

# JOHN A. CALLAHAN

## Curriculum Vitae

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Web: [geo42.org/john-callahan/](http://geo42.org/john-callahan/)

### PROFESSIONAL EXPERIENCE

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2021 – Present      Visiting Assistant Professor, Dept of Geography and Spatial Sciences, College of Earth, Ocean, & Environment, University of Delaware (UD), Newark, DE  
2014 – 2021      Associate Scientist, Delaware Geological Survey (DGS), UD, Newark, DE  
2008 – 2014      Research Associate, DGS, UD, Newark, DE  
2001 – 2008      Information Resource Consultant/Geospatial and Statistical Analyst, Research Data Management Services, UD, Newark, DE  
2000 – 2001      GIS Consultant, ESRI, Inc., King of Prussia, PA  
1999 – 2000      Remote Sensing Analyst, Earth Satellite Corporation, Rockville, MD

### EDUCATION

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Ph.D. Climatology, Department of Geography and Spatial Sciences, University of Delaware, 2021  
Title: *Skew Surge and Extreme Coastal Flooding Events in the Delaware and Chesapeake Bays of the U.S. Mid-Atlantic Coast for 1980 – 2019*  
M.Sc. Geography, University of Delaware, 2014  
Title: *Estimation of Precipitable Water Over the Amazon Basin Using GOES Imagery*  
B.Sc. Physics, Temple University, Philadelphia, PA, 1994  
B.Sc. Mathematics, Temple University, Philadelphia, PA, 1994

### RESEARCH INTERESTS

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Climate change and sea-level rise, coastal flooding and storm surge, Mid-Atlantic severe weather and coastal storms, teleconnections, synoptic atmospheric circulation patterns, atmospheric water vapor, dendroclimatology, tidal data analysis, surface water monitoring and water resources, natural hazards and impacts, lidar/GPS, remote sensing of land surface and atmosphere, geospatial and statistical analysis methods, topographic and watershed hydrological analysis and elevation metrics

### HONORS AND AWARDS

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2021      UD Department of Geography and Spatial Sciences Research Award  
2019      John C. Frye Memorial Award for Environmental Geology, for the publication “Recommendation of Sea-Level Rise Planning Scenarios for Delaware”, co-sponsored by the Geological Society of America (GSA) and the Association of American State Geologists (AASG)  
2007      Delaware State Geographic Service Award, recognized for Outstanding Service to the Delaware GIS community

- 2003 John Wesley Powell Award, for the Data Mapping and Integration Laboratory (DataMIL) project, awarded by United States Geological Survey (USGS)
- 2002 Special Achievement in GIS Award, sponsored by ESRI
- 1998 Research Data Management Services Graduate Fellowship, UD
- 1995 UD Department of Physics and Astronomy Teaching Award
- 1994 Outstanding Physics Graduate Award, Department of Physics, Temple University
- 1989 Outstanding Achievement Scholarship, Full four-year tuition, Temple University

## **PUBLICATIONS – ARTICLES, BOOK CHAPTERS, SIGNIFICANT REPORTS**

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Stotts, Stephanie, John Callahan, and Olivia Gullede, 2021. Impact of Channel Dredging and Straightening in an Atlantic White Cedar (*Chamaecyparis thyoides* L. (B.S.P.)) Freshwater Tidal Wetland. *Journal of Coastal Research*. <https://meridian.allenpress.com/jcr/article-abstract/doi/10.2112/JCOASTRES-D-20-00093.1/>

Callahan, John A., Daniel J. Leathers, and Christina L. Callahan, 2021. Skew Surge and Storm Tides of Tropical Storms in the Delaware and Chesapeake Bays for 1980- 2019. *Frontiers in Climate: Climate Risk Management*, Vol 3, 86. *Special collection on Coastal Flooding: Modeling, Monitoring, and Protection Systems*). <https://doi.org/10.3389/fclim.2021.610062>

Callahan, John A., Daniel J. Leathers, and Christina L. Callahan (*in review*). Comparison of Extreme Coastal Flooding Events Between Tropical and Mid-Latitude Weather Systems in the Delaware and Chesapeake Bays for 1980- 2019. *Journal of Applied Meteorology and Climatology*. Draft preprint available at <https://www.essoar.org/doi/abs/10.1002/essoar.10506864.1>

Callahan, John A., and Daniel J. Leathers (*in review*). Estimation of Return Levels for Extreme Skew Surge Coastal Flooding Events in the Delaware and Chesapeake Bays for 1980 – 2019. *Frontiers in Climate: Climate Risk Management*. Draft preprint available at <https://www.essoar.org/doi/abs/10.1002/essoar.10506584.1>

Warner, Daniel L., Mario Guevara, John Callahan, and Rodrigo Vargas (*in review*). Downscaling satellite soil moisture for landscape applications in the Mid-Atlantic region, USA. *Journal of Hydrology*.

Callahan, John A., Benjamin P. Horton, Daria L. Nikitina, Christopher K. Sommerfield, Thomas E. McKenna, and Danielle Swallow, 2017. Recommendation of Sea-Level Rise Planning Scenarios for Delaware. Technical Report prepared for Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 117 pp.

Samoteskul, K., Firestone, J., Corbett, J., Callahan, J., 2014. Changing Vessel Routes Could Significantly Reduce the Cost of Future Offshore Wind Projects. *Journal of Environmental Management*, Volume 141, pp 146–154. <https://doi.org/10.1016/j.jenvman.2014.03.026>

Callahan, John, 2014. *Estimation of Precipitable Water Over the Amazon Basin Using GOES Imagery*. Master's Thesis, University of Delaware, Department of Geography, 221 pages. Available at <http://udspace.udel.edu/handle/19716/15868>

Bates, A., Samoteskul, K., Callahan, J., Corbett, J., Kempton, W., Madsen, J., Shriver, G., Dvorak, M., Kenney, R., McCormack, R., Harris, K. Noel, L., and Firestone, J., 2012. Delaware Marine Spatial Planning: Offshore Wind Context. Final Report. Center for Carbon-free Power Integration, 108 pp. Available at <http://carbonfree.udel.edu>.

Madsen J., A. Bates, J. Callahan, and J. Firestone, 2011. Use of Geospatial Data in Planning for Offshore Wind Development. In: Thakur J.K., Singh S.K., Ramanathan A., Prasad M.B.K., Gossel W. (eds) Geospatial Techniques for Managing Environmental Resources. Springer, Dordrecht. [https://doi.org/10.1007/978-94-007-1858-6\\_16](https://doi.org/10.1007/978-94-007-1858-6_16)

Vanderlaan, Angelia S. M., James J. Corbett, Shannon L. Green, John A. Callahan, Chengfeng Wang, Robert D. Kenney, Christopher T. Taggart, and Jeremy Firestone, 2009. Probability and Mitigation of Vessel Encounters with North Atlantic Right Whales, *Endangered Species Research*, Vol 6, p. 273-285. <https://doi.org/10.3354/esr00176>

## RESEARCH SUMMARY

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Delaware Geological Survey, Univ of Delaware Associate Scientist. Research at DGS focuses on natural hazards that impact the state of Delaware to help inform better decisions at the local and state level. Responsibilities include conducting original research, collaborating with state and federal (USGS, NOAA, NASA, FWS) agencies on needs of the state, providing guidance on climate change impacts for Delaware stakeholders, supporting long-term planning and short-term emergency preparedness for Delaware state agencies and local communities. Identifying funding opportunities, proposal and final report writing, supervisory duties of staff and student researchers, all aspects of data analysis, web development, scientific outreach/public talks on climate/weather, and promotion of research. Fieldwork included water level sensor installations and data collection, and GPS surveying. Conducted variety of projects using multiple computing methods and techniques (refer to Funded Grants and Publications sections).

