

Shane Elipot

CONTACT OCE/RSMAS/UM *Office:* +1 (305) 421-4630
 INFORMATION 4600 Rickenbacker Causeway *Mobile:* +1 (305) 632-7366
 TION Miami, Florida 33149, USA *Email:* selipot@rsmas.miami.edu

RESEARCH Atmosphere-ocean interactions and energy pathways, ocean surface boundary layer, dynamics
 INTERESTS of the meridional overturning circulation, Agulhas Current System, Oceanic observations, time series analysis, covariance analysis.

PROFESSIONAL APPOINT- MENTS

Current Appointments:

The Rosenstiel School of Marine and Atmospheric Science, University of Miami,
Miami, USA

Associate Scientist, since April 2014; Assistant Scientist, April 2013 - March 2014.

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Carnegie Museum of Natural History, Pittsburgh, USA

Research Associate, since October 2016.

Previous Appointments:

- **National Oceanography Centre**, Natural Environment Research Council, Liverpool, UK
Physical Oceanographer, 2009–2012.
- **University of Liverpool**, School of Environmental Sciences, Liverpool, UK
Honorary Research Fellow, 2009–2012.
- **Cooperative Institute for Marine and Atmospheric Studies**, University of Miami,
Miami, Florida, USA.
Postdoctoral Associate, 2008
- **Atlantic Oceanographic and Meteorological Laboratory**, Miami, FL, USA.
National Research Council Postdoctoral Research Fellow, 2007

EDUCATION

- **Scripps Institution of Oceanography, University of California, San Diego**, La Jolla, California, USA.
Ph.D., Oceanography, December 2006, supervisor Prof Sarah Gille.
- **Université de Bretagne Occidentale**, Brest, France.
Master of Advanced Studies (*Diplôme d'Études Approfondies*) in Meteorology, Oceanology and Environment, 2001.
- **ENSTA Bretagne**, graduate school in electrical and mechanical engineering, Brest, France.
Master (*Diplôme d'Ingénieur*), 2001, Oceanography and Hydrography.
- **Lycée Henri Poincaré**, Nancy, France.
Undergraduate preparation in advanced mathematics, physics and chemistry for the competition entrance examination to French graduate engineering schools, 1995-1998.

FUNDINGS
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ACTIVITIES

- National Science Foundation Physical Oceanography Program Award, Current 2015/2018. *Global Observational Constraints on Oceanic Response to Wind Forcing*, \$275,880 budget for 3-year project, co-PIs J. Lilly (NWRA), R. Harcourt (UW/APL), **lead PI S. Elipot** with duties of managing the project and analyzing of Lagrangian, Eulerian and numerical data.
- National Science Foundation Physical Oceanography Program Award, Current 2015/2020. *Agulhas System Climate Array*, \$2,480,730 budget for 5-year project, lead principal investigator L. Beal, **co-PI S. Elipot** with duties including but not limited to scientific investigations, co-supervising of University of Miami and South African students, operations at sea, instrumentations, and contributing to capacity building/teaching program.
- Office of Naval Research DRI, *Northern Arabian Sea Circulation - autonomous research (NASCar); Rectified circulation of the Arabian Sea and its Seasonal Internal Wave Field*, Current 2015/2019, Lead PI Lisa Beal, **co-PI Shane Elipot** with duties including scientific investigations and co-advising of postdoctoral researcher.
- Cooperative Institute for Marine and Atmospheric Science (NOAA/UM) 2015/2017. *High-frequency variability of near-surface oceanic velocity from surface drifters*, **lead PI S. Elipot** with duties of managing the project and leading all scientific investigations.
- National Science Foundation Physical Oceanography Program Award, 2010/2014, *Global Impact of Eddies on Inertial Oscillations of the Mixed Layer*, lead principal investigator Dr. J. M. Lilly, NWRA, international collaborator S. Elipot with duties of contributing to scientific investigations.
- U.S. National Research Council Postdoctoral Research Award, 2007, *What is the polarization of ocean currents?*, tenure at NOAA/AOML.

