Shane Elipot

Contact Information

OCE/RSMAS/UM
4600 Rickenbacker Causeway
Miami, Florida 33149, USA

Office: +1 (305) 421-4630
Mobile: +1 (305) 632-7366
Email: selipot@rsmas.miami.edu

Research Interests

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

Professional Appointments

Current Appointments:

The Rosenstiel School of Marine and Atmospheric Science, **University of Miami**, Miami, USA
Research Assistant Professor, since August 2019; Associate Scientist, April 2014 - July 2019; Assistant Scientist, April 2013 - March 2014.

&

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 & Activities

- National Science Foundation Physical Oceanography Program Award, Current 2019/2022. *Mapping the Kinematics and Dynamics of Tidal Ocean Currents with Surface Drifters*, $335,520, co-PIs Edward Zaron (PSU) and Rick Lumpkin (NOAA/AOML), **lead PI S. Elipot** with duties of managing the project and analyzing of Lagrangian and numerical data.
- Cooperative Institute for Marine and Atmospheric Science (NOAA/UM) 2018/2019. *Hourly drifter sea surface temperature*, $35,481, **lead PI S. Elipot** with duties of managing the project and leading all scientific investigations.
- 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.
- National Science Foundation Physical Oceanography Program Award, 2015/2019. *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.
- 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, **research staff S. Elipot** with duties including scientific investigations and co-advising of postdoctoral researcher.
- Cooperative Institute for Marine and Atmospheric Science (NOAA/UM) 2015/2018. *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 experience

- 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 Appointments

- 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 Experience:

- 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

- *Towards global observational constraints oceanic surface response to wind forcing*, Department of Marine Sciences, University of Connecticut, Groton CT, April 2019.
- *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

22. Yu, X. A. L. Ponte, **S. Elipot**, D. Menemenlis, E. D. Zaron, R. Abernathey (2019), Surface kinetic energy distributions in the global oceans from a high-resolution numerical model and surface drifter observations, Geophys. Res. Lett., in press, doi:10.1029/2019GL083074.

21. Frajka-Williams, E. [. . .], **Elipot, S.**, [. . .] (2019), Atlantic Meridional Overturning Circulation: Observed Transport and Variability, Front. Mar. Sci., 6:260. doi:10.3389/fmars.2019.00260.

20. Howe, B. M., [. . .], **Elipot, S.**, [. . .] (2019), SMART Cables for Observing the Global Ocean: Science and Implementation, Front. Mar. Sci., 6:424, doi:10.3389/fmars.2019.00424.

19. Vermeulen E., B. Backeberg, J. Hermes, and **S. Elipot** (2019), Investigating the relationship between volume transport and sea surface height in a numerical ocean model, Ocean Sci., 15, 513-526, doi:10.5194/os-15-513-2019.

18. L'Hégaret, P., L. M. Beal, **S. Elipot**, and L. Laurindo (2018), Shallow cross-equatorial gyres of the Indian Ocean driven by seasonally reversing monsoon winds, J. Geophys. Res.-Oceans, 123, doi:10.1029/2018JC014553.

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 adjustements 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:

2. MacKinnon, J.A., and co-authors, (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.

1. 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.** (2019), *Measuring global mean sevel with surface drifters*, OceanObs19, Sept. 2019.
- **Elipot S.** and J. M. Lilly (2018), *Global Observational constraints to wind forcing*, AGU Fall meeting, Dec. 2018.
- **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

- Prof. Chris Hughes, School of Environmental Sciences, University of Liverpool, and National Oceanography Centre, Liverpool, Jane Herdman Building, Liverpool L69 3GP, U.K.
  Email: C.W.Hughes@liverpool.ac.uk, Tel: +44 (0)151 795 4640 Ext. 54640

- 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