CURRICULUM VITAE June 22, 2015

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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:

04/2011 – present	Associate Scientist with Tenure, Woods Hole Oceanographic Institution
01/2007 – 04/2011	Associate Scientist w/o Tenure, 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:

Interdisciplinary Study Award (with D. Anderson), Woods Hole Oceanographic Institution, 2014
Mary Sears Visitor Program Award, Woods Hole Oceanographic Institution, 2012
Interdisciplinary Study Award (with G. Lawson and P. Wiebe), Woods Hole Oceanographic Institution, 2011
Ocean Life Institute Award, Woods Hole Oceanographic Institution, 2010
Coastal Ocean Research Award (with P. Traykovski), Woods Hole Oceanographic Institution, 2006
Independent and Interdisciplinary Study Award, Woods Hole Oceanographic Institution, 2003
Mentorship Award (with M. A. Grosenbaugh), 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 in plankton
Behavioral, physical and sensory ecology of marine organisms
Plankton fluid dynamics; Bio-fluid dynamics; Environmental fluid dynamics
Applied computational fluid dynamics
Atmospheric mesoscale numerical modeling over the Red Sea

PROFESSIONAL ACTIVITIES:

Inside WHOI (Non Education Related):

Member of the Advisory Committee at WHOI for the OUC-WHOI Joint Research Center (May 2015 – present)
Information Technology Advisory Committee Member (March 2005 – January 2009)

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 – March 2009)
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*; *Biological Bulletin*; *Hydrobiologia*; *Journal of the Acoustical Society of America*; *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*; *Journal of Theoretical Biology*; *Limnology & Oceanography*; *Limnology & Oceanography: Fluids and Environments*; *Marine Biology*; *Marine Ecology Progress Series*; *Quarterly Journal of the Royal Meteorological Society*; *Surveys in Geophysics*; *Theoretical & Computational Fluid Dynamics*
Proposal reviewer for Biological Oceanography Program, Physical Oceanography Program, Polar Program, and Ocean Technology and Interdisciplinary Coordination Program, and Division of Integrative Organismal Systems, 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 – January 2012)

STUDENTS AND POSTDOCTORAL RESEARCHERS ADVISED:

Dr. Shannon R. Davis, WHOI postdoctoral investigator, June 2012 – present (co-advised with Drs. Larry Pratt and Tom Farrar).
Dr. Kit Yu Karen Chan, WHOI postdoctoral scholar, Oct. 2012 – March 2014 (co-advised with Dr. J. Pineda).
Dr. Kakani Katija Young, WHOI postdoctoral scholar/investigator, Sept. 2010 – April 2014.
Wei Zhang, visiting Ph.D. student from Zhejiang University in China, December 2014 – present. Research Topic: *Laboratory experimental and computational fluid dynamics investigations of deep-sea hydrothermal plumes*.
Xubo Zhang, visiting Ph.D. student from Tongji University in China, September 2014 – present (co-advised with Dr. Jian Lin). Research Topic: *Quantitative image analysis of deep-sea hydrothermal plumes*.
Heather Beem, Ph.D. 2014, MIT/WHOI Joint Program – Ocean Engineering (Committee Member, March 2011 – August 2014).
Mark A. Rapo, Ph.D. 2009, (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.
R. Thomas Sayre-McCord, WHOI summer undergraduate student fellow from The University of North Carolina at Chapel Hill, the summer of 2011 (co-advised with Dr. S. Beaulieu). Research Topic: *Analysis of kinematics and generated water flow by swimming zooplankton*.
Miles Borgen, a summer undergraduate student fellow from Western Washington University, the summer of 2011 (co-advised with Dr. S. Gallager). Research Topic: Swimming kinematics and water flow generation by the lobster larvae through ontogeny.
Simon Freeman, (austral) summer undergraduate student fellow from New Zealand, worked in WHOI for three months in the winter of 2004 (co-advised with Dr. M. Grosenbaugh). Research Topic: *Computation fluid dynamics simulation of vortex shedding from a fish-like body*.

