

Curriculum Vitae for María Josefina Olascoaga

May 8, 2009

Personal Data

Name María Josefina Olascoaga
Home Phone 305-860-4034
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Address 2621 SW 26 Lane, Miami, Fl 33133
Current Academic Rank Assistant Professor
Department AMP
Citizenship Argentina
Visa Type Permanent Resident

Education

1997–2001 ScD, Phys. Oceanography, CICESE, Ensenada, BC, Mexico. (Advisor: P. Ripa.)
1994–1997 MSc, Phys. Oceanography, CICESE, Ensenada, BC, Mexico. (Advisor: J. Sheinbaum.)
1989–1994 Licentiate, Oceanography, ITBA, Bs. As., Argentina. (Advisor: L. Romanelli.)

Experience

2008– Assistant Professor, RSMAS, UMiami.
2004–2007 Assistant Scientist, RSMAS, UMiami.
2001–2004 Postdoc Associate, RSMAS, UMiami. (Advisors: S. Smith, M. Brown, D. Olson, and E. Chassignet)
1998–2000 Graduate Research Assistant, CICESE, Ensenada, BC, Mexico.

Publications

Published and in press

16. Beron-Vera, F. J. and **M. J. Olascoaga** (2009). An assessment of the importance of chaotic stirring and turbulent mixing on the West Florida Shelf. *J. Phys. Oceanogr.*, in press. doi: 10.1175/2009JPO4046.1.
15. **Olascoaga, M. J.**, F. J. Beron-Vera, L. E. Brand, and H. Kocak (2008). Tracing the early development of harmful algal blooms with the aid of lagrangian coherent structure, *J. Geophys. Res.*, **113**: C12014, doi:10.1029/2007JC004533.
14. Beron-Vera, F. J., **M. J. Olascoaga**, and G. J. Goni (2008). Lagrangian coherent structures and transport by mesoscale oceanic vortices, *Geophys. Res. Lett.*, **35**: L12603, doi:10.1029/2008GL033957.
13. Beron-Vera, F. J., M. G. Brown, **M. J. Olascoaga**, I. I. Rypina, H. Koçak, and I. A. Udovydchenkov (2008). Zonal jets as transport barriers in planetary atmospheres, *J. Atmos. Sci.*, **65**: 3316-3326, doi:10.1175/2008JAS2579.1.