Dept of Geography, Univ of Delaware PhD research was performed in conjunction and accordance with the focus and responsibilities at DGS. Theme of my PhD was extreme coastal flooding events along the US Mid-Atlantic coast and encompassed three primary projects: 1) ranking and clustering of skew surge and storm tide from tropical cyclones, 2) extreme value analysis of skew surge using BM/GEVr and POT/GP approaches, and 3) comparison of magnitude, timing, and spatial variation of extreme water levels between tropical cyclones and mid-latitude weather systems. This work primarily utilized NOAA tide gauges in the Delaware and Chesapeake Bays, but also included International Best Track Archive for Climate Stewardship (IBTrACS) database for tropical cyclone tracks and the North American Regional Reanalysis model. Analysis was performed in Matlab and R programming languages and included techniques such as harmonic analysis, linear correlations, K-Means clustering, extreme value distributions, and Principal Components Analysis.

<p>Dept of Geography, Univ of Delaware</p>	<p>Master's research was mostly performed while in graduate school full-time, and the writing was completed while at DGS. Work focused on estimation of total columnar precipitable water over the Amazon River Basin using GOES satellite imagery. NCEP/NCAR Reanalysis model data was input to an atmospheric transfer model to estimate longwave radiation and initial guess surface temperature and precipitable water, which were then combined with observed GOES imagery (11 and 12-micron bands) to adjust initial guess as necessary. Data were interpolated under cloud fields, and clear-sky retrievals were compared against vertically integrated humidity data from in situ radiosondes. Research included several days at the NASA Marshall Space Flight Center in Huntsville, AL for training. Reanalysis data processing and output data analysis was performed in Fortran, McIDAS-X, and ArcInfo.</p>
<p>Research Data Management Services, Univ of Delaware</p>	<p>Information Resource Consultant. GIS campus coordinator and primary technical support for geospatial and image analysis in teaching and research activities across all departments and centers at the University of Delaware. Supported faculty, staff, and students. Included coordination of meetings, management of software site licenses, supervising students, developing and teaching workshops, technical training, project design and grant writing, statistical and geospatial analysis consulting, programming support, design and implementation of web and database applications, and representation of UD in state and national GIS activities. Research focus on data distribution and application development, including Delaware Census 2000, Delaware State Geospatial Information Clearinghouse, and Delaware Data Mapping and Integration Laboratory (DataMIL).</p>
<p>ESRI, Inc.</p>	<p>GIS Consultant. Developed custom applications for a variety of ESRI software products, including ArcView, ArcInfo, ArcGIS, and ArcIMS map server, including on-site installations, trouble shooting, and optimization. Project management, documentation, maintaining client relationships, and small proposal writing. Developed and taught workshops and training on various ESRI software. Represented ESRI in several seminars, meetings, and conferences.</p>
<p>EarthSat, Inc.</p>	<p>Applications Scientist. Performed supervised and unsupervised land-use classifications on multi-band Landsat Thematic Mapper (TM) scenes utilizing ground truth and ancillary information in a production environment as part of a global land cover project, GeoCover. Developed automated geospatial/statistical processes through ERDAS Imagine EML/SML programming languages as well as ARC/INFO AML scripting.</p>

## **PUBLICATIONS – CONFERENCE PAPERS AND PUBLISHED ABSTRACTS**

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- Medlock, C.L., McKenna, T.E., and Callahan, J.A., 2018. LiDAR vertical bias assessment and digital elevation model correction in Delaware's tidal salt marshes. Abstract EP23C-2340. *American Geophysical Union 2018 Fall Meeting*, Washington, D.C., December 10-14.
- Abdolali, A., Callahan, J., Guiteras, S., Kirby, J.T., Shi, F. and Mitchell, L., 2016. Vegetation bias correction in tidal salt marsh LiDAR data sets with artificial neural networks. *Restore America's Estuaries 8th National Summit on Coastal and Estuarine Restoration and 25th Biennial Meeting of The Coastal Society*, Abstract, New Orleans, LA., December 10-15, doi:10.13140/RG.2.2.21299.63527
- Tehranirad, B., Kirby, J. T., Callahan, J., Shi, F., Banihashemi, S., Grilli, S. T., Grilli, A., Tajalli Bakhsh, T. and O'Reilly, C., 2014. Tsunami inundation mapping for the upper East Coast of the United States, *AGU Fall Meeting*, Abstract NH12A-04, San Francisco, CA, December 15-19.
- Samoteskul, K., Firestone, J., Callahan J., and Corbett, J., 2013. Vessel Traffic Rerouting to Hasten Offshore Wind Power Development and Enhance Net Societal Benefits, *EWEA Offshore Wind Power Conference*, Frankfurt, Germany, November 2013.
- Samoteskul, K., Firestone, J., Callahan, J., and Corbett, J.J., 2013. Analysis of Vessel Traffic Rerouting Scenarios to Open Areas for Offshore Wind Development Reveals Significant Societal Benefits, *AGU Science and Policy Meeting*, Washington, DC, June 2013.
- Samoteskul, K., Firestone, J., Callahan, J., and Corbett, J.J., 2013. Costs and Benefits of Rerouting Vessel Traffic to Open Shallow Waters for Offshore Wind Development, *WINDPOWER 2013*, Chicago, IL, May 2013.
- Wunsch, D.R., Callahan, J.A., and Ramsey, K.W., 2013. The role of the Delaware Geological Survey in Support of Delaware's Planning and Preparedness for Hurricane Sandy, *Northeast Section – 48th Annual Meeting Abstracts with Programs*, v. 45, no.1, p. 133.
- Samoteskul, K., Firestone, J., Callahan, J., and Corbett, J.J., 2012. Costs and Benefits of Rerouting Vessel Traffic to Open Shallow Waters for Offshore Wind Development, *AWEA Offshore Wind Power Conference*, Virginia Beach, VA, October 2012.
- Tehranirad, B., J.T. Kirby, F. Shi, J.A. Callahan, J.C. Harris, S.T. Grilli and T.S. Tajali Bakhsh, 2012. Tsunami hazards on the US East Coast: Inundation Mapping and Tsunami Process Over a Wide Shelf. *EOS Transactions AGU*, 93 (52), Fall Meeting Supplemental, San Francisco, Dec. 3-7. Abstract NH33A-1645.
- Schenck, William S., and John A. Callahan, 2009. A New Delaware DataMIL, *Digital Mapping Techniques '09 - Workshop Proceedings*, USGS Open File Report 2010-1335.
- Wang, C., J.J. Corbett, and J. Callahan, 2007. Geospatial Modeling of Ship Traffic and Air Emissions, Paper UC1683, *Proceedings of the 2007 ESRI International User Conference*, ESRI, San Diego, CA.
- Andres, A. Scott, and John A. Callahan, 2003. State of Delaware Initiatives in Internet Ground-Water Data. *National Ground Water Association Annual Ground-Water Expo*, Orange County Convention Center, Orlando, FL, December 9 – 12, 2003.
- DeLiberty, Tracy L., and John A. Callahan, 2001. Diurnal Variability of Satellite Derived Precipitable Water in the Amazon Basin, *Proceedings of the 11th Conference on Satellite Meteorology and Oceanography*, American Meteorological Society. Madison, Wisconsin, Oct. 15-18, 2001, pp 196-199.
- DeLiberty, Tracy L, John A. Callahan, Gary Jedlovec, and Anthony Guillory, 2000. Temporal and mesoscale variations of satellite derived precipitable water in the Amazon Basin. *96<sup>th</sup> Annual Meeting of the Association of American Geographers*. Pittsburg, PA. April 4-8, 2000.

- DeLiberty, T.L., J.A. Callahan, A.R. Guillory, and G.J. Jedlovec, 2000. A Regional Scale Assessment of Satellite-Derived Precipitable Water in the Amazon Basin. *Proceedings of the 10th Conference on Satellite Meteorology and Oceanography*, American Meteorological Society, Long Beach, CA, Jan 9-14, 2000, pp 414-417.
- DeLiberty, Tracy L. and John A. Callahan, 1999. Mesoscale Moisture Variations Associated With Cold Surges In Southern Brazil, *Proceedings of the 23rd Conference on Hurricanes and Tropical Meteorology*, American Meteorological Society, Dallas, TX, January 11-15.
- DeLiberty, Tracy L., and John A. Callahan. An investigation of satellite-derived land surface temperatures in Amazon Basin using split window technique. *93rd Annual Meeting of the Association of American Geographers*. Fort Worth, TX. April 1-5, 1997.