PARTICIPATION IN CRUISES:

Wilkinson Basin Krill, Copepod and Pteropod Field Survey: *R/V TIOGA*, November 29, 2011
Wilkinson Basin Krill and Copepod Field Survey: *R/V TIOGA*, July 15, 2011

PAPERS IN REFEREED JOURNALS:

[40] Gemmell, B. J., **Jiang, H.** and Buskey, E. J. (2015) A tale of the ciliate tail: investigation into the adaptive significance of this sub-cellular structure. *Proceedings of the Royal Society B* (in press).
[39] Katija, K., Colin, S. P., Costello, J. H. and **Jiang, H.** (2015) Ontogenetic propulsive transitions by medusae *Sarsia tubulosa*. *Journal of Experimental Biology* (in press).
[38] Davis, S. R., Pratt, L. J. and **Jiang, H.** (2015) The Tokar Gap jet: Regional circulation, diurnal variability and moisture transport based on numerical simulations. *Journal of Climate* (in press).
[37] Reed, D. C., Breier, J. A., **Jiang, H.**, Anantharaman, K., Klausmeier, C. A., Toner, B. M., Hancock, C., Speer, K., Thurnherr, A. M. and Dick, G. J. (2015) Predicting the response of the deep-ocean microbiome to geochemical perturbations by hydrothermal vents. *The ISME Journal*, doi: 10.1038/ismej.2015.4.
[36] Stewart, W. J., Nair, A., **Jiang, H.** and McHenry, M. J. (2014) Prey fish escape by sensing the bow wave of a predator. *Journal of Experimental Biology*, 217, 4328-4336.
[35] **Jiang, H.** and Breier, J. A. (2014) Physical controls on mixing and transport within rising submarine hydrothermal plumes: A numerical simulation study. *Deep-Sea Research Part I: Oceanographic Research Papers*, 92, 41-55.
[34] Kiørboe, T., **Jiang, H.**, Gonçalves, R. J., Nielsen, L. T. and Wadhwa, N. (2014) Flow disturbances generated by feeding and swimming zooplankton. *Proceedings of the National Academy of Sciences of the USA*, 111, 11738-11743.
[33] Gemmell, B. J., **Jiang, H.** and Buskey, E. J. (2014) A new approach to micro-scale particle image velocimetry (μPIV) for quantifying flows around free-swimming zooplankton. *Journal of Plankton Research*, 36, 1396-1401.
[32] Chen, C., Li, R., Pratt, L., Limeburner, R., Beardsley, R.C., Bower, A., **Jiang, H.**, Abualnaja, Y., Xu, Q., Lin, H., Liu, X., Lan, J. and Kim, T. (2014) Process modeling studies of physical mechanisms of the formation of an anticyclonic eddy in the central Red Sea. *Journal of Geophysical Research: Oceans*, 119, 1445-1464.
[31] Chan, K. Y. K., **Jiang, H.** and Padilla, D. K. (2013) Swimming speed of larval snail does not correlate with size and ciliary beat frequency. *PLoS ONE* 8(12): e82764. doi:10.1371/journal.pone.0082764.
[30] Katija, K. and **Jiang, H.** (2013) Swimming by medusae *Sarsia tubulosa* in the viscous vortex ring limit. *Limnology and Oceanography: Fluids and Environments*, 3, 103-118.
[29] Ralston, D. K., **Jiang, H.** and Farrar, J. T. (2013) Waves in the Red Sea: response to monsoonal and mountain gap winds. *Continental Shelf Research*, 65, 1-13.
[28] Kiørboe, T. and **Jiang, H.** (2013) To eat and not be eaten: optimal foraging behavior in suspension feeding copepods. *Journal of the Royal Society Interface*, 10, no. 78 20120693, doi:10.1098/rsif.2012.0693.
[27] Gemmell, B. J., **Jiang, H.**, Strickler, J. R. and Buskey, E. J. (2012) Plankton reach new heights in effort to avoid predators. *Proceedings of the Royal Society B*, 279, 2786-2792.
[26] **Jiang, H.** (2011) Why does the jumping ciliate *Mesodinium rubrum* possess equatorially located propulsive ciliary belt? *Journal of Plankton Research*, 33, 998-1011 (**Featured article**).
[25] **Jiang, H.** and Kiørboe, T. (2011) The fluid dynamics of swimming by jumping in copepods. *Journal of the Royal Society Interface*, 8, 1090-1103.
[24] **Jiang, H.** and Kiørboe, T. (2011) Propulsion efficiency and imposed flow fields of a copepod jump. *Journal of Experimental Biology*, 214, 476-486.
[23] Cardenas, M. B. and **Jiang, H.** (2011) Wave-driven porewater and solute circulation through rippled elastic sediment under highly transient forcing. *Limnology and Oceanography: Fluids and Environments*, 1, 23-37.
[22] Kiørboe, T., **Jiang, H.** and Colin, S. P. (2010) Danger of zooplankton feeding: the fluid signal generated by ambush-feeding copepods. *Proceedings of the Royal Society B*, 277, 3229-3237.
[21] **Jiang, H.**, Farrar, J. T., Beardsley, R. C., Chen, R. and Chen, C. (2009) Zonal surface wind jets across the Red Sea due to mountain gap forcing along both sides of the Red Sea. *Geophysical Research Letters*, 36, L19605, doi:10.1029/2009GL040008.
[20] 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*, 212, 1494-1505.
[19] **Jiang, H.** and Paffenhöfer G.-A. (2008) Hydrodynamic signal perception by the copepod *Oithona plumifera*. *Marine Ecology Progress Series*, 373, 37-52.
[18] 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.
[17] **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.

