

CURRICULUM VITAE

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EDUCATION:

- 2001 Johns Hopkins University, Baltimore, Maryland, Ph.D. (Oceanography)
- 1998 Johns Hopkins University, Baltimore, Maryland, M.A. (Oceanography)
- 1996 Nanjing University, Nanjing, Jiangsu, China, M.S. (Atmospheric Dynamics & Mesoscale Meteorology)
- 1993 Nanjing University, Nanjing, Jiangsu, China, B.S. (Meteorology)

PROFESSIONAL EXPERIENCE:

- 01/2007 – present Associate Scientist, Woods Hole Oceanographic Institution
- 12/2002 – 01/2007 Assistant Scientist, Woods Hole Oceanographic Institution
- 04/2002 – 11/2002 Postdoctoral Investigator, Woods Hole Oceanographic Institution
- 10/2000 – 03/2002 Postdoctoral Scholar, Woods Hole Oceanographic Institution
- 09/1996 – 09/2000 Research Assistant, Johns Hopkins University, Baltimore, MD
- 09/1997 – 12/1999 Teaching Assistant, Johns Hopkins University, Baltimore, MD
- 09/1991 – 07/1996 Research Assistant, Nanjing University, Nanjing, Jiangsu, China
- 09/1994 – 07/1995 Teaching Assistant, Nanjing University, Nanjing, Jiangsu, China

HONORS, AWARDS AND FELLOWSHIPS:

- Coastal Ocean Research Award, Woods Hole Oceanographic Institution, 2006
- Independent and Interdisciplinary Study Award, Woods Hole Oceanographic Institution, 2003
- Postdoctoral Scholar Fellowship, Woods Hole Oceanographic Institution, 2000
- Gilman Fellowship, Johns Hopkins University, 1996
- Ying-Song Scholarship, Nanjing University, 1990, 1994
- Guang-Hua Scholarship, Nanjing University, 1991, 1992
- Listed with 34 other junior undergraduate students (from among 1600) at Nanjing University as “The Most Creative Top Students of Nanjing University”, 1991
- Excellent Undergraduate Student Scholarship, Nanjing University, 1989 – 1993

PROFESSIONAL AFFILIATIONS:

- American Society of Limnology and Oceanography (ASLO)
- American Geophysical Union (AGU)
- American Physical Society (APS)
- The Society for Integrative & Comparative Biology (SICB)

RESEARCH INTERESTS:

- Small-scale biological-physical interactions, predator and prey perception in copepods, zooplankton ecology
- Bio-fluid dynamics, hydrodynamics of copepod swimming, feeding and sensing, computational fluid dynamics study of fish and squid propulsion
- Applied computational fluid dynamics
- Environmental fluid mechanics, large-eddy simulation of flow and sediment transport over ripples and muddy seabeds
- Marine meteorology, atmospheric mesoscale numerical modeling

PROFESSIONAL ACTIVITIES:

Inside WHOI (Non Education Related):

- Information Technology Advisory Committee Member (March 2005 – present)
- AOP&E Department Chair Search Committee (December 2008)
- AOP&E Department Seminar Coordinator (January 2004 – March 2005)

Outside WHOI:

- Member of the editorial board of *Surveys in Geophysics* (March 2004 – present)

Session co-chair (TS47 – Biological-Physical Interaction at Individual Plankter Scale), 2005 Aquatic Sciences Meeting, February 20-25, 2005, Salt Lake City, Utah, USA

Journal reviewer: *American Naturalist*; *Aquatic Biology*; *Hydrobiologia*; *Journal of Experimental Biology*; *Journal of Fluid Mechanics*; *Journal of Geophysical Research – Oceans*; *Journal of Mathematical Biology*; *Journal of Plankton Research*; *Journal of Sea Research*; *Limnology and Oceanography*; *Marine Biology*; *Marine Ecological Progress Series*; *The Biological Bulletin*; *Surveys in Geophysics*; *Theoretical and Computational Fluid Dynamics*

Proposal reviewer for Biological Oceanography Program, Polar Program, and Ocean Technology and Interdisciplinary Coordination Program, National Science Foundation, USA.

Proposal reviewer for The Research Council of Norway.

