

Daniela Di Iorio

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Personal Information

Citizenship: Canada, Italy
Immigration: USA (H-1 visa)
Languages: English, Italian
Family: Married (Donald E. Newman, B.Eng.), two children (Evan, 8; Marco, 6)

Education

1994 Ph.D., Physics and Astronomy, University of Victoria, Victoria BC, Canada
1988 B.Sc., Honours Physics (CO-OP), Physics and Astronomy, University of Victoria, Victoria BC, Canada

Awards and Scholarships

NSF CAREER	2005-2010	
NSERC Industrial Research Fellowship (declined)	1994	CDN\$ 25,000.
CAA Annual Student Presentation Award	1992	500.
CAA Fessenden Student Award in Underwater Acoustics	1992	500.
BC Science Council GREAT Award	1989-92	38,700.
NSERC Graduate Research Fellowship	1990-91	32,300.
McDonnell Graduate Award in Physics	1988	2,000.

Professional Experience

1999-present Assistant Professor, Dept of Marine Sciences,
University of Georgia, Athens, GA, USA
1995-1999 Scientist, Oceanography Dept., NATO SACLANTCEN, La Spezia (SP), Italy
1994-1995 Postdoctoral Research Fellow, Acoustical Oceanography Research Group,
Institute of Ocean Sciences, Sidney BC, Canada.
1988-1994 Graduate Research Fellow, Dept of Physics and Astronomy,
University of Victoria, Victoria, BC, Canada.

Co-operative education employment

1991 Summer Research Assistant, Environmental Modelling Group,
NATO SACLANTCEN, La Spezia (SP), Italy.
1987 Summer Research Assistant, Institute of Ocean Sciences, Sidney BC, Canada.
1986 Summer Research Assistant, Institute of Ocean Sciences, Sidney BC, Canada.
1986 Junior Oceanographer, SeaConsult Ltd., St. John's NF, Canada.
1985 Summer Research Assistant,
Island Research and Development Corporation, (no longer exists).
1984 Junior Programmer, TRIUMF University of Victoria, Victoria BC, Canada.

Research Interests

The application of high frequency acoustic propagation through moving random media (acoustic scintillation) for hydrothermal vent systems and boundary layer flows.
 Horizontal transport by advection and diffusion/dispersion in coastal and estuarine environments.
 Extending oceanographic observations and comparing independent turbulence quantities with the General Ocean Turbulence Model.
 Surface wave effects on coastal and estuarine circulation and parameterizations for turbulence models.
 Spatial and temporal distributions of fishes in Reef environments.

Teaching Objectives

Keep the learning environment active by combining traditional lecturing with class activities.
 Get students talking in the classroom either within small groups or to the class as a whole.
 Develop quantitative and critical thinking skills for students at all levels.

Memberships

American Geophysical Union, Estuarine Research Federation, Acoustical Society of America, (member of the Acoustical Oceanography Technical Committee)

Publications

Book Chapters

D. Di Iorio and A.E. Gargett, (2005). 'Studies of turbulent processes using Doppler and acoustical scintillation techniques', Chap.20 in **Sounds in the Seas: From Ocean Acoustics to Acoustical Oceanography**, editor: H. Medwin, Cambridge University Press, Cambridge UK.

Refereed Journals

K. Kang and **D. Di Iorio**, (2006). 'Variations of turbulent flow with river discharge in the Altamaha River Estuary, Georgia'. In revision for *J. Geophys. Res.*
D. Di Iorio, (2006). 'The effects of atmospheric forcing on nearshore processes in coastal waters of northwest Italy'. In revision *Estuarine Coastal Shelf Sci.*
 M. Charnotskii, I. Fuks, A. Smirnov, K. Naugolnyky, **D. Di Iorio** and I. Esipov, (2005). 'The dual-frequency method of monitoring transverse current'. *Acoustical Physics*, in press.
 K. Kang and **D. Di Iorio**, (2005). 'Depth- and current-induced effects on wave propagation into the Altamaha River Estuary, Georgia'. *Estuarine Coastal Shelf Sci.*, in press.
D. Di Iorio, D. Lemon and R. Chave, (2005). 'A self contained acoustic scintillation instrument for path-averaged measurements of flow and turbulence with application to hydrothermal vent and bottom boundary layer dynamics'. *J. Atmosph. Oceanic Tech.*, 22(10):1602-1617, doi:10.1175/JTECH1799.1
D. Di Iorio and A.D. Barton, (2003). 'Path averaged ocean measurements in the deep, stratified tidal channel of Hood Canal using acoustical scintillation'. *J. Geophys. Res.*, 108,3312,doi:10.1029/2003JC001796.

