

**BENOIT CUSHMAN-ROISIN**

Thayer School of Engineering  
Dartmouth College  
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**PERSONAL:**

Born 17 December 1954, Wellin, Belgium  
U.S. citizen since February 1985  
Married (Sept. 1980); four children

**INTERESTS:**

Environmental Fluid Mechanics, incl. oceanography  
Environmental Transport and Fate  
Industrial Ecology, Sustainable Design  
Computer Modeling in Environmental Engineering

**EDUCATION:**

July 1978      B.S. in Engineering Physics (Ir. Civil Ph.)  
                    (5-year program; Summa Cum Laude every year)  
                    University of Liège, Belgium

Dec. 1980      Ph.D. in Geophysical Fluid Dynamics  
                    Florida State University

**POSITIONS HELD:**

*Primary Positions*

1995 -          Professor  
                    Thayer School of Engineering, Dartmouth College

1993 - 1996    Associate Dean  
                    Thayer School of Engineering, Dartmouth College

1990 - 1995    Associate Professor (tenured in 1992)  
                    Thayer School of Engineering, Dartmouth College

1989 - 1990    Associate Professor  
                    Department of Oceanography, Florida State University

1985 - 1989    Assistant Professor  
                    Department of Oceanography, Florida State University

1981-1985      Research Associate - Mesoscale Air-Sea Interaction Group

Benoit Cushman-Roisin  
Page 2

Department of Meteorology, Florida State University

- 1980-1981 Postdoctoral Scientist - Joint Institute for the Study of the Atmosphere and Ocean University of Washington
- 1978-1980 Doctoral Candidate - Geophysical Fluid Dynamics Institute  
Prof. James J. O'Brien, major professor  
Florida State University

*Visiting Positions*

- March 2001, Visiting Professor  
2003-05-06-07 Nova Gorica Polytechnic, Slovenia
- Jan 2004, Visiting Professor  
Nov 2002, Université catholique de Louvain, Belgium  
Sep 2001, July 2000 & July 1995
- March 1988 Lecturer - IBM Bergen Scientific Centre, Norway
- June 1984 Visiting Research Scientist  
& June 1981 Courant Institute of Mathematical Sciences, New York University
- Summer 1979 Predoctoral Fellow - Summer Institute of Geophysical Fluid Dynamics  
Woods Hole Oceanographic Institution, Massachusetts

**HONORS/AWARDS:**

Mathematical Association of America Award, March 1973.

Belgian American Educational Foundation Fellowship, 1978-1979.

Predoctoral Fellowship - Summer Institute of Geophysical Fluid Dynamics  
Woods Hole Oceanographic Institution, Summer 1979.

Fellowship of the Norwegian Royal Council for Scientific and Industrial Research,  
May-June 1986.

A.M. Honorary Degree, Dartmouth College, Spring 1996.

Who's Who in Science and Engineering, 1996-97 and later editions

## SCHOLARLY WORK:

### *Books*

Cushman-Roisin, B., 1994: *Introduction to Geophysical Fluid Dynamics*, Prentice Hall, 320 pp. (ISBN 0-13-353301-8). [Accompanied by a solution manual under ISBN 0-13-328956-7.]

Cushman-Roisin, B., M. Gacic, P.-M. Poulain and A. Artegiani, 2001: *Physical Oceanography of the Adriatic Sea: Past, Present and Future*, Kluwer Academic Publishers, 304 pp. (ISBN 1-4020-0225-4).

Cushman-Roisin, B., 2007: *Environmental Fluid Mechanics*, under contract with John Wiley & Sons.

Cushman-Roisin, B., and J.-M. Beckers, 2007: *Introduction to Geophysical Fluid Dynamics. Physical and Numerical Aspects*, under contract with Academic Press.

### *Refereed Publications*

Nihoul, J. C. J., Y. Runfola, and B. Roisin, 1979: "Non-linear three-dimensional modelling of mesoscale circulation in seas and lakes," in: *Marine Forecasting*, J. C. J. Nihoul, Ed., Elsevier Oceanography Series, **25**, 235-259.

Nihoul, J. C. J., Y. Runfola, and B. Roisin, 1980: "Shear effect dispersion in a shallow tidal sea," in: *Marine Turbulence*, J. C. J. Nihoul, Ed., Elsevier Oceanography Series, **28**, 345-362.

Cushman-Roisin, B., 1981: "Deepening of the wind-mixed layer: A model of the vertical structure," *Tellus*, **33**, 564-582.

Cushman-Roisin, B., 1981: "Effects of horizontal advection on upper-ocean mixing. A case of frontogenesis," *J. Phys. Oceanogr.*, **11**, 1345-1356.