[16] **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.
[15] **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.
[14] **Jiang, H.** and Osborn, T. R. (2004) Hydrodynamics of copepods: a review. *Surveys in Geophysics*, 25, 339-370.
[13] **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.
[12] **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.
[11] **Jiang, H.**, Osborn, T. R. and Meneveau, C. (2002) Hydrodynamic interaction between two copepods: a numerical study. *Journal of Plankton Research*, 24, 235-253.
[10] **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.
[9] **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.
[8] **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.
[7] 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).
[6] **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).
[5] 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).
[4] **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).
[3] Lü, K. and **Jiang, H.** (1998) Influences of interaction of external source with solitary wave on blocking. *Quarterly Journal of Applied Meteorology (Beijing, China)*, 9, 431-440 (in Chinese with an abstract in English).
[2] Lü, K. and **Jiang, H.** (1998) Localized thermal forcing and formation of large amplitude quasi-steady disturbances. *Acta Meteorologica Sinica*, 56, 424-435 (in Chinese with an abstract in English).
[1] 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).

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.

INVITED TALKS AND SEMINARS:

Seminar at the State Key Laboratory in Marine Pollution – City University of Hong Kong, Hong Kong, China, 6 November 2014. Title: Observing microplankton behavior and interaction at sub-mm scales with a high-resolution high-speed imaging system.

Seminar at School of Geographic and Oceanographic Sciences, Nanjing University, Nanjing, China, 4 August 2014. Title: Numerical simulation and laboratory modeling of deep-sea hydrothermal plumes (in Chinese).

Seminar at Zhejiang University Ocean College, Hangzhou, China, 20 December 2013. Title: Toward a mechanistic understanding of the jumping behavior of marine copepods.

Seminar at Second Institute of Oceanography of the State Oceanic Administration, Hangzhou, China, 19 December 2013. Title: Numerical investigation of hydrothermal plume hydrodynamics.

International Workshop of Harmful Algae Blooms and Eutrophication, 16-17 December 2013, Zhejiang University, Hangzhou, China. (Invited talk). Title: Observing microzooplankton swimming behavior and imposed flow at sub-mm scales.

Seminar in Applied and Computational Mathematics, Department of Mathematical Sciences, University of Wisconsin - Milwaukee, 13 November 2013. Title: The fluid dynamics of jumping in zooplankton.

Seminar at School of Geographic and Oceanographic Sciences, Nanjing University, Nanjing, China, 6 July 2012. Title: Marine zooplankton individual behavior and its role in marine ecosystems (in Chinese).

The Fluid•DTU seminar, Department of Physics, Technical University of Denmark, 20 September 2011. Title: The fluid dynamics of jumping in zooplankton.

WHOI, Biology Department Thursday Seminars, 5 May 2011. Title: Toward a mechanistic understanding of the jumping behavior of zooplankton.

Schweppe Lecture, The University of Texas at Austin Marine Science Institute. (1) Technical seminar, 1 February 2011, Title: Toward a mechanistic understanding of the jumping behavior of copepods. (2) Public lecture, 3 February 2011 (cancelled due to an unusual winter weather condition for southern Texas), Title: Tiny water currents, swirls and jets inside a scoop of seawater: a journey into the zooplankton world.

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

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

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

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

Society for Experimental Biology Annual Main Meeting. 11-15 July 2005, Universitat Autonoma 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. 3-7 March 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, 21-23 November 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, 27-31 May 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:

The 2nd Seafloor Observation Symposium, 8-10 November 2014, Xiamen, China. Jiang, H. Observing microplankton behavior and interaction at sub-mm scales with a high-resolution high-speed imaging system.

