

CURRICULUM VITAE

**Thomas R. Allen**  
**Professor of Geography**

Department of Political Science & Geography  
Old Dominion University  
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**Areas of Specialization**

Geographic Information Science and technology; emphasizing coastal and marine applications of GIS, spatial analysis, remote sensing, and Geovisualization, coastal environmental hazards and sustainable environmental management, and climate change impacts on coastal environments and human health

**Academic Positions**

- 2016 – Present Professor of Geography, Department of Political Science & Geography  
Senior Fellow, Commonwealth Center for Recurrent Flooding Resiliency (CCRFR),  
Old Dominion University, Norfolk, Virginia
- 2015 –2016 Professor of Geography, Department of Geography, Planning & Environment,  
East Carolina University, Greenville, North Carolina  
Director, Coastal and Marine Studies Interdisciplinary Minor (2010-2016)  
Director, Center for GIScience (2013-2016)  
PI and Director, NC Coastal Atlas Partnership (2012-2016)
- 2006-2015 Associate Professor, Department of Geography, East Carolina University, Greenville, NC
- 2006- 2012 Associate Professor of Geography and Director, RENCI at ECU Regional Engagement  
Center, East Carolina University (2009-2013)
- 2001-2006 Associate Professor of Geography, Old Dominion University, Norfolk, Virginia  
Director of Geography Program and Director, Laboratory for Remote Sensing and  
Environmental Analysis, College of Arts & Letters
- 1996-2001 Assistant Professor, Department of Political Science & Geography, Old Dominion  
University
- 1995-1996 Assistant Professor (tenure-track), Department of Geography, University of Vermont
- 1991-1995 Graduate Research Associate and Teaching Fellow, Spatial Analysis Lab, Department of  
Geography, University of North Carolina at Chapel Hill

**Education**

- Ph.D. 1995 Department of Geography, University of North Carolina at Chapel Hill  
Dissertation: *Relationships between Spatial Pattern and Environment at the Alpine  
Treeline Ecotone, Glacier National Park, Montana*  
Advisor: Dr. Stephen J. Walsh
- B.S. 1991 Old Dominion University, Norfolk, Virginia (*magna cum laude*)

Major: Geography; Minor: Geology  
Academic Honors Program 1987-1991

1989 University of the South Pacific, Fiji Islands (student exchange), Geography and Pacific Geoscience Program, School of Social and Economic Development

### **Honors and Support**

2016 *ECU Five-Year Research and Creative Activity Award* (nominated)  
2015 Affiliate Faculty Member of the Year, ECU Center for Sustainability  
2015 Servire Society (ECU Volunteer Service Society), inducted Spring 2015  
2014 *Best Map*, Dasymetric Techniques Improve Mapping of Vulnerable Coastal Populations, NC ArcGIS User Group (NCAUG) Annual Meeting, Advisor to Calvin Harmin (M.S.)  
2013 *First place*, "Potential Sea-Level Rise in North Carolina," Florida GIS Conference  
2011 *Best Digital Map*, "Potential Sea-Level Rise in the Albemarle-Pamlico Estuarine System," ESRI International User Conference  
2010 *Centennial Award for Outstanding Service*, East Carolina University  
2003 *Fulbright Scholar*, US Department of State to Finland, University of Turku, Fall 2003  
2003 *The Virginia Scholar Award*, Virginia Social Science Association  
2002 U.S. delegate to Arctic Council Workshop, Northern Timberline Forests, Rovaniemi, Finland, travel support from National Research Council.  
2001 University Instructional Technology Teaching Award, Old Dominion University.  
2000 Awarded *Best in Session* and Second Place in conference for poster at the Sixth International Conference on Remote Sensing for Marine and Coastal Environments  
1999 Certificate of Excellence in Instructional Technology, College of Arts & Letters, Old Dominion University  
1996 ESRI Award for Best Scientific Paper on Geographic Information Systems, American Society for Photogrammetry and Remote Sensing (ASPRS), \$200.  
1994 The Ta Liang Memorial Award, American Society for Photogrammetry and Remote Sensing (ASPRS), doctoral research grant.  
1994 Spring and Summer co-instructor, "Spatial Data Representation, Analysis, and Display," University of North Carolina at Chapel Hill  
1992 Honorable Mention, National Defense Science and Engineering Fellowship  
1991-1995 Research Assistant, Spatial Analysis Labs, University of North Carolina at Chapel Hill  
1991 Outstanding Geography Graduate, Old Dominion University  
1990-1991 Research Consultant, Arts and Letters Research Office, Old Dominion University  
1990-1991 Phi Kappa Phi Honor Society, Student Representative and Outstanding Member  
1990-1991 The Dabney-Tunstall Scholarship in Arts and Letters, Old Dominion University  
1987-1991 Academic Honors Program, Old Dominion University

### **Courses Taught**

#### *Old Dominion University*

GEOG 101 Environmental Geography  
GEOG 300 Maps and Geographic Information  
GEOG 301 Cartography  
GEOG 306 Hazards: Natural and Technologic  
GEOG 350 United States and Canada  
GEOG 402/502 Introduction to GIS  
GEOG 404/504 Digital Techniques for Remote Sensing  
GEOG 419/519 Spatial Analysis of Coastal Environments  
GEOG 420/520 Marine Geography: GIS for a Blue Planet  
GEOG 422W/522 Coastal Geography  
GEOG 490 Applied GIS and Geospatial Field Techniques

## UNIV 100            New Portals to Appreciating the Global Environment (NewPAGE)

*East Carolina University*

GEOG 1250	The Water Planet
GEOG 1300	Weather and Climate
GEOG 2250	Earth Surface Systems
GEOG 2410	Fundamentals of GIS
GEOG 3250	Environmental Hazards
GEOG 4410/6410	Advanced Cartography
GEOG 4430/6430	Advanced GIS
GEOG 4440/6440	Coastal Applications of GIS
SUTO 6100	Environmental Systems and Sustainability
COAS 2025	Survey of Coastal and Marine Resources
COAS 4025	Society and the Sea Seminar
GEOG 5583	Selected Topics: Tropical Geography Field Course (Costa Rica)

*University of Vermont*

GEOG 112	World Natural Environments
GEOG 444/544	Introduction to Geospatial Technology
GEOG 400/500	Biogeography and Landscape Ecology

**Publications****Refereed Articles**

- Kearney, G.D., K. Jones, R.A. Bell, M. Swinker, and T.R. Allen. 2017. Climate Change and Public Health through the Lens of Rural, Eastern North Carolina. *North Carolina Medical Journal*. (in press.)
- Griffin, M., Edwards, J., and T.R. Allen. 2016. Coastal Impervious Cover and Watershed Scale: Implications for Environmental Management, New Hanover County, North Carolina. *International Journal of Applied Geospatial Research*, 7(1).
- Allen, T.R. and R. Howard. 2015. Improving Low-Relief LiDAR DEMs with Hydro-conditioning of fine-scale and Artificial Drainages. *Frontiers in Earth Science-Hydrosphere*, Special issue: A Global High-Resolution Digital Elevation Model: A Paradigm Shift in High Impact Research and Applications, Schumann, G. and P. Bates, eds. 7(1).
- Cleckner, H. and T.R. Allen. 2014. Dasymeric Mapping and Spatial Modeling of Mosquito Vector Exposure, Chesapeake, Virginia. *ISPRS International Journal of Geo-Information Science*. 3(3): 891-913. <http://www.mdpi.com/2220-9964/3/3/891>. doi:10.3390/ijgi3030891
- Allen, T.R., Y. Wang, and B. Gore. 2013. Coastal Wetland Mapping Combining Multi-date SAR and LiDAR in North Carolina. *Geocarto International*, 28(7):616-631.
- Manda, A., A.S. Giuliano, and T.R. Allen. 2013. Influence of Artificial Channels on the Source and Extent of Saline Water Intrusion in the Wind-tide Dominated Wetlands of the southern Albemarle Estuarine System, (USA). *Environmental Earth Sciences Journal*, DOI 10.1007/s12665-013-2834-9.
- Crawford, T., A. Salahuddin, S. Curtis, A. Ahmed, T. Allen, D. Bradley, A. Mishra, A. Mukherji, and K. Premalal. 2013. Human Responses to Catastrophic Monsoon Events in South Asia: Designing a

Spatially Explicit Model in Low-lying Coastal Areas: A Scoping Workshop. *APN Science Bulletin*, March Issue 3: 125-27.

- Allen, T.R. 2012. Estimating Coastal Lagoon Tidal Flooding and Repletion with Multidate ASTER Thermal Imagery. *Remote Sensing*, special issue on applications of thermal remote sensing, 4(10):3110-3126.
- Allen, T.R., G.F. Oertel, and P.A. Gares. 2012. Mapping Coastal Morphodynamics using Geospatial Techniques, Cape Henry, Virginia, U.S.A. *Geomorphology* 137:138-149.
- Landry, C., T. Allen, J. Whitehead, and T. Cherry. 2012. Offshore Wind Turbines and Coastal Recreation Demand. *Resource and Energy Economics* 34(1):93-111.
- Cleckner, H.C., T.R. Allen, and A.S. Bellows. 2011. Predictive Spatial Modeling of Mosquito Abundance and Habitats in Coastal Virginia. *Remote Sensing* 3(12):2663-2681.
- Anderson, A. and T.R. Allen. 2011. Mapping Historic Hookworm Disease Prevalence in the Southern US, Comparing Percent Prevalence with Percent Soil Drainage Type using GIS. *Infectious Diseases: Research and Treatment* 4:1-19.
- Allen, T.R., G.F. Oertel, and G.M. McLeod. 2011. Coastal Flushing and Tidal Repletion Patterns in Multitemporal ASTER Thermal Satellite Data: Chincoteague Inlet, Virginia/Maryland. *IEEE Journal of Selected Topics in Applied Remote Sensing*, 4(1):147-158.
- Montz, B.E., Allen, T.R. and Monitz, G.I. 2011. Systemic Trends in Disaster Vulnerability: Migrant and Seasonal Farm Workers in North Carolina. *Risk, Hazard & Crisis in Public Policy* 2(1):1-17.
- Allen, T.R. and B.A. Shellito. 2008. Spatial Interpolation and Image-integrative Geostatistical Prediction of Mosquito Vectors for Arboviral Surveillance. *Geocarto International*, 23(4):311-325.
- Li, L., L. Xu, A. Jeng, D. Naik, T. Allen, and M. Frontini. 2008. Creation of Environmental Health Information System for Public Health Service: A Pilot Study. *Information Systems Frontiers*, 10:531-542.
- Oertel, G.F., T.R. Allen, and A.M. Foyle. 2008. The Influence of Dainage Hierarchy on Pathways of Barrier Retreat: An Example from Chincoteague Bight, Virginia, U.S.A. *Southeastern Geology*, 45(3):179-208.
- Wang, Y. and T.R. Allen. 2008. Estuarine Shoreline Change Detection Using Japanese ALOS PALSAR HH and JERS-1 L-HH SAR Data in the Albemarle-Pamlico Sounds, North Carolina, USA. *International Journal of Remote Sensing*, 29(15):4429-4442.
- Allen, T.R., H. Tolvanen, G.F. Oertel, and G.M. McLeod. 2007. Spatial Characterization of Environmental Gradients in a Coastal Lagoon, Chincoteague Bay, USA. *Estuaries and Coasts*, 30(6):1-19.
- Allen, T.R. 2007. Digital Terrain Visualization and Virtual Globes for Teaching Physiography and Earth Surface Processes. *Journal of Geography*, Using Geospatial Data in Geographic Education, 106(6):253-266.
- McLeod, G.M., J. Daigneu, J. Collins, N. Swan, and T.R. Allen. 2007. High Resolution Dune Complex Mapping for the Monitoring of Coastal Landform Change, First Landing State Park, Virginia. *Virginia Journal of Science*, 58(1): 17-25.