Cushman-Roisin, B., 1982: "A theory of convection: Modelling by two buoyant interacting fluids," *Geophys. Astrophys. Fluid Dyn.*, **19**, 35-59.

Cushman-Roisin, B., 1982: "Penetrative convection in the upper ocean due to surface cooling," *Geophys. Astrophys. Fluid Dyn.*, **19**, 61-91.

Cushman-Roisin, B., 1982: "Motion of a free particle on a beta-plane," *Geophys. Astrophys. Fluid Dyn.*, **22**, 85-102.

Hsueh, Y., and B. Cushman-Roisin, 1983: "On the formation of surface to bottom fronts over steep topography," *J. Geophys. Res.*, **88C**, 743-750.

Benoit Cushman-Roisin

Page 4

- Cushman-Roisin, B., J. J. O'Brien, and R. L. Smith, 1983: "Note on wind and ocean velocity correlations in a coastal-upwelling system," *J. Phys. Oceanogr.*, **13**, 547-550.
- Cushman-Roisin, B., and J. J. O'Brien, 1983: "The influence of bottom topography on baroclinic transports," *J. Phys. Oceanogr.*, **13**, 1600-1611.
- Cushman-Roisin, B., and H. Svendsen, 1983: "Internal gravity waves in sill fjords: Vertical modes, ray theory and comparison with observations," in *Coastal Oceanography*, Gade et al., Eds., Plenum Publishing Co., 373-396.
- Klinck, J. M., B. Cushman-Roisin, and J. J. O'Brien, 1983: "Considerations of coastally forced flow in a branched fjord," in *Coastal Oceanography*, Gade et al., Eds., Plenum Publishing Co., 451-473.
- Cushman-Roisin, B., 1984: "Analytical, linear stability criteria for the leap-frog, Dufort-Frankel method," *J. Comp. Phys.*, **53**, 227-239.
- Cushman-Roisin, B., D. W. McLaughlin, and G. Papanicolaou, 1984: "Interactions between mean flow and finite-amplitude mesoscale eddies in a barotropic ocean," *Geophys. Astrophys. Fluid Dyn.*, **29**, 333-353.
- Cushman-Roisin, B., 1984: "On the maintenance of the Subtropical Front and its associated Countercurrent," *J. Phys. Oceanogr.*, **14**, 1179-1190.
- Cushman-Roisin, B., 1985: "Conditions for interface surfacing, upper bounds on extent of ventilation, and formation of bottom lenses over topography," *J. Geophys. Res.*, **90**, 889-894.
- Cushman-Roisin, B., 1985: "Importance of coupling between dynamic and thermodynamic processes at the sea surface: The large-scale, oceanic point of view," *Coupled Ocean - Atmosphere Models*, J. C. J. Nihoul, Ed., Elsevier Oceanography Series, **40**, 263-274.
- Cushman-Roisin, B., W. H. Heil, and D. Nof, 1985: "Oscillations and rotations of elliptical warm-core rings," *J. Geophys. Res.*, **90**, 11756-11764.
- Cushman-Roisin, B., 1986: "Frontal geostrophic dynamics," *J. Phys. Oceanogr.*, **16**, 132-143.
- Cushman-Roisin, B. and T. Keffer, 1986: "Comment on "The ventilation of the world's oceans; Maps of the potential vorticity field"," *J. Phys. Oceanogr.*, **16**, 795.
- Cushman-Roisin, B., 1986: "Linear stability of large, elliptical warm-core rings," *J. Phys. Oceanogr.*, **16**, 1158-1164.
- Cushman-Roisin, B., 1987: "Large-scale ocean dynamics," *Climatology and Space Observations*, Cepadues-Editions, France, 631-642.