ASLO, TOS, and AGU, 2014 Ocean Sciences Meeting, 23-28 February 2014, Honolulu, Hawaii. Abstract 1: Jiang, H., Gemmell, B.J., Strickler, J.R. and Buskey, E.J., Observing zooplankton swimming behavior and imposed flow at sub-mm scales. Abstract 2: Gemmell, B.J., Jiang, H. and Buskey, E.J., Exploring a new approach to micro-scale particle image velocimetry (PIV) for quantifying flow around free-swimming microzooplankton. Abstract 3: Strickler, J.R., Hinow, P., Jiang, H., Motschman, J. and Alcaraz, M., Sub-millimeter scale phenonema near the vibrating mouthparts of calanoid copepods.

AOP&E COFDL seminar on 17 January 2014. Title: Jiang, H., Numerical investigation of hydrothermal plume hydrodynamics and transport.

International Workshop on Trait-based Approaches to Ocean Life, 26-28 August 2013, Copenhagen, Denmark. Jiang, H. Why does the jumping ciliate *Mesodinium rubrum* possess equatorially located propulsive ciliary belt?

ASLO Summer 2012 Aquatic Sciences Meeting, 8-13 July 2012, Lake Biwa, Otsu, Shiga, Japan. Jiang, H., Katija, K., Lawson, G. and Wiebe, P., The flow field generated by the copepod *Calanus finmarchicus* during swimming and jumping.

The 2nd Symposium of Deep Sea Research and Earth System Sciences, 2-4 July 2012, Shanghai, China. Jiang, H. and Lin, J. Computational fluid dynamics simulation of a seafloor hydrothermal plume (in Chinese).

Biological Flow: A Conference to Celebrate the 70th Birthday of Timothy J. Pedley. Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK, 2-3 April 2012. Talk titles: (1) Jiang, H. and Kiørboe, T., Impulsive generation of viscous vortex rings and propulsion at "low" Reynolds numbers; (2) Kiørboe, T. and Jiang, H., Copepodology for the ornithologist: how suspension feeding zooplankton optimize their fitness.

AGU Fall Meeting, 5-9 December 2011, San Francisco, CA. Jiang, H., Breier, J. A., Dick, G. J. and Toner, B. M. Computational fluid dynamics simulation of the rising portion of a seafloor hydrothermal plume.

5th International Zooplankton Production Symposium, 14-18 March 2011, Pucón, Chile. Talk title: Jiang, H., Kiørboe, T. and Colin, S. C, Toward a mechanistic understanding of the jumping behavior of copepods.

ASLO 2011 Aquatic Sciences Meeting, 13-18 February 2011, San Juan, Puerto Rico. Gemmell, B. J., Jiang, H. and Buskey, E. J. Flying plankton? copepods take to the sky in effort to avoid predators.

Aspen conference: Microenvironments modulating biological interactions in the ocean, 16-21 January 2011, Aspen Center for Physics, Aspen, CO. Talk title: Jiang, H. and Kiørboe, T., The fluid dynamics of swimming by jumping in copepods.

WHOI-GFD program summer-school talk on 9 August 2010. Title: Jiang, H., Feeding and swimming currents and jumping vortices in planktonic copepods.

AOP&E COFDL seminar on 21 May 2010. Title: Jiang, H., Copepods 'blow (or kick)' viscous vortex rings for jumping: Theory, PIV observation, and CFD simulation.

American Geophysical Union (AGU), American Society of Limnology and Oceanography (ASLO) and The Oceanography Society (TOS), 2010 Ocean Sciences Meeting, 22-26 February 2010, Portland, OR. Jiang, H., Why does the jumping ciliate *Mesodinium rubrum* possess equatorially located propulsive ciliary belt?

The 2009 Gordon Conference on Coastal Ocean Circulation, 7-12 June 2009, Colby-Sawyer College, New London, NH. Abstract: Jiang, H., Farrar, J. T., Beardsley, R. C., Chen, R., and Chen, C., Two types of Red Sea coastal mountain gap wind jets and their effects on the wind and thermohaline forcing over the Red Sea.

AOP&E COFDL seminar on 8 May 2009. Title: Mesoscale atmospheric modeling of the winds over the Red Sea.

Society for Integrative and Comparative Biology (SICB) 2009 Meeting, 3-7 January 2009, Boston, MA. Abstract: Jiang, H., Grosenbaugh, M. A., Janssen, J., and Strickler, J. R., Hydrodynamic imaging of a self-propelling zooplankton prey by the lateral line system of a fish: A computational fluid dynamics study.