TEACHING
EXPERI-
ENCE

- Guest lecturer at the University of Cape Town for a 2-week workshop called *Methods of Data Analysis in Oceanic and Atmospheric Sciences*, August 2017, all lecture and practicals available at <https://selipot.github.io/>
- Invited lecture, *Time series analysis in a changing climate*, Time series analysis in environmental science and applications to climate change conference, Tromsø, Norway, 10-11 Nov. 2016.
- Guest lecture on *Forcing of the Ocean* for graduate course *Introduction to Physical Oceanography* at UM/RSMAS, Sep. 2014.
- Guest lecture on *Eigen mode analyses* for graduate course *Applied Data Analysis* at UM/RSMAS, Mar. 2014.
- Guest lecturer for Natural Environment Research Council Earth System Science Spring School, Scarborough, UK, Apr. 2010. Lecture title: *Global Ocean Circulation: observations and models*.
- Guest lecturer for Semester at Sea leg from Salvador, Brazil to Walvis Bay, Namibia, Sep. 2008. Lectures: *Climate studies, Ocean currents, Oceanographic research aboard the MV Explorer*.

VISITING
APPOINT-
MENTS

- Invited visiting scientist at NorthWest Research Associates, Redmond, Washington, USA, February 2011 (visit funded by NSF as an international collaborator).
- Invited visiting scientist at Atlantic Oceanographic and Meteorological Laboratory, Miami, Florida, USA, January 2011.
- Visiting scientist at Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California, USA, March to June 2001.
- Visiting scientist at Institute of Arctic and Alpine Research, University of Colorado, Boulder, Colorado, USA, June to August 2000.

SYNERGISTIC
ACTIVITIES

- Member for 2017-2020 of *Phenomena, Observations, and Synthesis* panel of U.S. Climate Variability and Predictability Program (CLIVAR).
- Co-advisor of a Masters candidate at the University of Cape Town, South Africa.
- External examiner for Ph.D. thesis awarded at the University of Tasmania, Hobart.
- Co-Convener, AGU Ocean Sciences meeting 2010, session entitled *Patchy Mixing and the geography of the Ocean's energy cascade*; Co-Convener, AGU Ocean Sciences meeting 2014, session entitled *Frontiers of oceanographic data and methods*.
- Member of the *American Geophysical Union*.
- Reviewer for *J. of Physical Oceanography*, *J. of Geophysical Research*, *J. of Marine Research*, *Geophysical Research Letters*.
- Reviewer for American National Science Foundation.

SEA EXPE-
RIENCE:

- June 2018: CTD program, watch leader, Oceanographic mooring recovery coordination, *SA Agulhas*, Agulhas System Climate Array cruise 2018, Indian Ocean, 14 days, Chief Scientist: Prof. Lisa Beal.
- April 2016: Oceanographic mooring deployment coordination, CTD operations, *RV Algoa*, Agulhas System Climate Array cruise 2016, Indian Ocean, 14 days, Chief Scientist: Prof. Lisa Beal.
- Feb. 2012: CTD watch, *Ronald H. Brown*, Western Boundary Time Series cruise, North Atlantic, 20 days, Chief Scientist: Dr. Molly Baringer.
- May 2009 : Microstructure profiler operation, *RV Prince Madog*, PHiXT cruise, Irish Sea, 6 days, Chief Scientist: Dr. Matthew Palmer.
- Sep. 2008 : Semester at Sea leg from Salvador, Brazil to Walvis Bay, Namibia, *MV Explorer*, Argo floats deployments and educational activities, 7 days.
- Feb.-Mar. 2004 : CTD watch and satellite data analyses, *ARSV Laurence M. Gould*, Blue Water Zone cruise, Southern Drake Passage, 40 days, Chief Scientist: Dr. Greg Mitchell.
- Feb.-Mar. 2003 : LADCP/CTD watch, *R/V Melville*, AUCE cruise: Agulhas Current, 30 days, Chief Scientist: Dr. Lisa Beal.
- Jun.-Aug. 1999 : Scientific assistant, *R/V Marion Dufresne*, *IMAGES V* paleoceanographic campaign, legs 2 & 3 Québec-Reykjavik-Tromsø, 42 days.