- Allen, T.R. and D. Wong. 2006. Exploring GIS, Spatial Statistics, and Remote Sensing for Risk Assessment of Vector-Borne Disease: A West Nile Virus Example. *International Journal of Risk Assessment and Management*, 6(4/5/6):253-275.
- Allen, T.R. and J.A. Kupfer. 2001. Spectral Response and Spatial Pattern of Fraser Fir Mortality and Regeneration, Great Smoky Mountains. *Plant Ecology, GIS and Remote Sensing Special Issue*, 156: 59-74.
- Allen, T.R. and J.A. Kupfer. 2000. Application of Spherical Statistics to Change Vector Analysis of Landsat Data: Southern Appalachian Spruce-Fir. *Remote Sensing of Environment*, 74: 482-493.
- Allen, T.R. 2000. Topographic Normalization of Landsat Data in Three Mountain Environments. *Geocarto International*, 15(2): 13-19.
- Allen, T.R. 1998. Topographic Context of Glaciers and Perennial Snowfields, Glacier National Park, Montana. *Geomorphology*, Special GIS Issue. 21: 207-216.
- Allen, T.R. and S.J. Walsh. 1996. Spatial and Compositional Pattern of Alpine Treeline, Glacier National Park, Montana, *Photogrammetric Engineering and Remote Sensing*, Annual GIS Issue, 62 (11): 1261-1268.
- Walsh, S.J., D.R. Butler, T.R. Allen, and G.P. Malanson. 1994. Influence of Snow Patterns and Snow Avalanches on the Alpine Treeline Ecotone. *Journal of Vegetation Science*, 5(5): 657-672.
- Allen, T.R., T.J. Bara, and S.J. Walsh. 1994. Observed Biases in the Conterminous U.S. AVHRR Data Set: A North Carolina Case Study. *Geocarto International*, 9(2): 52-62.
- Allen, T.R. and S.J. Walsh. 1993. Characterizing Multitemporal Alpine Snowmelt Patterns for Ecological Inferences. *Photogrammetric Engineering and Remote Sensing*, 59(10): 1521-1529.

### **Book Chapters**

- Allen, T.R. 2014. Advances in Remote Sensing of Coastal Wetlands: LiDAR, SAR, and Object-Oriented Case Studies from North Carolina. In: Finkl, C., A. Klein, and C. Makowski, eds. *Advances in Coastal and Marine Resources: Remote Sensing and Modeling*. Coastal Education and Research Foundation (<http://www.springer.com/us/book/9783319063256>.)
- Allen, T.R., S. Sanchagrin, and G. McLeod. 2013. Visualization for Hurricane Storm Surge Risk Awareness and Emergency Communication. In: Tiefenbacher, J., ed., *Approaches to Disaster Management- Examining the Implications of Hazards, Emergencies, and Disasters*. InTech, Rijeja, Croatia. pp. 105-129.  
([http://www.academia.edu/4002875/Approaches\\_to\\_Disaster\\_Management-Examining\\_the\\_Implications\\_of\\_Hazards\\_Emergencies\\_and\\_Disasters](http://www.academia.edu/4002875/Approaches_to_Disaster_Management-Examining_the_Implications_of_Hazards_Emergencies_and_Disasters))
- Allen, T.R., T. Crawford, and Y. Wang. 2012. Remote Sensing of Land Cover Dynamics. In: Bishop, M. and J. Shroder, eds., *Treatise in Geomorphology* pp. 80-102.  
(<http://www.sciencedirect.com/science/referenceworks/9780080885223#ancv3>)
- Allen, T.R. and Y. Wang. 2010. Selected Scientific Analyses and Practical Applications of Remote Sensing: Examples from the Coast. In: Bossler, J.D., J.B. Campbell, R.B. McMaster, and C. Rizos, Eds. *Manual of Geospatial Science and Technology*, Second edition, pp. 467-485.
- Allen, T.R., S.J. Walsh, D.M. Cairns, J.P. Messina, D.R. Butler, and G.P. Malanson. 2004. Geostatistics and Spatial Analysis: Characterizing Form and Pattern at the Alpine Treeline. In: *Geographic*

*Information Science and Mountain Geomorphology*, M.P. Bishop and J. Shroeder, Eds., Springer-Verlag/Praxis, Chichester, pp. 189-218.

- Walsh, S.J., A. Moody, T.R. Allen, and D.G. Brown. 1997. Scaling Relationships Between NDVI and Terrain in a Mountainous Environment. In: Quattrochi, D.A., and M.F. Goodchild, Eds., *Scale in Remote Sensing and GIS*. CRC Lewis Publishers, Boca Raton, ppg. 27-55.
- Allen, T.R. and S.J. Walsh. 1994. Characterizing Multitemporal Alpine Snowmelt Patterns for Ecological Inferences. In: MacLean, Anne L., Ed., *Remote Sensing and Geographic Information Systems An Integration of Technologies for Resource Management: A Compendium*. American Society for Photogrammetry and Remote Sensing, Bethesda, Maryland (compiled from *Photogrammetric Engineering and Remote Sensing*).
- Walsh, S.J., D.R. Butler, T.R. Allen, and G.P. Malanson. 1994. Influence of Snow Patterns and Snow Avalanches on the Alpine Treeline Ecotone. In: Walsh, S.J., F.W. Davis, and R.K. Peet, Eds., *Applications of Remote Sensing and Geographic Information Systems in Vegetation Science*, Opulus Press, Uppsala, Sweden (compiled from *Journal of Vegetation Science*).

### **Published Maps and Geospatial Data**

- Allen, T.R. 2017. Normalized Difference Index (NDX) Mosaic Composite for Salt Marshes of the South Atlantic. ScienceBase.gov, South Atlantic Landscape Conservation Cooperative, Conservation Planning Atlas, (<https://www.sciencebase.gov/catalog/item/58f7e6f6e4b0b7ea5451fb81>).
- Allen, T.R. 2017. Marsh Classification: Vector Polygons and Rasters for Salt Marshes of the South Atlantic. ScienceBase.gov, South Atlantic Landscape Conservation Cooperative, Conservation Planning Atlas, (<https://www.sciencebase.gov/catalog/item/58f7c8bfe4b0b7ea5451fac7>).
- Allen, T.R. and R. Howard. *North Carolina Coastal Atlas*. Coastal webmap and bibliography (<https://www.nccoastalatlus.org/>).
- Allen, T.R., M. Carey, B. Gore, T. Hill, and M. Covi. 2012. "Sea-Level Rise Vulnerability in the Albemarle-Pamlico Estuarine System," *ESRI Map Book*, v.27, p. 29.
- Allen, T.R., R. Howard, M. Covi, D. Kain. 2010. "Potential Sea-Level Inundation in the Town of Plymouth, NC." *NC Sea Grant* map and final report.

### **Book and Software Reviews**

- Hamylton, S. 2017. *Spatial Analysis of Coastal Environments*. Cambridge University Press, for *Ocean and Coastal Management*, (in review.)
- Allen, T.R. 2002. Earth (Version 2.0) Software Review. *Photogrammetric Engineering and Remote Sensing*, 68(10): 971-976.
- Atkinson, P.M. and N.J. Tate. 1999. Eds., *Advances in Remote Sensing and GIS Analysis*, Wiley, New York, 273 pp. for *Geomorphology*, 2001.
- Hapke, Bruce. 1993. *Theory of Reflectance and Emittance Spectroscopy*. Cambridge University Press, Cambridge, Topics in Remote Sensing 3, 455 ppg.
- Pieters, Carlé M. and Peter A.J. Englert. Eds., 1993. *Remote Geochemical Analysis: Elemental and Mineralogical Composition*. Cambridge University Press, Cambridge, Topics in Remote Sensing 4, 594 ppg. for *Geomorphology*, 1997, 18(3-4): 350-352.

Allen, T.R. 1997. ELT/2500 PC (Version 3.3) and ELT/Net. (software review) *Photogrammetric Engineering and Remote Sensing*, 63(8): 947-951.

### Conference Proceedings

- Allen, T.R., Wang, Y., Gore, B., Swords, J., and D. Newcomb. 2011. Coastal wetland mapping and monitoring using time series SAR imagery and LiDAR: Alligator River National Wildlife Refuge, North Carolina. *18<sup>th</sup> William T. Pecora Remote Sensing Symposium*, American Society for Photogrammetry and Remote Sensing, Herndon, Virginia, November 14-17.
- Allen, T.R. and S. Sanchagrín. 2011. Storm surge visualization for communicating risk and uncertainty. *Coastal GeoTools 2011*, Myrtle Beach, SC, March 21-24.
- Allen, T.R. and S. Sanchagrín. 2010. Geovisualization for Hurricane Risk Communication. *Proceedings, ASPRS/CaGIS/AutoCarto Fall Specialty Conference, Geospatial Data and Geovisualization: Environment, Security, and Society*, Orlando, November 15-19, 2010.
- Allen, T.R., S. Sanchagrín, and N. Lee. 2010. Geovisualization Strategies to Analyze and Communicate Inundation Risk from Storm Surges. *Proceedings, The Coastal Society's 22nd International Conference: Shifting Shorelines: Adapting to the Future*, June 13-16, Wilmington, NC.
- Allen, T. R. 2010. Geovisualization for Sea-Level Rise. *North Carolina Sea-Level Rise Forum*, Raleigh, January 5-6.
- Marshburn, E., Y. Wang, R. Mitchelson, and T. Allen. 2009. Potentials and Impediments for Operational Remote Sensing of Small Recreational Vessels. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS) Annual Meeting*, Baltimore, March 11-13.
- Allen, T.R., G. Oertel, and G. McLeod. 2009. Mapping Tidal Flushing with Multitemporal ASTER Thermal Data and a Tidal Repletion Model. *Proceedings of the American Society for Photogrammetry and Remote Sensing (ASPRS) Annual Meeting*, Baltimore, March 11-13.
- Allen, T. R., Crawford, T., Walsh, J. P. , Corbett, R., & Sanchagrín, S. (2009). Spatial Modeling and Visualization for the North Carolina Coastal Hazards Decision Portal (NC COHAZ). *NOAA Coastal GeoTools 2009*.
- Wang, Y. and T.R. Allen. 2008. Using Japanese ALOS PALSAR HH and JERS-1 L-HH SAR Data to Delineate Estuarine Shorelines and to Study Shoreline Changes of North Carolina Coast, USA. *JAXA Conference, Japan*.
- Allen, T.R., H. Tolvanen, G.F. Oertel, and G. McLeod. 2005. Spatial Analysis and Ecological Applications of Tidal Flushing and Wave Exposure in Chincoteague Bay, Virginia, USA. *Estuarine Interactions: Biological-Physical Feedbacks and Adaptations*, 18th Biennial Conference of the Estuarine Research Federation. Conference abstracts. October 16-20, Norfolk, Virginia, USA, p. 11.
- Oertel, G.F., T.R. Allen, and G. McLeod. 2005. Spatial Analysis of Basin Hypsography for Determining Repletion in Coastal Lagoons, Hog Island Bay, Virginia. *Estuarine Interactions: Biological-Physical Feedbacks and Adaptations*, 18th Biennial Conference of the Estuarine Research Federation. Conference abstracts. October 16-20, Norfolk, Virginia, USA, p. 135.