- D. Di Iorio** and K. Kang, (2003). 'Some physical factors that may affect turbulent mixing in Altamaha Sound, Georgia', *Proceedings of the 2003 Georgia Water Resources Conference*, Kathryn J. Hatcher (ed), April 23-24, 2003, Athens GA.
- E. Özsoy, **D. Di Iorio**, M.C. Gregg and J.O. Backhaus, (2001). 'Mixing in the Bosphorus Strait and the Black Sea continental shelf: Observations and a model of the dense water outflow', *J. Mar. Sys. Special Issue: Ventilation of the Black Sea Anoxic Waters* **31**:99-135.
- D. Di Iorio** and H. Yuce, (1999). 'Observations of Mediterranean flow into the Black Sea', *J. Geophys. Res.*, **102**:3091-3108.
- D. Di Iorio** and D.M. Farmer, (1998). 'Separation of current and sound speed in the effective refractive index for a turbulent environment using reciprocal acoustic transmission', *J. Acoust. Soc. Am.*, **103**:321-329.
- D. Di Iorio** and D.M. Farmer, (1996). 'Two-dimensional angle of arrival fluctuations', *J. Acoust. Soc. Am.*, **100**:814-824.
- D. Di Iorio** and D.M. Farmer, (1994). 'Path averaged turbulent dissipation measurements using high frequency acoustical scintillation analysis', *J. Acoust. Soc. Am.*, **96**:1056-1069.

Conference Proceedings

- D. Di Iorio**, D. Lemon and R. Chave, 'Long-term variability in hydrothermal vent flow and temperature fluctuations by acoustic scintillation'. In *Proceedings of the International Conference "Underwater Acoustic Measurements: Technologies & Results"*, Heraklion Crete, Greece, Jun 28- Jul 1, 2005.
- K. Naugolnykh, M. Charnotskii, I. Fuks, A. Smirnov, **D. Di Iorio** and I. Esipov, 'A dual frequency acoustic method for flow monitoring'. In *Proceedings of the ISARS 2004*, Cambridge UK, Jul 14-16, 2004.
- M. Charnotskii, I. Fuks, K. Naugolnykh, A. Smirnov, **D. Di Iorio** and I. Esipov, 'An experimental test of the dual-frequency method of transverse current monitoring'. In *Proceedings of the 7th European Conference on Underwater Acoustics 2004*, Delft, The Netherlands, Jul 5-8, 2004.
- S. Kim, W.A. Kuperman, W.S. Hodgkiss, H.C. Song, G.F. Edelmann, T. Akal, R.P. Millane, **D. Di Iorio**, 'A Method for Robust Time-Reversal Focusing in a Fluctuating Ocean'. In *IEEE Oceans '01*. Honolulu HI, USA, Nov 5-8, 2001.
- O. Bergem, N.G. Pace, **D. Di Iorio**, 'Surface Wave Influence on Acoustic Propagation in very Shallow Water'. In *IEEE Oceans '99*. Seattle WA, USA, Sept 13-16, 1999.
- D. Di Iorio**, 'High frequency acoustic observations of Mediterranean flow into the Black Sea'. In *Proceedings of High Frequency Acoustics in Shallow Water*. Lerici, Italy, June 30 - July 4, 1997.
- T. Akal, A.P. Lyons, **D. Di Iorio**, P. Guerrini, 'High frequency acoustic propagation in coastal waters'. In *Proceedings of High Frequency Acoustics in Shallow Water*. Lerici, Italy, June 30 - July 4, 1997.
- D.M. Farmer and **D. Di Iorio**, 'Acoustic detection of turbulence by reciprocal scintillation'. In *Proceedings of a workshop on Microstructure Sensors in the Ocean*, sponsored by the US Office of Naval Research, pp 44-51. Timberline Lodge, Oregon, USA, October 23-25, 1996.
- D.M. Farmer, **D. Di Iorio** and M. Trevorrow, 'Some recent applications of high frequency acoustic systems to the study of turbulence in coastal waters'. In *Int. Symp. Acoustic Rem. Sensing*. Boulder CO, USA, Oct 2-7, 1994.

D.M. Farmer and **D. Di Iorio**, 'High frequency acoustic propagation through a turbulent shear flow'. In *2nd European Conference on Underwater Acoustics*. Copenhagen, Denmark, July 4-8, 1994.

D. Di Iorio and D.M. Farmer, 'Observations of acoustical scintillations in Saanich Inlet'. In *IEEE Oceans '93*, 1:416-420. Victoria BC, Canada, October 18-21, 1993.

D. Di Iorio and D.M. Farmer, 'Separation of multipaths in Saanich Inlet'. In *Canadian Acoustics Proceedings 20(3)*:63-64. Vancouver BC, Canada, October 6-7, 1992.

D.M. Farmer and **D. Di Iorio**, 'Two dimensional acoustical propagation in a stratified shear flow'. In *Ocean Variability and Acoustic Propagation*, eds: J.R. Potter and A. Warn-Varnas, pp 41-55. La Spezia, Italy, June 4-8, 1990.