INVITED
TALKS

- *Observed Agulhas Current sensitivity to interannual and long-term trend atmospheric forcings*, University of Rhode Island Graduate School of Oceanography, Physical Oceanography Seminar, Narragansett, November 2017.
- *The Agulhas Current in our changing climate*, R.W. Moriarty Science Seminar Series of the Carnegie Museum of Natural History, Pittsburgh, PA, February 2017
- *Basin-wide response of the North Atlantic Meridional Overturning Circulation to wind stress forcing*, AOML, Miami, USA, Sept. 2012.
- *What is the link between measurements of the Atlantic Meridional Overturning Circulation at 4 different latitudes?*, School of Ocean Sciences, Bangor University, UK, Nov. 2011.
- *Estimation and dynamics of the North Atlantic meridional overturning circulation from the Rapid-WAVE array*, University of East Anglia, Norwich, U.K., Jul. 2010.
- *Inertial Oscillations Modification by Mesoscale Vorticity*, Ifremer, Brest, France, Dec. 2009.
- *The transfer function for wind-driven oceanic currents*, Capstone Conference Mini-Symposium on Lagrangian Structure, Lagrangian Data, Warwick University, U.K., Jul. 2009.
- *Ekman velocities and vertical viscosities from surface drifter data in the Southern Ocean*, LOCEAN, Paris, France, Dec. 2006.
- *Wind energy input into Ekman motions in the Southern Ocean*, CISECE, Ensenada, Mexico, Jul. 2005

PUBLICATIONS

20. L'Hégaret, P., L. M. Beal, **S. Elipot**, and L. Laurindo (2018), Pathlines reveal cross-equatorial gyres of the Indian Ocean driven by seasonally reversing monsoon winds, submitted to *J. Geophys. Res.-Oceans*
19. Vermeulen E., B. Backeberg, J. Hermes, and **S. Elipot** (2018), Investigating the relationship between volume transport and sea surface height in a numerical ocean model, submitted to *Journal of Marine Systems*
18. **Elipot, S.** (2018), Measuring global mean sea level changes with surface drifting buoys, submitted to *Scientific Reports*.
17. **Elipot, S.**, and L. M. Beal (2018), Observed Agulhas Current sensitivity to interannual and long-term trend atmospheric forcings, *J. Clim.*, 31, 3077-3098, doi: 10.1175/JCLI-D-17-0597.1. *This publication is a Research Highlights item for the March 2018 issue of Nature Climate Change.*
16. **Elipot, S.**, E. Frajka-Williams, C. Hughes, S. Olhede, and M. Lankhorst (2017), *Observed basin-scale response of the Atlantic Meridional Overturning Circulation to wind stress forcing*, *J. Climate*, 30, 2029-2054, doi:10.1175/JCLI-D-16-0664.1.
15. Beal, L. M., and **S. Elipot** (2016), *Broadening not strengthening of the Agulhas Current since the 1990s*, *Nature*, 540, 570–573, doi:10.1038/nature19853.
14. Leber, G. M, L. M. Beal, and **S. Elipot** (2016), *Wind and current forcing combine to drive strong upwelling in the Agulhas Current*, *J. Phys. Oceanogr.*, 47, 123-134, doi:10.1175/JPO-D-16-0079.1.
13. **Elipot, S.**, R. Lumpkin, R. C. Perez, J. M. Lilly, J. J. Early, A. M. Sykulski (2016), *A global surface drifter dataset at hourly resolution*, *J. Geophys. Res. Oceans*, 121, doi: 10.1002/2016JC011716
12. **Elipot, S.**, and L. M. Beal (2015), *Characteristics, Energetics, and Origins of Agulhas Current Meanders and their Limited Influence on Ring Shedding*, *J. Phys. Oceanogr.*, 45, 2294–2314, doi:10.1175/JPO-D-14-0254.1
11. Beal, L. M., **S. Elipot**, A. Houk, and G. Leber (2015), *Capturing the Transport Variability of a Western Boundary Jet: Results from the Agulhas Current Time-series experiment (ACT)*, *J. Phys. Oceanogr.*, 45, 1302-1324 doi:10.1175/JPO-D-14-0119.1
10. **Elipot, S.**, E. Frajka-Williams, C. Hughes and J. Willis (2014), *The Observed North Atlantic Meridional Overturning Circulation, its Meridional Coherence and Ocean Bottom Pressure*, *J. Phys. Oceanogr.*, 44, 517-537, doi:10.1175/JPO-D-13-026.1
9. Polton, J., Y.-D. Lenn, **S. Elipot**, T. K. Chereskin, and J. Sprintall (2013), *Can Drake Passage observations match Ekman's classic theory?* *J. Phys. Oceanogr.*, 43, 1733-1740, doi:10.1175/JPO-D-13-034.1
8. **Elipot, S.**, C. Hughes, S. Olhede, and J. Toole (2013), *Coherence of western boundary pressure at the RAPID WAVE array: boundary wave adjustments or deep western boundary current advection?*, *J. Phys. Oceanogr.*, 43, 744-765, doi:10.1175/JPO-D-12-067.1
7. Hughes, C., **S. Elipot**, M.A. Morales Maqueda, and J. Loder (2013) *Test of a Method for Monitoring the Geostrophic Meridional Overturning Circulation Using Only Boundary Measurements*, *J. Atmosph. Ocean. Techn.*, 30,789–809, doi:10.1175/JTECH-D-12-00149.1
6. Lumpkin, R., and **S. Elipot**, (2010), *Surface Drifter Pair Spreading in the North Atlantic*, *J. Geophys. Res. Oceans*, 115, C12017, doi:10.1029/2010JC006338.
5. **Elipot, S.**, R. Lumpkin, and G. A. Prieto (2010), *Modification of inertial oscillations by the mesoscale eddy field*, *J. Geophys. Res. Oceans*, 115, C09010, doi:10.1029/2009JC005679.