- Allen, T.R. and G.F. Oertel. 2000. Application of Change Vector Analysis to Ecosystem Monitoring, Virginia Barrier Islands, U.S.A. *Proceedings of the Sixth International Conference on Remote Sensing for Marine and Coastal Environments*, 2: 234-242.
- Oertel, G.F., K. Overman, T. Allen, and R. Carlson. 2000. Hypsographic Analysis of Coastal Bay Environments using Integrated Remote Sensing Techniques, Hog Bay, Virginia, U.S.A. *Proceedings of the Sixth International Conference on Remote Sensing for Marine and Coastal Environments*, 2: 242-250.
- Allen, T.R. 1999. Reflected GPS Signal Analysis. *Coastal GeoTools '99*, NOAA Coastal Services Center, Charleston, April 5-7, with G.F. Oertel and S.J. Katzberg.
- Allen, T.R. 1998. Mapping Coastal Change in the Southern Delmarva, USA. *Proceedings, Fifth Thematic Conference on Remote Sensing for Marine and Coastal Environments*, October, San Diego, 2: 282-289.
- Allen, T.R., D.G. Brown, D.R. Butler, and S.J. Walsh. 1995. Local and Regional Variability of Glacier Equilibrium-Line Altitudes in Northwest Montana. *Proceedings, American Congress on Surveying and Mapping/American Society for Photogrammetry and Remote Sensing (ACSM/ASPRS) Joint Annual Convention*, Charlotte, North Carolina, pp. 112-122.
- Moody, A., S.J. Walsh, T. Allen, and D. Brown. 1995. Scaling Properties of NDVI and their Relationship to Land-Cover Spatial Variability. *Proceedings, 15th International Geoscience and Remote Sensing Symposium (IGARSS)*, Firenze, Italy, July 10-14.
- Walsh, S.J., D.G. Brown, L. Bian, and T.R. Allen. 1994. Effects of Spatial Scale on Data Certainty: An Assessment Through Data Dependency and Sensitivity Analysis. *Proceedings, International Symposium on the Spatial Accuracy of Natural Resource Databases*, Williamsburg, Virginia, pp. 151-160.
- Allen, T.R. 1989. Testing an Analytical Model of Surf Prediction. *Proceedings, Third National Conference on Undergraduate Research*, 1:223-226.

### **Technical Reports**

- Allen, T.R., G. McLeod, and J. Behr. *Assessing Current and Potential Future Risk Posed to Structural Assets at Norfolk International Terminal-South Stemming from Sea Level Rise and Severe Storm Inundation*. Final report to the Port of Virginia. 59pp. (July 3, 2017.)
- Allen, T.R. *Maps, Marshes, and Management: Sea-Level Rise Information for Coastal Management Decision-Making*. Final report to NOAA Cooperative Institute for Climate and Satellites, March 2014.
- Allen, T.R. and B. Montz. *Climate Change Impacts on Water Infrastructure: Vulnerability to Sea-Level Rise and Coastal Storm Surges*. Final report to Carolinas Integrated Sciences and Assessments (May 1, 2013 - April 30, 2014.)
- Manda, A. and T.R. Allen. *Assessment of surface and ground water hydrology at the Emily and Richardson Preyer Buckridge Coastal Reserve, NC*. Prepared for the Division of Coastal Management, NC Department of Environment and Natural Resources, funds provided by the NC Clean Water Management Fund, December 2012.
- Bright, J., N. Richards, J. Hoyt, J. Wagner, and T.R. Allen. 2012. *The Battle of the Atlantic Expedition 2011: The Battle of Convoy KS-520, North Carolina, 15 July 1942*. National Park Service, US Department of Interior, American Battlefield Protection Program, February 2012.



- Allen, T.R. 2011. Assessment of a Methodology to Simulate Geomorphic Evolution of the North Carolina Coastal System: Albemarle-Pamlico Sound Pilot study. NC Sea-Level Rise Risk Management Study (FEMA/NC Division of Emergency Management), October 1.
- Allen, T.R., D. Mallinson, S. Culver, and S. Riggs. 2011. A Methodology to Simulate Geomorphic Evolution of the North Carolina Coastal System. Final report to NC Sea-Level Rise Risk Management Study. June 1.
- Allen, T.R. 2010. Potential Sea-Level Inundation in the Town of Plymouth, NC. *NC Sea Grant*.
- Culver, S., S. Riggs et al. 2008. North Carolina Coastal Hazards: Economic Implications of Severe Storms and Sea-Level Rise. Final report to University of North Carolina General Administration. June 30.
- Allen, T.R. and N. Dahman. 2006. MicroMaps Georeferencing and Geospatial Analysis. Final report to NASA Virginia Space Grant Consortium, Hampton, Virginia, and George Mason University Center for Earth Observation and Space Research, August 30.
- Allen, T.R. 2002. Remote Sensing Applications in Mosquito-borne Disease Prevention. Final report to VAccess project year 1, NASA Stennis Space Center.
- Allen, T.R. and G.F. Oertel. 2000. Remotely Sensed Patterns of Coastal Waters, Wetlands, and Reflected GPS Power. Report to NASA Langley Research Center, Sensors and Systems Development Branch.
- Allen, T.R. 1999. Accuracy Assessment and GIS Database Development for Chincoteague National Wildlife Refuge. Cooperative agreement report to US Fish and Wildlife Service, Chincoteague NWR.
- Apperson, C., T.R. Allen, and C.J. Neely. 2001. Integrated Mosquito Management: Use of Wide Area Multi-Spectral Remote Sensing and Geographic Information Systems Technologies to Locate Mosquito Breeding Habitats. Report to North Carolina State University Cooperative Extension, Integrated Pest Management Committee, January 19.

### **Non-Peer-Reviewed Articles and White Papers**

- Allen, T.R. Sea-Level Rise in the Albemarle-Pamlico Estuarine System. *The State of the Sounds 2012: An Assessment of the Albemarle Pamlico Ecosystem*. Raleigh, NC, Albemarle Pamlico National Estuary Partnership. <http://portal.ncdenr.org/web/apnep>
- Plymouth Prepares for the Future: Flooding Threats in a Changing Climate. *CoastWatch*, NC Sea Grant, Spring 2012, pp. 12-17.
- Feyen, J., D. Marcy, and NOAA Storm Surge Team. 2011. Coastal Inundation Mapping Workshop, Bay St. Louis, Mississippi.
- Auer, Carole. 2009. Geovisualization for Sea-Level Rise. In: *North Carolina Sea Level Rise Project: Application to Management*. NOAA Sea Level Rise Program Workshop White Paper. October 2009, 36 pp.
- Allen, T.R. 2007. Alexander von Humboldt. In: Robbins, P., ed., *Encyclopedia of Environment and Society*. Sage Publications.

Allen, T.R. 2003. Remote Sensing Integration for Mosquito Surveillance and Control. *Earth Observation Magazine (EOM)*, August/September 12(6): 28-33.

Allen, T.R., C.W. Emerson, and D.A. Quattrochi. 2001. Guest Editorial (Special Issue), *Geocarto International*, 16(4): 4.

Allen, T.R. and R. Warren Flint. 1997. Measuring Smart Growth. *Sustainability Review*, The Eastern Shore Institute. 1(2): 2.

#### **Articles in Review**

Landry, C.E. and T. Allen. Hedonic Property Prices and Coastal Beach Width. *Social Science Research Network* (in review).

Allen, T.R., G. Mcleod, J. Behr. Geospatial Risk Assessment of Marine Terminal Infrastructure to Storm Surge Inundation and Sea Level Rise. *Transportation Research Board: Journal of the Transportation Research Board*, (accepted 8 Nov 2017.)

Loftis, D., M. Mitchell, L. Atkinson, B. Hamlington, T.R. Allen, D. Forrest, T. Updyke, N. Tahvildari, D. Bekaert, and M. Bushnell. Integrated Ocean, Earth and Atmospheric Observations in Hampton Roads, Virginia. *Marine Technology Society Journal* (submitted 17 November 2017.)

#### **Works in Preparation**

Allen, T.R., G. McLeod, and J. Behr. Spatial Analysis for Port Risk Assessment and Resiliency Planning for Storm Surge and Sea Level Rise in Norfolk, Virginia. *Marine Technology Society Journal*

Allen, T.R., Z. Oyer, and B. Montz. Differential Water Infrastructure Vulnerability to Flood Hazards in three Coastal Micropolitan Cities of North Carolina, USA. *Applied Geography*.

Harmin, C., T.R. Allen, and R. Howard. Dasymetric Mapping Improves Assessment of Vulnerable Coastal Populations. *Journal of Maps*. (in review.)

Squires, K., L. Thie, and T.R. Allen. Health-related Infrastructure at Risk to Sea Level Rise in North Carolina. (in preparation for submission.)

Allen, T.R. and M. Garner. High-resolution Classification of Barrier Island Vegetation: Object-Oriented image analysis. *Int. J. Remote Sensing*. Special issue on Fine Resolution Remote Sensing of Species in Terrestrial and Coastal Ecosystems. (in prep.)

Allen, T.R. and M. Carey. Geospatial Site Suitability Modeling for Living Shorelines in the Roanoke and Croatan Sounds, North Carolina. *Ocean and Coastal Management*. (in prep.)

Allen, T.R. and B. Gore. Modeling and Historical Verification versus Calibration of Sea-Level Response in the Roanoke, Croatan, and Pamlico Sounds, North Carolina. *Estuaries and Coasts*. (in prep.)

#### **Grants Received**

Co-Principal Investigator (with J. Behr, PI, and G. Mcleod, Co-PI). Assessing Current and Future Risk Posed to Structural Assets at Norfolk International Terminal South Stemming from Sea Level Rise and Severe Storm Inundation. \$68,000, (May - July 2017.)

Principal Investigator (with G. McLeod, Co-PI). NASA Coastal Hazards Mid-Atlantic Demonstration Study. NNL16AA05C, \$30,000, (August 2017 – April 2018.)

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Principal Investigator (with G. McLeod, Co-PI). Marsh Habitat Classification Synthesis for Southern Coastal Georgia and Northern Florida. US Fish and Wildlife Service, South Atlantic Landscape Conservation Cooperative, \$38,000, (August 2017 - December 2018.)

Principal Investigator (with G. McLeod and T. Alberts, Co-PIs). Unmanned Aerial Vehicles (UAVs) for Coastal Resources and Hazards. Virginia Space Grant Consortium, \$8,985 (May – August 2017.)

Principal Investigator (with B. Montz, G. Kearney, T. Crawford, L. Fly, and J. Whitehead.) A Community-wide Public Health Risk Assessment of Vulnerable Water Infrastructure in Coastal Cities. NOAA Climate Program Office, ECU subaward in collaboration with SC Sea Grant and NC Sea Grant. \$281,000, (Sept. 2015-August 2017.)

Co-Principal Investigator (with Burrell Montz.) Rip Current Maps, Graphics, and Risk Communications, subaward from ESC Consultants, funded by NOAA National Weather Service. \$35,000.

Co-Principal Investigator (with Randall Etheridge, ECU, and Huili Hao, UNCW.) Participatory Mapping of Surface Water Hydrology as an Initial Step in the Restoration of Lake Mattamuskeet. USDA Fish and Wildlife Service Cooperative Agreement No. F16AC01262, FWS Cooperative Ecosystem Studies Unit, Oct. 1, 2016 – December 31, 2017, \$10,000.

Principal Investigator. Coastal Atlas Asset Inventory Mapping for the NC Land of Water. NC Land of Water and Z. Smith Reynolds Foundation, April 1, 2015 – June 30, 2016, \$30,000.

Principal Investigator and Mentor (Michael J. Flynn). NC Sea Grant Coastal Policy Fellowship, January 2016, \$5,000.

Principal Investigator. NC Coastal Atlas Year 4. NC Division of Coastal Management. \$45,000. (July 1, 2015 - December 31, 2016.)