P.A. Reeve, S. Foo, **D. Di Iorio**, 'Magnet design programs: MAGDES and SUPERMAG'. In *9th International Conference of Magnet Technology* Zurich, Switzerland, 1987.

Presentations

Conferences

May 16-19, 2005. 'Long -term variability in hydrothermal vent flow and temperature fluctuations by acoustic scintillation', Acoustic Society of America 149th Meeting, Vancouver BC, Canada (invited).

Sep 14-18, 2003 'Turbulent Mixing in the Altamaha Estuary: An Observation and Model Comparison'. 17th Biennial Conference of the Estuarine Research Federation, Seattle, Washington. (presented by K. Kang).

Dec 2-6, 2002. 'On the multifrequency method for range dependent transversal current monitoring', Acoustical Society of America 144th meeting, Cancun Mexico (presented by K. Naugolnykh).

Feb 11-15, 2002. 'Flow, Salinity and Bottom Turbulence characteristics in the Altamaha Estuarine Channel', 2002 Ocean Sciences Meeting: Stratified Coastal and Estuarine Circulation I, Honolulu HI, USA (poster).

Dec 3-7, 2001. 'The measurement of flow and turbulence levels using acoustical scintillation analysis', Acoustic Society of America 142th Meeting, Fort Lauderdale FL, USA (invited).

Nov 5-8, 2001. 'Flow, salinity and bottom turbulence characteristics in Altamaha Sound', Estuarine Research Federation, St. Pete FL, USA (poster presentation by K. Kang)

May 30-Jun 3, 2000. 'A maximum likelihood estimation algorithm for tracking two multipaths', Acoustic Society of America 139th Meeting, Atlanta GA, USA (presented by A. Barton)

Sep 26-30, 1999. 'Atmospheric and sea surface wave effects on current and temperature/salinity variations in a shallow water environment', Estuarine Research Federation, New Orleans LA, USA

Dec 2-6, 1996. 'Acoustic observations of Mediterranean flow into the Black Sea', Acoustical Society of America 132nd Meeting, Honolulu HI, USA

Dec 2-6, 1996. 'On the relative importance of refractive index fluctuations and sea surface roughness to amplitude variability in a multipath environment', Acoustical Society of America 132nd Meeting, Honolulu HI, USA

Nov 27 - Dec 1, 1995. 'Separation of turbulence velocity and temperature soundspeed variability with reciprocal transmission', Acoustical Society of America 130th Meeting, St. Louis MO, USA (presented by D. Farmer)

- Nov 28 - Dec 2, 1994. 'High-frequency propagation in a turbulent flow', Acoustical Society of America 128th Meeting, Austin TX, USA (presented by D. Farmer)
- Feb 21-25, 1994. 'Path averaged turbulent dissipation measurements using acoustical scintillation analysis', AGU Ocean Sciences Meeting, San Diego CA, USA
- Oct 4-8, 1993. 'High-frequency propagation in a turbulent shallow water environment', Acoustical Society of America 126th Meeting, Denver CO, USA (presented by D. Farmer)
- Sep 23-25, 1992. 'Separation of acoustic multipaths in Saanich Inlet', 39th Annual Pacific Northwest Regional Meeting of the AGU, Victoria BC, Canada.
- Aug 3-7, 1992. 'Acoustical scintillation observations in Saanich Inlet', International Meeting for Wave Propagation in Random Media (Scintillation), Seattle WA, USA (poster presentation).
- May 16-19, 1990. 24th Annual Conference of the Canadian Meteorological and Oceanographic Society, Victoria BC, Canada.

Seminars

- Jun 24, 2005, 'Long-term hydrothermal vent flow and temperature fluctuations using acoustic scintillation', University of Washington, Department of Oceanography, Marine Geophysics and Geology, Seattle WA (invited)
- Jun 13, 2003, 'Hydroacoustic surveying of fish populations', NOAA National Ocean Service, Center for Coastal Environmental Health and Biomolecular Research, Charleston, SC. (invited)
- Mar 18, 2003. Hydroacoustic and trawl surveying of fishes in the Altamaha and MacKay river estuaries', NOAA Gray's Reef National Marine Sanctuary, Savannah GA (invited).
- Apr 12, 2001. 'Small scale oceanographic variability and the acoustic characteristics of two contrasting coastal environments', Environmental Acoustics, Pennsylvania State University, College Station PA (invited).
- Jul 20, 1998. 'Mediterranean flow into the Black Sea', Dept. of Marine Sciences, University of Georgia, Athens GA (invited for interview).
- Apr 8, 1995. 'The application of high frequency acoustic propagation to oceanographic measurement', NATO SACLANT Undersea Research Centre, La Spezia Italy (invited for interview).