12. Rypina, I. I., M. G. Brown, F. J. Beron-Vera, H. Koç ak, **M. J. Olascoaga** and I. A. Udovydchenkov (2007). Robust transport barriers resulting from strong Kolmogorov–Arnold–Moser stability, *Phys. Rev. Lett.*, **98**: 104102.
11. Rypina, I. I., F. J. Beron-Vera, M. G. Brown, H. Kocak, **M. J. Olascoaga** and I. A. Udovydchenkov (2007). On the Lagrangian Dynamics of Atmospheric Zonal Jets and the Impermeability of the Stratospheric Polar Vortex, *J. Atmos. Sci.*, **64**: 3595–3610.
10. **Olascoaga, M. J.**, I. I. Rypina, M. G. Brown and F. J. Beron-Vera, H. Kocak, L. E. Brand, G. R. Halliwell, and L. K. Shay (2006). Persistent Transport Barrier on the West Florida Shelf. *Geophys. Res. Lett.*, **33**: L22603.
9. Rothstein, L., M. Abbott, E. Chassignet, J. Cullen, K. Denman, S. Doney, H. Ducklow, K. Fennel, M. Follows, D. Haidvogel, E. Hofmann, D. Karl, J. Kindle, I. Lima, M. Maltrud, C. McClain, D. McGillicuddy, **J. Olascoaga**, Y. Spitz, J. Wiggert, and J. Yoder (2006). Modeling Ocean Ecosystems: The PARADIGM Program, *Oceanography*, **19**: 1, 17–45.
8. **Olascoaga, M. J.**, N. Idrisi and A. Romanou (2005). Biophysical isopycnic-coordinate modelling of plankton dynamics in the Arabian Sea, *Ocean Modell.*, **8**: 55–80.
7. Idrisi, N., **M. J. Olascoaga**, Z. Garraffo, D. B. Olson and S. L. Smith (2004). Mechanisms for emergence from diapause of *Calanoides carinatus* in the Somali Current, *Limnol. Oceanogr.* **49**: 1262–1268.
6. Beron-Vera, F. J., **M. J. Olascoaga** and J. Zavala-Garay (2004). Linear waves and baroclinic instability in a inhomogeneous-density layered primitive-equation ocean model, *ICTAM04 Abstract Book and CD-ROM Proceedings*, ISBN 83-89687-01-1, IPPT PAN, Warsaw, to appear (e-Print arXiv:physics/0401078).
5. **Olascoaga, M. J.**, F. J. Beron-Vera and J. Sheinbaum (2003). Deep ocean influence on upper ocean baroclinic instability saturation, in O. U. Velasco-Fuentes et al. (eds.), *Nonlinear Processes in Geophysical Fluid Dynamics: A Tribute to the Scientific Work of Pedro Ripa*, Kluwer Academic, pp. 15–28.
4. Beron-Vera, F. J., **M. J. Olascoaga** and M. G. Brown (2003). Passive tracer patchiness and particle trajectory stability in incompressible two-dimensional flows, *Nonlin. Proc. Geophys.*, **11**: 67–74.
3. Beron-Vera, F. J. and **M. J. Olascoaga** (2003). Spectral, formal, and nonlinear stability in a layered quasigeostrophic model with application to the Atlantic North Equatorial Current, in P. Malanotte-Rizzoli and G. J. Goni (eds.), *Interhemispheric Water Exchange in the Atlantic Ocean*, Elsevier Oceanography Series 68, Elsevier Science, pp. 313–334.
2. **Olascoaga, M. J.** (2001). Deep ocean influence on upper ocean baroclinic instability, *J. Geophys. Res.* **106**: 26863–26877.
1. **Olascoaga, M. J.** and P. Ripa (1999). Baroclinic instability in a two-layer model with a free boundary and β , *J. Geophys. Res.* **104**: 23357–23366.

Submitted

1. **M. J. Olascoaga** (2009). Does the Mississippi River fuel harmful algal blooms on the West Florida Shelf?, *Harmful Algae*.

Lectures and Meeting Presentations

Invited Lectures

4. **Olascoaga, M. J.** (2007). Lagrangian Coherent Structures: An Application to Red Tide Dynamics, U. Louisville, Math Department, Louisville, KY, USA, June.

3. **Olascoaga, M. J.** (2007). Tracing the origin of harmful algal blooms with the aid of lagrangian coherent structure, U. Toronto, Department of Physics, Toronto, Canada, June.
2. **Olascoaga, M. J.** (2003). Deep ocean influence on upper ocean baroclinic instability, Woods Hole Oceanographic Institution, Physical Oceanography Department, Woods Hole, MA, USA, May.
1. **Olascoaga, M. J.** (2003). Modelling of biophysical interactions in the Arabian Sea, Woods Hole Oceanographic Institution, Applied Ocean Physics and Engineering Department, Woods Hole, MA, USA, May.

Invited Meeting Presentations

5. **Olascoaga, M. J.**, F. J. Beron-Vera, and L. brand (2009). An Application of Lagrangian Coherent Structures to Harmful Algal Blooms, 2009 European Geosciences Union, Vienna, Austria, April.
4. **Olascoaga, M. J.** and F. J. Beron-Vera (2008). On the nature of the surface ocean Lagrangian dynamics in the West Florida Shelf, 2008 Joint Assembly, Ft. Lauderdale, Florida, USA, May.
3. Beron-Vera, F. J., M. G. Brown and **M. J. Olascoaga** (2005). Sistemas hamiltonianos no integrables en física oceánica (Nonintegrable Hamiltonian systems in ocean physics), XXVII Congreso Nacional de la Sociedad Matemática Mexicana (27th National Congress of the Mexican Mathematical Society), Ensenada, Baja Cfa., Mexico, October
2. **Olascoaga, M. J.** and F. J. Beron-Vera (2002). Baroclinic instability in a three-layer quasigeostrophic model with application to the Atlantic North Equatorial Current, Pedro Ripa Memorial Colloquium on “Nonlinear Processes in Geophysical Fluid Dynamics,” Ensenada, BC, Mexico, October. (Presented by J. Sheinbaum.)
1. Idrisi, N., **M. J. Olascoaga**, Z. Garraffo, D. B. Olson and S. L. Smith (2002). Patterns of dispersion and fate of deep hibernating Copepods, UMichigan, Ann Arbor, MI, USA, September.