## **PUBLICATIONS – TECHNICAL REPORTS, MAPS, AND NEWSLETTERS**

- Warner, Daniel L., John A. Callahan and Thomas E. McKenna, 2021. Assessing spatial distributions of blue carbon stocks in Blackbird Creek and St. Jones River coastal marshes. Technical Report prepared for Delaware National Estuarine Research Reserve, 21 pp.
- Brinson, Kevin R., Daniel L. Warner, and John A. Callahan, 2021. Determination of Flood Elevations and Hydrology of Delaware Roadways. Technical Report prepared for Delaware Department of Transportation, 23 pp.
- Callahan, John A., Kevin R. Brinson, and Christina L. Callahan, 2019. Development of a Coastal Storm Hazard Early Warning and Decision Support Dashboard for Delaware: Integration and Analysis of Past Coastal Storms: Final Report prepared for Delaware Sea Grant, 14 pp.
- McKenna, Thomas E., John A. Callahan, Catherine L. Medlock, and Naomi S. Bates, 2018. Creation of Improved Accuracy LiDAR-Based Digital Elevation Models for the St. Jones River and Blackbird Creek Watersheds. Technical Report prepared for Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 37 pp.
- Callahan, John A. and Naomi S. Bates, 2018. Development of Delmarva Fox Squirrel Habitat Maps from LiDAR Data for Sussex County, Delaware. Technical Report, Delaware Department of Natural Resources and Environmental Control (DNREC) Division of Fish and Wildlife, 20 pp.
- Bates, Naomi S., and John A. Callahan, 2017. Delaware Coastal Inundation Maps, Data and Mapping Methodology. Technical Report prepared for Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 26 pp.
- Brinson, K.R., and Callahan, J.A., 2016. Development of a Weather and Flood Monitoring and Warning System Strategic Plan for Delaware, Technical Report prepared for Delaware Department of Transportation, 107 pp.
- Andres, A.S., J.A. Callahan, C. He, T.E. McKenna, D.R. Wunsch, 2016. Delaware National Groundwater Monitoring Network, Technical Report, USGS, 32 pp.
- Tehrani-rad, B., Kirby, J.T., Callahan, J.A. and Shi, F., 2015. Tsunami inundation mapping for Atlantic City, NJ NGDC DEM, Research Report No. CACR-15-01, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, University of Delaware.
- Tehrani-rad, B., Kirby, J.T., Callahan, J.A. and Shi, F., 2015. Tsunami inundation mapping for the northern half of the State of New Jersey, Research Report No. CACR-15-02, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, University of Delaware.
- Tehrani-rad, B., Kirby, J.T., Callahan, J.A. and Shi, F., 2015. Tsunami inundation mapping for New York City, Research Report No. CACR-15-03, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, University of Delaware, 71 pp.

- Tehrani-rad, B., Kirby, J.T., Callahan, J.A. and Shi, F., 2015. Tsunami inundation mapping for Montauk, NY NGDC DEM, Research Report No. CACR-15-04, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, University of Delaware.
- Tehrani-rad, B., Kirby, J.T., Callahan, J.A. and Shi, F., 2015. Tsunami inundation mapping for Nantucket, MA NGDC DEM, Research Report No. CACR-15-05, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, University of Delaware.
- Tehrani-rad, Babak, Banihashemi, Saeidah, Kirby, James T., Callahan, John A. and Shi, Fengyan, 2014. Tsunami Inundation Mapping for Ocean City, MD NGDC DEM, Research Report No. CACR-14-04, Center for Applied Coastal Research, Department of Civil and Environmental Engineering, UD, 58 pp.
- Callahan, John A., 2015. Analysis of Storm Surge and Tidal Data Relationships in the Delaware Inland Bays based on Meteorological Conditions, Technical Report prepared for Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 38 pp.
- Brinson, Kevin R., and John A. Callahan, 2013. Development and Support of a Hydrologic Monitoring Capability for Transportation in Delaware: Phase I Hydrologic Sensor Placement, Technical Report prepared for Delaware Department of Transportation, 49 pp.
- Leathers, Daniel J., John A. Callahan, and Kevin R. Brinson, 2013. Expansion of the Delaware Coastal Flood Monitoring System. Technical Report prepared for Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs. 27 pp.
- Callahan, John A. 2012. Delaware Geological Survey Node Development for Inclusion and Participation in the US Geoscience Information Network (USGIN). Technical Report prepared for Arizona Geological Survey, 116 pp.
- Callahan, John A. 2011. DGS Unveils New Website and Web-Mapping Services, *First State Geology*, Delaware Geological Survey Newsletter, 2011 Winter Edition, p. 2.
- Callahan, John A. 2011. Prototype Coastal Flood Monitoring System for Delaware, *First State Geology*, Delaware Geological Survey Newsletter, 2011 Winter Edition, p. 3.
- Callahan, John A. 2011. DataMIL Gets a New Look, *First State Geology*, Delaware Geological Survey Newsletter, 2011 Winter Edition, p. 4.
- Schenck, William S., and John A. Callahan, 2010. Delaware Geological Survey Digital Imagery Inventory. Final Report prepared for the USGS National Geological and Geophysical Data Preservation Program (NGGDPP). 26 pp.
- Callahan, John A., Christina L. Callahan, Richard S. Sacher, Michael B. Mahaffie, William, S. Schenck, Shannon S. Bain, and Robert E. Rinehart, 2002. The Delaware DataMIL: A Web-Based Mapping Collaboration. *ArcNews*, ESRI, Vol. 24, No. 2, Summer 2002. p. 18-19.
- Callahan, John A. 2002. Delaware: A National Map Pilot Project, *First State Geology*, Delaware Geological Survey Newsletter, Vol 20, No. 1, 2002 Winter Edition. p. 2.

## **FUNDED GRANTS**

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- Co-Principal Investigator, "Assessing spatial distributions of soil carbon stocks and their vulnerability to sea level rise in tidal marsh ecosystems", Delaware National Estuarine Research Reserve (DNERR), 2019 - 2021.
- Principal Investigator, "Storm Surge and High Tide Relationships in Development of a Delaware Inland Bays Coastal Flood Warning System", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2019 - 2021.
- Co-Principal Investigator, "Determination of Flood Elevations and Hydrology of Delaware Roadways", Delaware Department of Transportation, 2020.

Co-Principal Investigator, "Morphology and Tidal Inundation of Tidal Wetlands in the Delaware Estuary", Delaware Sea Grant, 2018 - 2020.

Principal Investigator, "Development of a Coastal Storm Hazard Early Warning and Decision Support Dashboard for Delaware: Integration and Analysis of Past Coastal Storms", Delaware Sea Grant, 2017 - 2018.

Principal Investigator, "Digital Elevation Model, GIS, and Watershed Analysis to Support USGS StreamStats Update", Delaware Department of Transportation, 2017 - 2018.

Co-Principal Investigator, "Creation of an Improved Accuracy LiDAR-Based Digital Elevation Model for St. Jones and Blackbird Creek Reserves", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2017 - 2018.

Principal Investigator, "Determination of Future Sea-Level Rise Planning Scenarios and Development of Coastal Inundation Maps for the State of Delaware", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2015 - 2016.

Investigator, "Delaware Participation in the National Groundwater Monitoring Network", United States Geological Survey, 2016.

Co-Principal Investigator, "Development of a Transportation Weather and Flood Monitoring and Warning System Strategic Plan for Delaware", Delaware Department of Transportation, 2015 - 2016.

Co-Principal Investigator, "Drought Conditions Indicators for Delaware", Delaware Emergency Management Agency (DEMA), 2015.

Principal Investigator, "Conversion of Historic Seismic Signal Data for Internet Accessibility", Delaware Emergency Management Agency (DEMA), 2014 - 2015.

Principal Investigator, "Analysis of Storm Surge and Tidal Data Relationships in the Delaware Inland Bays based on Meteorological Conditions", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2014 - 2015.

