
Team

COS
   Robert Weiss¹ (Geosciences)

CNRE
   Anamaria Bukvic¹ (Geography)
   Ashley Dayer (Fish and Wildlife Conservation)
   Jim Fraser (Fish and Wildlife Conservation)
   Sarah Karpany (Fish and Wildlife Conservation)
   Daniel Catlin (Fish and Wildlife Conservation)
   Luke Juran (Geography, Virginia Water Resources Research Center)
   Randy Wynne (Forest Resources and Environmental Conservation, Center for Environmental Applications of Remote Sensing)

VM
   Julia Gohlke (Population Health Sciences)

CALS
   Kevin Boyle (Director, Program in Real Estate)
   Venkat Sridhar (Sri) (Biological Systems Engineering, CALS/COE)

COE
   Jennifer Irish (Civil and Environmental Engineering)
   Roberto Leon (Civil and Environmental Engineering)

COB
   Christopher Zobel (Business Information Technology)
   Loren Rees (Business Information Technology)

CAUS
   Yang Zhang (Urban Affairs and Planning)
   Todd Schenk (School of Public and International Affairs)

CLAHS
   Priya Dixit (Political Science)

¹ Team leader
VISION
More than half of the world’s human population lives within 40 miles of the sea. Coastal cities are the backbone of global finance, trade, manufacturing, and transportation. Millions of people worldwide travel to beaches for recreation. Coastal fisheries and aquaculture are key sources of food, and the chief source of protein in most developing countries. The coast is home to a diverse range of plants and animals, some commercially valuable, some threatened or endangered, and all part of unique ecosystems. Coastal livelihoods, tourism, fish and wildlife species, and ecosystem services are threatened by climate change and its associated impact on coastal hazards. Flooding and coastal disasters from New York to Kolkata have killed thousands of people and cost trillions of dollars. By 2100 more than 100 million people could be displaced by sea-level change, 13 million in the U.S. alone. The stability of the global economy is threatened by sea-level change.

As the land-grant University in a strategically important coastal state, Virginia Tech is perfectly positioned to leverage its research excellence and intellectual capital to become a leader in coastal systems research, teaching, outreach, and innovation. Expanding on the already well-established research programs of faculty across a variety of disciplines at Virginia Tech (Appendix II, Table 2), we will build linkages with other Destination Areas and GSS themes in food, infectious diseases, and water to develop a truly integrated and holistic framework for solving contemporary and emerging wicked problems in the coastal zone. We envisage this concept area to be an incubator for cutting-edge research and teaching, advancing technology, policy creativity and facilitating knowledge exchange as well as for forging sustained and long-lasting partnerships with industry and philanthropic organizations with similar missions. This will position Virginia Tech at the forefront of an effort to address a paramount challenge of this century, which threatens the diversity, stability and prosperity of all coastal systems.

RELEVANCE
With a rising global population and intense economic development in all coastal zones, as well as emerging climate challenges around the globe that threaten prosperity and vitality, there is significant demand for skills and advanced knowledge in coastal environmental, social and health sciences, as well as coastal engineering and geosciences. An inevitable intensification of societal and environmental challenges, in addition to increased economic losses, will follow projected changes in coastal zones, including those resulting from sea-level rise, and altered frequency and intensity of storms. The cascading effects of all these stressors emanate from the complexity of the coastal system and its components (ecosystems, water quality, civil and military infrastructure, public health and safety, and economic sustenance) and are capable of turning even small and local perturbations, for example from a coastal hazard, into a global disaster. These urgencies are exacerbated by the importance of large port facilities to the global economy, and coastal military installations to national and global security. For example, the U.S. ports and marine transportation accommodated 75% of imports and exports by weight and $1.7 trillion worth of goods in 2014. A reasonable projected three feet of sea-level rise will inundate 128 military bases, including nine major Navy bases, causing around $100 billion in damages. Metropolitan areas, towns, small fishing, and tribal villages will also experience persistent inundation. More than 50% of socioeconomically vulnerable areas will be subject to unplanned displacement under


one to four feet of sea-level rise\textsuperscript{5}, suggesting emerging social justice, equity, and moral challenges. There will be questions of whom and what to protect, how and at what cost?