Contributed Meeting Presentations

28. F. J. Beron-Vera, and **Olascoaga, M. J.**, and M. Brown (2009). Strong KAM stability in the summer hemisphere subtropical stratosphere, 2009 European Geosciences Union, Vienna, Austria, April.
27. S. Derada, J. C. Kindle, I. Shulman, and **M. J. Olascoaga** (2008). US West Coast modeling using GODAE products. Observing and Forecasting the Ocean, Nice, France, November.
26. **Olascoaga, M. J.** and F. J. Beron-Vera (2008). Stirring and mixing in the West Florida Shelf. Workshop on Nonlinear Processes in Oceanic and Atmospheric Flows, Castro Urdiales, Spain, July.
25. Beron-Vera, F. J., M. G. Brown, **M. J. Olascoaga**, I. I. Rypina, H. Koçak and I. A. Udovydchenkov (2008). Zonal jets as transport barriers in planetary atmospheres. Workshop on Nonlinear Processes in Oceanic and Atmospheric Flows, Castro Urdiales, Spain, July.
24. Beron-Vera, F. J., **M. J. Olascoaga** and G. J. Goni (2008). Mesoscale vortices as revealed by Lagrangian coherent structures. Ocean Sci. Meet., Orlando, FL, March.
23. **Olascoaga, M. J.**, F. J. Beron-Vera, L. E. Brand and H. Koçak (2008). An application of Lagrangian coherent structures to harmful algal blooms. Ocean Sci. Meet., Orlando, FL, March.
22. Beron-Vera, F. J., M. G. Brown, **M. J. Olascoaga**, I. I. Rypina, H. Koçak and I. A. Udovydchenkov (2007). Zonal jets as transport barriers in planetary atmospheres. *Eos Trans. AGU* **88**(52), Fall Meet. Suppl., Abstract P51A-0202, San Francisco, CA, December.