Principal Investigator. Allen, T. and M. Flynn (Recipient). A Multi-Hazard Vulnerability Assessment of Coastal Development along Cape Hatteras National Seashore. NC Coastal Policy Fellowship, NC Sea Grant. 2016 (\$5,000.)

Principal Investigator. Synthesis of High and Low Marsh Habitat Mapping, Vulnerability and Responses to Sea-Level Rise in the South Atlantic Region. (with JP Walsh, ECU; Jim Morris, USC; Clark Alexander, Skidaway Inst.) South Atlantic Landscape Conservation Cooperative (SALCC), \$281,631 (February 2013-August 2016.)

Principal Investigator (with T. Crawford, B. Montz, and JP Walsh.) Identifying Cultural Resources Sites Affected by Sea Level Rise at Cape Hatteras National Seashore. US National Park Service: Piedmont-South Atlantic Cooperative Ecosystems Studies Unit. \$67,613 (September 2013 – September 2016.)

Principal Investigator (with Guiseppe Getto, ECU English and Technical Communications.) NC Coastal Atlas Year 5. \$76,101. NC Division of Coastal Management and NOAA Office of Coastal Management, (October 15, 2015 – December 31, 2016).

Principal Investigator. NC Coastal Atlas Year 3. \$30,000. NC Division of Coastal Management and NOAA Office of Coastal Management, (January 1 – December 31, 2015).

Co-Principal Investigator (with Alex Manda). NC Coastal Groundwater Watch. NC Sea Grant. \$45,000. (September 2014-July 2015.)

Principal Investigator (with JP Walsh). Planning and Implementing a North Carolina Coastal Atlas. \$35,000. NC Division of Coastal Management, (July 2013 – June 2018.)

Co-PI, (with B. Montz). Climate Change Impacts on Water Infrastructure: Vulnerability to Sea-Level Rise and Coastal Storm Surges. \$19,148. Carolinas Integrated Sciences and Assessments (CISA), (January 1, 2013 – December 31, 2013.)

PI (with Donna Kain). Visualization and Communications Tools to Help North Carolina Communities Plan for Sea Level Rise. \$22,500. NC Sea Grant. (April 1, 2013 – April 30, 2014.)

Co-PI, (with JP Walsh). Prototype North Carolina Coastal Atlas. Governor's South Atlantic Alliance Grant. \$10,091 (January 1, 2013 – June 30, 2014.)

Principal Investigator. High and Low Marsh Mapping, Vulnerability, and Responses to Sea-Level Rise in Rachel Carson NC Estuarine Research Reserve. Graduate fellowship: Margaret Garner, CRM doctoral student, (\$5,000 Spring-fall 2013.)

Co-PI, Monsoon Vulnerability and Climate Change in Bangladesh. Asia-Pacific Research Foundation, seed grant with Crawford, T. (PI), A. Salahuddin, S. Curtis, and A. Mukherji, \$15,000 (seed grant, March 2012-February 2013.)

Principal Investigator and Director, Renci@ECU Regional Engagement Center: Attacking Coastal Hazards of North Carolina Renewal Proposal for 2009-2012. \$600,000 three-year renewal of the ECU Center for Coastal Systems Informatics and Modeling (2009-2012.)

Principal Investigator, Maps, Marshes, and Management Applications: Ecological Effects of Sea-Level Rise in North Carolina. NOAA Cooperative Institute for Climate and Satellites-North Carolina (CICS-NC) and NOAA Center for Sponsored Coastal Ocean Research, \$90,000 (October 27, 2011 – December 31, 2012.)

Co-Principal Investigator (with Alex Manda, PI) Assessment of Surface and Ground Water Hydrology and Vegetation at the Emily and Richardson Preyer Buckridge Coastal Reserve, NC. NOAA NC National Estuarine Research Reserve, NC Division of Coastal Management, \$71,400 (May 17, 2010 – Sept. 27, 2012.)

Principal Investigator (with Yong Wang, Co-PI), Investigating SAR Remote Sensing for Updating National Wetland Inventory in North Carolina. US Fish and Wildlife Service, Cooperative Ecosystems Studies Unit. \$20,000 (October 1, 2010 – August 31, 2012.)

Co-Principal Investigator (with Nathan Richards, PI) Battle of the Atlantic: Resources Identification and Assessment Survey, National Park Service, Battlefield Protection Program, \$160,000 (with NOAA match), (August 1, 2010 – January 31, 2012.)

Principal Investigator, Mapping Potential Sea-Level Rise in the Town of Plymouth, North Carolina: GIS and Collaborative Participation. NC Sea Grant. \$7,800 (2010-11.)

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Co-Investigator, Towards Integration of Estuarine Observation: An Inter-institutional Cooperative Research and Outreach Proposal to the University of North Carolina Research Competitiveness Program, PIs Stephen J. Culver and Lynn Leonard, \$75,000 (\$5,000 to develop Eastern Carolina Coastal Imagery Clearinghouse, [http://nccohaz.ecu.edu/ecu\\_imagery.htm](http://nccohaz.ecu.edu/ecu_imagery.htm))

Co-Investigator, North Carolina Coastal Hazards: Economic Implications of Severe Storms and Sea-Level Rise. UNC General Administration, \$288,694 November 15, 2007 to June 30, 2008 (Coastal Hazards Database project, with Crawford, Corbett, and Walsh).

Co-Investigator, Benefits and Costs of Offshore Wind Farms in North Carolina. \$39,000. with Todd Cherry (ASU), Craig Landry (ECU) and John Whitehead (ASU). Appalachian State University Energy Research Council, June 2008-June 2009.

Principal Investigator, VISSTA –Vegetation, Impervious Surfaces, Soils, and Topographic Analysis Tools: Using Geospatial Technology to Promote Coastal Water Quality. \$159,631. The Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), Sept. 1, 2007-Aug. 31, 2010.

Co-Investigator (Visualization Lead), *Renaissance Computing Institute (Renci) at East Carolina*. Center for Coastal Systems Informatics and Modeling (C-SIM), \$1M, January 2007-June 2009.

Co-Principal Investigator, Environmental Public Health Tracking System in Virginia. \$80,000. Old Dominion University Research Foundation Seed Grant, January – June 2006.

Co-Principal Investigator. \$13,500. MicroMaps CO Sensor Georectification and Mapping. Virginia Space Grant Consortium, with Nidal Dahman, Civil Engineering Technology, ODU, June 2005 – June 2006.

Principal Investigator, *Virginia Access-Phase 3*. \$85,000. NASA Stennis Space Center, VAccess Virginia Remote Sensing Center of Excellence, subcontract with George Mason University, March 2005-October 2006.

Principal Investigator, *Virginia Access-Phase 2*. \$108,000. NASA Stennis Space Center, VAccess Virginia Remote Sensing Center of Excellence, subcontract with George Mason University, September 2003- September 2005.

Principal Investigator, *Fulbright Scholar- Finland*, research/lecturing at University of Turku, Finland, U.S. Department of State, Fulbright Scholar Program, Fall 2003.

Principal Investigator, *Virginia Access-Year 2*. \$125,000. NASA Stennis Space Center, VAccess Virginia Remote Sensing Center of Excellence, subcontract with George Mason University, September 2002- August 2003.

Travel Stipend. Presenter and U.S. representative at the Northern Timberline Forests Workshop, Arctic Council, Polar Research Board, National Research Council, \$1500, May 23-25, 2002.

Principal Investigator. *Remote Sensing Applications in Landscape Epidemiology: Mosquito Control and Disease Surveillance*. NASA Stennis Space Center, VAccess Virginia Remote Sensing Center of Excellence, subcontract with George Mason University, \$75,000 year 1 (AY 2001-2002).

Co-Principal Investigator. *Integrated Mosquito Management: Use of Wide Area Multi-Spectral Remote Sensing and Geographic Information Systems Technologies to Locate Mosquito Breeding Habitats*. North Carolina State University Extension Integrated Pest Management, \$12,614 first year, \$5,500 year 2 (2000-2001).

Principal Investigator. *Geospatial Research and Education: A Laboratory for Remote Sensing and Environmental Analysis (LaRSEA)*. NASA Office of Mission to Planet Earth, \$142,000 total, \$95,000 NASA, (1997-1998.)

Co-Principal Investigator, *Coupling Field, Remote Sensing, and Modeling Techniques to Examine Processes at the Deciduous-Coniferous Ecotone in Great Smoky Mountains National Park*. National Science Foundation Geography and Regional Science Division, 1998-1999, two years, total \$209,851 requested, (\$50,000 received for one year.)

Co-Principal Investigator, *Remotely Sensed Patterns of Surface Roughness in Coastal Waters Using Landsat TM Imagery and Reflected GPS Power*. NASA Langley Research Center, Principal Investigator G. Oertel, Department of Ocean, Earth, and Atmospheric Sciences, \$25,000 (one year, April 1, 1998 – December 31, 1998.)

Principal Investigator, *Drivers of Land Transformation on Virginia's Eastern Shore*. USGS Data Grant, \$800 for four Landsat MSS satellite images (August 1997.)

Travel Grant, *NASA Workshop on Remote Sensing Applications*, Utah State University, May 28-30, 1997, Virginia Space Grant Consortium, \$500.

*Dynamics of Coastal Land Cover on Virginia's Eastern Shore*. Arts and Letters Semester Research Grant, Old Dominion University, \$400 (Spring 1997.)

Principal Investigator. *Spatial Decision-Making and Geographic Information Systems (GIS) in Coastal Disaster Response*, Natural Hazards Research and Information Center, Boulder, Colorado, \$1,667 (1996-97.)

Principal Investigator, *Topographic Normalization of Multispectral Satellite Data for Improved Landscape Characterization*. University Committee on Research and Scholarship, University of Vermont, \$3,300 (1995-96).

### **University Internal Grants Received**

Evaluating Unmanned Aerial Vehicles (UAVs) for Monitoring Coastal Change and Mapping Recurrent Flooding. \$7,000. ODU Resiliency Collaborative, FY 2017 (with G. Mcleod and T. Alberts.)

Preliminary assessment of the potential influence of artificial channels on salt water intrusion and ecosystem changes of the Buckridge Reserve, North Carolina. \$20,000. Interdisciplinary Research Collaboration Award. ECU Research and Graduate Studies, FY015 (with E. Reyes, A. Manda).

Impact of climate change and sea-level rise on groundwater inundation in coastal regions. \$20,000. Interdisciplinary Research Collaboration Award. ECU Research and Graduate Studies, FY015 (with A. Manda, D. Mallinson, S. Curtis, B. Montz, and E. Bean.)

Terrestrial laser scanning and GPS equipment infrastructure, \$50,000. UNC General Administration and ECU Research and Graduate Studies, 2010.

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Co-PI, Battle of the Atlantic: Developing a Joint Maritime Geospatial Research Proposal for the Monitor National Marine Sanctuary (National Park Service), Coastal Maritime Council (ECU CMC seed grant \$6,000.)

Co-Investigator, Seed grant proposal, Hazard Management Scenarios for Coastal Communities. Coastal Maritime Council, East Carolina University (with Paul Gares, Craig Landry, and Dan Marcucci; June 2007.)

### **Proposals Submitted**

Co-Principal Investigator (with D. Loftis, PI, VIMS and G. McLeod, Co-PI ODU). Geostatistical Methods for First-Floor Elevation Mapping and Risk Assessment and Floodplain Mapping. \$40,000 of \$200,000 total project, submitted July 2017 to FEMA and Virginia Department of Emergency Management.

