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**Amy L. Kukulya**

Senior Oceanographic Engineering Assistant II, Applied Ocean Physics and Engineering Department  
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**Education:**

**B.S.:** Rutgers University, 1999, Environmental Policy.  
American University, 1998, Summer Semester, Seville, Spain.

**Research Interests:**

Underwater vehicle system architecture for docking, navigation, communications, underwater archaeology, three-dimensional tracking of animals and under-ice capabilities; Development of science applications for underwater vehicles.

**Professional Experience:**

**Woods Hole Oceanographic Institution, Woods Hole, MA** (June 2001-present)  
Research Assistant II, Biology Department (2001 June, transferred to AOP&E in 2003 June)  
Research Assistant III, AOP&E (November 2004-February 2006)  
Engineering Assistant III, AOP&E (February 2006-July 2008)  
Senior Engineering Assistant I, AOP&E (August 2008-April 2015)  
Senior Engineering Assistant II, AOP&E (April 2015-Present)

**The Children's School of Science, Woods Hole, MA** (June 2001-August 2007)  
Faculty, Ichthyology, 6-week summer course

**Cape Cod Cooperative Extension's Marine Program, Barnstable County, MA** (October 2000-June 2001)  
Program Assistant, Southeastern Massachusetts Aquaculture Center (SEMAC).

**AmeriCorps National Service Program, Cape Cod, MA** (September/1999-October/2000)  
Volunteer Member at: Woods Hole Oceanographic Institution (WHOI).  
Southeastern Massachusetts Aquaculture Center (SEMAC).

**Department of Marine Sciences, Isla Magueyes Research Station** (May/1999-August/1999)  
USDA grant in aquaculture research, University of Puerto Rico, Mayaguez: Biologist/Student

**The US Fish & Wildlife Service, Oceanville, NJ** (May/1997-September/1997)  
Outreach coordinator and Biologist Assistant (co-op)

**The Department of Environmental Protection, Trenton, NJ** (February/1997-May/1997)  
Research Intern (co-op): Division of Science & Research

**Professional Activities:**

**WHOI:**

- Woman's Committee elected member, Webmaster, September 2007 (two year)
- Retirement Task Force- Member, May 2009-June 2010

**OUTSIDE:**

- Wowster Mentor and Outreach Professional, Appointed by MA Governor's Office, 2012- ongoing

**Professional Affiliations:**

ASLO, American Society for Limnology and Oceanography, 2004-2006  
IEEE Ocean Engineering Society, 2006 -current

### **Participation in Education and Outreach Programs:**

- Children School of Science faculty member (2001-2007).
- EngineerYourLife.org outreach brochure and featured engineer- ongoing.
- Design Squad PBS outreach profile video for kids.
- Engineergirl.org profile outreach program-featured engineer- ongoing.
- Falmouth Academy Summer Faculty for Underwater Robotics Class, July 2008.
- DotDiva.org, mentor for college bound women, Microsoft/WGBH, 2010-ongoing.
- Girls, Math & Science Partnership, mentor, Braincake.org, 2010-ongoing.
- WOWSTER Program, Highlighted Mentor for Governor's STEM Program, 2011-ongoing.
- Developed ten-week outreach program in Morse Pond Elementary School -Robotics for 5th and 6th graders, Winter 2013

### **Supervision at WHOI:**

CO-Supervised Summer Student Fellow, Jennifer Batryn, 2012  
Thomas Rough, Summer Intern, 2015