20. Beron-Vera, F. J., **M. J. Olascoaga**, I. I. Rypina, M. G. Brown, H. Koçak and I. A. Udovydchenkov (2007). On the Lagrangian dynamics of atmospheric zonal jets and the permeability of the stratospheric polar vortex. AGU Chapman Conference on “The Role of the Stratosphere in Climate and Climate Change,” Santorini, Greece, September.
21. Rypina, I. I., M. G. Brown, F. J. Beron-Vera, H. Kocak, **M. J. Olascoaga** and I. A. Udovydchenkov (2007). On the Lagrangian dynamics of atmospheric zonal jets and the impermeability of the stratospheric polar vortex. *Eos Trans. AGU* **88**(52), Fall Meet. Suppl., Abstract A51F-11, San Francisco, CA, December.
19. **Olascoaga, M. J.**, I.I. Rypina, M.G. Brown, F.J. Beron-Vera, H. Koçak, L.E. Brand, G.R. Halliwell and L.K. Shay (2006). Persistent Transport Barrier on the West Florida Shelf, 2006 HYCOM Workshop, Tallahassee, FL, USA, November.
18. **Olascoaga, M. J.**, S. de Rada, J. Kindle and E. Chassignet (2006). Biophysical modeling of the California Current System, 2006 HYCOM Workshop, Tallahassee, FL, USA, November.
17. **Olascoaga, M. J.**, and F. J. Beron-Vera (2006). Fluid particle clustering as a mechanism for plankton patchiness, *Eos Trans. AGU* **87** (36), Ocean Sci. Meet. Suppl., Abstract OS36H-06, Honolulu, Hawaii, USA, February.
16. Beron-Vera, F. J., and **M. J. Olascoaga** (2006). Nonlinear evolution of baroclinically unstable near-surface zonal jets, *Eos Trans. AGU* **87** (36), Ocean Sci. Meet. Suppl., Abstract OS45L-02, Honolulu, Hawaii, USA, February.
15. Beron-Vera, F. J., **M. J. Olascoaga** and J. Zavala-Garay (2004). Linear waves and baroclinic instability in a inhomogeneous-density layered primitive-equation ocean model, 21st International Congress of Theoretical and Applied Mechanics (ICTAM), Warsaw, Poland, August.
14. **Olascoaga, M. J.**, E. P. Chassignet, J. Kindel and A. Wallcraft (2004). Sensitivity of biophysical modeling to model’s vertical coordinate representation, ASLO Ocean Sciences Meeting, Honolulu, Hawaii, USA, February.
13. Beron-Vera, F. J., **M. J. Olascoaga** and J. Zavala-Garay (2004). How much can we do with only a few layers?, 2004 LOM Workshop, Miami, FL, USA, February.
12. Beron-Vera, F. J., **M. J. Olascoaga** and M. G. Brown (2002). Particle trajectory stability and tracer patchiness in 2D incompressible flows, II LAPCOD Meeting, Key Largo, FL, USA, December.
11. Idrisi, N. and **M. J. Olascoaga** (2002). Lagrangian modeling of diapaused Copepods in intermediate to deep layers in the Arabian Sea, II LAPCOD Meeting, Key Largo, FL, USA, December.
10. **Olascoaga, M. J.**, N. Idrisi, A. Romanou, D. B. Olson and S. L. Smith (2002). Biophysical modeling of plankton dynamics off Somalia and Oman, *EOS* **83** (4): OS58, AGU/ASLO Ocean Sciences Meeting, Honolulu, Hawaii, USA, February.
9. Idrisi, N., **M. J. Olascoaga** and S. L. Smith (2002). Translocation of diapausing Calanoides carinatus in the mesopelagic/deep layers in the Arabian Sea: Modeling Lagrangian particle drift in an isopycnic ocean model, *EOS* **83** (4): OS38, AGU/ASLO Ocean Sciences Meeting, Honolulu, Hawaii, USA, February.
8. Ripa, P., **M. J. Olascoaga** and F. J. Beron-Vera (2001). Generalization of the classical baroclinic instability problems, Waves Phenomena III, Edmonton, Canada, June.
7. **Olascoaga, M. J.** and P. Ripa (2000). Deep ocean influence on upper ocean baroclinic instability, *Bol. Soc. Mex. Fís.* **14** (3): 152, XXXIX Mexican Congress of Physics, Puebla, Pue., Mexico, October.
6. **Olascoaga, M. J.** and P. Ripa (2000). Baroclinic instability in a two-layer model with a free boundary and β effect, *EOS* **80** (49): OS35, AGU/ASLO Ocean Sciences Meeting, San Antonio, TX, USA, January.

5. **Olascoaga, M. J.** and P. Ripa (1999). Free boundary effects on baroclinic instability. Part II: Two-layer model on the β -plane, Aosta Summer School in Geophysical and Astrophysical Fluid Dynamics on “Transport and Mixing in Geophysical Flows,” St. Oyen, Aosta, Italy, June.
4. **Olascoaga, M. J.** and P. Ripa (1998). Earth’s curvature effects on baroclinic instability in the upper ocean layer, *GEOS 18*, Mexican Geophysical Union Annual Meeting, Puerto Vallarta, Jal., Mexico, November.
3. **Olascoaga, M. J.** and P. Ripa (1998). Nonlinear aspects on Phillips’ problem of baroclinic instability with a free boundary, XI National Congress of Oceanography, Ensenada, B.C., Mexico, April.
2. **Olascoaga, M. J.** and P. Ripa (1997). Free boundary effects on Phillips’ problem of baroclinic instability, *GEOS 17*, Mexican Geophysical Union Annual Meeting, Puerto Vallarta, Jal., Mexico, November.
1. **Olascoaga, M. J.** and J. Sheinbaum (1996). Determination of suitable open boundary conditions for a simplified ocean using data assimilation techniques, *Bol. Soc. Mex. Fís.* **10**, XXXIX National Congress of Physics, Oaxaca, Oax., Mexico, October.