4. **Elipot, S.**, and S. T. Gille (2009), *Estimates of wind energy input to the Ekman layer in the Southern Ocean from surface drifter data*, J. Geophys. Res. Oceans, 114, C06003, doi:10.1029/2008JC-005170.
3. **Elipot, S.**, and S. T. Gille (2009), *Ekman layers in the Southern Ocean: spectral models and observations, vertical viscosity and boundary layer depth*, Ocean Sci., 5, 115-139, doi:10.5194/os-5-115-2009.
2. **Elipot, S.**, and R. Lumpkin (2008), *Spectral description of oceanic near-surface variability*, Geophys. Res. Lett., 35, L05606, doi:10.1029/2007GL032589.
1. Beal, L. M. , T. K. Chereskin, Y.-D. Lenn , and **S. Elipot** (2006), *The sources and mixing characteristics of the Agulhas Current*, J. Phys. Oceanogr., 36, 2060-2074, doi:10.1175/JPO2964.1.

Other publications:

- a. MacKinnon, J.A., Alford, M., Bouruet-Aubertot, P., Bindoff, N., **Elipot, S.**, Gille, S., Girton, J., Gregg, M.C., Hallberg, R., Kunze, E., Naveira Garabato, A., Phillips, H., Pinkel, R., Polzin, K., Sanford, T., Simmons, H., and Speer, K., (2010), *Using global arrays to investigate internal-waves and mixing*, in Proceedings of the OceanObs09: Sustained Ocean Observations and Information for Society Conference (Vol. 1), Venice, Italy, 21-25 September 2009, Hall, J., Harrison D.E. and Stammer, D., Eds., ESA Publication WPP-306.
- b. **Elipot, S.** (2006), *Spectral characterization of Ekman velocities in the Southern Ocean based on surface drifter trajectories*, Ph.D. dissertation, University of California, San Diego.