### **Proposals in Preparation**

Principal Investigator. Marsh Mapping Across the Florida Coastal Landscape: A Multi-Sensor Mapping Synthesis for Regional Habitat and Conservation. Atlantic Coast Joint Venture (ACJV). \$69,590. To be submitted November 2017.

Co-Principal Investigator (with J. Hochard and J. Kruse, East Carolina U.) Policy Benefits of Assessing Upstream Pollution Risks to Downstream Coastal Public Health. Molly K. Macauley Award for Research Innovation and Advanced Analytics for Policy, \$50,000 to be submitted December 2017.

### **Recently Declined Proposals**

Co-Principal Investigator (with L. Borgeau-Chavez, M. Miller, N. French, R. Chimner, J. Hribljan, Michigan Tech; B. Benschoter, Florida Atlantic; K. Tansey and S. Page, Leicester U.), Multi-Temporal and Multi-Sensor Mapping and Analysis of Wetland Degradation and Remediation. NASA ROSES Land Use/Land Cover Change Program, \$750,000, submitted June 2017.

Co-Principal Investigator (with D. Loftis, VIMS, and M. Covi, ODU). SCC-IRG Track 1: StormSense Municipal Dashboard for Street-Level Flood Prediction and Adaptive Urban Planning. National Science Foundation Smart and Sustainable Cities Program, \$1.8M. Declined June 2017.

Principal Investigator (with G. McLeod, R. Zimmerman). Geospatial Laboratory Development and Instrumentation Utilizing STEM (GLADIUS). US Department of Defense 2017 Research and Education Program, \$246,000. Declined June 2017.

### **Professional Presentations**

Allen, T.R., G. McLeod and J. Behr. Geospatial Risk Assessment of Marine Terminal Infrastructure to Storm Surge Inundation and Sea Level Rise. Transportation Research Board, Washington, D.C., January 2018 (forthcoming.)

Allen, T.R. Linking Marine Geography and GIScience in an Advanced University Course. Esri Oceans GIS Forum, Redlands, CA, October 2017.

Allen, T.R. and T. Crawford. Spatial Modeling of Flood Hazards and Water Infrastructure in Charleston, SC, and Morehead City, NC. American Association of Geographers, Boston, April 2017.

McLeod, G. and T. Allen. Modeling Inundation Uncertainty in Coastal Flood Events Using Monte Carlo Simulation. American Association of Geographers, Boston, April 2017.

- Allen, T.R., Crawford. Geospatial Modeling for Coastal Community Water Infrastructure Vulnerability. Coastal GeoTools, Charleston, SC, February 2017.
- Allen, T.R., T. Crawford, B. Montz, G. Kearney. Geospatial Modeling of Flooding Threats to Coastal Community Water Infrastructure, Applied Geography Conference, Louisville, KY, October 2016.
- Allen, T.R. Geospatial Modeling Techniques for Community Water Infrastructure Vulnerability Assessment. Hampton Roads Water Symposium, Chesapeake, VA, September 12, 2016.
- Allen, T.R., T. Crawford, B. Montz, et al. Geospatial Vulnerability Assessment of Coastal Water Infrastructure. *NOAA Social Coast Forum*, Charleston, SC, February 6-10, 2016.
- Allen, T.R. Flooding Threats to Coastal Community Water Infrastructure: A View to the south in Charleston (SC) and Morehead City (NC), Hampton Roads Water Symposium, Chesapeake, VA, September 2016.
- Flynn, M., T. Allen, B. Montz, T. Crawford, and JP Walsh. Vulnerability of Landmarks at Cape Hatteras National Seashore. *NOAA Social Coast Forum*, Charleston, SC, February 6-10, 2016.
- Allen, T., J. Whitehead, B. Montz, T. Crawford et al. Geospatial Vulnerability Assessment of Coastal Water and Waste Water Infrastructure. *NC Water Resources Research Institute Annual Meeting*, Raleigh, March 18-19, 2016.
- Allen, T. Mapping Salt Marshes in the South Atlantic Landscape using Landsat 8 and Object-Oriented Image Analysis. Coastal and Estuarine Research Federation (CERF) Bi-ennial Conference, Portland, OR, November 8-12, 2015.
- Allen, T.R., B. Montz, Z. Oyer. Vulnerability of Coastal Water Infrastructure to Storm Surge, Floods, and Sea-Level Rise: Plymouth, Manteo, and New Bern, NC. *Carolinas Climate Resilience Conference*, Charlotte, April 28-29, 2014.
- Garner, M. and T.R. Allen. High and Low Marsh Habitat Mapping, Vulnerability, and Response to Sea Level Rise in the Rachel Carson Reserve, NC. *Carolinas Climate Resilience Conference*, Charlotte, April 28-29, 2014.
- Allen, T.R. and R. Howard. Introducing the North Carolina Coastal Atlas. *ECU FaculTea*, Joyner Library, March 5, 2014.
- Allen, T.R., M. Covi, R. Howard, M. Flynn, and M. Garner. Transforming Data to Information for Coastal Decisions: The North Carolina Coastal Atlas. *Social Coast Forum*, Charleston, SC, February 18-20, 2014.
- Allen, T.R. and B. Montz. Climate Change Impacts on Water Infrastructure: Vulnerability to Sea-Level Rise and Coastal Storm Surges. *SEDAAG Annual Meeting*, Roanoke, Virginia, November 2013.
- Allen, T.R., R. Howard, M. Covi, and M. Flynn. Introducing the North Carolina Coastal Atlas. *NC ArcUser Group Meeting*, Carolina Beach, October 29-31, 2013.
- Allen, T.R. Introducing the North Carolina Coastal Atlas. Colloquium, Department of Geography, Planning and Environment, ECU, Oct. 18, 2013.



- Allen, T.R., J.P. Walsh, J. Morris, and C. Alexander. Multi-scale Mapping, Modeling, and Measurement of Vulnerable South Atlantic Wetlands. Special Session Organizer and presenter, *Coastal and Estuarine Research Federation (CERF)*, San Diego, November 2013.
- Allen, T.R. Maps, Marshes, and Management with the North Carolina Coastal Atlas. *North American Cartographic Information Society*, October 2013, Greenville, SC.
- Allen, T.R. Geospatial Tools and the North Carolina Coastal Atlas. *NCDEM-ECU Annual Hurricane Workshop*, Greenville, NC, May 26, 2013.
- Allen, T.R. Planning for the NC Coastal Atlas. *Estuarine Shorelines and NC Coastal Atlas Workshop*, Coastal Studies Institute, Manteo, NC, May 10-11, 2013.
- Allen, T.R. Mapping Marsh Ecotones, Hypsometry, and Vulnerability to Sea-Level Rise in the South Atlantic. *Association of American Geographers Annual Meeting*, Los Angeles, April 2013.
- Allen, T.R. The North Carolina Coastal Atlas. *NOAA NC Sentinel Sites Research and Monitoring Coordination Workshop*, NOAA Beaufort, NC, March 12-13.
- Manda, A. and T.R. Allen. Hydrologic restoration in the channelized and peatland dominated coastal wetlands of the Southern Albemarle Estuarine System: Effectiveness of water control structures in regulating water levels and flow. *NC Water Resources Research Institute (WRRI) Annual Conference*, Raleigh, March 20-21.
- Manda, A. and T.R. Allen. Source, Transport and Fate of Salt in a Channelized and Peatland-Dominated Wetland System, Southern Albemarle Estuarine System (North Carolina, USA). *Annual Meeting, Southeastern Section, Geological Society of America (GSA)*, San Juan, Puerto Rico, March 20-21, 2013.
- Allen, T.R. Coastal Hazards and GIS. *NC Beaches, Inlets, and Waterways Association Annual Meeting*, Wrightsville Beach, NC, November 19-20.
- Thie, L., J. Hawhee, and T.R. Allen. Vulnerability of Coastal Public Health Infrastructure to Sea-Level Rise. *Annual Meeting of the American Public Health Association*, Atlanta, October 27-31, 2012.
- Allen, T.R. Modeling Needs and Opportunities for Sea-Level Rise and Coastal Hazards in Bangladesh. *Asia-Pacific Research Network Workshop*, Dhaka, Bangladesh, September 18, 2012.
- Thie, L., T.R. Allen, and J. Hawhee. Climate Change and Infrastructure along Coastal North Carolina. *Centers for Disease Control and Prevention (CDC) and NOAA Symposium*. Atlanta, September 12, 2012.
- Crawford, T., T.R. Allen, D. Kain, N. Murray, and L. Gedminas. Project BioViz: Communicating Hurricane Risk. *Cybervisualization Conference*, 23-24 July 2012 National Socio-Environmental Synthesis Centre (SESYNC) Workshop, Annapolis, MD.
- Allen, T.R. Best Practices (and pitfalls) for Communicating Hurricane Maps and Graphics. *3<sup>rd</sup> Annual NC Hurricane Workshop*, Greenville, May 23, 2012 (co-organizer and speaker.)
- Allen, T.R. Visualizing Storm Surge Uncertainty. *NOAA-in-the-Carolinas Annual Meeting*, Charleston, SC, March 15-16, 2012 (invited.)

- Allen, T.R. Developing Geospatial Decision-Support Tools for Sea-Level Rise Stakeholders. *Webinar to NOAA Gulf of Mexico, Center for Sponsored Coastal Ocean Research (CSCOR)*, December 9, 2012.
- Allen, T.R. Modeling Sea-Level Rise and Wetland Response in the Croatan and Pamlico Sounds, North Carolina. *Annual Meeting of the Association of American Geographers (AAG)*, New York, February 21-25, 2012.
- Allen, T.R. and S. Sanchagrin. Storm Surge Visualization for Communicating Risk and Uncertainty. *Coastal GeoTools 2011*, Myrtle Beach, SC, March 21-24, 2011.
- Allen, T.R. GIS and Visualization for Coastal Inundation Hazards. Webinar for Emergency Preparedness Masters Program, Millersville University, March 18, 2011.
- Allen, T.R., and S. Sanchagrin. Storm Surge Geovisualization for Risk Communication. *NC GIS Conference*, Raleigh, February 18-19, 2011.
- Allen, T.R. and S. Sanchagrin. Geovisualization for Storm Surge Risk Communication. *Joint Symposium of ISPRS Technical Commission IV and AutoCarto 2010 and ASPRS/CaGIS Fall Specialty Conference*, Orlando, November 14-20, 2010.
- Knowles, D., J. Fox, T.R. Allen, and J. Michael. The Renaissance Computing Institute (RENCI) distributed engagement center outreach model. *National Outreach Scholarship Leadership Conference*, Raleigh, NC, October 7-9, 2010.
- Allen, T.R., S. Sanchagrin, and N. Lee. Geovisualization strategies to analyze and communicate inundation risk from storm surges. *The Coastal Society's 22nd International Conference, Shifting Shorelines: Adapting to the Future*, Wilmington, NC, June 10-11, 2010.
- Allen, T.R. and S. Sanchagrin. Linking Storm Surge Modeling and GIScience. Annual Meeting of the Association of American Geographers, Washington, D.C., April 12-15, 2010.
- Allen, T. R. Envisioning Potential Climate Change Impacts in Coastal North Carolina. *NC Climate Change Adaptation Workshop*, EPA and NC Interagency Leadership Team, Raleigh, North Carolina, March 2-3, 2010.
- Allen, T.R. Technology development for emergency management in the 10 years after Hurricane Floyd. Panel organizer and presenter. *Hurricane Floyd 10<sup>th</sup> Anniversary Symposium*, Greenville, NC, September 17-18, 2009.
- Sanchagrin, S. and T.R. Allen. 2009. Hurricane Storm Surge Spatial Representation and Visualization Using GIS. . Southeast *Division Association of American Geographers (SEDAAG) Annual Meeting*, Knoxville, November 21-23, 2009.
- Allen, T. R., Crawford, T., Walsh, J. P. , Corbett, R., & Sanchagrin, S. Spatial Modeling and Visualization for the North Carolina Coastal Hazards Decision Portal (NC COHAZ). *NOAA Coastal GeoTools*, Myrtle Beach, March 14-16, 2009.
- Allen, T.R. North Carolina's Medically-fragile populations: A webinar for public health and emergency management. Organizer and host, February 25, 2009.
- Allen, T.R. *National Weather Service Remembering Floyd Conference*. Flood Awareness Week. March 11, 2009.