Principal Investigator, "Delaware Contribution to the National Geothermal Data System Regarding Metadata Management", National Science Foundation (NSF), 2014 - 2014.

Principal Investigator, "Development of a High Water Mark Database and Display System for Coastal Flooding Events in Delaware", Delaware Sea Grant, 2014 - 2016.

Principal Investigator, "Mobile Application and Data Integration for the Delaware Coastal Flood Monitoring System", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2014 - 2015.

Co-Principal Investigator, "Development and Support of a Hydrologic Monitoring Capability for Transportation in Delaware", Delaware Department of Transportation, 2013.

Co-Principal Investigator, "A Climate Change Analysis for Delaware and the Delaware Bay Estuary", Delaware National Estuarine Research Reserve (DNERR), 2012 - 2013.

Co-Principal Investigator, "Modeling Tsunami Inundation and Assessing Tsunami Hazards for the US East Coast", NOAA National Tsunami Hazard Mitigation Program (NTHMP), 2010 – 2013.

Co-Principal Investigator, "Delaware Geological Survey Node Development for Inclusion and Participation in the United States Geoscience Information Network (USGIN)", National Science Foundation (NSF), 2012.

Co-Principal Investigator, "Expansion of the Coastal Flood Monitoring System for Delaware", Delaware Department of Natural Resources and Environmental Control (DNREC) Delaware Coastal Programs, 2011 – 2012.

Principal Investigator, "A Web-Delivered Application for Hydrogeologic Data", Delaware Department of Natural Resources and Environmental Control (DNREC) Water Supply Section, 2010 – 2011.

Co-Principal Investigator, "Offshore Wind Power for Delaware in a Marine Spatial Planning Context", Delaware Sea Grant Program, 2011 - 2012.

Co-Principal Investigator, "DGS Digital Image Metadata", USGS National Geological and Geophysical Data Preservation Program, 2009 – 2010.  
Co-Principal Investigator, "A Prototype Coastal Flood Monitoring System for Delaware", Joint funding from Delaware NSF EPSCoR and Delaware Dept of Environmental Control (DNREC), 2009 - 2010.  
Co-Principal Investigator, "Development of the Delaware Spatial Data Clearinghouse", USGS NSDI Cooperative Agreements Program, 2002 – 2003.  
Co-Principal Investigator, "The USGS National Map/Delaware Framework DataMIL Project", USGS Title VIII Funding Initiatives, 2001 – 2002.  
Collaborator, "A University Teaching Laboratory for Geographic Information Science", UNIDEL, University of Delaware, College of Arts and Sciences, 2001.

## **ACADEMIC TEACHING EXPERIENCE**

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**Primary Instructor**, Dept of Geography and Spatial Sciences, University of Delaware  
Atmospheric Physics and Thermodynamics  
Full of Hot Air: Understanding Climate Change  
GIS in Natural Resource Management  
Teaching Geography with Technology: A Special Summer Institute for Delaware Teachers  
Climate and Life  
Meteorology  
Computer Methods in Geography

**Online Course Development**, Dept of Geography and Spatial Sciences, University of Delaware  
Geospatial Statistics, GIS Programming

**Guest Lecturer**, University of Delaware  
Meteorology, Physical Geography, Introduction to Data Analysis, Introduction to GIS, GIS in Public Policy, and GIS in Natural Resource Management

**Teaching Assistant**, Department of Geography, University of Delaware  
Advanced Geographic Information Systems  
Introduction to Environmental Remote Sensing  
Seminar in Geographic Information Systems (graduate level course)  
Introduction to Geographic Information Systems  
Physical Climatology  
Seminar in Geographic Information Systems (graduate level course)  
Computer Methods in Geography

**Teaching Assistant**, Department of Physics and Astronomy, University of Delaware  
Introductory Physics II  
Introductory Physics I  
Physical Science

Mathematics Learning Center, Tutor, University of Delaware, Jun 1995 - Aug 1995  
Mathematics Learning Center, Head Tutor, Temple University, Oct 1991 - Dec 1993

## **SUPERVISORY AND MENTORING EXPERIENCE**

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### Professional supervision:

2018 – 2021 Dr. Daniel Warner, GIS Analyst/Research Associate  
2017 – 2019 Beatrice O’Hara, GIS Analyst  
2015 – 2018 Dr. Naomi Bates, Research Associate

### Masters committee:

2012 – 2014 Kateryna Samoteskul, UD CEOE School of Marine Science and Policy

### Student supervision:

2017 – 2018 Catherine Medlock, Geological Sciences  
2016 – 2017 Derek Schroeter, Geography  
2016 Katharine Liming, Geography  
2015 Peter Kinney, misc work employment  
2014 Akeem Booker, Engineering  
2012 – 2014 Amanda Lawson, Geography  
2011 Brian Kinney, misc work employment  
2010 Kyle Kinney, misc work employment  
2008 – 2009 Sebastian Carisio, Geography  
2003 Frank Pisan, Geography  
2002 Laura Townsend, Teaching Assistant for FREC480  
2002 Julia MacInnis, Geography  
2001 – 2002 Kerri Steck, Geography

## **INVITED TALKS AND GUEST/EXPERT PANELS**

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Future SLR Planning Scenarios for Delaware, City of Lewes Executive Committee on Resiliency, August 2021.

Solve Climate by 2030: A Global Dialog – Delaware, Panel Session. Bard College Center for Environmental Policy, April 2021.

Determining Future Sea-Level Rise Planning Scenarios for Delaware, DRBC Advisory Committee on Climate Change (ACCC) public meeting, December 2020.

Sea-Level Rise Projections and Impacts on Delaware. University of Delaware, College of Earth, Ocean, and Environment and Delaware Sea Grant, Coast Day, October 2020.

Hurricanes, Sea-Level Rise, and Coastal Flooding in the Mid-Atlantic. University of Delaware, College of Earth, Ocean, and Environment Ocean Currents Lecture Series, September 2020.

Climate Change and Sea-Level Rise: Observations and Projections for the State of Delaware. NOAA Community Climate Adaptation Planning Training Course, St. Jones Reserve, Dover, DE, January 2019.

High Tide in Dorchester Documentary Film Screening. Guest panelist. Earth, Ocean, and Environment Club UD, Newark, DE, November 2018.

Determination of Future Sea-Level Rise Planning Scenarios for Delaware. 110th Annual Meeting of the Association of American State Geologists, Rehoboth Beach, DE, June 2018.

LiDAR Vertical Bias Estimation and DEM Correction in a Tidal Salt Marsh. 110th Annual Meeting of the Association of American State Geologists, Rehoboth Beach, DE, June 2018.

Determination of Future Sea-Level Rise Planning Scenarios for Delaware. Delaware River Basin Commission (DRBC) Flood Advisory Committee, Trenton, NJ, April 2018.

Storms, Climatology, and Changing Conditions in Delaware. Guest panelist. Delaware Resilient and Sustainable Communities League (RASCL) Climate Summit, Dover, DE, November 2017.

Past Observations and Future Projections of Climate in Delaware. Delaware March for Science and Our Earth, Newark, DE, April 2017.

Delaware Coastal Flood Monitoring System. Delaware River Basin Commission Flood Advisory Committee, Trenton, NJ, May 2016.

The Delaware Coastal Flood Monitoring System. MACRI Coastal Flooding Workshop, Clayton Hall Conference Center, Newark, DE, September 2015.

Monitoring Severe Weather and Flooding Hazards in Delaware's Environment. US Army Reserve Force Policy Committee (ARFPC), Bethany Beach National Guard Training Site, September 2015.

The Delaware Coastal Flood Monitoring System and Other Related Research, Inaugural meeting of the Mid-Atlantic Coastal Resiliency Institute (MACRI), Wallops Island, VA, August 2014.

Demonstration of the Delaware Coastal Flood Monitoring System, Delaware Emergency Management Agency (DEMA), Smyrna, DE, Summers 2012 and 2013.

A Coastal Flood Monitoring and Early Warning System for Delaware. Delaware Geological Survey Research Symposium, Newark, DE, April 2013.