SELECTED
ABSTRACTS

- **Elipot S.** and L. M. Beal (2017), *Observed Agulhas Current sensitivity to interannual climate forcings*, keynote presentation, IAPSO General Assembly, Cape Town, South Africa, Aug. 2017.
- **Elipot S.**, R. Lumpkin, R. C. Perez, J. M. Lilly, J. J. Early, A. M. Sykulski (2016), *A new global surface drifter dataset at hourly resolution*, AGU Ocean Sciences meeting, New Orleans, USA., Feb. 2016.
- **Elipot S.**, R. Lumpkin, R. C. Perez, J. M. Lilly, A. M. Sykulski (2016), *A new hourly global surface drifter dataset: methods and applications*, 2015 Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics (LAPCOD), Winter Harbor, USA., Jul. 2015.
- **Elipot, S.**, Lisa M. Beal, *Origins and impacts of mesoscale meanders in the Agulhas Current*, AGU Fall meeting, San Francisco, USA., Dec. 2014.
- **Elipot, S.**, Lisa M. Beal, Adam Houk, *Two-dimensional structure and transport of the Agulhas Current during the Agulhas Current Time-series experiment (ACT)*, AGU Ocean Sciences meeting, Honolulu, USA., Feb. 2014.
- **Elipot, S.**, E. Frajka-Williams, C. Hughes, S. Olhede, M. Lankhorst, *Basin-wide response of the North Atlantic Meridional Overturning Circulation to wind stress forcing*, North Atlantic Climate Variability International Joint Conference EU-THOR, Hamburg, Germany, Sept. 2012.
- **Elipot, S.**, E. Frajka-Williams, C. Hughes, S. Olhede, M. Lankhorst, *Basin-wide response of the North Atlantic Meridional Overturning Circulation to wind stress forcing*, EGU General Assembly, Vienna, Austria, Apr. 2012.
- **Elipot, S.**, E. Frajka-Williams, and C. W. Hughes and co-authors: *Observations of the latitudinal coherence of the Atlantic Meridional Overturning Circulation from deep moored arrays*, IUGG General Assembly, Melbourne, Australia, Jul. 2011.
- **Elipot, S.**, E. Frajka-Williams, and C. W. Hughes and co-authors: *Observed latitudinal coherence of the North Atlantic Meridional Overturning Circulation*, EGU General Assembly, Vienna, Austria, Apr. 2011.
- **Elipot, S.**, C. W. Hughes, M. A. M. Maqueda, and R. Williams: *Meridional transport estimates from the Rapid WAVE array*, Challenger Society meeting, Southampton, U.K., Sep. 2010.

- **Elipot, S.**, C. W. Hughes, and M. A. M. Maqueda: *Meridional transport estimates from the Rapid WAVE array*, US AMOC annual meeting, Miami, USA, Jun. 2010.
- **Elipot, S.**, R. Lumpkin, and G. Prieto: *Inertial Oscillations Modification by Mesoscale Vorticity*, invited talk, AGU Ocean Sciences meeting, Portland, USA., Feb. 2010.
- **Elipot, S.** and R. Lumpkin: *Global observations of inertial waves from Lagrangian drifters*, Ocean Sciences meeting, Orlando, Florida, Mar. 2008.
- **Elipot, S.**, S. Gille and R. Lumpkin: *Polarizations of the oceanic surface flow*, International Union of Geodesy and Geophysics XXIV General Assembly, Perugia, Italy, Jul. 2007.
- **Elipot, S.** and S. Gille: *Wind energy input and vertical viscosity in the Southern Ocean*, AGU Ocean Sciences meeting, Honolulu, Hawaii, Feb. 2006.
- **Elipot, S.**: *How to obtain estimates of vertical viscosity from surface drifter data*, Physical Oceanography Dissertation Symposium IV, Honolulu, Hawaii, Oct. 2006.
- **Elipot, S.** and S. Gille: *Evidence of frequency dependent Ekman currents from drifters in the Southern Ocean*, Ocean Sciences meeting, Portland, Oregon, Jan. 2004.
- **Elipot, S.** and S. Gille: *Spectral response of the Southern Surface Circulation to Wind*, Invited student to *WOCE and Beyond Conference*, San Antonio, Texas, Nov 2002.

REFERENCES

- Prof. Lisa Beal, The Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Causeway, Miami, FL, 33149, U.S.A.
Email: lbeal@rsmas.miami.edu, Tel: +1 (305) 421-4093
- Dr. Rick Lumpkin, NOAA/AOML, 4301 Rickenbacker Causeway, Miami, FL, 33149, U.S.A.,
Email: Rick.Lumpkin@noaa.gov, Tel: +1 (305) 361-4513
- Prof. Sarah Gille, UCSD/SIO, 9500 Gilman Drive, La Jolla, CA, 92093, U.S.A.,
Email: sgille@ucsd.edu, Tel: +1 (858) 822-4425