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- Cushman-Roisin, B., 1987: "The main ocean thermocline," *Climatology and Space Observations*, Cepadues-Editions, France, 643-654.
- Cushman-Roisin, B., 1987: "Wind and buoyancy driven ocean circulation," *Climatology and Space Observations*, Cepadues-Editions, France, 655-663.
- Cushman-Roisin, B., 1987: "Exact analytical solutions for elliptical vortices of the shallow-water equations," *Tellus*, **39A**, 235-244.
- Cushman-Roisin, B., 1987: "On the role of heat flux in the Gulf Stream-Sargasso Sea Subtropical Gyre system," *J. Phys. Oceanogr.*, **17**, 2189-2202.
- Panchang, V. G., B. Cushman-Roisin, and B. R. Pearce, 1987: "A finite-difference model for combined refraction-diffraction of water waves," *Coastal Hydrodynamics*, R. A. Dalrymple, Ed., 60-70.
- Pavia, E. G., and B. Cushman-Roisin, 1988: "Modeling of oceanic fronts using a particle method," *J. Geophys. Res.*, **93**, 3554-3562.
- Panchang, V. G., B. Cushman-Roisin and B. R. Pearce, 1988: "Combined refraction-diffraction of short waves in large coastal regions," *Coastal Engineering*, **12**, 133-156.
- Heil, W. H., B. Cushman-Roisin, and J. J. O'Brien, 1988: "Realizing two-dimensional, continuous directed fields by vector fields and an algorithm to remove dichotomous ambiguity in a discrete field." *Math. & Comp. Mod.*, **10**, 853-862.
- Cushman-Roisin, B., 1989: "On the role of filamentation in the merging of anticyclonic lenses," *J. Phys. Oceanogr.*, **19**, 253-258.
- Cushman-Roisin, B., V. Tverberg and E. G. Pavia, 1989: "Resonance of internal waves in fjords: A finite-difference model," *J. Mar. Res.*, **47**, 547-567.
- Cushman-Roisin, B., and B. Tang, 1989: "Geostrophic regimes and geostrophic turbulence beyond the radius of deformation," *Mesoscale/Synoptic Coherent Structures in Geophysical Turbulence*, Nihoul & Jamart, Eds., Elsevier Oceanography Series, **50**, 51-74.
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- Cushman-Roisin, B., E. P. Chassignet and B. Tang, 1990: "Westward motion of mesoscale eddies," *J. Phys. Oceanogr.*, **20**, 758-768.
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- Tang, B., and B. Cushman-Roisin, 1992: "Two-layer geostrophic dynamics. Part II: Geostrophic turbulence," *J. Phys. Oceanogr.*, **22**, 128-138.
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- Cushman-Roisin, B., 1993: "Trajectories in Gulf Stream meanders," *J. Geophys. Res.*, **98**, 2543-2554.
- Cushman-Roisin, B., L. Asplin, and H. Svendsen, 1994: "Upwelling in broad fjords," *Continental Shelf Res.*, **14**, 1701-1721.
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- Cushman-Roisin, B., and S. Merchant-Both, 1995: "Elliptical warm-core rings in a two-layer ocean with ambient shear," *J. Phys. Oceanogr.*, **25**, 2011-2024.
- Cushman-Roisin, B., 1996: "Lower and upper bounds of internal-wave frequencies in stratified rotating fluids," *Phys. Rev. Letters*, **77**, 4903-4905.
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- Esenkov, O. E., and B. Cushman-Roisin, 1999: "Modeling of two-layer eddies and coastal flows with a particle method," *J. Geophys. Res.*, **104**, 10959-10980.
- Cushman-Roisin, B., 2000: "Organic modeling systems," *Marine Technology Soc. J.*, **34**, 42-45.

Benoit Cushman-Roisin

Page 7

- Cushman-Roisin, B., O. E. Esenkov, and B. J. Mathias, 2000: "A particle-in-cell method for the solution of two-layer shallow-water equations," *Int. J. Numer. Meth. Fluids*, **32**, 515-543.
- Malacic, V., D. Viezzoli, and B. Cushman-Roisin, 2000: "Tidal dynamics in the northern Adriatic Sea," *J. Geophys. Res.*, **105**, 26265-26280.
- Cushman-Roisin, B., N. J. Rice, and M. A. Moldaver, 2000: "A simulation tool for Industrial Ecology," *J. Industrial Ecology*, **3**, 131-144.
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- Poulain, P.-M., and B. Cushman-Roisin, 2001: "Circulation" in *Physical Oceanography of the Adriatic Sea*. B. Cushman-Roisin et al., eds., Kluwer Academic Publ., 67-109.
- Poulain, P.-M., V. H. Kourafalou and B. Cushman-Roisin, 2001: "Northern Adriatic Sea" in *Physical Oceanography of the Adriatic Sea*. B. Cushman-Roisin et al., eds., Kluwer Academic Publ., 143-165.
- Cushman-Roisin, B., V. Malacic and M. Gacic, 2001: "Tides, seiches and low-frequency oscillations" in *Physical Oceanography of the Adriatic Sea*. B. Cushman-Roisin et al., eds., Kluwer Academic Publ., 217-240.
- Cushman-Roisin, B., M. Gacic, P.-M. Poulain and A. Artegiani, 2001: "Toward the future" in *Physical Oceanography of the Adriatic Sea*. B. Cushman-Roisin et al., eds., Kluwer Academic Publ., 241-245.
- Mathieu, P.-P., E. Deleersnijder, B. Cushman-Roisin, J.-M. Beckers, and K. Bolding, 2002: "The role of topography in small well-mixed bays, with application to the lagoon of Mururoa," *Cont. Shelf Res.*, **22**, 1379-1395.
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- Cushman-Roisin, B., and C. E. Naimie, 2002: "A 3D finite-element model of the Adriatic tides," *J. Marine Syst.*, **37**, 279-297.
- Cushman-Roisin, B., A. J. Willmott and N. R. T. Biggs, 2005: "Influence of stratification on decaying surface seiche modes," *Cont. Shelf Res.*, **25**, 227-242.
- Lee, C. M., F. Askari, J. Book, S. Carniel, B. Cushman-Roisin, C. Dorman, J. Doyle, P. Flament, C. K. Harris, B. H. Jones, M. Kuzmic, P. Martin, A. Ogston, M. Orlic, H. Perkins, P.-M. Poulain, J. Pullen, A. Russo, C. Sherwood, R. P. Signell and D. Thaler Detweiler, 2005: "Northern Adriatic response to a wintertime bora wind event", *Eos, Trans. Am. Geophys. U.*, **86**(16), 157-165.