The Delaware Coastal Flood Monitoring System, Delaware Sea-Level Rise Advisory Committee Meeting, St. Jones Reserve, April 2013.

University of Delaware's Offshore Wind Energy Workshop. Guest panelist, Queen Theater, Wilmington, DE, November 2011.

Open Geospatial Information: Trends and Technology. Plenary presentation at UD Geospatial Research Day, Newark, DE, November 2009.

A New Campus Mapping Initiative at the University of Delaware. Building and Maps Team, June 2008.

Drupal: A Content Management System, UD Web Developer Group and CMS Committee, Dec 2007.

GIS Portals and Web Mapping Services. Guest panelist at Northeast Map Organization (NEMO) Annual Conference, New York, NY, June 2007.

Potential role of the Delaware DataMIL (real-time online mapping) in emergency management and e911 projects. Delaware e911 Committee, Delaware Emergency Management Agency, Smyrna, March 2003.

The Delaware DataMIL: Delaware's Geography Network and contribution toward The National Map. University Consortium of Geographic Information Science (UCGIS) Winter Meeting, Presentations to members of US Congress, Washington D.C., February 2003.

Status of Geographic Information Systems in Delaware. University of Delaware, Center for Remote Sensing seminar series, Newark, DE, November 2002.

Publishing Geospatial Data in Delaware. Delaware Geographic Data Committee, Dover, DE, Aug 2002.

The Delaware DataMIL. Plenary presentation at the ESRI User Conference (12,000+ attendees), San Diego, CA, July 2002.

The Delaware Data Mapping and Integration Laboratory (DataMIL). Plenary presentation at the Delaware State GIS Conference, Rehoboth Beach, DE, April 18, 2002.

The Delaware Data Mapping and Integration Laboratory (DataMIL). Plenary presentation at the ESRI Federal User Conference, Washington, D.C., April 3, 2002.

The Delaware Data Mapping and Integration Laboratory (DataMIL). Briefing to the USGS Cooperative Topographic Mapping (CTM) Group, USGS Headquarters, Washington, D.C., March 20, 2002.

The Delaware Data Mapping and Integration Laboratory (DataMIL). USGS The National Map Developer's Workshop, EROS Data Center, USGS, Sioux Falls, SD, March 6-8, 2002.

The State of GIS in Delaware. UD Department of Geography seminar series, February 15, 2002.

An Overview of the Delaware DataMIL, Delaware Geological Survey, Newark, DE, December 2001.

The Delaware DataMIL. Delaware State Mapping Advisory Committee, Newark, DE, October 2001.

The Delaware DataMIL: Data Mapping and Integration Laboratory. Delaware Geographic Data Committee (DGDC) meeting, Dover, DE, August 2001.

Introduction to GIS, co-presented to the UD Nursing Department, Morris Library Lunchtime Lecture Series, University of Delaware, Newark, DE, April 2001.

How to Organize Problem Solving Sessions and Making Sense of Student Feedback. Session co-presenter, Annual Graduate Student Orientation Teaching Assistant Conference, Center for Teaching Effectiveness, University of Delaware, Newark, DE, August 1998.

Research Life as a Graduate Student. Delaware Organization of Undergraduate Geographers (DOUG), Newark, DE, March 1997 and May 1998.

Teaching Laboratory Sciences. Guest panelist, Annual Graduate Student Orientation Teaching Assistant Conference, Center for Teaching Effectiveness, University of Delaware, Newark, DE, August 1995.

## **PRESS AND MEDIA COVERAGE**

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Interviewed and quoted through several media outlets, including *FactCheck.org*, *Delaware Public Media: Delaware's source for NPR News*, *DelawareOnline - The News Journal*, *DelmarvaNow*, *Cape Gazette: Covering Delaware's Cape Region*, *WRDE – Delmarva's NBC Affiliate*, *WHYY.org*, *UDaily – University of Delaware News Service*

Interviewed by numerous students for UD coursework and student newspaper *The Review*.

News brief video on sea-level rise in Delaware for UDaily news service,  
<https://www.youtube.com/watch?v=xNa7OLaW7K0>

Documentary video “How Sea Level Rise is Affecting Delaware?” UD student network STN49.

## **SERVICE**

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Current activities:

- National Climate Assessment 5 (**NCA5**) Chapter Author (Chapter 8: Coastal Effects)
- US Climate Variability and Predictability Program (**CLIVAR**) Predictability, Predictions, and Applications Interface (**PPAI**) Panel
- Delaware River Basin Commission (**DRBC**) Advisory Committee on Climate Change (**ACCC**)
- Delaware State Hazard Mitigation Council (**SMHC**)
- Delaware Resilient & Sustainable Communities League (**RASCL**), Science/Research Committee
- Associate Member - Delaware, American Association of State Climatologists (**AASC**)
- Faculty Affiliate, Water Science and Policy Program, Univ of DE
- Affiliated Scientist, Center for Environmental Monitoring and Analysis (**CEMA**), Univ of DE
- **DeIDOT**-TMC Weather Group
- American Meteorological Society (**AMS**)
- American Geophysical Union (**AGU**)
  
- Provide real-time guidance on flooding hazards to state/local agencies with Delaware Emergency Management Agency (DEMA) and National Weather Service (NWS) during severe weather
- Provide planning guidance to state agencies on climate change and sea-level rise
- Multiple employee search and other internal committees
- Numerous public presentations and demonstrations to K-12 students/teachers

Contributor to:

- Delaware Sea Grant 15-second Science videos
- DGS Annual Report of Programs and Activities, 2014 – present.
- Delaware Homeowners Handbook to Prepare for Natural Hazards, (2019). Delaware Sea Grant.
- State of Delaware All-Hazard Mitigation Plan (2018), Delaware Emergency Management Agency (DEMA), <https://dema.delaware.gov/contentFolder/pdfs/HazardMitigationPlan.pdf>
- Connecting Our World: GIS Web Services (2003), Winnie Tang and Jan Selwood, ESRI Press.

#### Peer Reviews:

- New Jersey Sea Grant Consortium Research Proposals, 2021
- He, Changming, Scott Andres, Kevin Brinson, and Tracy DeLiberty, 2020. Mapping evapotranspiration for 2016 growing season using Landsat 8 images and METRIC model, Sussex County, Delaware. Delaware Geological Survey, Report of Investigations 84. 29 pp.
- McKenna, Thomas E., 2018. Characterization of tidal wetland inundation in the Murderkill River Estuary. Delaware Geological Survey, Report of Investigations 81. 31 pp.

#### Past activities:

Chair, Delaware SLR Technical Committee, 2015 – 2017  
DelawareView (Delaware chapter of AmericaView)  
AGU Natural Hazards Focus Group webmaster, 2015 – 2017  
Mid-Atlantic Coastal Resiliency Institute (MACRI), 2015 – 2016  
Delaware Elevation Data Working Group, 2009 – 2014  
GIS@UD User Group, 2001 – 2012  
Delaware Geographic Data Committee, 2001 – 2014  
Delaware DGDC I-Team, 2001 – 2008  
Chair, Metadata Subcommittee of the DGDC, 2002 – 2008  
Founder of the Delaware Geospatial Technology Group, 2007 – 2009  
Hosted first Google Developer Day at the University of Delaware, 2007  
Delaware Geospatial Information Clearinghouse, 2001 - 2007  
Chair, Delaware GIS Conference planning committee, 2002 - 2004  
Member, Delaware GIS Conference planning committee, 2001 - 2005

#### **WORKSHOPS (DEVELOPED/TAUGHT)**

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Severe weather and coastal flooding training workshop for Delaware Emergency Management Agency (DEMA), Newark and Smyrna, DE, October 2018 and November 2019.

Delaware Environmental Sensing Symposium. Sponsored by Delaware DNREC Delaware Coastal Programs, Clayton Hall Conference Center, Newark, DE, January 2017.

