Darin Comeau

✉ dcomeau@math.arizona.edu
Citizenship: United States www.math.arizona.edu/~dcomeau

Education

expected August 2013 **PhD, Applied Mathematics**, *University of Arizona*, Tucson, AZ.
PhD Minor: Statistics
Thesis: Conceptual and Numerical Models of Ice in a Global Climate Framework
Advisor: Dr. Juan Restrepo

December 2008 **MS, Applied Mathematics**, *University of Arizona*, Tucson, AZ.

May 2005 **MA, Mathematics**, *University of Pennsylvania*, Philadelphia, PA.
Thesis: The Dirichlet-to-Neumann Map on 2-Dimensional Manifolds with Boundary.
Advisor: Dr. Charles Epstein

May 2002 **BA, Mathematics with Honors**, *New York University*, New York, NY.

Selected Coursework

Mathematics Numerical Analysis for Partial Differential Equations, Probability, Theoretical Statistics, Stochastic Differential Equations & Dynamical Systems

Geosciences Geophysics, Geomorphology, Field Study Geomorphology, Subsurface Hydrology & Statistical Hydrology

Research Interests

My current research interests are in energy-balance models for climate, non-parametric methods for signal processing, and iceberg modeling in a general circulation model framework. I am more generally interested in uncertainty quantification, geophysical fluid dynamics, and data assimilation.

Experience

Research

Summers 2012, 2011, & 2009 **Graduate Research Assistant**, *Los Alamos National Laboratory*, Climate, Ocean and Sea Ice Modeling Group, Los Alamos, NM.
- Developed an implementation of iceberg dynamics and thermodynamics into the CICE sea ice model, focusing on iceberg-sea ice interaction.
- Supervised by Dr. Elizabeth Hunke.

Spring 2012 **Graduate Research Fellow**, *SAMSI*, Research Triangle Park, NC.
- Participant in year long Uncertainty Quantification theme.

Spring 2011 **Research Assistant**, *University of Arizona*, Department of Mathematics, Tucson, AZ.
- Developed an energy balance box coupled ocean-ice model focusing on the role of oceanic transport in a snowball Earth scenario.
- Supervised by Dr. Juan Restrepo

Fall 2008 **Research Assistant**, *University of Arizona*, Department of Geosciences, Tucson, AZ.
- Modeled and studied the formation of chains of lakes in valleys as a result of glacial erosion.
- Supervised by Dr. Jon Pelletier.

Teaching

Fall 2011 **Instructor**, *Calculus I*, University of Arizona.
- had primary teaching responsibilities; prepared lectures and class activities, held office hours, wrote exams, graded homework, quizzes, and exams.

2010 - 2011 **Graduate Teaching Assistant**, *Principles of Applied Analysis*, University of Arizona.
- held weekly discussion sessions for graduate core analysis course.

Spring 2009 **Instructor**, *Pre-Calculus*, University of Arizona.

2007 - 2008 **Instructor**, *Trigonometry*, University of Arizona.

Spring 2005 **Teaching Assistant**, *Calculus IV*, University of Pennsylvania.

Fall 2004 **Teaching Assistant**, *Calculus I*, University of Pennsylvania.
- held weekly discussion sessions and exam review sessions, graded homework and exams.

Publications

in preparation **D. Comeau**, D. Kurtze, and J. Restrepo. Ocean transport consequences on the snowball Earth model.

in preparation **D. Comeau** and E.C. Hunke. A dynamic / thermodynamic iceberg implementation in CICE.

2011 E.C. Hunke and **D. Comeau**. Sea ice and iceberg dynamic interaction. Journal of Geophysical Research, 116(C5):C05008, 2011

2010 J.D. Pelletier, **D. Comeau**, and J. Kargel. Controls of glacial valley spacing on Earth and Mars. Geomorphology, 116:189-201

2009 J.D. Pelletier, T. Engelder, **D. Comeau**, A. Hudson, M. Leclerc, A. Youberg, and S. Diniega. Tectonic and structural control of fluvial channel morphology in metamorphic core complexes: The example of the Catalina-Rincon core complex, Arizona. Geosphere, 5(4):363-384

Fellowships & Awards

Spring 2013 Herbert Carter Travel Award, University of Arizona

Summer & Fall 2010 NSF VIGRE Graduate Research Fellowship, University of Arizona.

2009 – 2010 Water Sustainability Program Fellowship, University of Arizona.

Selected Presentations

June 2012 *An Implementation of Icebergs in CICE*, 17th Annual CESM Workshop, Breckenridge, CO.

February 2012 *Oceanic Transport and the Snowball Earth Hypothesis*, Poster at 2012 Ocean Sciences Meeting, Salt Lake City, UT.

April 2011 *Sea Ice and Iceberg Dynamic Interaction*, Arizona Days, University of Arizona.

February 2011 *An Introduction to Particle Filtering*, Uncertainty Quantification Group Seminar, University of Arizona.

January 2011 *Modeling Flow in Random Porous Media*, Brown Bag Graduate Student Seminar, University of Arizona.

October 2010 *Sea Ice and Iceberg Dynamic Interaction*, Modeling and Computation Seminar, University of Arizona.

September 2010 *An Introduction to Geophysical Fluid Dynamics*, Brown Bag Graduate Student Seminar, University of Arizona.

July 2010 *Data Assimilation with Kalman Filter Techniques*, Mathematics of Climate Change Summer School, National Center for Atmospheric Research, Boulder, CO.

April 2009 *Glacier Erosion and Formation of Valley Chains of Lakes*, Brown Bag Graduate Student Seminar, University of Arizona.

February 2008 *An Introduction to the Gibbs Sampler*, Uncertainty Quantification Group Seminar, University of Arizona.

Selected Workshops Attended

July 2010 *Mathematics of Climate Change Summer School*, National Center for Atmospheric Research, Boulder, CO

Service

2010 – 2011 **Student Representative**, *Graduate Interdisciplinary Program Advisory Council*, University of Arizona.

2009 – 2010 **Organizer**, *Brown Bag Graduate Student Seminar*, University of Arizona.

Spring 2008 **Webmaster**, *Uncertainty Quantification Workshop*, University of Arizona.

References

Dr. Juan Restrepo, *Department of Mathematics*, University of Arizona.

Dr. Elizabeth Hunke, *Fluid Dynamics Group*, Theoretical Division, Los Alamos National Laboratory.

Dr. Hermann Flaschka, *Department of Mathematics*, University of Arizona.

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http://math.arizona.edu/~dcomeau/Comeau_CV.pdf