- Cushman-Roisin, B., 2005: "Kelvin-Helmholtz instability as a boundary-value problem", *Environmental Fluid Mech.*, **5**, 507-525.
- Cushman-Roisin, B., and A. D. Jenkins, 2006: "On a non-local parameterisation for shear turbulence and the uniqueness of its solutions", *Boundary-Layer Meteorol.*, **118**, 69-82.
- Lee, C. M., M. Orlic, P.-M. Poulain and B. Cushman-Roisin, 2007: Recent advances in oceanography and marine meteorology of the Adriatic Sea, *J. Geophys. Res.*, **112**, C03S01, doi:10.1029/2007JC004115.
- Cushman-Roisin, B., K. A. Korotenko, C. E. Galos and D. E. Dietrich, 2007: "Simulation and characterization of the Adriatic Sea mesoscale variability", *J. Geophys. Res.*, **112**, C03S14, doi:10.1029/2006JC003515.
- Cushman-Roisin, B., and K. A. Korotenko, 2007: "Mesoscale-resolving simulations of summer and winter bora events in the Adriatic Sea", *J. Geophys. Res.*, **112**, C11S91, doi:10.1029/2006JC003516.
- Cushman-Roisin, B., 2008: "Beyond eddy diffusion: an alternative model for turbulent dispersion", *Environmental Fluid Mech.*, **8**, in press.
- Willmott, A. J., and B. Cushman-Roisin, 2008: "Barotropic instability of coastal flows as a boundary-value problem; linear and non-linear theory", *Geophys. Astrophys. Fluid Dyn.*, favorably reviewed.

#### *Encyclopedia entry*

- Cushman-Roisin, B., 2002: *Geophysical Fluid Dynamics*, 9<sup>th</sup> edition of the *McGraw-Hill Encyclopedia of Science & Technology*, 75-78.

#### *Secondary Publications*

- Roisin, B., 1978: "Modèles tridimensionnels des courants marins," Bachelor's Thesis for the degree of Engineering Sciences, University of Liège, Liège, Belgium, 124 pp.
- Roisin, B., 1978: "Modèles tridimensionnels des courants marins," Report ACN3, Ministry for Science Policy, Brussels, Belgium, 124 pp.
- Roisin, B., 1979: "Penetrative convection: Modelling with discrete convecting elements," *Geophys. Fluid Dyn.*, Woods Hole Oceanogr. Inst. Technical Report, WHOI-79-84, Vol. II, 1-28.
- Cushman-Roisin, B., 1980: "Mixing, convection, and advection in the upper ocean," Mesoscale Air-Sea Interaction Group Technical Report, Florida State University, 195 pp.

- Cushman-Roisin, B., 1981: "High-Rayleigh number convection modelled as a two-fluid system, with application to convection in the atmospheric boundary layer," *Geophys. Fluid Dyn.*, Woods Hole Oceanogr. Inst. Technical Report, WHOI-81-102, 132-135.
- Cushman-Roisin, B., 1983: "What maintains the Subtropical Front and its associated Countercurrent?" *Geophys. Fluid Dyn.*, Woods Hole Oceanogr. Inst. Technical Report, WHOI-83-41, 103-105.
- Cushman-Roisin, B., 1984: "An explanation for the Subtropical Front - without Ekman convergence," *Ocean Modelling*, **54**, 5-7.
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- Cushman-Roisin, B., and B. Tang, 1989: "Frontal effects of eddies and their implications on energy storage and convection." Nansen Remote Sensing Center, Univ. of Bergen, Norway, Conference Report No. 3, 24-28.
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Benoit Cushman-Roisin  
Page 10