### **Cruise/Field Work Participation:**

April 2001: F/V Odessa; Boston Harbor, yellowtail outfall pipe sampling.  
May 2001: R/V Hatteras; Gulf of Maine *Alexandrium* studies.  
September 2001: R/V Connecticut; Mass Bay, VPR/AVPPO.  
April 2002: RVIB Palmer; Antarctica, BIOMAPER/SeaRover-Two months.  
September 2002: R/V Connecticut; Mass Bay, VPR/AVPPO.  
2001-2003: 8 VPR mooring deployment cruises in New England waters.  
April 2003: R/V Oceanus; Mass Bay., Scallop Sled  
May 2003: Field ops in Carmel NY; AUV Tunnel Project.  
June 2003: Field ops in Newport RI; NUWC REMUS trials.  
August 2003: Field ops in Keyport WA; AUV Fest.  
August 2003: R/V Asterias and F/V Patricia Lynn: MVCO REMUS Trials.  
October 2003: Field ops in San Diego CA; NCEX REMUS-two months.  
June 2004: Field ops in Camp Lejeune NC; REMUS.  
September 2004: REMUS acoustic testing field ops, Dodge Pond, CT.  
September and November 2004: Cruise R/V Pelican, REMUS ops, Panama City, FL.  
AWACS Field work participation R/V Tioga 2005  
July 2005, Sublaunch Demonstration, Hawaii  
November 2005, REMUS-600 Demonstration, La Spezia, Italy  
February 2006, Docking Demonstration, Panama City, FL  
April 2006- REMUS 600 Demonstration, Panama City, FL  
January 22- Feb 8, 2007:CNAV 50 vehicle support, Keyport WA  
February 20-March 2,2007: CNAV support, Keyport, WA  
March 14-24 2007: REMUS 600 support, Panama City, FL  
May 30-June 15 2007: AUVFEST 2007, Panama City, FL  
August 21-24 2007: Hull Harbor Demo, San Diego, CA  
February 2008, REMUS 600 Panama City, FL  
March 2008, 14 day REMUS ARL UT Training, Austin, TX  
April 2008, 10 day cruise, Towed Array Experiment, Andros Island, Bahamas  
May 2008, 10 days AUVFEST, Hull & Harbor Demo, Newport, RI  
May/June 2008, 10 day cruise, Towed Array, NJ shelf break

\*August 2008, R/V Annika Marie, Beaufort Sea, Alaska- REMUS 100 Arctic  
 August 2008, Kiel Germany. Hull & Harbor Demo with REMUS 100  
 \*February 2009, Honolulu, Hawaii, PO REMUS Operations, Gawarkiewicz.  
 April 16-May 2009, AUTECH Bahamas, Plus-INP, Argos Maine.  
 May 27-June 4 2009, NYC Tunnel Inspection, Carmel NY.  
 24 July-12 August 2009, R/V KNORR in Kauai Hawaii, PLUS-INP.  
 1 October -8 October 2009, AUTECH, Sublaunch.  
 \*2-5 February 2010, Seller's AUV Under-ice work, New Hampshire.  
 7-21 February 2010, Field Operations, Kauai, Hawaii.  
 \*14-27 March 2010, Under Ice Arctic Expedition, Barrow, Alaska.  
 \*4-9 April 2010, Lake Seneca Sublaunch training exercise (Navy), NY.  
 May-Sept 2010, PLUS-INP Local testing  
 23 Sept- 7 Oct 2010, PLUS-INP cruise, R/V Moana Wava, San Clemente Island, CA.  
 \*17 January - 7 February 2011, Pink and White Terraces Discovery, New Zealand.  
 \*14 - 18 February 2011, Acoustic Testing, Lake Seneca NY.  
 11 - 24 June 2011, AUV FEST, Panama City FL.  
 21 July - 5 August 2011, PLUS INP, control center, Naval Undersea Warfare Center.  
 \*7 - 15 September 2011, Fish Acoustics Cruise, R/V Sharp, Outerbanks, NC.  
 January 2012, USS Revenge Survey, Watchill, RI  
 \*\*May-July 2012, Sharkcam, Provincetown and Chatham, MA  
 \*May 11-29, 2012, Fish Acoustics Cruise, R/V Sharp, Outer Banks, RI  
 \*July 13-29 2012, Greenland, Glacier and Fjord Survey, Camping  
 \*April 2013, REMUS-100 mini magnetometer testing, Panama City, FL  
 \*August 2013, Katama Bay Surveys, MV  
 July/Aug 2013, Pilgrim Nuclear Power Plant multi vehicle surveys, Plymouth, MA  
 October 2013 Night Operations REMUS-100 laser docking, Local, Lincoln Labs, Woods Hole, MA  
 \*\*26 October – 12 Nov 2013, SharkCam II Expedition, R/V Horizon, Guadalupe Isle, Mexico  
 April 2014, radon sensor and range finder integration and field testing, Knoxville TN  
 15-22 March 2014, Delivery of NPS docking station and training @ NPS, Monterey, CA  
 \*\*July/August 2014, Turtle tagging and tracking fieldwork, Vineyard Sound, MA  
 \*\*12-16 July 2014, Scallop Enhancements Expedition@ CA I George's Bank  
 \*\*8-12 September, Scallop Mortality II Expedition south of Block Island  
 July/August, Sept/Oct 2014 (~40 days total), (2) REMUS-6000 FSM manganese nodules Expeditions,  
 Hawaii  
 \*\*20 March-4 April, SharkCam expedition III, Florida  
 6 -18 July, LMR Whale Expedition (OASIS), Monterey, CA  
 \*\*27 July – 1 Aug, ScallopCam Expedition, George's Bank, MA