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- Allen, T. R. and S. Sanchagrin. Visualizing Storm Surges in GIS for Communicating Risk. *NC ArcUser Group Meeting*, Carolina Beach, North Carolina, September 15-18, 2009.
- Allen, T. R. Visualization alternatives for communicating sea-level rise. *Workshop on Ecological Responses of Sea-Level Rise*, Beaufort, North Carolina, July 18-19, 2009.
- Allen, T.R. Coastal Runoff and Flooding, Presentation to *Coastal Hazards Workshop* public forum, Jockeys Ridge State Park, Nags Head, NC, May 15, 2008.
- Allen, T.R. Visualizing hurricane storm surges. Guest presenter to *NC Emergency Manager Association Annual Meeting*. October, 2008.
- Allen, T.R. Spatial Representation of Wave Energy in a Coastal Lagoon. Southeast Division Association of American Geographers (SEDAAG) Annual Meeting, Charleston, South Carolina, forthcoming November, 2007.
- Wang, Y. and T.R. Allen. Mapping Trends in Estuarine Shorelines and Accompanying Infrastructure and Human Vulnerabilities using High Spatial Resolution Remote Sensing. Southeast Division Association of American Geographers (SEDAAG) Annual Meeting, Charleston, South Carolina, forthcoming November, 2007.
- Allen, T.R. Spatial Analysis of Environmental Gradients in a Coastal Lagoon. Department of Geography and Geology, University of North Carolina at Wilmington, September 2007 (invited.)
- Allen, T.R. Advancing Coastal Geoinformatics and GIS at East Carolina. North Carolina Arc User Group, Carolina Beach, NC, September, 2007 (invited.)
- McLeod, G.M., J. Wilson, J. McGee, and T.R. Allen. Assessing Virginia's Geospatial Workforce and Educational Needs. ESRI User Conference, June 2007.
- Oertel, G.F., T.R. Allen, A.M. Foyle, and G. McLeod. The Chincoteague Paleovalley and Chincoteague Bight. Southeastern Geological Society of America Meeting, Savannah, March 26-27, 2007.
- Allen, T.R., G.F.Oertel, G.M. McLeod. Bathymetric, Hypsometric, and Tidal Prism Analysis of a Coastal Lagoon. Southeast Division Association of American Geographers (SEDAAG) Annual Meeting, Morgantown, West Virginia, November 19-21, 2006.
- Allen, T.R. (invited) Sound Practice for Presentation Graphics in Scientific Publications. Geography Graduate School of Finland, Jyväskylä, Finland, 28-29 August 2006.
- Allen, T.R., H. Tolvanen, and G.F. Oertel. Spatial Modeling of Tidal Flushing and Wave Exposure in a Coastal Lagoon: Implications for ecological restoration and sustainability. Association of American Geographers, Chicago, March 2006.
- Allen, T.R. Flushing, Fetch, and Free Surfaces: A Digital Benthic Landscape Analysis of Chincoteague Bay, MD/VA. Invited colloquium presentation, Department of Geography, University of South Carolina, February 24, 2006.
- Bellows, A.S. and T.R. Allen. Confounding Characteristics of the National Land Cover Data (NLCD) classification scheme. Virginia Academy of Science, Harrisonburg, Va., May 20-22, 2005.
- Allen, T.R. Modelling Diagnostic Spectral-ecological Change at Subarctic Treeline, Finnish Lapland. Association of American Geographers, Denver, April 5-9, 2005.

- Allen, T.R. Supervising change detection: An Approach to Forest Dynamics in Finnish Lapland. American Society for Photogrammetry and Remote Sensing (ASPRS), Baltimore, March 2005.
- Allen, T.R. and G.F. Oertel. Landscape Modifications by Hurricane Isabel, Fisherman Island, Virginia. *Hurricane Isabel in Perspective*. Linthicum Heights, Maryland, November 15-17, 2004.
- Allen, T.R. Remote Sensing of Coastal Habitats for Mosquito Surveillance and Control. Association of American Geographers, Philadelphia, March 2004.
- Allen, T.R. Application of GIS and Geostatistics to Mosquito Surveillance and Control. North Carolina Mosquito and Vector Control Association, Atlantic Beach, N.C., November 13-15, 2002.
- Allen, T.R. Monitoring Northern Treeline via Remote Sensing and Geographic Information Systems: Reality and Prospects. Northern Timberline Forests Workshop, Arctic Council, Rovaniemi, Finland, May 23-25, 2002.
- Allen, T.R. Digital Terrain Analysis for Coastal Geomorphometry: Case Studies from Coastal Virginia. Annual Meeting of the Association of American Geographers, Los Angeles, April 2002.
- Allen, T.R. and J.A. Kupfer. Change Detection in High-Elevation Spruce-Fir Forests, Great Smoky Mountains. Southeast Division of the Association of American Geographers, Lexington, Kentucky, November 2001.
- Allen, T.R. Digital Benthic Landscape Analysis in Two Virginia Coast Preserves. Annual Meeting, Association of American Geographers, New York, NY, February 2001.
- Allen, T.R. and J.A. Kupfer. Spherical Measures for Change Vector Analysis of Landsat Time Series. Association of American Geographers, Pittsburgh, PA, April 2000.
- Allen, T.R. and J.A. Kupfer. Application of Spherical Geometry to Change Vector Analysis of Landsat Data, Annual Conference American Society for Photogrammetry and Remote Sensing, Washington, D.C., May 28, 2000.
- Allen, T.R. and G.F. Oertel. Change Vector Analysis for Coastal Ecosystem Monitoring, Eastern Shore of Virginia. Sixth International Conference on Coastal and Marine Remote Sensing, Charleston, SC, May 3, 2000.
- Allen, T.R., G.F. Oertel, and J. Navarro. Evaluation of Coastal Applications of Reflected GPS Signals, Virginia Academy of Science. May 27, 1999, Norfolk, Virginia, vol. 2: 282-289.
- Oertel, G.F. and T.R. Allen. Evaluation of GPS Signal Reflectance and Coastal Bathymetry at Fishermans Island, Virginia. Presented at *Coastal GeoTools '99*, NOAA Coastal Services Center, Charleston, SC, 5-7 April, 1999.
- Allen, T.R. Changing Structure and Ecological Function of Coastal Basins, Eastern Shore of Virginia, USA. Presented at the Fifth International Conference on Remote Sensing for Marine and Coastal Environments, San Diego, 5-7 October, 1998.
- Allen, T.R. Remote Sensing and GIS Tools for Spatial Planning. Virginia Academy of Science, George Mason University, May 28, 1998.
- Allen, T.R. Spatial Approaches to Sustainable Development Indicators on Virginia's Eastern Shore. Annual Meeting, Association of American Geographers, Boston, March 1998.

- Flint, R.W. and T.R. Allen. The Smart-Growth Paradigm and Virginia's Eastern Shore. Partners for Smart Growth, sponsored by the Urban Land Institute, Baltimore, Maryland, December 2-4, 1997.
- Allen, T.R. Of Necks and Guts: Landscape Ecology of Virginia's Eastern Shore. Invited speaker, Virginia Polytechnic Institute, Office of GIS and Departments of Geography and Forestry, Blacksburg, Virginia, November 12, 1997.
- Allen, T.R. Watershed Concepts and Processes for Teaching Landscape Ecology and Environmental Management. NCGE Annual Meeting, Orlando, October 8-11, 1997.
- Allen, T.R. Late Twentieth Century Landscape and Population-Environment Interactions on the Eastern Shore of Virginia. Faculty Research Workshop, College of Arts and Letters, Old Dominion University, October 1997.
- Allen, T.R. Land-Use Interfaces Science Area Update. Virginia Space Grant Consortium and NASA Langley Research Center, Hampton, Virginia, September 19, 1997.
- Allen, T.R. Remote Sensing of Landscape Patterns for Sustainable Development, Eastern Shore of Virginia. Virginia Academy of Science, Geography Section, Blacksburg, Virginia, May 22, 1997.
- Neely, C.J. and T.R. Allen. Spatial Analysis of the Incidence and Diffusion of *Aedes albopictus* (Asian Tiger) Mosquito, Norfolk, Virginia. Virginia Academy of Science, Geography Section, Blacksburg, Virginia, May 22, 1997.
- Allen, T.R. Comparison of Topographic Normalization of Landsat Data in Three Mountain Environments, Annual Meeting of the Association of American Geographers, Dallas-Ft. Worth, Texas, April 1997.
- Allen, T.R. and R.W. Flint. Landscape Indicators of Sustainable Development and Ecological Integrity on Virginia's Eastern Shore, U.S. International Association for Landscape Ecology Annual Symposium, Duke University, March 1997.
- Allen, T.R. Environment and Pattern at the Alpine Treeline Ecotone, Glacier National Park. Annual Meeting of the Association of American Geographers, Charlotte, North Carolina, April 1996.
- Walsh, S.J., A. Moody, T.R. Allen, and D.G. Brown. Influence of Mountain Terrain on the Scale Dependence of NDVI Values. Annual Meeting of the Association of American Geographers, Charlotte, North Carolina, April 1996.
- Walsh, S.J. and Allen, T.R. Spatial and Compositional Analysis of the Alpine Treeline Ecotone, Glacier National Park, Montana. Conference on Spatio-Temporal Dynamics in Ecological Systems. Hosted by National Center for Ecological Analysis and Synthesis (NCEAS), University of California at Santa Barbara, February 28 - March 1, 1996.
- Allen, T.R. Spatial Attributes of Alpine Treeline in Glacier National Park, Montana. Annual Meeting of the New England/St. Lawrence Valley Division, Association of American Geographers, Burlington, Vermont, November 3, 1995.
- Allen, T.R. Mapping Vermont Land Cover Using Landsat Satellite Data. Presented to Vermont and New Hampshire GAP Biodiversity Analysis cooperators, government, and conservation groups, November 1 (Waterbury, Vermont) and 2 (Concord, New Hampshire). (invited)

- Allen, T.R. Ecological Mapping of the Alpine Treeline Ecotone: A Multidate and Hierarchical Approach. Annual Meeting of the Association of American Geographers, Chicago, Illinois, March 1995.
- Allen, T.R., D.G. Brown, D.R. Butler, and S.J. Walsh. Local and Regional Variability of Glacier Equilibrium-Line Altitudes in Northwest Montana. American Congress on Surveying and Mapping/American Society for Photogrammetry and Remote Sensing (ACSM/ASPRS) Joint Annual Convention, Charlotte, North Carolina, February 1995.
- Walsh, S.J., D.G. Brown, L. Bian, and T.R. Allen. Effects of Spatial Scale on Data Certainty: An Assessment Through Data Dependency and Sensitivity Analysis. International Symposium on the Spatial Accuracy of Natural Resource Databases, Williamsburg, Virginia, May 1994.
- Allen, T.R. Markovian Analysis of Multitemporal Snow Cover Data. Special Session: GIS for Scientific Research, Annual Meeting of the Association of American Geographers, Atlanta, Georgia, April 1993.
- Walsh, S.J., D.R. Butler, T.R. Allen, and W.F. Welsh. The Influence of Mass Movements on the Spatial Pattern of Alpine Treeline, Glacier National Park, Montana. Annual Meeting of the Association of American Geographers, Atlanta, Georgia, April 1993.
- Allen, T.R. and D.R. Butler. Topoclimatic Influences on Glacier and Snowfield Patterns, Glacier National Park, Montana. Annual Meeting of the Southeastern Division of the Association of American Geographers, Greensboro, North Carolina, November 1993.
- Allen, T.R., T.J. Bara, and S.J. Walsh. Preliminary Assessment of Biases in the Conterminous U.S. AVHRR Satellite Data Set: Adjustments and Implications. Annual Meeting, Southeastern Division of the Association of American Geographers, Louisville, Kentucky, November 1992.
- Allen, T.R. 'Riders on the Storm:' Atlantic Hurricanes and the Surfer Disaster Subculture. Annual Meeting, National Council on Geographic Education, Williamsburg, Virginia, November 1990.
- Allen, T.R. Testing an Analytical Model of Surf Prediction. Third National Conference on Undergraduate Research, Trinity University, San Antonio, Texas, April 1989.