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Benoit Cushman-Roisin  
Page 11

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#### *Book Reviews*

- Cushman-Roisin, B., 1988: "General Circulation of the Ocean" by H. D. I. Abarbanel and W. R. Young (Springer Verlag, 1986, 291 pp.), *Pure & Appl. Geophys.*, **126**, 165-168.
- Cushman-Roisin, B., 1991: "Oceanic Circulation Models: Combining Data and Dynamics" edited by D. L. T. Anderson and J. Willebrand (Kluwer Academic Publishers, 1989, 605 pp.) *Pure & Appl. Geophys.*, **135**, 154-156.
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#### *Grants*

##### From the Office of Naval Research:

- |           |  |
|-----------|--|
| \$102,938 | from 4-1-83 to 3-31-85 (2 years)(under J.J. O'Brien, P.I.) |
| \$ 69,474 | from 4-1-85 to 3-31-86 (1 year)(under J.J. O'Brien, P.I.)  |
| \$ 69,204 | from 4-1-86 to 3-31-87 (1 year)                            |

Benoit Cushman-Roisin

Page 12

\$143,736 from 4-1-87 to 12-31-88 (1-3/4 years)  
 \$ 9,366 supplement for International Liège Colloquium  
 \$190,060 from 1-1-89 to 12-31-90 (2 years)  
 \$160,000 from 2-1-91 to 1-31-93 (2 years)  
 \$217,939 from 2-1-93 to 1-31-95 (2 years)  
 \$119,745 from 9-1-93 to 8-31-96 (3 years)  
 \$168,218 from 2-1-95 to 1-31-97 (2 years)  
 \$248,721 from 2-1-97 to 12-31-98 (2 years)  
 \$ 20,000 from 9-1-98 to 12-31-98 (suppl. for international conference)  
 \$267,817 from 1-31-99 to 9-30-00 (2 years)  
 \$339,663 from 1-1-02 to 12-31-04 (3 years)  
 \$363,122 from 1-1-05 to 12-31-07 (3 years)

From the National Science Foundation:

\$210,000 from 5-1-90 to 4-30-93 (3 years)  
 \$240,000 from 8-1-91 to 7-31-94 (3 years)

From the National Oceanic and Atmospheric Administration:

\$173,000 from 7-1-93 to 6-30-95 (2 years)

From US Army Cold regions Research Engineering Laboratory:

\$ 6,800 from 6-22-2000 to 6-21-2001 (1 year)  
 \$170,899 from 2-22-2007 to 2-21-2010 (3 years)

From IBM: (via Bergen Scientific Centre, Norway)

\$ 50,000 from 7-1-87 to 12-31-88 (1-1/2 years)

From College Sea Grant Program:

Benoit Cushman-Roisin

Page 13

\$36,710 from 2-1-91 to 1-31-94 (3 years)

From Moldaver & Associates, Hanover, NH:

\$20,102 from 10-1-98 to 3-31-99 (6 months)

## **TEACHING EXPERIENCE:**

### *Courses Taught*

- At Florida State University:

Introduction to Oceanography	Springs 1987, 88
Main Ocean Thermocline	Springs 1988, 89, 90
Special Topics in Physical Oceanography	Springs 1986, 87

- At Dartmouth College:

Fluid Dynamics	1990-93, 97-98, 2002-04
Environmental Transport and Fate	Yearly since Fall 1991
Introduction to Environmental Engineering	Spring 2000-01, Fall 01-03, 05-06
Geophysical Fluid Dynamics	Winters 1991, 92, 94, 96, 98
Turbulence in Fluids	Winter 1993, Sp 1995, Winter 2005
Intermediate Fluid Mechanics	Spring 2000
Environmental Fluid Mechanics	Spring 2003, 05, 07
Topics in Environmental Science and Engineering	Winter 1996
Special Topics in Industrial Ecology	Winter 1995
Industrial Ecology	Yearly since Fall 1996
Sustainable Design	Winter 2006, 07
Role of Meteorology in Air Pollution	Winter 1998
Seminar on Science, Engineering, and Public Policy	Spring 1994

### *Invited Courses*

June 1986	Four-lecture course entitled “Marine Circulation Models”, University of Liège, Belgium (Sponsored by the Belgian Royal Academy).
Mar. 1988	Six-lecture course entitled “Oceanic Eddies and Fronts”, Geophysical Institute, University of Bergen, Norway.
July 1995	Six-lecture course entitled “Geophysical Fluid Dynamics and Oceanic Processes”, Dept. of Physics, Université Catholique de Louvain, Belgium.
Apr.-May 1996	“Geophysical Fluid Dynamics”, Int’l Centre for Theoretical Physics, Trieste, Italy (Sponsored by UNESCO and Int’l Atomic Energy Agency).