\* Denotes Technical Leader/Expedition Leader

\*\* Denotes Technical Leader/Expedition Leader and Principal Investigator

#### **Technical Documentation:**

- Seafloor Docking Manual, 2014
- Seafloor Docking Test Frame, 2014
- DIDSON Technical Documentation, 2004
- Barley Straw for Algae Control, SEMAC/Cape Cod Cooperative Extension, 2001
- Fishing for Answers in an Urban Estuary, New Jersey Audubon Society, 2000

#### **Managed Facilities:**

- Created and operate OSL Zodiac Cost Center

### **Publications:**

J. D. Holmes, W. M. Carey, J. F. Lynch, A. E. Newhall and **A. Kukulya**, "An Autonomous Underwater Vehicle Towed Array for Ocean Acoustic Measurements and Inversions", ASA Vancouver, 2005.

R. Stokey, A. Roup, C. von Alt, B. Allen, N. Forrester, T. Austin, R. Goldsborough, M. Purcell, F. Jaffre, G. Packard, **A. Kukulya**, "Development of the REMUS 600 Autonomous Underwater Vehicle", Oceans 2005.

\***Kukulya, A.**, Stokey, R., von Alt, C., Packard, G., Purcell, M., Forrester, N., Austin, T., Goldsborough, R., Allen, B., "Recent Science Applications for the REMUS AUV", Presented ASLO 2004, Hawaii. \*Presented

B. Allen, T. Austin, N. Forrester, R. Goldsborough, **A. Kukulya**, G. Packard, M. Purcell and R. Stokey, "Autonomous Docking Demonstrations with Enhanced REMUS Technology", September 2006. Presented at Oceans 2006, Boston.

J. D. Holmes, **A. Kukulya**, "Characteristics of an autonomous underwater vehicle with a towed hydrophone array", September 2006. Presented at Oceans 2006, Boston.

\***A. Kukulya**, A. Plueddemann, et. al, "Under-ice Operations with a REMUS-100 AUV in the Arctic," *Proceedings: IEEE Autonomous Underwater Vehicle Conference 2010*, Mapping the World's Oceans, Naval Postgraduate School, Monterey, California 1–3 September 2010. \*Presented

S. L Walker, C. E J de Ronde, D. J Fornari, M. I Leybourne, V. Ferrini, **A. Kukulya**, et. al. "Hydrothermal Venting at Lake Rotomahana, New Zealand, 125 Years After the Tarawera Eruption of 1886," AGU SESSION: EP19. Post-Eruptive Processes Operating on Volcanic Landscapes.

Cornel E J de Ronde, D. Fornari, V. L Ferrini, F. Caratori Tontini, S. L Walker, B. J Scott, M. Leybourne, A. Pittari, R. F Keam, J. E Lupton, A. Mazot, **A. L. Kukulya**, et. al. "Rediscovery of the 8th Natural Wonder of the World: The Pink and White Terraces' survival of the 1886 Tarawera Rift eruption," AGU 2011 SESSION: EP19: Post-Eruptive Processes Operating on Volcanic Landscapes.

G.E. Packard, **A. L. Kukulya**, et. al. "Continuous Autonomous Tracking and Imaging of White Sharks and Basking Sharks Using a REMUS-100 AUV". Presented IEEE MTS Oceans, San Diego October 2013.

### **Published Abstracts:**

\* **Kukulya, A.**, Stokey, R., von Alt, C., Packard, G., Purcell, M., Forrester, N., Austin, T., Goldsborough, R., Allen, B., "Recent Science Applications for the REMUS AUV", \*Presented ASLO 2004, Hawaii.

G. Gawarkiewicz, F. Bahr, **A. Kukulya**, C. Marquette, C. Linder, T. Grothues and J. Dobarro, "Impact of recent flooding on the continental shelf north of Cape Hatteras: Results from Scanfish and AUV surveys," AGU Session 2011.