### **Poster Presentations**

- Allen, T.R., T. Crawford, B. Montz, G. Kearney. Geospatial Modeling of Flooding Threats to Coastal Community Water Infrastructure, SEDAAG Annual Meeting, Columbia, SC, November 2016.
- Allen, T.R., R. Howard, and R. Dugger. NC Coastal Atlas Interactive Display. NCArcUser Group Annual Meeting, Carolina Beach, NC, September 2015.
- Flynn, M. and T. Allen. Coastal Vulnerability of Landmarks at Cape Hatteras National Seashore. *ESRI International User Conference*, San Diego, July 14-18, 2015.
- Allen, T.R., R. Howard, M. Flynn, and M. Garner. North Carolina Coastal Atlas Interactive Display. *NC Hurricane Workshop*, Greenville, NC, May 23, 2014.
- Allen, T.R., Z. Oyer, and B. Montz. Comparative Vulnerability of Water Infrastructure to Coastal Hazards in North Carolina. *CISA Climate Resilience Conference*, Charlotte, NC, April 21-23, 2014.
- Allen, T.R., R. Howard, and M. Flynn. The North Carolina Coastal Atlas. *NOAA Social Coast Forum*, Charleston, SC, February 11-12, 2014.

- Allen, T.R., R. Howard, and M. Covi. North Carolina Coastal Atlas Design. *North American Cartographic Information Society (NACIS)*, Greenville, SC, October 8-10, 2013.
- Allen, T.R., J. Thomas, R. Howard, J.P. Walsh, and M. Covi. Design and Prototype of a North Carolina Digital Coastal Atlas (poster and digital display). *NC GIS Conference*, Raleigh, February 7-8, 2013.
- Crawford, T., T.R. Allen, D. Kain, and N. Murray. A Comparison of Hurricane Map Advisory Performance. *3<sup>rd</sup> NC Hurricane Workshop*, Greenville, May 23, 2012.
- Carey, M., B. Gore, T. Hill, M. Covi, and T.R. Allen. 2011. Cartographic Techniques for Visualizing Potential Sea-Level Rise Inundation. *Annual Meeting, Southeastern Division of Association of American Geographers (SEDAAG)*, Savannah, November 20-22.
- Carey, M., B. Gore, T. Hill, M. Covi, and T.R. Allen. 2011. Potential Sea-Level Rise Inundation. *NC ArcUser Group*, Wilmington, September 18-19.
- Gore, T. Hill, M. Carey, and T.R. Allen. 2011. Brunswick County Critical Infrastructure Vulnerability to Flood Inundation. *NC ArcUser Group*, Wilmington, September 18-19.
- Allen, T.R., Wang, Y., Gore, B., Swords, J., and D. Newcomb. 2011. Coastal Wetland Mapping and Monitoring Using Time Series SAR Imagery and LiDAR: Alligator River National Wildlife Refuge, North Carolina. *18<sup>th</sup> William T. Pecora Remote Sensing Symposium*, American Society for Photogrammetry and Remote Sensing, Herndon, Virginia, November 14-17.
- Carey, M., Gore, B., Hill, T., and T.R. Allen. 2011. Sea-Level Rise Vulnerability in the Albemarle-Pamlico Estuarine System. *NC ArcUser GIS Conference*, September 16-17, Carolina Beach, NC.
- Allen, T., J.P. Walsh, D.R. Corbett, and T. Crawford. NC Coastal Hazards Portal Poster and RENCi exhibit booth, *NC GIS Conference*, Raleigh, February 19-20, 2009.
- Marshburn, E., Y. Wang, and T.R. Allen. 2008. Potentials and Impediments for Operational Remote Sensing of Small Recreational Vessels. *American Society for Photogrammetry and Remote Sensing (ASPRS) Annual Conference*, Baltimore, March 8-13.
- Tragert, C. and T.R. Allen. 2008. Development, Validation, and Vulnerability Assessment of an Overwash Model, Outer Banks, North Carolina. *NOAA Coastal GeoTools*, Myrtle Beach, SC, March 2-5.
- Walsh, J.P., D.R. Corbett, T.R. Allen, T. Crawford, and S. Sanchagrin. 2008. Modeling and Visualization for the North Carolina Coastal Hazards Decision Portal (NC COHAZ), *NOAA Coastal GeoTools*, Myrtle Beach, SC, March 2-5.
- Allen, T.R., S. Sanchagrin, T. Crawford, J.P. Walsh, and D.R. Corbett. 2008. The North Carolina Coastal Hazards Decision Portal (NC COHAZ). *North Carolina GIS Conference*, Raleigh, February 18-19.
- Cleckner, H. and T.R. Allen. Exploring Paleo-Sea-Level Rise at Carolina Capes Using Digital Elevation Models and Relict Landforms. North Carolina Academy of Science, Greenville, NC, March 30-31, 2007.

- Allen, T.R. A Geospatial Approach to Estuarine Classification in Chincoteague Bay. Atlantic Estuarine Research Society/Southeast Estuarine Research Society joint meeting, Pine Knoll Shores, NC, March 16-17, 2007.
- Allen, T.R. Using Geospatial Visualization and Virtual Globes to Teach Physiography, Landforms, and Earth Surface Processes. ECU Think-In Teaching with Technology Symposium. November 9, 2006.
- Allen, T.R., H. Tolvanen, G.F. Oertel, and G. McLeod. 2005. Spatial Analysis and Ecological Applications of Tidal Flushing and Wave Exposure in Chincoteague Bay, Virginia, USA. *Estuarine Interactions: Biological-Physical Feedbacks and Adaptations*, 18th Biennial Conference of the Estuarine Research Federation. Conference abstracts. October 16-20, Norfolk, Virginia, USA, p. 11.
- Allen, T.R. and G.F. Oertel. Mapping Past Effects of Sea-Level Rise on Coastal Spit Morphodynamics. Proceedings, Coastal Zone '03, Baltimore, Maryland, July 2003.
- Allen, T.R. and J.A. Kupfer. Landform-Vegetation Interactions in the Mortality and Regeneration of Fraser Fir Forests, Great Smoky Mountains National Park. Binghamton Geomorphology Symposium: Mountain Geomorphology- Integrating Earth Systems, October 20, 2000 (invited.)
- Allen, T.R. and G.F. Oertel. Extending Change Vector Analysis for Monitoring Coastal Ecosystems, Virginia Barrier Islands. International Conference on Remote Sensing for Marine and Coastal Environments, Charleston, South Carolina, May 1-3, 2000.
- G.F. Oertel, K. Overman, and T. Allen. Hypsographic Analysis of Coastal Bay Environments using Integrated Remote Sensing Techniques, Hog Bay, Virginia, U.S.A. International Conference on Remote Sensing for Marine and Coastal Environments, Charleston, South Carolina, May 1-3, 2000.
- Allen, T.R. and G.F. Oertel. Environmental Analysis of the Coastal Landscape Mosaic, Virginia, Coastal GeoTools '99, NOAA Coastal Services Center, Charleston, South Carolina, April 6-8.
- Oertel, G.F. and T.R. Allen. Experimental Evaluation of GPS Reflectance and Hypsometric Mapping in Coastal Barrier Environments of Virginia. Coastal GeoTools '99, NOAA Coastal Services Center, Charleston, South Carolina, April 6-8.
- Allen, T.R. Mapping Coastal Change in the Southern Delmarva, USA, Fifth Thematic Conference on Coastal Remote Sensing, San Diego, October 5-7, 1998.
- Flint, R.W. and T.R. Allen. The Smart-Growth Paradigm and Virginia's Eastern Shore. Partners for Smart Growth, Urban Land Institute, Baltimore, Maryland, December 2-4, 1997.

## **Professional Activities and Service**

### Scholarly and Professional Service

- Chair, Coastal and Marine Specialty Group, Association of American Geographers, 2011-2016.  
 Board Member, Coastal and Marine Specialty Group, Association of American Geographers, 2006-2008.  
 Vice-Chair, 2009-2011.
- Board Member, Center for Natural Hazards Research (CNHR), East Carolina University.
- Chair, Albemarle-Pamlico National Estuary Program (APNEP) Policy Board, April 2012 – 2017.
- Board Member, NC ArcUser Group, June 2014-2017.



November 19, 2017

Guest Editor, *Remote Sensing*, Special Issue on Remote Sensing of Coastal Ecosystems, 2011 (eleven papers [http://www.mdpi.com/journal/remotesensing/special\\_issues/coastal\\_ecosystem/](http://www.mdpi.com/journal/remotesensing/special_issues/coastal_ecosystem/))

Member (Higher Education Representative), Policy Board, Albemarle-Pamlico National Estuary Program, NC Department of Environment and Natural Resources and US EPA, December 2009-present.

Grant Proposal Panelist, Delaware Sea Grant Consortium, August 2015.

Fulbright Scholar Reviewer (Geography), Council for International Exchange of Scholars, 2010-present.

Advisory Board, National Weather Service Field Office, Morehead City/Newport, N.C., 2008-present.

Editorial Board Member- North America, *FENNIA* International Journal of Geography, Geographical Society of Finland (2008-Present.)

Invited Panelist, NOAA Storm Surge and Coastal Inundation Workshop, Bay St. Louis, Mississippi, March 15-16, 2011.

Invited Panelist and Speaker, Geography Graduate School Institute, Graduate School of Geography of Finland, Jyvaskyla, Finland, August 20-22, 2006.

Judge, Virginia Geographic Bee, March 31, 2006, Old Dominion University, Norfolk, Va.

Director, Remote Sensing Specialty Group, Association of American Geographers, 2000-2004.

Board Member, Virginia Geographic Information Network, by appointment of the Governor, Commonwealth of Virginia, 1999-2001.

Honors Committee, Southeastern Division Association of American Geographers (SEDAAG), 2002-04.

Promotion and tenure external reviewer:

Old Dominion University (2013)

Bloomsburg University (2012)

Virginia Tech (2010)

Indiana University- Purdue University, Indianapolis (2003)

Guest Editor, *Remote Sensing*, Special issue for coastal ecosystems, February 2011.

Guest Editor, *Geocarto International*, Special Issue for the Remote Sensing Specialty Group, Association of American Geographers, December 2001.