Benoit Cushman-Roisin  
Page 14

- March 2001, 03, 05 & 07 “Industrial Ecology”, School of Environmental Sciences,  
Nova Gorica Polytechnic, Nova Gorica, Slovenia.
- March 2006 “Environmental Transport & Fate”, School of Environmental Sciences,  
Nova Gorica Polytechnic, Nova Gorica, Slovenia.

*Graduate Students*

- At Florida State University:  
Edgar G. Pavia, Ph.D., September 1989  
Thesis: Numerical Study of Merging and Axisymmetrization of Oceanic Eddies  
Benyang Tang, Ph.D., October 1989  
Thesis: Numerical Modeling of Geostrophic Turbulence
- At Dartmouth College:  
Verena M.D. Moser, B.E., May 1991  
Project: Meandering of Oceanic Jets  
Raimund Uhr, B.E., March 1995  
Project: Numerical Simulations of Airport Pollution  
Gordon R. Newhard, M.S., March 1991  
Thesis: Sway of Particles in Gulf Stream Meanders  
Benedict J. Mathias, M.S., April 1992  
Thesis: Simulations of Vortex Interactions with a Particle Method  
Shabnam Merchant-Both, M.S. June 1992  
Thesis: Solution for the Elliptical Warm-Core Ring in a Two-Layer Ocean  
Oleg E. Esenkov, M.S., August 1994  
Thesis: Simulations of Coastal Currents with a Particle Method  
Timothy A. Hansen, M.S., September 1995  
Thesis: Persistence of White Phosphorus in Unsaturated Sediments  
Cynthia H. Carlson, M.S. - April 1996  
Thesis: Oceanic Convection in the Presence of Rotation  
Norman J. Rice, M.S. - March 1999  
Thesis: Development of a Simulation Tool in Industrial Ecology  
Camelia E. Galos, M.S. - May 2000  
Thesis: Seasonal Circulation in the Adriatic Sea  
Michael D. Cimis, Master of Arts in Liberal Studies - June 2005  
Thesis: Environmental and Chemical Management in Higher Education  
M. Tamay Özgökmen, Ph.D., August 1995  
Thesis: Effect of Air-Sea Heat Flux on the North Atlantic Circulation  
Douglas T. Morgan, Ph.D. - April 1997  
Thesis: Linear Instability of the Shelfbreak Front off the Southern Flank of Georges Bank  
Robert B. Haehnel, Ph.D. candidate, since Winter 2004  
Thesis topic: Particle Entrainment by Impinging Jet
- At University of Bergen, Norway:  
Vigdis Tverberg, Dr.Sc., August 1991

Benoit Cushman-Roisin  
Page 15

Thesis: Resonance of Internal Waves in Fjords  
Lars Asplin, Dr.Sc., April 1994  
Thesis: Influence of the Earth's Rotation of Flows in Fjords and Coastal Oceans

## **PROFESSIONAL ACTIVITIES:**

### *Proposal Submission Reviews*

for **National Science Foundation, NASA, NATO, South Carolina Commission on Higher Education, The Israel Science Foundation, The American Heart Association.**

### *Journal Submission Reviews*

for **J. Phys. Oceanogr., J. Atmos. Sci., J. Comp. Phys., J. Geophys. Res., J. Fluid Mech., J. Mar. Res., J. Math. & Phys. Sci., J. Nonlinear Science, J. Marine Systems, J. Air & Waste Mngnt. Assoc., J. Oceanogr. Soc. Japan, Annales Geophysicae, Chaos, Deep-Sea Res., Dyn. Atmos. Oceans, Progress in Oceanogr., Environmental Fluid Mech., Int. J. Numer. Meth. Fluids, Math. and Comp. Modeling, Ocean Modeling, Oceanologica Acta, Phys. Fluids, Quart. J. R. Met. Soc., Bollettino di Geofisica Teorica ed Applicata, J. Environmental Informatics**

### *Book Submission Reviews*

for **Academic Press, American Institute of Physics, McGraw-Hill, Springer, John Wiley & Sons, Cambridge University Press, World Scientific, CRC Press, Taylor & Francis**

### *Editorial Boards*

2000-present    Editor-in-Chief (and Founding Editor) of **Environmental Fluid Mechanics**

1994-1996      Associate Editor of **Pure & Applied Geophysics**

1984-1993      Associate Editor of the **Journal of Geophysical Research-Oceans**  
Acting editor during June 1985 and May 1987

### *Review Boards*

January 1997    Panelist, **NSF** Division of Bioengineering & Environmental Sciences