AOP&E departmental seminar on 24 September 2008. Title: Hydrodynamic signal perception by the copepod *Oithona plumifera*.

American Geophysical Union (AGU), American Society of Limnology and Oceanography (ASLO), The Oceanography Society (TOS) and the Estuarine Research Federation (ERF), 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, 2-6 January 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 28 June 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. 13-15 June 2007, University of Liverpool, Liverpool, UK. Jiang, H., Numerical simulation of flow created by protists sinking, swimming or interacting with each other.

ASLO 2007 Aquatic Sciences Meeting, 4-9 February 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.

AGU Fall Meeting, 11-15 December 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, 28-29 September 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, 4-9 June 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 21 April 2006. Title: Large-eddy simulation of flow over ripples: A preliminary study.

AOP&E departmental seminar on 15 June 2005. Title: Hydrodynamic signal perception in zooplankton.

ASLO 2005 Aquatic Sciences Meeting, 20-25 February 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 10 December 2004. Title: Unsteady copepod feeding currents and small-scale mixing.

AOP&E COFDL seminar on 12 March 2004. Title: Finite volume vs. finite difference, unstructured grid vs. structured grid: (informal) CFD with examples.

American Society of Limnology and Oceanography (ASLO) and The Oceanography Society (TOS) 2004 Ocean Research Conference, 15-20 February 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, 23-25 November 2003, East Rutherford, NJ. Abstract 1: Jiang, H., Meneveau, C. and Osborn T. R. Swimming behavior and flow geometry: a fluid mechanical study of the feeding currents in calanoid copepods. Abstract 2: 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, 17-20 June 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 14 March 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, 24-26 November 2002, Dallas, TX. Abstract: 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 15 May 2002. Title: Numerical simulation of vortex ring formation with implications for squid jet propulsion.

American Geophysical Union (AGU) and American Society of Limnology and Oceanography (ASLO), 2002 Ocean Sciences Meeting, 11-15 February 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.

American Society of Limnology and Oceanography, ASLO Aquatic Sciences 2001 in Albuquerque, New Mexico, 12-16 February 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 (ASLO), Limnology and Oceanography: Navigating into the next century, 1-5 February 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, 2-4 April 1998, Baltimore, Maryland. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Direct simulations of the feeding current around a copepod.

American Geophysical Union (AGU) and American Society of Limnology and Oceanography (ASLO), 1998 Ocean Sciences Meeting, 9-13 February 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, 22-24 September 1997, Baltimore, Maryland. Abstract: Jiang, H., Meneveau, C. and Osborn, T. R., Bio-physical coupling of predator-prey interactions.

WORKSHOPS ATTENDED:

The Gordon and Betty Moore Foundation (GBMF) Hydrothermal Vent Plume Project synthesis meeting, University of Michigan, Ann Arbor, MI, 5-6 May 2014.

International Workshop of Harmful Algae Blooms and Eutrophication, 16-17 December 2013, Zhejiang University, Hangzhou, China.

International Workshop on Trait-based Approaches to Ocean Life, Copenhagen, Denmark, 26-28 August 2013.

The Gordon and Betty Moore Foundation (GBMF) Hydrothermal Vent Plume Project mid-point meeting, University of Michigan, Ann Arbor, MI, 20-22 September 2012.

The Gordon and Betty Moore Foundation (GBMF) Hydrothermal Vent Plume Project kick-off meeting, University of Michigan, Ann Arbor, MI, 5-7 January 2011.

2006 RipplesDRI Annual Workshop, Woods Hole Oceanographic Institution, Woods Hole, MA, 28-29 September 2006.

2004 Finite Volume Coastal Ocean Model (FVCOM) Workshop, New Bedford, MA, 15-16 June 2004.

Weather Research and Forecasting (WRF) Model Summer Tutorial 2004, Boulder, CO, 28 June-2 July 2004.

BASC Workshop on Challenges in Representing Physical Processes in Coupled Atmosphere-Land-Ocean Models,Woods Hole, MA, 12-13 July 2004.

Workshop: The Next Generation of *in situ* Biological and Chemical Sensors in the Ocean, 13-16 July 2003, Woods Hole, MA.

GRANTS:

National Science Foundation (NSF) OCE-1433979 ($282,606, 10/01/2014-09/30/2017): **H. JIANG** and K. CHAN - Functional diversity and performance of ciliated marine invertebrate larvae: measuring and modeling larval swimming, feeding and hydrodynamic signaling.

