seagrass Ecosystem Engineering and Carbon Sequestration Project*. Ed. by S. Kraines and M. Isobe. University of Tokyo Press, Tokyo, Japan.
3. Burd, A. B. (1995). “How can you tell if the Bianchi IX models are chaotic?” In: *Deterministic Chaos in General Relativity*. Ed. by D. Hobill, A. Burd, and A. Coley. Plenum Press, New York, USA, pp.345–354.
4. Burd, A. B., N. Buric, and R. Tavakol (1991). “Chaos, entropy and cosmological models”. In: *Gravitation: A Banff Summer Institute*. Ed. by R. Mann and P. Wesson. World Scientific, pp.54–64.

Peer reviewed technical reports

1. Burd, A. B. (2012). *Modeling the effects of shading by bridge structures on the production of Thalassia testudinum*. Tech. rep. HNTB, Texas.
2. Dunton, K., A. Burd, D. Funk, and R. Maffione (2004). *Linking water turbidity and total suspended solids loading to kelp productivity within the Steffanson Sound Boulder Patch (ANIMADA Task 6)*. Tech. rep. OCS Report MMS 2005-001. Minerals Management Service.
3. Dunton, K., A. Burd, L. Cifuentes, P. Eldridge, and J. Morse (2003). *Effects of dredge desposits on seagrasses: an integrative model for Laguna Madre*. Tech. rep. U.S. Army Corps of Engineers.

Book Reviews

1. Burd, A. B. (2012). *Modeling Methods for Marine Sciences*.

Submitted papers

1. Jackson, G. and A. B. Burd (2013). *Simulating particle dynamics in ocean biogeochemical models*.
2. Wang, P., A. Burd, M. Moran, R. Hood, V. Coles, and P. Yager (2013). *Incorporating genomic information and predicting gene expression patterns in a simplified biogeochemical model*.

Editorials

1. Burd, A. B. (2010). *Using oceanographic data in the classroom*.
2. Burd, A. B. (2008). *The importance of quantitative skills in the curriculum*.