Gawarkiewicz, G., F. Bahr, **A. Kukulya**, C. Marquette, C. Linder, T. Grothues, and J. Dobarro (2012). "Cross-shelf structure on the continental shelf north of Cape Hatteras: impact from recent flooding." Poster presentation, AGU Ocean Sciences Meeting, Salt Lake City, UT.

### **Papers In Referred Journals:**

A. Plueddemann, **A. Kukulya**, R. Stokey, L. Freitag, "Autonomous Underwater Vehicle Operations Beneath Coastal Sea Ice," TMECH-04-2011-1580, (Peer-Reviewed 2011).

L. A. Stevens<sup>1</sup>, F. Straneo<sup>2</sup>, S. B. Das<sup>3</sup>, A. J. Plueddemann<sup>2</sup>, **A. L. Kukulya**<sup>4</sup>, and M. Morlighem<sup>5</sup> “*Linking catchment-scale subglacial discharge to subsurface glacially modified waters near the front of a marine terminating outlet glacier using an autonomous underwater vehicle*”

This Paper is under review for the journal *The Cryosphere* (TC) 2015

G. Skomal, M. Hoyos-Paudilla, **A. Kukulya**, R. Stokey -*Subsurface observations of white shark predatory behavior using an underwater vehicle*, *Journal of Fish Biology* 2015

**A. Kukulya**, R. Stokey, R. Littlefield, F. Jaffre, M. Hoyos-Padilla, G. Skomal *3D Real-time Tracking, Following and Imaging of White Sharks with an Autonomous Underwater Vehicle*– IEEE Proceedings (2015)

#### **Professional Talks:**

2015 21 May, Presenter, IEEE Oceans Conference, Genoa, Italy

2015 15 March, Presenter, AUV Technology and Science, Duxbury Beach Reservation Event (DBR)

2015 29 Jan, Presenter: MTS Speaker, CMR Event, AUV Technology, Smith Conference Room

2015 27 Jan, Presenter, ONR Review Meeting, SharkCam Technology, Fort Walton, FL

2015 8 Jan, Presenter: Falmouth Newcombers Club, AUV Technology & SharkCam, Falmouth, MA

2014 9 Oct, Presenter: Trustees’ Access to the Sea meeting, SharkCam Technology, Carriage House

2014 21 Aug, Presented to Senator Elizabeth Warren, AUV Technology and REMUS Lab Tour

2013 10 Sept, Presenter to WHOI science writers fellows, Smith Conference Room

2013 20 Aug, Presenter: Science Made Public talk, *SharkCam: Robots chase sharks where no else can go*. Redfield Auditorium

2013 16 Aug, Led 1930 society Tioga cruise with REMUS

2013 7 Aug, Presenter: Public Event: *White Sharks, Gray Seals: Chasing the Cape's Most Charismatic Predators*, Redfield Auditorium

2013 March, Presenter: Sandwich elementary school presentation and hands-on AUV lesson

2012 8 Sept, Keynote Speaker: First Robotics Competition. Newton North High School

2012 12 Aug, *Finding New Zealand's Lost Pink and White Terraces*. Science Made Public Lecture, WHOI

2012 April, Guest Speaker @ Massachusetts's Marine Educator's Conference, *Adventure's of Icebot*, Redfield Auditorium

2008 2 April, Woman’s History Month Panel Discussion Participant, *Woman of WHOI, Yesterday, Today and Tomorrow*

2006 28 July, *Robots Untethered*, WHOI Exhibit Center

2006 5 Oct, *REMUS, The Ultimate Science Tool*, MBL Club Talk to Newton Middle School

**Participation in Documentaries/Science Programming/Publications:**

- 2002, *Plankton* radio interview, NPR
- 2009 October, National Geographic Adventure Magazine, The Big, Record-Breaking, Green, Disease-Busting, Deep-Sea, Crime-Fighting IDEAS for 2009
- 2010, Design Squad, PBS
- 2010, WHOI Oceanus Video, *The Icebot: flying blind under the Arctic Ice*
- 2013, WHOI Oceanus Video, *The Ocean's Hidden Predators: Revealed*
- 2013 Documentary, *Return of Jaws*, Discovery Channel
- 2014 Documentary, *Jaws Strikes Back*, Discovery Channel
- 2015 Documentary, *Shark Trek*, Discovery Channel

**Licenses:**

United States Coast Guard Captains License- 50 Ton, Current