Workshop on Integrating Coastal Flood Research, Modeling and Monitoring to Improve Coastal Resiliency in the Mid-Atlantic. Sponsored by Mid-Atlantic Coastal Resilience Institute (MACRI), Delaware Sea Grant, and the University of Delaware, Clayton Hall Conference Center, Newark, DE, September 2015.

Delaware High Water Mark Workshop. Sponsored by Delaware Sea Grant, University of Delaware, St. Jones Reserve Training Facility, Dover, DE, November 2014.

Training workshop on the Delaware Coast Flood Monitoring System, for Delaware Emergency Management Agency (DEMA) and Kent County emergency management personnel, St. Jones Research Reserve Training Facility, Dover, DE, June 2011.

Google Maps Developer Technical Workshop, Delaware State GIS Conference, Sheraton Conference Center, Dover, DE, May 2007.

The Hitchhikers Guide to the Galaxy of Geospatial Metadata. Pre-conference workshop, Delaware State GIS Conference, Clayton Hall Conference Center, Newark, DE, June 2006.

Introduction to GIS. Two-day workshop to University of Delaware College of Marine and Earth Science (CMES) faculty, staff and students, Lewes, DE, January 2006.

Introduction to ArcGIS 9.0: Highlights and New Features. GIS@UD technical workshop, Newark, DE, May 2004 and April 2005.

Overview of the Geoprocessing Framework in ArcGIS 9. GIS@UD technical workshop, Newark, DE, November 2004.

Using ArcSDE and ArcIMS to Support Teaching, University of Delaware, Newark, DE, Fall 2004.

Using the RDMS Nationwide Geocoding Service and General Geocoding Techniques in ArcGIS, University of Delaware, Newark, DE, Fall 2004.

Introduction to ArcIMS and WMS Web Mapping Services: What Are They and How Can I Use Them? Pre-conference workshop, Delaware State GIS Conference, Dover, DE, April 2004.

Introduction to Web Mapping Services. GIS@UD technical workshop, Newark, DE, March 2004.

Introduction to ArcGIS Spatial Analyst. GIS@UD technical workshop, Newark, DE, Spring 2003.

Hydrologic Modeling using GIS. GIS@UD technical workshop, Newark, DE, November 2002  
G.NET: Case Studies of GIS State Programs that Build the Spatial Data Infrastructure, John Callahan (co-presenter representing Delaware), ESRI International User Conf, San Diego, CA, July 8-12, 2002.

Introduction to ArcIMS: A Hands-On Approach. GIS@UD technical workshop, Newark, DE, September 2002.

Internet Mapping using ArcIMS. Two-day seminar to the USGS Mid-Continent Mapping Center, USGS Central Region, Rolla, MO, August 2002.

GIS Career Student Workshop. University of Delaware, Newark, DE, November 2001.

Introduction to Internet Mapping using ArcIMS. GIS@UD technical workshop, Newark, DE, June 2001.

Intermediate ArcView. Full-day training workshop, Pennsylvania State GIS Conference, Harrisburg, PA, June 2000.

The Delaware NSDI Metadata Clearinghouse: An Overview and Demonstration, co-presented a workshop on the creation, use, and distribution of metadata, Delaware State GIS Forum Conference, Clayton Hall Conference Center, Newark, DE, March 1999.

Co-presented workshops on “How to Organize Problem Solving Sessions” and “Making Sense of Student Feedback” as part of the Annual Graduate Student Orientation Teaching Assistant Conference, organized by the Center for Teaching Effectiveness, University of Delaware, August 1998.

Introduction to GIS. Technical workshop designed for the Center for Drug and Alcohol Studies (CDAS) and Disaster Research Center (DRC), Newark, DE, July 1997.

## **K-12 ACTIVITIES**

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### Service to K-12 Students:

- Interview for 7/8th Grade S.T.E.A.M. Project, Cab Calloway School for the Arts, DE, 2020.
- Climate and Weather, 3<sup>rd</sup> Grade, Hillside Elementary, Montclair, NJ, 2020.
- Climate and Weather, 6<sup>th</sup> Grade, Simon Baruch Junior High School, Manhattan, NY, 2020.
- Introduction to GPS and GIS, Jr/Sr High School Marine Science class, Newark Charter Jr/Sr High School Marine Science class, Newark, Delaware, 2019.
- Field work demonstration at Peterson Wildlife Refuge, Newark Charter Jr/Sr High School Marine Science class, Newark, Delaware, 2019.
- Dinner with a Scientist, Climate and “Normal” Weather, 6<sup>th</sup> Grade, NCS, 2017.
- Dinner with a Scientist, Weather and Remote Sensing, 5<sup>th</sup> Grade, NCS, 2016.
- Career Night, Hurricane Sandy Preparedness & Response Careers, 5<sup>th</sup> Grade, NCS, 2013.
- Weather Observation Methods, 4<sup>th</sup> Grade classes, NCS, 2012.

### Training and Education to K-12 Teachers:

- Introduction to GPS and GIS, Gunning Bedford MS, New Castle, DE, 2002.
- Integrating GPS and GIS Workshop, DGA, Fifer Middle School, Camden, DE, 2001.
- Geography and Technology workshop, co-developed/taught 3-day workshop for Delaware Geographic Alliance Technology Institute, University of Delaware, July 23 – 25, 2001.
- Teaching Geography with Technology: A Special Summer Institute for Delaware State Teachers, co-developed/co-taught two-week 3 credit course, July 1999.
- Geography and Technology in the Classroom with Special Focus on the ArcView Geographic Information System, workshop as part of the Advanced Teacher Institute held at the University of Delaware, Delaware Geographic Alliance (DGA), 1998.
- Geography and Technology with Special Focus on the ArcView Geographic Information System, St. Mark’s High School, Delaware Geographic Alliance (DGA), Wilmington, DE, 1998.
- ArcView GIS, designed for the Delaware Geographic Alliance (DGA) as part of a two-week training session given to Delaware K-12 school teachers, 1997.

### Miscellaneous:

- Newark Charter School Parent Council, 2016 – 2018.
- Helped write and proctor exams for the Delaware Science Olympiad: Remote Sensing Event – Division C, High School level, 2003 – 2012.
- Member of the DGDC GIS in Education Committee, 2005 – 2009.
- Willis, Dawn, Jacqui Wilson, and John Callahan, 1999. Teaching Geography with Technology: A Special Summer Institute for Delaware State Teachers, *Proceedings of the 84th Annual Meeting of the National Council of Geographic Education*, Boston, MA, November 3 – 6, 1999.

## **APPLICATION DEVELOPMENT AND TECHNICAL SKILLS**

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Programming languages:	Matlab, Python, R, PHP, Fortran, Javascript, VB/ASP, Perl
GIS software:	ArcGIS Desktop, ArcInfo, QGIS, GDAL/OGR, IDV, SAGA GIS, ENVI, ERDAS IMAGINE, MapServer, GeoServer, ArcIMS/ArcGIS Server
Stat/Misc Packages:	JMP Pro, USGS Hydroclimate, USACE HEC-DSSVue, FEMA HAZUS-MH, GrADS, McIDAS-X, LaTeX, Photoshop/GIMP Website development, CMS management, Database management
Web applications:	Delaware Coastal Flood Monitoring System, 2013 – present <a href="http://www.coastal-flood.udel.edu">http://www.coastal-flood.udel.edu</a>  DGS public website, 2009 – present <a href="http://www.dgs.udel.edu">http://www.dgs.udel.edu</a>  Delaware Geologic Information Resource (DGIR), 2011 – present <a href="http://maps.dgs.udel.edu">http://maps.dgs.udel.edu</a>  Delaware Aerial Imagery Tile Server, 2014 - 2016 Delaware Data Mapping and Integration Laboratory, 2001 – 2015 Delaware Geospatial Information Clearinghouse, 2001 - 2008 Delaware Census Mapper, 2001 - 2008 UD Buildings and Maps viewer, 2000 – 2007

## **ADDITIONAL TRAINING**

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Write Winning Grant Proposals for USDA, NSF, and NIH, presented by Grant Writers' Seminars & Workshops, in association with University of Delaware Career Development Office, June 2021.