PARTICIPATION IN EDUCATION PROGRAM:

Participated in preparing questions and answers and in grading the exams for MIT-OE Written Doctoral Part I Qualifying Examination (Hydrodynamics, January 2003 and January 2006).

2003 WHOI Summer Lecture Series for Summer Student & Minority Fellows. Jiang, H. Hydrodynamics of copepods, July 17, 2003.

2008 WHOI Summer Lecture Series for Summer Student & Minority Fellows. Jiang, H. Hydrodynamic signal perception by the copepod *Oithona plumifera*, July 7, 2008.

AOP&E Department Representative on the Summer Student Fellowship Selection Committee at WHOI (January 2009 – present)

FORMER STUDENTS:

Mark A. Rapo, Ph.D. 2008, (co-advised with Dr. M. Grosenbaugh). Rapo, M. A. (2009). CFD study of hydrodynamic signal perception by fish using the lateral line system. PhD thesis, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution, USA.

Simon Freeman, (austral) summer undergraduate student fellow from New Zealand, worked with me for three months in the winter of 2004. Research Topic: *Computation fluid dynamics simulation of vortex shedding from a fish-like body.*

PAPERS IN REFEREED JOURNALS:

Rapo, M. A., **Jiang, H.**, Grosenbaugh, M. A. and Coombs, S. (2009) Using computational fluid dynamics to calculate the stimulus to the lateral line of a fish in still-water. *Journal of Experimental Biology* (in press).

Jiang, H. and Paffenhöfer G.-A. (2008) Hydrodynamic signal perception by the copepod *Oithona plumifera*. *Marine Ecology Progress Series*, 373, 37-52.

Cardenas, M. B., Cook, P. L. M., **Jiang, H.** and Traykovski, P. (2008) Constraining denitrification in permeable wave-influenced marine sediment using linked hydrodynamic and biogeochemical modeling. *Earth and Planetary Science Letters*, 275, 127-137.

Jiang, H. and Strickler, J. R. (2007) Copepod flow modes and modulation: a modelling study of the water currents produced by an unsteadily swimming copepod. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 362, 1959-1971.

Jiang, H. and Grosenbaugh, M. A. (2006) Numerical simulation of vortex ring formation in the presence of background flow with implications for squid propulsion. *Theoretical and Computational Fluid Dynamics*, 20, 103-123.

Jiang, H. and Strickler, J. R. (2005) Mass density contrast in relation to the feeding currents in calanoid copepods. *Journal of Plankton Research*, 27, 1003–1012.

Jiang, H. and Osborn, T. R. (2004) Hydrodynamics of copepods: a review. *Surveys in Geophysics*, 25, 339-370.

Jiang, H. and Paffenhöfer G.-A. (2004) Relation of behavior of copepod juveniles to potential predation by omnivorous copepods: an empirical-modeling study. *Marine Ecology Progress Series*, 278, 225-239.

Jiang, H., Osborn, T. R. and Meneveau, C. (2002) Chemoreception and the deformation of the active space in freely swimming copepods: a numerical study. *Journal of Plankton Research*, 24, 495-510.

Jiang, H., Osborn, T. R. and Meneveau, C. (2002) Hydrodynamic interaction between two copepods: a numerical study. *Journal of Plankton Research*, 24, 235-253.

Jiang, H., Meneveau, C. and Osborn, T. R. (2002) The flow field around a freely swimming copepod in steady motion: Part II numerical simulation. *Journal of Plankton Research*, 24, 191-213.

Jiang, H., Osborn, T. R. and Meneveau, C. (2002) The flow field around a freely swimming copepod in steady motion: Part I theoretical analysis. *Journal of Plankton Research*, 24, 167-189.

Jiang, H., Meneveau, C. and Osborn, T. R. (1999) Numerical study of the feeding current around a copepod. *Journal of Plankton Research*, 21, 1391-1421.

BOOK CHAPTERS:

Jiang, H. (2004) Numerical simulation of the flow field at the scale size of an individual copepod. In Handbook of scaling methods in aquatic ecology: measurement, analysis, simulation, Seuront, L.J. and Strutton, P.G., Eds., CRC Press, 479-491.