April 1993      Panelist, Ocean Modeling and Prediction Program, **ONR**

1992-1994      Member of Advisory Committee for Ocean Sciences, **NSF**

January 1991    Panelist, **NSF** Ocean Sciences Division

Benoit Cushman-Roisin  
Page 16

*External Examinations*

- Dec. 1989 David Brickman, Ph.D.  
Dalhousie University, Nova Scotia, **Canada**
- May 1995 Simon J. Wotherspoon, Ph.D.  
University of Tasmania, **Australia**
- June 1995 Sophie Valcke, Dr.Sc.  
Université Joseph Fourier, Grenoble, **France**
- December 1996 Bingyi Xu, Ph.D.  
Dept. Civil Engineering, University of Maine-Orono
- August 1998 Richard H. Karsten  
University of Alberta, Edmonton, **Canada**
- June 2003 Urska Koren  
Nova Gorica Polytechnic, **Slovenia**
- May 2006 Eva Ancik  
Nova Gorica Polytechnic, **Slovenia**
- May 2006 Igor Madon  
Nova Gorica Polytechnic, **Slovenia**

*Invited Lectures*

- May 1984 "Importance of coupling between dynamic and thermodynamic processes at the sea surface: The large-scale, oceanic point of view," JSC/CCCO 16th International Liège Colloquium, Belgium
- August 1985 "General considerations on the thermocline problem. Choice of coordinates and natural existence of fronts", IAMAP/IAPSO Joint Assembly, Honolulu.
- June 1986 "A new theory for the Gulf Stream and Sargasso Sea," Norwegian Geophysical Society annual meeting, Geilo, Norway.
- July 1986 "Large-scale ocean dynamics" - "The main ocean thermocline" - "Wind and buoyancy driven ocean circulation", Summer School of Space Physics, CNES, Roscoff, France.
- January 1987 "Subduction", Hawaiian Winter Workshop, University of Hawai'i, Honolulu.
- May 1993 "Frontal and mixing dynamics in coastal regions", XVIII General Assembly of the European Geophysical Society, Wiesbaden, Germany.

Benoit Cushman-Roisin  
Page 17

- Sept. 1998 "Three-dimensional finite-element modeling of the Adriatic Sea", International Conference on the Oceanography of the Adriatic Sea, Trieste, Italy.
- March 2007 "Introduction to Environmental Fluid Mechanics" and "Mass, momentum and energy balances for environmental fluid systems", inaugural lectures of new PhD Program in Environmental Fluid Mechanics, at the University of Trieste and jointly with the International Centre for Theoretical Physics, Trieste, Italy.

*Contributed Conference Presentations*

- Colloquia on Ocean Hydrodynamics, University of Liège, Belgium  
(May 1979, May 1984, May 1988)
- American Geophysical Union-AGU  
(San Francisco CA, Dec. 81; New Orleans LA, Feb. 90; San Diego CA, Feb. 96)
- Colloquia on Modelling of Ocean Vortices  
(Tallahassee FL, Dec. 83, Mar. 85, Mar. 87; Hanover NH, May 90; Amsterdam, May 93)
- International Association for the Physical Sciences of the Ocean-IAPSO  
(Honolulu, Aug. 1985 - two presentations)
- Meeting on the Theory of the Ocean General Circulation  
(U. Washington, Seattle WA, January 1986)
- Society of Norwegian Oceanographers  
(Bergen, October 1989)
- Workshop on Regional and Mesoscale Modelling of Ice-Covered Oceans  
(Solstrand, Norway, October 1989)
- International Union of Geodesy and Geophysics - IUGG  
(Vienna, August 1991 - Two presentations)
- European Geophysical Society - EGS  
(Wiesbaden, May 1993; Grenoble, April 1994)
- The Oceanography Society - TOS  
(Amsterdam, July 1996)
- Fifth International Symposium on Stratified Flows  
(Vancouver, British Columbia, July 2000)
- Sixth International Symposium on Stratified Flows  
(Perth, Australia, December 2006)
- EGS-AGU-EUG Joint Assembly  
(Nice, France, April 2003)
- EGU General Assembly  
(Vienna, Austria, April 2005 and 2008)
- Fifth International Symposium on Environmental Hydraulics  
(Arizona State University, December 2007)

*Seminars*

**In USA:** U. Maine, Dartmouth, U. New Hampshire, Harvard, MIT, Woods Hole Oceanogr. Inst., Brown, U. Rhode Island, Yale, Columbia, New York U., SUNY-Stony Brook, Cornell, Princeton, Rutgers, U. Delaware, Johns Hopkins, Old Dominion U., Florida