Professional

Research Grants

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| FY09 | NASA: Assessing the Impact of High-Resolution Wide-Swath Altimetry on the Determination of the Surface Ocean Lagrangian Circulation. Beron-Vera F. J. (PI), M. J. Olascoaga and G. J. Goni (Co-PIs). Current. 67,000. |
| FY09 | CLIA: Bioresiduals project. J. Englehardt (PI). Current. 6,000. |
| FY08–FY12 | NSF, CMG-0825547: Nonintegrable Hamiltonian systems in geophysical fluid dynamics. Beron-Vera, F. J. (PI); M. J. Olascoaga and H. Koçak (Co-PIs); M. Brown (Senior Personnel). Current. 763,266. |
| FY08 | UM General Research Support Award: “Harmful Algal Blooms in the West Florida Shelf: A Dynamical Systems Approach,” M. J. Olascoaga (PI). Current. 6,283. |
| FY07–FY09 | NSF, OCE-0648284: “Finite-amplitude upper-ocean baroclinic instability,” M. J. Olascoaga (PI). Current. 375,000. |
| FY08 | Pilot Project NSF NIEHS Oceans and Human Health (OHH) Center: “Circulation constraints on <i>Karenia brevis</i> blooms on the West Florida Shelf,” M. J. Olascoaga (PI). 15,100. |
| FY05–FY08 | NSF, CMG-0417425: “Nonintegrable Hamiltonian systems in ocean dynamics,” Beron-Vera, F. J. (PI); M. J. Olascoaga , H. Koçak, and M. Brown (Co-PIs). 995,981. |
| FY07 | Pilot Project NSF NIEHS Oceans and Human Health (OHH) Center: “Circulation constraints on <i>Karenia brevis</i> blooms on the West Florida Shelf,” M. J. Olascoaga (PI). 10,000. |
| FY03–FY07 | NSF/ONR-NOPP N000014-02-1-0370: “The Partnership for advancing interdisciplinary Global Modeling (PARADIGM),” L. Rothstein (PI, URI), E. Chassignet (Co-PI). Transferred May 2006. |

Reviewer

Book chapters (*Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics*)

Research proposals (NSF-OCE PO and BO)

Proposal review panel (NSF-OCE PO)

Professional and Honorary Organizations

American Geophysical Union (since 1996)

Awards

2001 Francisco Medina Martinez Award to the Best Thesis in Earth Sciences, UGM, Mexico.

1999 Aosta Summer School in Geophys. and Astrophys. Fluid Dyn. Fellowship, Italy.

1997–2000 SNI Graduate Research Fellowship, Mexico.

1994 Silver Medal for Outstanding Fellowship, ITBA, Bs. As., Argentina.

Field Experience

1999 Graduate student on the oceanographic cruise “Canek IV: Caribbean Sea and Gulf of Mexico,” CICESE, Mexico.

1998 Graduate student on the oceanographic cruise “Canek II: Caribbean Sea and Gulf of Mexico,” CICESE, Mexico.

1994 Graduate student on the oceanographic cruise “FU9412: Gulf of California,” CICESE, Mexico.

Teaching

2009 RSM671: Lagrangian Fluid Dynamics Predictability, RSMAS, UM.

2008 Math 112 (Lab.), UM.

2001 Dynamical Oceanography III (Lab.), CICESE, Mexico.

1999 Mathematical Methods I (Lab.), CICESE, Mexico.

1998 Mathematical Methods I (Lab.), CICESE, Mexico.

1997 Dynamical Oceanography II (Lab.), CICESE, Mexico.

Students

Fiorentino, Laura (Ph.D RSMAS/AMP, co-advised with M. Brown)

Thesis Committees

Rypina (Ph.D. RSMAS/AMP, U. Miami)

Gremes-Cordero (Ph.D. RSMAS/AMP, U. Miami)

Xiaofang Zhu (MSc RSMAS/AMP, U. Miami)