Machine Learning in Python for Environmental Science Problems, AMS Short Course, American Meteorological Society (AMS), April 2021.

Making Sense of Climate Science Denial (<https://www.edx.org/course/making-sense-of-climate-science-denial>), Massive Open Online Course (MOOC), The University of Queensland, Australia, Fall 2020.

FEMA E172 HAZUS for Flood instructor-led training course. Sponsored by Delaware Emergency Management Agency and Delaware Dept of Technology and Information, Dover, DE, 2014.

Numerous meteorology courses from MetEd, operated by UCAR COMET Community Programs

Numerous GIS courses from ESRI Virtual Campus

GIS Portal Toolkit training course, ESRI, Redlands, CA, 2005.

Introduction to Geodatabases, ESRI. University of Delaware GIS Lab, Newark, DE, 2002.

Introduction to ArcSDE with Oracle Database training class, ESRI, Redlands, CA, 2000.

Microsoft Active Server Pages/SQL Server Development, King of Prussia, PA, 2000.

## **SOLICITED CONFERENCE POSTERS AND PRESENTATIONS**

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- Skew Surge and Coastal Flooding from Tropical Cyclones in the Delaware and Chesapeake Bays for 1980 – 2019, John Callahan (presenter), Daniel Leathers, and Christina Callahan. American Meteorological Society (AMS) 101<sup>st</sup> Annual Meeting, 19th Symposium on the Coastal Environment, January 2021.
- Total Water Levels, Storm Surge, and Inundation Frequency along Delaware's Coasts, John A. Callahan (presenter). Delaware Wetlands Conference, Wilmington, DE, January 2020.
- Vulnerability of Stored Soil Carbon in Delaware's Coastal Wetlands, Daniel L Warner (presenter), John A Callahan, and Tom McKenna. Delaware Wetlands Conference, Wilmington, DE, Jan 2020.
- LiDAR Vertical Bias Assessment and Digital Elevation Model Correction of Tidal Salt Marshes in Delaware (poster), Catherine Medlock (presenter), Thomas E. McKenna, John A. Callahan, and Daniel Warner. Delaware Wetlands Conference, Wilmington, DE, January 2020. (**Awarded best student poster.**)
- Influences of Atmospheric and Oceanic Teleconnections on Delaware Coastal Storm Frequency and Intensity, 1951 – 2018 (poster), John Callahan, Nicholas Butler, and Jeremy Chapman. Grand Challenges in Water Sustainability Symposium: Science, Management and Policy for Water, Delaware National Estuarine Research Reserve, Dover, DE, June 2019. (**Awarded 2<sup>nd</sup> place student poster competition.**)
- A Hybrid Approach for Incorporating High-Resolution LiDAR DEMs into USGS StreamStats at the State Level (poster), Daniel Warner, John Callahan, and Beatrice O'Hara. Association of American Geographers (AAG) Annual Meeting, Washington, D.C., April 2019.
- A Hybrid Approach for Incorporating High-Resolution LiDAR DEMs into USGS StreamStats at the State Level (poster), Daniel Warner (lead), John Callahan, and Beatrice O'Hara. Human and Climate Series II: Future of Water in the Mid-Atlantic: Agriculture, Restoration and Technology Symposium, Stroud Water Research Center, Avondale, PA, March 2019.
- Towards a hydrological characterization of Delaware Bay Tidal Wetlands - Elevation and tidal channels (poster). Tom McKenna (lead), Catherine Medlock, and John Callahan. Delaware Applied Coastal Research Symposium, Clayton Hall Conf Center, Newark, DE, March 2019.
- A Dendroecological Investigation of the Demise of the Atlantic White Cedar Freshwater Tidal Wetland in Kent County, Delaware, Stephanie Stotts (presenter), Olivia Gullledge, and John Callahan. Delaware Applied Coastal Research Symposium, Clayton Hall Conf Center, DE, March 2019.
- Update to USGS StreamStats for Delaware, Beatrice O'Hara (presenter) and John Callahan. Delaware Estuary Science & Environmental Summit, Cape May, NJ, January 2019.
- Determining Flow Paths for Flooding and Draining in Slaughter Beach, Delaware (poster), Thomas McKenna (lead), John Callahan, Kevin Brinson, David Huntley, and Damaris Slawik. Delaware Emergency Management Agency. Delaware Estuary Science & Environmental Summit, Cape May, NJ, January 2019.
- Determination of Future Sea-Level Rise Planning Scenarios for Delaware, John Callahan (presenter). Delaware Wetlands Conference, Wilmington, DE, January 2018.
- Top Coastal Flooding Events in Delaware, John Callahan (presenter). Delaware Wetlands Conference, Wilmington, DE, January 2018.
- An Improved Digital Elevation Model for St. Jones and Blackbird Creek Reserves, John Callahan (presenter). Delaware Wetlands Conference, Wilmington, DE, January 2018.
- Fieldwork and Dataset Preparation to Create an Improved Digital Elevation Model for St. Jones and Blackbird Creek Reserves (poster), Catharine Medlock (lead), Naomi Bates, Thomas McKenna, and John Callahan. Delaware Wetlands Conference, Wilmington, DE, January 2018.

- Determination of Future Sea-Level Rise Planning Scenarios for Delaware, John Callahan (presenter). Coastal GeoTools Conference, Charleston, SC, February 2017.
- Delaware Joins the National Ground-Water Monitoring Network, A.S. Andres (presenter), T.E. McKenna, C. He, D.R. Wunsch, and J.A. Callahan. National Ground Water Association Summit, April 25, 2016, Denver, Colorado, April 2016.
- Real-time Monitoring and Analysis of Coastal Storms in Delaware (poster), Christina Callahan (lead), John Callahan, Kevin Brinson, and Daniel Leathers. Rising Seas and Extreme Events on Vulnerable Coasts: A Symposium Honoring Brian F. Atwater, USGS, BENJAMIN FRANKLIN MEDALIST in Earth and Environmental Science, Newark, DE, April 20, 2016.
- Characterization and Application of 2014 Delaware LiDAR Data (poster), Naomi Bates (lead) and John Callahan. Rising Seas and Extreme Events on Vulnerable Coasts: A Symposium Honoring Brian F. Atwater, USGS, BENJAMIN FRANKLIN MEDALIST in Earth and Environmental Science, Newark, DE, April 20, 2016.
- Analysis of Tides and Storm Surge from Observations Records in the Delaware Inland Bays, John Callahan (presenter). Coastal GeoTools Conference, Charleston, SC, April 2015.
- Tide Gage Observations of Coastal Inundation in the Delaware Inland Bays, John Callahan (presenter). Delaware Estuary Science & Environmental Summit, Cape May, NJ, January 2015.
- Development of a High Water Mark Database and Display System for Coastal Flooding Events in Delaware (poster), John Callahan (lead), Tina Callahan, Kevin Brinson, Dan Leathers, and Hunter Brown. Delaware Estuary Science & Environmental Summit, Cape May, NJ, Jan 2015.
- Tsunami Inundation Mapping for the Upper East Coast of the United States (poster), Babak Tehranirad (presenter), James T Kirby, Fengyan Shi, Saeideh Banihashemi, Stephan T Grilli, Annette Grilli, Tayebeh Tajali Bakhsh, and Chris O'Reilly, AGU Annual Conference, San Francisco, Oct 2014.
- Map Services, Metadata, and More: Delaware Geological Survey Participation in the United States Geoscience Information Network (USGIN), John Callahan (presenter). USGS/AASG Digital Mapping Techniques (DMT) Conference, Newark, DE, June 2014.
- The Delaware Coastal Flood Monitoring System (poster), Christina Callahan (lead), Dan Leathers, Kevin Brinson and Linden Wolf. Delaware National Estuarine Research Reserve (DNERR) Research Symposium, Dover, DE, March 2014.
- Changing Vessel Routes Could Significantly Reduce the Cost of Future Offshore Wind Projects (poster), Kateryna Samoteskul (lead), Jeremy Firestone, John Callahan, and James Corbett. Society for Benefit-Cost Analysis (SBCA) 2014 Annual Conference and Meeting, March 2014.
- Changing Vessel Routes to Open Areas for Wind Development Could Generate Significant Societal Benefits (poster), K. Samoteskul (lead), J. Firestone, J. Callahan, and J. Corbett. American Wind Energy Association (AWEA) Offshore Wind Power Conference, Providence, RI, October 2013. **(Awarded best student poster.)**
- Costs and Benefits of Rerouting Vessel Traffic to Open Shallow Waters for Offshore Wind Development (poster), Kateryna Samoteskul (lead), Jeremy Firestone, John Callahan, and James Corbett. American Wind Energy Association (AWEA) Wind Power Conference, Chicago, IL, May 2013.
- The Delaware Coastal Flood Monitoring System, John Callahan (presenter). Delaware Sea-Level Rise Advisory Committee Meeting, St. Jones Reserve, Dover, DE, April 2013.
- The Role of the Delaware Geological Survey in Support of Delaware's Planning and Preparedness for Hurricane Sandy, David Wunsch (lead), John Callahan, and Kelvin Ramsey. 48th Annual Meeting of the Geological Society of America – Northeastern Section, March 2013.
- The Delaware Coastal Flood Monitoring System, John Callahan (presenter), Delaware Estuary Science and Environmental Summit, Cape May, NJ, January 2013.