Benoit Cushman-Roisin

Page 18

State U., U. Miami, Mississippi State U., Naval Research Lab., U. Arizona, Arizona State U., Scripps Inst. Oceanogr., Naval Postgraduate School, U. Washington, Washington State U., Inventor's Network of Vermont

**In Italy:** Osservatorio Geofisico Sperimentale (Trieste), Istituto Sperimentale Talassografico-CNR (Trieste), IMGA-CNR (Bologna)

**In Slovenia/Croatia:** Nova Gorica Polytechnic, U. Ljubljana, U. Zagreb

**In Scandinavia:** Danish Hydraulic Institute, U. Oslo, U. Bergen, U. Tromsø, Norwegian Meteorol. Inst., Norwegian Polar Inst., Bergen Scientific Centre, U. Gothenburg

**Elsewhere in Europe:** Marine Res. Inst. (Helsinki), Royal U. Utrecht, Royal Dutch Acad. Arts & Sci., U. Liège, U. catholique de Louvain

**In Japan:** Tokyo U., Kyushu U., Hokkaido U., Tsukuba Sci. Ctr.

### *Conference Organization*

Dec. 1983, Mar. 1985 and Mar. 1987:

Organizer and convener of three colloquia entitled "Modelling of isolated ocean vortices" (Florida State University)

May 1988      Leading member of the Scientific Organizing Committee of the 20th International Colloquium on Ocean Hydrodynamics (University of Liège, Belgium)

May 1990      Organizer and convener of an international colloquium on "Modeling of Oceanic Vortices" (Thayer School of Engineering, Dartmouth College)

1991 - 1996    Organizer of monthly seminars for Geophysical Fluid Dynamicists in the northeast USA

May 1993      Co-organizer and co-convener of an international colloquium on "Modelling of Oceanic Vortices" (Royal Dutch Academy of Arts & Sciences, Amsterdam)

Sept. 1998     Co-organizer of an international conference on "The Oceanography of the Adriatic Sea" (Abdus Salam Int'l Centre for Theor. Phys., Trieste, Italy)

### *Administration & Service*

Departmental Activities:

Space Committee, Chair (at FSU)

Admissions Committee, Chair

Financial-Aid Committee, Chair (\$644,000/year)

Graduate Program Committee, Chair (\$81,500/year)

Honors Program, Director

Undergraduate Program Committee

B.E. Program Committee

Publications Committee

Biochemical-Engineering Faculty Search (twice)

Thermo-fluids Faculty Search

Committee on Non-Tenured Appointments

Benoit Cushman-Roisin

Page 19

Committee on Standard & Conflicts  
 Corporate Relations  
 Graduate-Student Placement  
 Oversight of Engineering-School Registrar  
 Master-of-Engineering Task Force, Chair  
 Ph.D. Task Force, Chair

**Institution-wide Activities:**

Faculty Senate (at FSU)  
 Dept. representative to dean's council (at FSU)  
 Freshmen Advising  
 Council on Graduate Studies, Chair  
 Council on Sponsored Activities  
 Provost's Graduate Advisory Group  
 Dean Search Committee (for Thayer School)  
 Faculty Affirmative Action Review Committee  
 Advisory Board for Women-In-Science-Project  
 Writing Sub-committee  
 Steering Committee of the Faculty  
 Energy Task Force

*Consulting/Other*

1988-1992	Science Applications International Corp., McLean, VA
1997-2002	Senate Member, Nova Gorica Polytechnic University, Slovenia
1997-	Certified Engineer-in-Training, State of New Hampshire (#3475)
1998-1999	Moldaver & Associates, Hanover, New Hampshire
1999	Strategic planning, Engineering Research Center, Mississippi State U.
2001	Publications in Environmental Engineering, McGraw-Hill
2003	Town of Hanover, New Hampshire
2003-2006	Lull's Brook Watershed Association, Hartland, Vermont
2003-2006	Member, Board of Directors, Hanover Consumer Cooperative Society, NH (a retail operation with gross revenues exceeding \$60 million per year)

*Memberships (past and current)*

- American Geophysical Union
- American Meteorological Society

Benoit Cushman-Roisin

Page 20

- American Society of Civil Engineers
- American Society for Engineering Education
- Air & Waste Management Association
- Coastal Education & Research Foundation
- European Geosciences Union
- The Oceanography Society (Charter Member)
- International Society for Industrial Ecology (Charter Member)
- Graduate Faculty: U. Maine-Orono, U. Alberta
- Voting Member, Belgian American Educational Foundation, Brussels

**LANGUAGE PROFICIENCY:**

- English and French
- Passive knowledge of Latin, Spanish and Dutch (reading, translating)