Meeting Program Chair, Remote Sensing Specialty Group, Association of American Geographers, 2000

Chair, Geography Section, Virginia Academy of Science, 1997-1999

Reviewer:

*Climate Change*

*Annals of the Association of American Geographers*

*Arctic and Alpine Research*

*Australian Journal of Soil Conservation*

*Belgian Academy of Science*

*Cambridge University Press*

*Coastal Management*

*Estuaries and Coasts*  
*FENNIA*  
*Geomorphology*  
*International Journal of Remote Sensing*  
*IEEE Geoscience and Remote Sensing*  
*ISPRS Journal of Photogrammetry*  
*Journal of Coastal Research*  
*Journal of Maps*  
*Journal of Vegetation Science*  
*Journal of Soil and Water Quality*  
*Journal of Coastal Research*  
*Landscape Ecology*  
*Ocean and Coastal Management*  
*Plant Ecology*  
*Photogrammetric Engineering & Remote Sensing*  
*Physical Geography*  
*Remote Sensing*  
*Remote Sensing of Environment*  
University of North Carolina Press  
University Press of Virginia

Grant Proposal Reviewer:

EPA  
NOAA Sea Grant Consortia (DE, NC, SC, CT, DE, NY, TX, VA, WI)  
NOAA Center for Sponsored Coastal Ocean Research (C-SCOR)  
NOAA National Weather Service  
NASA Earth Sciences  
National Science Foundation (Geography and Regional Science, Geosciences, and Instrumentation, EPSCoR)  
Strategic Applications International Corporation (SAIC)  
U.S. Civilian Research Development Foundation  
Council for International Exchange of Scholars (Fulbright)

**Research Affiliations**

Geospatial Program Lead, Commonwealth Center for Recurrent Flooding Resiliency (CCRFR)

Associate Research Faculty, ODU Resilience Collaborative.

South Atlantic Landscape Conservation Cooperative (SALCC) task forces: Coastal wetlands, environmental health, US Fish and Wildlife Service.

NOAA NC Sentinel Site Program for Sea Level Rise (2013-2016)

Research Associate, Long-Term Ecological Research (L-TER) Program, Virginia Coast Reserve

Communications Committee, Remote Sensing Specialty Group, Association of American Geographers (1996-1998).

Virginia Space Grant Consortium, Remote Sensing/GIS/Landscape Working Group, 1996-1998.

Regional Councilor (New England/St. Lawrence Valley Division), Remote Sensing Specialty Group, Association of American Geographers, 1995-1996.

East Carolina University Affiliate Faculty member:  
ECU Center for Natural Hazards Research

ECU Center for Sustainability (core affiliate faculty member)  
Institute for Coastal Science and Policy

### **Committees and Departmental Service**

Undergraduate Director of Geography, ECU, 2013-14, 2014-15, 2015-2016.  
Member, Undergraduate Council, Harriot College of Arts and Sciences, ECU, 2015-Present  
Director, Coastal and Marine Studies Interdisciplinary Minor (COAS), Thomas Harriot College of Arts and Sciences, 2014-Present.  
ECU Coastal-Maritime Council (2007-Present)  
Member, Search Committee, Engineering and Center for Sustainability, ECU (2014-15)  
Member, Search Committee, Director of Coastal Resource Mgt. Ph.D. Program, ECU (2014)  
Chair, Search Committees, Planning Program, Department of Geography, ECU (2010-11, 2012-13)  
Member, Coastal Research and Education Writing Team, East Carolina University (2012-13)  
Member, Research and Graduate Studies, Graduate Enrollment Task Force (2009-2011)  
Representative, Research and Graduate Studies, ECU Information Technology Resources Council (2009-present)  
Member, Graduate Committee, Department of Geography (2010 – present)  
Associate Director, Center for GIScience (2008-present)  
Curriculum Committee, Coastal Resources Management Ph.D. program  
Currituck County Environmental Steering Committee (2007-2010)

### **Student Mentoring**

Old Dominion University

#### Thesis or Dissertation Committees:

McLeod, G.M. Ph.D. Candidate in Oceanography. Dissertation: Characterization of Uncertainty in Inundation Models and Watershed Hypsometry for Identification and Assessment of Non-linear Impacts of Sea Level Rise. (graduated expected May 2019.)

Jalaeian, H. Ph.D Candidate in Civil and Environmental Engineering. Dissertation pending.

Cofield, Shannon. Ph.D. Candidate in Oceanography. Dissertation pending.

East Carolina University

#### Dissertation Advisor:

Flynn, Michael, Ph.D. Coastal Resources Management, *Vulnerability of Historic Landmarks of Cape Hatteras National Seashore*. (in preparation, expected graduation December 2016.)

Garner, Margaret, Ph.D. Coastal Resources Management, *Community Participatory Mapping in Coastal Natural Heritage Areas* (proposal pending, expected graduation December 2016.)

#### Thesis or Internship Advisor:

Harmin, Calvin, M.S. Geography, thesis advisor, *Flood Vulnerability of Hog Farms in Eastern North Carolina: An Inconvenient Poop*. November 2015.

Oyer, Zach, M.A. Geography, thesis advisor, *Water Infrastructure Vulnerability to Coastal Flood Hazards: A Space-Place Analysis of Manteo, New Bern, and Plymouth, North Carolina*, August 2014.

Peterson, Doug. M.A. Geography, internship advisor. December 2014.

Carey, Matthew, M.A. Geography, thesis advisor, *Site Suitability Modeling for Estuarine Living Shorelines*. August 2013.

Gore, Brent, M.A. *Modeling Potential Wetland Loss and Migration in the Pamlico Sound*. August 2013.

Gedminas, Laurynas, M.A. Geography, thesis advisor, *Eye-tracking and Biometric Analysis for Hurricane Risk Perception in the Cone of Uncertainty*. (graduated May 2011.)

Cleckner, Haley, M.A. Geography, thesis advisor, *Spatial Modeling of Risk of Mosquito-Borne Disease Transmission, Craven County, North Carolina*. (graduated August 2010.)

Carrie Tragert, M.A. Geography, thesis advisor, *Modeling Overwash Processes and Coastal Vulnerability, Outer Banks, N.C.* (2008-2009.)

David L. Shaeffer, M.A. Geography, thesis advisor, *Characterizing Jurisdictional Wetlands Using Aerial LIDAR*. (graduated December 2008.)

Dissertation committees:

Smith, Chad, doctoral student, Coastal Resources Management Ph.D. program. *Quality Analysis of Citizen Science for Coastal Environmental Monitoring*. (2010-2015.)

Zenil, Hilde, doctoral student, Coastal Resources Management Ph.D. program. (2015-present).

Bangley, Charles, doctoral student, Coastal Resources Management Ph.D. program. (2015-present).

Steinmetz, Joyce, doctoral student, Coastal Resources Management Ph.D. program. *Commercial Fishing Hangs and Locating Shipwrecks: A Proof of Concept Study off the U.S. Mid-Atlantic Coast*, (2012-present.)

Bennett, Andrew, doctoral student, Coastal Resources Management Ph.D. program. *Characterizing Patterns and Drivers of Land Use/Land Cover Change along the Atlantic Coast Barrier Beaches*. (2011-present.)

Marshburn, Ernest, doctoral student, Coastal Resources Management Ph.D. program, *Spatial Analysis of Recreational Boating Accidents*, (2009-2015.)

Covi, Michelle, Coastal Resources Management Ph.D. program, *Risk Communication and Sea-Level Rise*, (2014.)

Eulie, Devon, Coastal Resources Management Ph.D. program, *Coastal Estuarine Erosion and Sediment Dynamics in North Carolina*, (2014.)

Kaneshiro-Pinto, Mahealani, Coastal Resources Management Ph.D. program, *Jellyfish-Human Interactions in North Carolina*, (2013.)

Member of thesis committee:

Van Horn, Jessy. M.S. Geography (ECU), *Lateral Stream Migration in the Blue River Watershed, Wisconsin*. (2015-present.)

James E. Edwards. M.S. Marine Science (University of South Carolina), *Spatial Hypsometric Analysis of Salt Marshes* (2015-present.)

Simonds, Lucas. M.A., Maritime Studies (ECU), 'A Determination Worthy of a Better Cause': *Naval Action during the Battle of Roanoke Island, 7 & 8 February 1862*. (2013-14.)

- Strand, Jessi. M.S. Geological Sciences (ECU), *Sediment Dynamics in Coastal Back-Barrier Marshes*. (2014-2015.)
- Clayton, Brian. M.A. Geography, thesis committee member, *Using GIS to Optimize Shipwreck Search and Discovery*. (2011-2013.)
- Giuliano, Angela. M.S., Geological Sciences, thesis committee member, *Surface and Ground Water Hydrology of Buck Ridge Preserve, North Carolina*. (2011-2012.)
- Irwin, Jennelle. M.A. Geography, internship committee member, *Applications of GIS to Coastal Municipal Storm Water Management, Ocean City, Maryland*. (2011-present.)
- Culpepper, Alex. *Quantitative Comparison of 2D Porosity and Pore Geometry between the Upper Castle Hayne Aquifer, North Carolina, and the Biscayne Aquifer, Florida, using Image and Geospatial Analysis*. (2011-2012.)
- Sanchagrin, Stephen, M.A., Maritime Studies, thesis committee member, *A View through the Periscope: Advanced Geospatial Visualizations of Naval Battlefields of the Second World War*. (2011-present.)
- Bright, John. M.A., Maritime Studies, thesis committee member, *Stalking the Gray Wolf: A KOCO A Terrain Analysis of the Battle of the Atlantic off the North Carolina Coast*. (2011-2012.)
- Jones, Jennifer. M.A., Maritime Studies, thesis committee member, *Scattered to the Wind: An Evaluation of the Disaster Landscape of Coastal North Carolina*. (2011-2012.)
- Wagner, John. M.A., Maritime Studies, thesis committee member, *Waves of Carnage: A Historical, Archeological, and Geographical Study of the Battle of the Atlantic in North Carolina Waters*. (graduated 2010.)
- Howard, Robert, M.S., Geological Sciences, thesis committee, *Impervious Surface Runoff Modeling in Greenville, North Carolina*. (2009-present.)
- Brass, Jesse, M.A., Geography, thesis committee, *Barrier Island Beach Replenishment at Wrightsville Beach, North Carolina*. (graduated 2009.)
- Katherine Renken, M.A. Geography, thesis committee member, *Volumetric Changes in the Morphologic Zones Adjacent to Inlets in Microtidal Barrier Islands, Outer Banks, North Carolina*. (graduated August 2008.)
- Rachel Campbell, M.A. Geography, Internship committee member, *Designing a ZIP Code GIS for Trinidad and Tobago*. (graduated May 2008.)

Old Dominion University:

- Co-Advisor, Andy Damalas, Ph.D., Ecological Sciences, 2005. Old Dominion University, Dissertation: *Landscape Determinants of Neotropical Avian Species Diversity in the Deciduous-Coniferous Ecotone, Great Smoky Mountains National Park*.
- Advisor, Scott Bellows, Ph.D. Ecological Sciences, 2007. Old Dominion University, Dissertation: *Spatial Analysis of Mosquito Habitat: Implications for Population Control and Health Surveillance*.

Co-Advisor, Robert Wardwell, M.S. Geology, 2000. *Spatial Patterns of Beach Ridge Morphology at Cape Henry, Virginia*. Old Dominion University.

Thesis Co-Advisor, Noel Jackson, M.A., Geology, Geological Sciences, Old Dominion University,  
Thesis: Mapping Lunar Basalt Stratigraphy Using Clementine Image Data, 1998.

### **Professional Organizations**

Association of American Geographers (AAG): GIS, Remote Sensing, Hazards, Medical, and Coastal-Marine specialty groups

The Coastal Society (TCS)

Coastal and Estuarine Research Federation (CERF)

American Society for Photogrammetry and Remote Sensing (ASPRS)

NC ArcUser Group (NCAUG)

Virginia Mapping and Land Information Society (VAMLIS)

Hampton Roads GIS User Group (HRUG)