REFEREED PUBLICATIONS IN CHINESE JOURNALS:

Lü, K. and **Jiang, H.** (2002) Effects of upper and low-level jets and condensation process of moisture on evolution of occluded frontal circulation. *Acta Meteorologica Sinica*, 60, 660-667 (in Chinese with an abstract in English).

Jiang, H. and Lü, K. (2000) Occluded frontal circulation in upper and lower-level jets. *Plateau Meteorology*, 19, 265-276 (in Chinese with an abstract in English).

Lü, K. and **Jiang, H.** (1999) Influences of upper and low-level jets and condensation process of moisture on evolution of warm front circulation. *Acta Meteorologica Sinica*, 57, 681-693 (in Chinese with an abstract in English).

Jiang, H. and Lü, K. (1998) The nonlinear long-waves excited by topography in a shear flow. *Plateau Meteorology*, 17, 231-244 (in Chinese with an abstract in English).

Lü, K. and **Jiang, H.** (1998) Influences of interaction of external source with solitary wave on blocking. *Quarterly Journal of Applied Meteorology*, 9, 431-440 (in Chinese with an abstract in English).

Lü, K. and **Jiang, H.** (1998) Local thermal forcing and the onset of quasi-stationary large amplitude disturbance. *Acta Meteorologica Sinica*, 56, 424-435 (in Chinese with an abstract in English).

Lü, K. and **Jiang, H.** (1996) Forced solitary Rossby waves in a near-resonant flow in the presence of topography. *Acta Meteorologica Sinica*, 54, 142-153 (in Chinese with an abstract in English).

INVITED TALKS AND SEMINARS:

International Summer School on Turbulence, Plankton and Marine Snow, 1-5 September 2008, Vilanova i la Geltrú, 08800 Barcelona, Spain. (Invited lecturer for the Summer School). Title: Using CFD to investigate the copepod hydrodynamics and associated small-scale biological-physical-chemical interactions.

Hatsopoulos Microfluids Seminar, November 29, 2005, Dept. of Mechanical Engineering, MIT. Title: Hydrodynamics of copepod swimming, feeding and sensing.

Environmental Fluid Mechanics Seminar, October 27, 2005, Dept. of Civil and Environmental Engineering, MIT. Title: Small-scale biological-physical interactions in copepods.

Warnemünde Turbulence Days 2005, September 28-30, 2005, Baltic Sea Research Institute Warnemünde, Germany. Jiang, H. (Invited speaker for the workshop). Title: Hydrodynamics of copepods.

Seminar on September 26, 2005 at the Danish Institute of Fisheries Research, Charlottenlund, Denmark. Title: Hydrodynamics of copepods.

Society for Experimental Biology Annual Main Meeting. 11th–15th July 2005, Universitat Autònoma de Barcelona, Barcelona, Spain. Jiang, H. (Invited speaker for Session A9 – Environmental constraints on locomotion and energetics in aquatic organisms.) Abstract: Jiang, H. and Strickler, J. R., Flow modes and modulation of the water currents produced by free-swimming calanoid copepods. *Comparative Biochemistry and Physiology Part A* 141 (2005) S163 – S164.

International Cross-Disciplinary Symposium on Physics and Biology. March 3rd - March 7th 2005, Oslo, Norway. Jiang, H., Flow modes and modulation of the water currents produced by free-swimming calanoid copepods.

The 57th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, November 21-23, 2004, Seattle, WA. Jiang, H. and Strickler, J. R., Flow modes and modulation in copepod generated flows. (Invited mini-symposium talk.)

SIAM Conference on Applications of Dynamic Systems, May 27-31, 2003, Snowbird, UT. Jiang, H., Biological-physical interactions at the scale size of an individual copepod. (Invited mini-symposium talk.)

Interactions between the hydrodynamics and chemoreception in calanoid copepods: a numerical approach. Jiang, H., University of Wisconsin – Milwaukee, Center for Great Lakes Studies and the Great Lakes WATER Institute, May 2001.

Theoretical and numerical studies of the hydrodynamics and chemoreception in calanoid copepods. Jiang, H., Skidaway Institute of Oceanography, Savannah, GA, May 2001.