National Science Foundation (NSF) IOS-1353937 ($274,967, 08/01/2014-07/31/2017): **H. JIANG** - Collaborative Research: BCSP: BIOMAPS: The hydrodynamics of predator sensing and escape in zebrafish.

WHOI - 2014 Interdisciplinary Study Award: The Joint Initiative Awards Fund from the Andrew W. Mellon Foundation ($99,824, 06/01/2014-05/31/2016): **H. JIANG** and D. Anderson - Development and testing of a high-resolution high-speed imaging system for exploration of microplankton behavior and cell-cell interactions.

National Science Foundation (NSF) OCE-1129496 ($265,804, 09/01/2011-08/31/2014): **H. JIANG** - Collaborative Research: Linking propulsive morphology, swimming behavior and sensory perception by marine planktonic protists to their trophic roles within marine food webs.

Gordon and Betty Moore Foundation subcontract through University of Michigan #3001670598 ($355,250, 10/19/2010-10/18/2013): J. BREIER and **H. JIANG** - Unveiling the microbiology that underpins deep-sea biogeochemistry.

National Science Foundation (NSF) OCE-1038055 ($328,197, 09/01/2010-08/31/2013): J. BREIER and **H. JIANG** - Collaborative Research: Integrating geochemistry, microbiology, and hydrodynamics: A model for trace element transport and fate in hydrothermal plumes.

WHOI - Interdisciplinary Study Award: 2011 Pratt-Hall Interdisciplinary Award ($98,108, 06/15/2011-06/30/2013): **H. JIANG**, G. LAWSON and P. WIEBE - Laboratory experiments for assessing the efficiency of vertical mixing induced by swimming copepods and krill.

WHOI - 2010 Green Technology Innovation Award ($74,614, 12/01/2010-11/30/2012): K. K. YOUNG, **H. JIANG** and R. SCHMITT - Three-dimensional profiling particle image velocimetry.

King Abdullah University of Science and Technology of Saudi Arabia (KAUST) - Coastal Hydrography and Circulation of Red Sea: Coastal Ocean and Atmospheric Modeling (~$1.88M, 11/1/2007-10/31/2012), L. PRATT, R. BEARDSLEY, J. TROWBRIDGE, **H. JIANG**, D. RALSTON and C. CHEN. This is the modeling component of a large project to study the physics and biology of the Red Sea funded by KAUST.

WHOI - Ocean Life Institute (OLI) 2010 Award ($58,600, 09/01/2010-08/31/2012): **H. JIANG** - A high-speed time-resolved planar particle image velocimetry (PIV) system for zooplankton flow field measurements.

National Science Foundation (NSF) IOS-0718506 ($179,111, 09/01/2007-08/31/2010): **H. JIANG** - Collaborative Research: From structure to information in mechanosensory systems: The role of sensor morphology in detecting fluid signals.

NOAA - Woods Hole Sea Grant R/G-31 (under NOAA National Sea Grant College Program Office grant NA06OAR4170021, with cost share by WHOI) ($98,246, 02/01/2008-01/31/2010): **H. JIANG** and P. TRAYKOVSKI - Investigation of wave energy dissipation over muddy seafloors using large-eddy simulation driven and validated by field data.

WHOI - Coastal Ocean Institute (COI) 2006 Award ($90,090, 06/01/2006-05/31/2008): **H. JIANG** and P. TRAYKOVSKI - Investigation of wave energy dissipation and sediment transport over a rippled seabed by using large-eddy simulation driven by field data.

Subcontract from Infoscitex Corporation ($19,877, 08/01/2007-09/28/2007): M. A. GROSENBAUGH and **H. JIANG** - Computational fluid dynamics support for SBIR Phase I FFP.

National Science Foundation (NSF) OCE-0352284 ($192,851, 05/01/2004-04/30/2007): **H. JIANG** - Collaborative Research: Numerical study of the unsteady feeding currents in calanoid copepods.

National Science Foundation (NSF) OCE-0323959 ($161,461, 10/01/2003-09/30/2006): **H. JIANG** - Collaborative Research: The relation of behavior of copepod juveniles to potential predation by omnivorous copepods.

WHOI - Independent Study 2003 Award ($46,282, 06/01/2003-05/31/2005): **H. JIANG** - Implementation of a next-generation mesoscale atmospheric model into use in regional coupled ocean-atmosphere modeling studies.

WHOI - Mentorship 2003 Award ($20,000, 02/01/2003-01/31/2004): **H. JIANG** and M. A. GROSENBAUGH - The effect of background flow on vortex ring formation and pinch-off.