Manish S. Devana

Oceanography | Data Analysis | Climate Research
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Objectives

Seeking opportunities for marine or climate related data analysis , applications of machine learning to climate and environment issues, or green technology development in fast paced and innovative teams. Skilled in problem solving, geospatial and time series data analysis across multiple scripting languages, experienced in field work at sea, collaborative analysis, writing scientific publications, and communication of technical and research material to a range of audiences.

Research Experience

[1] **Overturning in the Subpolar North Atlantic Program (OSNAP)** *Graduate Research Assistant, University of Miami* **2018-Present**

- Implemented a range of data analysis and exploration techniques including time series analysis, interactive data visualizations, machine learning methods for data exploration and pattern detection.
- Geospatial data analysis with numerous types of datasets including: high resolution time series, unstructured spatial shipboard and ARGO observations, remote sensing observations (ocean altimetry and sea surface temperature), high resolution numerical model "big data", ocean, atmosphere reanalysis products.

[2] **Internal Wave Dynamics** *Master's Student, University of Southampton* **2015-2018**

- Examined high resolution hydrographic observations from the Southern Ocean to quantify internal wave activity over topographic features using spectral methods and parameterization techniques.
- Simulated internal wave evolution by constructing a ray tracing model for 3-D evolving fields surrounding the observational site.

Technical Skills

[1] Python (Strong)

- Experience using geospatial datasets with core earth science python packages (xarray,cartopy, dash, GMT, netcdf, numpy, scipy).
- Experience with machine learning libraries TensorFlow, pyTorch, and Keras for pattern detection and analysis in geophysical datasets.
- Developed python programs for oceanographic field work (CTD and mooring data processing, mooring trilateration, instrument calibrations).
- Extensive experience with data visualization techniques including: matplotlib static and animated figures, interactive visualizations, geospatial visualizations, real-time data visuals, and "big-data" visualization techniques.
- Familiar with high performance computing operations including modifying code for GPU operations and parallelization of algorithms.

[2] Javacript, HTML, CSS (Proficient) - Experience responsive designing web pages and markdown documentation

[3] Proficient in Linux operating systems (experience with CentOs, Debian, and Ubuntu)

[4] Adobe Creative Cloud tools (Photoshop, Illustrator, Premiere) (Proficient)

Fieldwork Experience

[1] RAPID-MOCHA Mooring Recovery and Hydrographic Survey Cruise **2018 & 2021**

- Assisted with mooring build, deployments, and recovery, CTD operations, and realtime data analysis on the R/V Endeavor and R/V Atlantic Explorer

[2] OSNAP Mooring Recovery and Hydrographic Survey Cruise **2019 & 2022**

- Assisted with mooring build, deployments, and recovery, CTD operations, salinity/temperature/velocity instrument calibrations, and realtime data analysis on the R/V Armstrong

Publications

[1] M. Devana, W.E. Johns (2021): Rapid Freshening of Iceland Scotland Overflow Water Driven by Entrainment of a Major Upper Ocean Salinity Anomaly, *Geophysical Research Letters*

[2] W.E.Johns, M.Devana, A.Houk, S.Zou (2021): Moored Observations of the Iceland-Scotland Overflow Plume Along the Eastern Flank of the Reykjanes Ridge, *Journal of Geophysical Research: Oceans*

Seminars and Conference Presentations

[1] Geophysical Fluid Dynamics Summer School Student Seminar **2019**

[2] American Geophysical Union Fall Meeting 2019: **Rapid Freshening of the Iceland Scotland Overflow Driven by Entrainment** **2019**

[3] Ocean Sciences Fall Meeting 2020: **Rapid Freshening of the Iceland Scotland Overflow Driven By Entrainment 2019**

[4] Ocean Sciences Fall Meeting 2022: **Variability of the Iceland Scotland Overflow** **2022**

[5] U.S. Atlantic Meridional Overturning Circulation Science Team Meeting: **Rapid Freshening of the Iceland Scotland Overflow Driven By Entrainment** **2022**

[6] American Meteorological Society Atmospheric and Oceanic Fluid Dynamics 2022: **Boundary Layer Dynamics in Bottom Intensified Flow along the Reykjanes Ridge** **2022**

Education

[1] Rosenstiel School of Marine and Atmospheric Science, University of Miami: *Meteorology and Physical Oceanography - PhD* **2018-Present**

[2] 2015-2018 University of Southamption, UK, *Physical Oceanography* ***First Class Honours*** *- MSCi (integrated BSC & MSC)* **2015-2018**

[3] New York University: *Biochemistry* **2013-2015**

Professional Development

[1] Graduate Undergraduate Mentoring (GUM) *Co-Founder and Mentor* **2019-Present**

- Co-founded mentoring program for earth science graduate students to mentor undergraduate students with the aim of enhancing the experience and retention of under-represented groups of students in earth science research

[1] COMPASS Student Seminar Series Speaker **2019, 2020, 2021**

[2] University of Miami Teaching Assistant:*Intro to Marine Science Lab* **Fall 2019**

[3] University of Miami Teaching Assistant:*Python Programming for Marine Science* **Fall 2021**

Awards and Honors

[1] Top of Class University of Southampton Oceanography **2018**

[2] 2019 Outstanding Student Presentation Award - AGU Fall Meeting **2019**

[3] COMPASS Student Seminar Series Best Graphics **2019-20**

[4] COMPASS Student Seminar Series 3rd Place Overall **2021-22**

References

- Wiliam E. Johns: Professor, Meteorology and Physical Oceanography, University of Miami, RSMAS bjohns@rsmas.miami.edu | (305) 421-4054
- Mohamed Iskandarani: Professor, Meteorology and Physical Oceanography, University of Miami, RSMAS m.iskandarani@miami.edu | (305) 421-4054