MEETING ABSTRACTS AND TALKS:

- Society for Integrative and Comparative Biology (SICB) 2009 Meeting, January 3-7, 2009, Boston, MA. Abstract: Rapo, M. A., Jiang, H., and Grosenbaugh, M. A., Computational fluid dynamics simulations of a vibrating sphere nearby a benthic fish in still and moving water.
- AOP&E departmental seminar on September 24, 2008. Title: Hydrodynamic signal perception by the copepod *Oithona plumifera*.
- International Summer School on Turbulence, Plankton and Marine Snow, 1-5 September 2008, Vilanova i la Geltrú, 08800 Barcelona, Spain. Jiang, H., Using CFD to investigate the copepod hydrodynamics and associated small-scale biological-physical-chemical interactions.
- American Geophysical Union, American Society of Limnology and Oceanography, The Oceanography Society and the Estuarine Research Federation, 2008 Ocean Sciences Meeting, 2-7 March 2008, Orlando, Florida. Abstract: Jiang, H. and Paffenhöfer, G.-A., Computational fluid dynamics simulations of protist sinking, swimming, jumping, or interacting with each other.
- Society for Integrative and Comparative Biology (SICB) 2008 Meeting, January 2-6, 2008, San Antonio, TX. Abstract: Rapo, M. A., Jiang, H., and Grosenbaugh, M. A., Computational fluid dynamics simulations of a vibrating sphere nearby a benthic fish in still and moving water.
- AOP&E COFDL seminar on June 28, 2007. Title: Direct comparison between numerical simulation and field observation for turbulent flow over large wave orbital scale ripples.
- EUROMECH Colloquium 488, The influence of fluid dynamics on the behaviour and distribution of plankton. June 13-15, 2007, University of Liverpool, Liverpool, UK. Jiang, H., Numerical simulation of flow created by protists sinking, swimming or interacting with each other.
- Cardenas, M. B., P. Cook, H. Jiang and P. Traykovski, Coastal sediments as reactors: linking hydrodynamic models with biogeochemical modes, Port Aransas, Texas, February, 2007.
- ASLO 2007 Aquatic Sciences Meeting, February 4-9, 2007, Santa Fe, NM. Jiang, H., Strickler, J.R. and Paffenhöfer, G.-A. Revisit to mechanical energy consumption of the swim-and-sink behavior of calanoid copepods.
- ASLO 2007 Aquatic Sciences Meeting, February 4-9, 2007, Santa Fe, NM. Strickler, J.R. and Jiang, H. Unsteady flow generation by calanoid copepods.
- ASLO 2007 Aquatic Sciences Meeting, February 4-9, 2007, Santa Fe, NM. Fields, D.M. and Jiang, H. Sensory morphology and fluid structure: Determining the form function relationship in mechanosensory hairs.
- AGU Fall Meeting, December 11-15, 2006, San Francisco, CA. Jiang, H. and Traykovski, P. A. Direct comparison between numerical simulation and field observation for turbulent flow over large wave orbital scale ripples.
- 2006 RipplesDRI Annual Workshop, September 28-29, 2006, Woods Hole, MA. Jiang, H. and Traykovski, P. A. Modeling flow over large-wave-orbital-scale ripples: Large-eddy simulation vs. k- ω URANS.
- ASLO Summer Meeting, June 4-9, 2006, Victoria, British Columbia, Canada. Jiang, H. and Paffenhöfer, G.-A. On the ecology of *Oithona*. II. An analysis of the temporal-spatial signal perception by *Oithona plumifera*.
- AOP&E COFDL seminar on April 21, 2006. Title: Large-eddy simulation of flow over ripples: A preliminary study.
- AOP&E departmental seminar on June 15, 2005. Title: Hydrodynamic signal perception in zooplankton.
- ASLO 2005 Aquatic Sciences Meeting, February 20-25, 2005, Salt Lake City, UT. Jiang, H. and Paffenhöfer, G.-A. Directional information on hydrodynamic signal perception by prey in nauplius-predator encounters.
- AOP&E COFDL seminar on December 10, 2004. Title: Unsteady copepod feeding currents and small-scale mixing.
- AOP&E COFDL seminar on March 12, 2004. Title: Finite volume vs. finite difference, unstructured grid vs. structured grid: (informal) CFD with examples.
- ASLO/TOS 2004 Ocean Research Conference, February 15-20, 2004, Honolulu, HI. Jiang, H. and Paffenhöfer, G.-A. Relation of behavior of copepod juveniles to potential predation by omnivorous copepods: an empirical-modeling study.
- The 56th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, November 23-25, 2003, East Rutherford, NJ. Jiang, H., Meneveau, C. and Osborn T. R. Swimming behavior and flow geometry: a fluid mechanical study of the feeding currents in calanoid copepods.
- The 56th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, November 23-25, 2003, East Rutherford, NJ. Jiang, H. and Grosenbaugh, M. A. Numerical simulation of vortex ring formation in the presence of background flow with implications for squid propulsion
- The Second M.I.T. Conference on Computational Fluid and Solid Mechanics, June 17-20, 2003, Cambridge, MA. Jiang, H. and Grosenbaugh, M.A. Numerical simulation of vortex ring formation in the presence of background flow with implications for squid propulsion.
- AOP&E COFDL seminar on March 14, 2003. Title: A probable ecological function of the multiple-encounter feeding currents in calanoid copepods: a preliminary modeling study.

