

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

Department of Geography  
East Carolina University  
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**Research Interests**

Geographic Information Science and Technology; emphasizing GIS, remote sensing, and environmental modeling of coastal and estuarine environments, landscape ecology, and spatial epidemiology of vector-borne diseases.

**Teaching**

Geographic Information Systems, digital image processing, cartography and visualization, digital terrain modeling, and geospatial field techniques; earth surface processes, coastal geography, physical geography of the global environment, and tropical geography (Costa Rica field course.)

**Employment**

- 2006-Present Associate Professor, Department of Geography, East Carolina University, Greenville, North Carolina  
Director, Center for Coastal Systems Informatics and Modeling,  
RENCI@ECU Regional Engagement Center (2009-Present)
- 2001-2006 Associate Professor of Geography, Old Dominion University, Norfolk, Virginia  
Director of Geography Program  
Director of Laboratory for Remote Sensing and Environmental Analysis, Department of Political Science & Geography
- 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 (exchange student)

## Publications

### Refereed Articles

- 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. and Y. Wang. 2009. Selected scientific analyses and practical applications of remote sensing: Examples from the Coast. In: Campbell, J., Ed. *Manual of Geospatial Science and Technology*, (in press.)

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*).

### **Conference Proceedings**

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.

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.

### **Book and Software Reviews**

- Allen, T.R. Earth (Version 2.0) 2002. 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. and 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.

### **Technical Reports**

- 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.

6/16/2009

- 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**

- Allen, T.R. Alexander von Humboldt. *In: Encyclopedia of Environment and Society*. Paul Robbins, Ed., Sage Publications (in press.)
- 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.

#### **In Review**

- Oertel, G.F., T.R. Allen, and G. McLeod. Repletion and residual-water dynamics in coastal lagoons: GIS Model and Remote Sensing of The Great Machipongo Lagoon (Hog Island Bay), Virginia, USA. *Journal of Coastal Conservation* (submitted June 2, 2009).

#### **In Preparation**

- Allen, T.R. Landscape Changes Detected in Decadal Landsat Imagery, northern Finnish Lapland, (in preparation.)
- Allen, T.R. and G.F. Oertel. Spatial Analysis of Sea-Level Rise and Coastal Spit Morphodynamics, Cape Henry, Virginia, (in preparation.)

## Grants Received

Principal Investigator and Director, Renci@ECU Regional Engagement Center: Attacking Coastal Hazards of North Carolina Renewal Proposal for 2009-2012. \$1.2M for three-year renewal of the ECU Center for Coastal Systems Informatics and Modeling (2009-2012.)

Co-Investigator, Towards Integration of Estuarine Observation: An Interinstitutional 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, 2009.

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, Autumn 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).

6/16/2009

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**

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 Pending**

Co-Principal Investigator, *Modeling Uncertainty in Hydrologic Runoff Forecasts of the Tar-Pamlico River Basin*, NASA, with Curtis, W.S., J. Arrigo, X. Yang, and M. O'Driscoll.

### **Support and Honors**

2003	<i>Fulbright Scholar</i> , US Department of State to Finland, University of Turku, autumn 2003
2003	<i>The Virginia Scholar Award</i> , Virginia Social Science Association
2002	U.S. delegate to Arctic Council Workshop, Northern Timberline Forests, Rovaniemi, Finland, travel support from National Research Council (\$1500.)
2001	University Instructional Technology Teaching Award, Old Dominion University, \$4000.

- 2000            Awarded “Best in Session” and Second Place in conference for poster presentation at the Sixth International Conference on Remote Sensing for Marine and Coastal Environments, Charleston, South Carolina, May 1-3
- 1999            Certificate of Excellence in Instructional Technology, College of Arts & Letters, Old Dominion University, \$200
- 1998-1999      Microsoft Learning Technologies (MLT) Pilot Program participant, \$15,000.
- 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

### **Professional Presentations**

- 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.

6/16/2009

- 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 Fisherman's 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**

- 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

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.)

Vice-Chair, Coastal and Marine Specialty Group, Association of American Geographers, 2009-Present.  
Board Member, Coastal and Marine Specialty Group, Association of American Geographers, 2006-2008.

Invited Panelist and Speaker, Geography Graduate School Institute, Graduate School of Geography of Finland, Jyväskylä, 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), beginning 2002.

Promotion and tenure external reviewer, Indiana University- Purdue University, Indianapolis (2003)

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:

*Annals of the Association of American Geographers*  
*Australian Journal of Soil Conservation*  
*Photogrammetric Engineering & Remote Sensing*  
*Remote Sensing of Environment*  
*International Journal of Remote Sensing*  
*IEEE Geoscience and Remote Sensing*  
*Landscape Ecology*  
*Plant Ecology*  
*Journal of Vegetation Science*  
*Geomorphology*  
*Journal of Soil and Water Quality*  
*Cambridge University Press*  
University Press of Virginia

#### Grant Proposal Reviewer:

NASA  
Sea Grant  
EPSCoR  
Strategic Applications International Corporation (SAIC)  
National Science Foundation, Geography and Regional Science and ILI programs

U.S. Civilian Research Development Foundation

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

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

Session Chair, Spatial Analysis, GIS, and Classification. Remote Sensing Session, Annual Meeting of the Association of American Geographers, Fort Worth, Texas, April 1997.

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.

Workshop Participant, *Global Remote Sensing*, ASPRS/ACSM/Resource Technology Annual Convention on Monitoring and Mapping Global Change, Washington, D.C., August 1992.

Workshop Presenter. *Introduction to GIS*. North Carolina Geographic Alliance, Chapel Hill, North Carolina, July 1992.

### **Committees and Departmental Service**

ECU GIScience Center, Associate

Curriculum Committee, Coastal Resources Management Ph.D. program

ECU Coastal-Maritime Council

Center for Sustainable Tourism graduate program development committee

Undergraduate Committee

Currituck Environmental Steering Committee

### **Student Mentoring**

East Carolina University:

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

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

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

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.)

External Reviewer- University of Memphis

Monika Mihir. Ph.D. Candidate, Department of Earth Sciences, *Process-form Relationships in Debris Flow Fans, Owens Valley, California*. (graduated December 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*.

6/16/2009

Advisor, Scott Bellows, Ph.D. Ecological Sciences, 2001-2007, Old Dominion University,  
Dissertation: Spatial Analysis of Mosquito Habitat: Implications for Population Control and  
Health Surveillance. (June 2007.)

Co-Advisor, Robert Wardwell, M.S. Geology, 2000. 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.

University of Vermont:

Thesis Advisor, Tracy Onega, M.A., Geography, University of Vermont, Thesis: *Spatial Modeling of  
Black Bear Habitat in Vermont*, 1995-1997.

### **Professional Organizations**

Association of American Geographers (AAG):

Remote Sensing, GIS, and Coastal-Marine specialty groups

American Society for Photogrammetry and Remote Sensing (ASPRS)

Coastal and Estuarine Research Federation (ERF)