Evaluation of Water Level Forecasts from Hydrodynamic Models in Delaware Bay (poster), Linden Wolf (lead), Kevin Brinson, Daniel Leathers, John Callahan, Weihan Chan, Alison Hayes. Delaware Estuary Science and Environmental Summit, Cape May, NJ, January 2013.

The Delaware Geologic Information Resource (poster), John Callahan (lead), David Wunsch, and Sandy Schenck. Delaware Estuary Science and Environmental Summit, Cape May, NJ, January 2013.

Tsunami Hazards on the US East Coast: Inundation Mapping and Tsunami Processes over a Wide Shelf (poster), Babak Tehranirad (lead), James T Kirby, Fengyan Shi, John Callahan, Jeffrey C Harris, Stephan T Grilli, Tayebeh S. Tajali Bakhsh, and Elise Estivals. American Geophysical Union Fall Meeting, December 2012.

Costs and Benefits of Rerouting Vessel Traffic to Open Shallow Waters for Offshore Wind Development (poster), Kateryna Samoteskul (lead), Jeremy Firestone, John Callahan, and James Corbett. American Wind Energy Association Offshore Wind Power Conference, Virginia Beach, VA, October 2012.

A Coastal Flood Monitoring System for Delaware, John Callahan (presenter), Kevin Brinson, Daniel Leathers, David Legates, and Linden Wolf. Association of American Geographers (AAG) Annual Meeting, New York, NY, April 2012.

A Web-based System for the Delivery of Hydrogeologic Data, Delaware Estuary Science and Environmental Summit, Cape May, NJ, February 2011.

A Prototype Coastal Flood Monitoring System for Delaware, John Callahan (presenter), Kevin Brinson, Daniel Leathers, David Legates, Linden Wolf, John Talley. Delaware Estuary Science and Environmental Summit, Cape May, NJ, February 2011.

Development of a GIS Database in a Marine Spatial Planning Context for Offshore Wind Power in Delaware, John Callahan (presenter), A. Bates, K. Samoteskul, J. Firestone, and J. Corbett. Delaware Estuary Science and Environmental Summit, Cape May, NJ, February 2011.

Comparative Quantitative Estimates of Decreased Encounter Probabilities in the Right Whale Habitat through Shifting Vessel Traffic, J.J. Corbett (presenter), J. Callahan, T. Callahan, and J. Firestone. Right Whale Consortium Annual Meeting, New Bedford, MA, November 2007.

The Delaware Geospatial Information Clearinghouse (oral presentation and poster), John Callahan (presenter) and Christina Callahan. Delaware GIS 2006 Conference, May 2006.

Integrating GIS into Wetland Functional Assessment. Whelchel, Adam W. (presenter) and John A. Callahan. Delaware GIS Conference, Rehoboth Beach, DE, April 2005.

The University of Delaware: A Self-Sustaining GIS Community, John Callahan (presenter) and Christina Callahan, 2003 ESRI Education User Conference, San Diego, CA, July 2003.

The Delaware DataMIL: Lessons Learned and Progress Made, John Callahan (presenter). ESRI International User Conference, San Diego, CA, July 2003.

The Delaware DataMIL: Delaware's Geography Network and Contribution Toward The National Map, John Callahan (presenter), Pennsylvania GIS Conference, Harrisburg, PA, June 2003.

Delaware Census 2000, Christina Callahan (presenter), Richard Sacher, and John Callahan. ESRI International User Conference, San Diego, CA, July 8-12, 2002.

GIS Day 2000 Activities for K-12 Students and Educators, John Callahan (presenter), Delaware State GIS Conference, Dover, DE, November 2000.

Workshop on Inquiry Learning, Center for Teaching Effectiveness, University of Delaware, October 1998.

Estimating Precipitable Water Fields Over the Amazon Basin Using GOES Imagery, John Callahan (presenter). Association of American Geographers Annual Meeting, Boston, MA, March 1998.

A Regional-Scale Investigation of the Hydrologic Cycle in Amazonia Using a GIS, John Callahan (presenter). University Consortium for Geographic Information Science (UCGIS) Annual Retreat and Assembly, Bar Harbor, ME, June 1997.

- Solar Radiation Modeling in the Coterminous United States: A Case Study using GIS, John Callahan (presenter). University Consortium for Geographic Information Science (UCGIS) Annual Retreat and Assembly, Bar Harbor, ME, June 1997.
- Precipitable Water Estimation in the Amazon River Basin from Remotely Sensed Data, John Callahan (presenter). Association of American Geographers Annual Meeting, Fort Worth, TX, Mar 1997.
- Workshop on Active Learning Techniques, Center for Teaching Effectiveness, University of Delaware, November 1996.
- Precipitable Water Estimation in the Amazon River Basin from Remotely Sensed Data, John Callahan (presenter). Association of American Geographers Middle-States Division Annual Meeting, Philadelphia, PA, October 1996.

## **RESEARCH ASSISTANT EXPERIENCE**

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|---|---|
| Sept 1998 - Sept 1999   | Research Data Management Services, University of Delaware, Graduate Research Assistant. Research and educational support to UD faculty, students and staff in GIS/mapping, geospatial modeling, web development and distribution of databases, GIS and demographic data management.                                 |
| Jun 1997 - Aug 1997   | Delaware Geological Survey, University of Delaware. GIS and IT programmatic consultant for a variety of projects, including creating large-scale plots for the Delaware Coastal Salinity Project, and writing Qbasic programs that connect to USGS stream gauges and dynamically plot river flow in near real-time. |
| Jun 1997 - Aug 1997   | Center for Drug and Alcohol Studies, University of Delaware. GIS, mapping, and statistical data analysis consultant for a variety of projects.  |
| Jan 1996 - Dec 1996   | Department of Geography, University of Delaware, Graduate Research Assistant. Investigated hydrometeorological processes in the Amazon River Basin from in situ observations and remote sensing techniques.   |
| Jun 1993 - Aug 1993   | State University of New York at Stony Brook, Nuclear Structure Laboratory. Experimental equipment setup and data analysis of Chlorine/Molybdenum - Neodymium nucleus-nucleus scattering.  |
| Dec 1992 - May 1993   | Department of Chemistry, Temple University, Research Assistant. Thermosetting and curing of polymer resins. Received training on the FT-Raman Spectroscopy.   |
| Jun 1992 - Aug 1992   | State University of New York at Stony Brook, High Energy Nuclear Physics. Proton-proton collisions in the D0 chamber at Fermilab; helped write Fortran code to display electron tracks.   |
| Jun 1989 - Aug 1990<br>Dec 1990 - Jan 1991<br>Jun 1991 - Aug 1991 | Naval Air Development Center, Warminster, PA. Mechanical Engineering Technician. Created and cured carbon fiber/graphite materials. Prepared and performed visual and mechanical testing.   |