- The 55th Annual Meeting of the Division of Fluid Dynamics, American Physical Society, November 24-26, 2002, Dallas, TX. Jiang, H. and Grosenbaugh, M.A. Numerical simulation of vortex ring formation in the presence of background flow: implications for squid propulsion.
- AOP&E departmental seminar on May 15, 2002. Title: Numerical simulation of vortex ring formation with implications for squid jet propulsion.
- American Geophysical Union, American Society of Limnology and Oceanography, 2002 Ocean Sciences Meeting, February 11-15, 2002, Honolulu, Hawaii. Abstract: Jiang, H., Osborn, T. R., and Meneveau, C., A hydrodynamic model for free-swimming copepods: The significance of being self-propelled.
- Society for Integrative and Comparative Biology (SICB) 2002 Meeting, January 2-6, 2002, Anaheim, California. Abstract: Anderson, E. J., Jiang, H., and Grosenbaugh, M. A., Jet flow in swimming squid.
- 36th European Marine Biology Symposium: A Marine Science Odyssey into the 21st Century. Maó (Menorca), September 17-22, 2001. Abstract: Strickler, J. R. and Jiang, H., Double trouble: Life in 3D and at low Reynolds numbers.
- American Society of Limnology and Oceanography, ASLO Aquatic Sciences 2001 in Albuquerque, New Mexico, February 12-16, 2001. Abstract: Jiang, H., Osborn, T. R. and Meneveau, C., Theoretical and numerical studies of the hydrodynamics and chemoreception of calanoid copepods.
- American Society of Limnology and Oceanography, Limnology and Oceanography: Navigating into the next century, February 1-5, 1999, Santa Fe, New Mexico. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Numerical study of the feeding current around a copepod.
- Johns Hopkins Conference in Environmental Fluid Mechanics, April 2-4, 1998, Baltimore, Maryland. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Direct simulations of the feeding current around a copepod.
- American Geophysical Union, American Society of Limnology and Oceanography, 1998 Ocean Sciences Meeting, February 9-13, 1998, San Diego, California. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Direct simulations of the feeding current around a copepod.
- ICES International Symposium, Recruitment Dynamics of Exploited Marine Populations: Physical-Biological Interactions, September 22-24, 1997, Baltimore, Maryland. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Bio-physical coupling of predator-prey interactions.

WORKSHOPS ATTENDED:

- 2006 RipplesDRI Annual Workshop, Woods Hole Oceanographic Institution, Woods Hole, MA, September 28-29, 2006.
- 2004 Finite Volume Coastal Ocean Model (FVCOM) Workshop, New Bedford, MA, June 15-16, 2004.
- Weather Research and Forecasting (WRF) Model Summer Tutorial 2004, Boulder, CO, June 28 – July 2, 2004.
- BASC Workshop on Challenges in Representing Physical Processes in Coupled Atmosphere-Land-Ocean Models, Woods Hole, MA, July 12-13, 2004.
- Workshop: The Next Generation of in situ Biological and Chemical Sensors in the Ocean, July 13–16, 2003, Woods Hole, MA.