Workshops

- Ridge2000 Planning Workshop , Oct 30-Nov2, 2005, Vancouver BC
- Gray's Reef Monitoring Workshop (invited), Apr 22-24, 2003, Savannah GA
- SURA/USF Workshop to Develop a Strategic plan for the Southeastern Coastal Ocean Observing Program (SCOOP), Aug 9-10, 2001, St. Petersburg, FL
- SEA-COOS Planning Workshop , Jun 27-29, 2001, Miami FL

Professional Service

Proposal reviews

National Science Foundation, Swiss National Science Foundation, National Oceanographic and Atmospheric Administration

Manuscript reviews

Journal of the Acoustical Society of America, Continental Shelf Research, Journal of Oceanic and Atmospheric Technology, Indian Journal of Marine Science

University service

Member, Faculty of Engineering Curriculum Committee
Member, Department of Marine Sciences undergraduate curriculum committee
Chair, Search Committee for an assistant professor in physical oceanography
Member, Search Committee for the Director, School of Marine Programs/Head, Department of Marine Sciences position

Courses Taught

MARS 1010, (F00, F01, F02) The Marine Environment, 33% (~ 300 students)
MARS 4100/6100, (S00, S01, S02, S03, (not offered S04)), S05 cruise, S06 Physical Processes of the Ocean, (100% and 50% to ~ 8 students)
MARS 8030, (F02, F03, (not offered F04), F05) Physical Oceanography, 100% (~ 10 students)
MARS 8150, (F00, F04) Ocean Waves, 100% (~ 3 students)
MARS 8170, (S01, S04) Ocean Mixing, 100% (~ 3 students)
HONS 1990H, (F01) Honors Proseminar: 'Recent world issues related to geological, oceanic and atmospheric processes', 100% (~ 5 students)

Students Advised**Graduated**

KiRyong Kang, PhD Aug 2005. "Waves, Turbulence and Circulation in the Altamaha River Estuary, GA". Currently research scientist for the Korean Meteorological Administration, Seoul Korea.
Alan Barton, MSc May 2002. "Multipath tracking and acoustical oceanography measurements in a stratified coastal tidal channel". Currently field coordinator at Hatfield Marine Center, Oregon State University.
Daimar Tamarach, BSc May 2003, Interdisciplinary Studies, Honors Thesis. "The use of acoustics to describe the spatial distribution of fish in the Altamaha and MacKay River Estuaries". Currently teaching in Japan.

At present

J. Paul McKay, PhD; Horizontal transport mechanisms in Georgia estuaries
Katherine Doyle, MSc; Spatial and temporal distributions of fishes at Gray's Reef NMS
Lisa R. Pfau, NSF Research Education for Undergraduates.
Amanda Bennett, Undergraduate Summer Intern from GaTech
Orion King, Undergraduate Summer Intern from GaTech.

Grants Awarded

Title: "CAREER: Hydrothermal vent flow and temperature fluctuations: exploring long-term variability through an integrated research and education program", D. Di Iorio

Source: NSF, current

Duration: 03/01/05-02/28/10

Total: \$ 552,076

Title: "LTER: Georgia land/ocean margin ecosystem", (PI/PD: Dr. J.T. Hollibaugh)

Total: D. Di Iorio participation is for \$180,000

Source: NSF, current

Duration: 05/01/00-10/31/06

Title: "Spatial and temporal variability of pelagic biota by acoustic methods and their relation to environmental characteristics at Gray's Reef NMS", D. Di Iorio (PI)

Source: NOAA Gray's Reef NMS,

Duration: 05/01/04-04/30/05

Total: \$ 20,000

Title: "Spatial and temporal variability of pelagic biota by video and acoustic methods and their relation to environmental characteristics at Gray's Reef NMS", D. Di Iorio

Source: NOAA NURC

Duration: 05/01/04-05/28/04

Total: 2 days Phantom II ROV time from the *RV Nancy Foster*

Title: "A study on the use of hydroacoustic and biological surveying to assess fish populations in the Altamaha and MacKay Rivers", D. Di Iorio (PI) and G. Grossman (Co-PI)

Source: Georgia Sea Grant,

Duration: 03/01/02-09/30/03

Total: \$ 10,000 + 8 days ship time for *RV Georgia Bulldog*

Title: "Book Chapter: Sounds in the Sea", D. Di Iorio

Source: Office of Naval Research,

Duration: 06/01/02-12/31/02

Total: \$ 10,000

Title: "A study of wave climate effects on coastal ocean processes", D. Di Iorio

Source: University of Georgia Faculty Research Grant,

Duration: 01/01/02-12/31/02

Total: \$ 6,750

Title: "Coastal Frontal Zone Mooring development", D. Di Iorio

Source: University of Georgia Faculty Research Grant

Duration: 01/03/2000 - 06/06/2001

Total: \$6,500