The cascading impacts of accelerating sea-level rise, ocean acidification, population growth, and rapid economic development represent an inherently wicked problem. A problem at this scale and scope can only be resolved by coordinated investment in research, teaching, outreach and broad engagement efforts, funded by industry, foundations, non-governmental organizations, and other partners. Considering that the business sector has already been experiencing significant pressures from coastal hazards, they will likely be willing partners in projects and the development of new technologies that increase coastal-zone resilience. As potential partners can be named big energy producers, such as Dominion Energy, but also big oil and gas companies as they will have to diversify their portfolio more in the future. A number of foundations already have funding opportunities that support coastal projects, including the Doris Duke Foundation, National Fish and Wildlife Foundation, Chesapeake Bay Trust, Kresge Foundation, MacArthur Foundation, and Rockefeller Foundation. Similarly, the non-profit sector has well-established research programs on coastal resilience, many of which emerged after experiences with major disasters like Katrina, Sandy and Deepwater Horizon. The coastal system theme is inherently linked with the Data Analytics and Decision Sciences, Intelligent Infrastructure for Human-centered Communities, and Integrated Security Destination Areas. Collaboration across these Destination Areas will be vital to the development of new methods (e.g., advanced quantitative techniques, scenario planning), technologies (e.g., autonomous vehicles), and tools to better communicate hazards, risk, adaptation and resilience in the coastal zone.

**TRANSDISCIPLINARY CURRICULUM ON COASTAL SYSTEMS**

The traditional discipline-centered approach to education creates inertia against developing holistic understandings of and solutions to the unprecedented challenges related to coastal systems. We require a common language, set of objectives, and new ways of thinking to address coastal risk and improve resilience. This requires a dynamic, adaptable, transdisciplinary educational approach that transcends the confines of disciplinary boundaries. Educating students with a holistic understanding of coastal systems is also a basic duty of a global and comprehensive land grant university with a twenty-first century vision of scholarship, teaching, and public service.

We envision that the new Transdisciplinary Coastal Systems curriculum (Appendix II, Table 1) will open to all undergraduates at Virginia Tech, and become a distinguishing trademark of Virginia Tech’s undergraduate education. Students participating in this destination area will gain competency in the concepts, perspectives, and innovative tools needed to increase coastal disaster resilience via informed, sustainable decisions and actions. The curriculum will teach students to holistically consider environmental, social, and economic drivers and their complex impacts on coastal systems, culminating in a field-based capstone experience. This knowledge will enable students to work more collaboratively with each other, as well as with local stakeholders and decision-makers in a problem-based environment. Further, students will have an opportunity to work with coastal partners and communities in a real-world context and participate in transdisciplinary problem-solving activities using novel technologies and innovative research methods. The proposed curriculum builds from several established Pathways courses (Appendix II, Table 1). As the undergraduate public health degree develops, additional courses on emerging public health issues and environmental justice could be added.

**DESCRIPTION OF RESOURCE NEEDS**

What clearly differentiates Virginia Tech, with respect to its ability to address contemporary and emerging challenges in the coastal zone, is the existing disciplinary excellence and incredible potential

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for interdisciplinary collaboration across a broad spectrum of different academic perspectives. No other school in the Commonwealth, and very few in the United States, share this critical combination of existing depth and breadth of potential in this area. With the help of the Interdisciplinary Graduate Education Program (IGEP) on Disaster Resilience and the Interdisciplinary Coastal Hazards Research Team, we were able to lay the pivotal groundwork to foster and establish a truly interdisciplinary mindset among those working on coastal-zone challenges. Because of the programmatic assistance delivered by the IGEP program, we were not only able to overcome disciplinary boundaries, but also identify important disciplinary gaps for research and education that need to be included in the interdisciplinary network at VT. One of the most prominent gaps concerns sea-level change. The highest priority is to hire an Assistant or Associate Professor who employs the geologic record to reconstruct past sea levels and helps to establish and refine sea-level projections. This FTE would be housed in COS with important links to IS, DADS and IIHCC DAs. Other gaps are in coastal system economics (could be joint between COS and CNRE), ecosystem services (CRNE), coastal zone policy (could be joint between CLAHS important link to IS DA), as well as environmental security (joint between COS and CLAHS, important link to IS and DADS DAs). These hires can be made at an Assistant or Associate Professor level depending on College and Departmental needs. Furthermore, the interdisciplinary team needs a common space, outside departmental boundaries, to develop collaborative interdisciplinary proposals, to brainstorm and research, as well as create the experiential and individualized learning environment required for this interdisciplinary topic.
Appendix I:

Bio Sketches
NAME: Boyle, Kevin John

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>Completion Date MM/YYYY</th>
<th>FIELD OF STUDY</th>
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</thead>
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<tr>
<td>University of Maine</td>
<td>B.A.</td>
<td>05/1978</td>
<td>Economics</td>
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<tr>
<td>Oregon State University</td>
<td>M.S.</td>
<td>12/1981</td>
<td>Agricultural and Resource Economics</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>Ph.D.</td>
<td>05/1985</td>
<td>Agricultural Economics</td>
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</table>

A. Personal Statement

I am a leading expert in the valuation of natural assets that do not have market values, and have considerable expertise in applications to coastal resources. I have worked on the development and validations, as well as application, of the major methods used to value changes in the condition of such resources. I am the co-editor of the primary textbook on these methods, “A Primer on Nonmarket Valuation”, and am a co-author on the most recent paper for setting implementation guidelines for stated-preference studies, “Contemporary Guidance for Stated Preference Studies”. I have worked with applications of these methods to inform decision making for over 30 years.


B. Positions and Employment

1986-1991 Assistant Professor, Department of Agricultural and Resource Economics and Department of Wildlife, University of Maine, Orono, ME
1992-1993 Visiting Scholar, Resource and Environmental Economics Program, Department of Agricultural and Resource Economics, North Carolina State University, Raleigh, NC
1992-1994  Faculty Associate, Center for Economics Research, Research Triangle Institute, Research Triangle Park, NC
1991-1997  Associate Professor, Department of Resource Economics and Policy and Department of Wildlife, University of Maine, Orono, ME
1999-2000  Visiting Scientist, Rocky Mountain Experiment Station, USDA Forest Service, Fort Collins, CO.
1997-2002  Libra Professor of Environmental Economics, Department of Resource Economics and Policy, Department of Wildlife Ecology, and Ecology and Environmental Sciences Program, University of Maine, Orono, ME
2002-2005  Distinguished Maine Professor, Department of Resource Economics and Policy, Department of Wildlife Ecology, and Ecology and Environmental Sciences Program, University of Maine, Orono, ME
2003-2005  Chair, Department of Resource Economics and Policy, University of Maine, Orono, ME
2005-2007  Head, Department of Agricultural and Applied Economics, Virginia Tech, Blacksburg, VA
2005-2007  Professor, Department of Agricultural and Applied Economics, Virginia Tech, Blacksburg, VA
2012-  Founding Director, Program in Real Estate, Virginia Tech, Blacksburg, VA
2013-  Principal Faculty, Myers-Lawson School of Construction, Virginia Tech, Blacksburg, VA

Example Other Experience
1997-1999  Associate Editor, Marine Resource Economics, 1997-99
2002-2004  Committee on Assessing and Valuing Services of Aquatic and Related Terrestrial Ecosystems, NRC
2009  Rosenberg Forum on Water Resources Management, Northwest Territories, Canada
2011-2013  Science Advisory Board Advisory Council on Clean Air Compliance, U.S. EPA
2013  Review, Chesapeake Bay TMDL Hedonic Analysis, U.S. EPA

Example Honors
2004  U.S. Professor of the Year, Maine, Carnegie Foundation for the Advancement of Teaching and Council for Advancement and Support of Education
2014  Publication of Merit, Environmental and Resource Economics.
2015  Service Award, Land, Water and Environmental Economics Section, Agricultural and Applied Economics Association
2016  Scholar of the Week, Office of the Vice President for Research and Innovation, Virginia Tech

C. Contribution to Science

1. I have extensive experience with the development and validation of stated-preference methods to value environmental assets. These methods are used to elicit use and nonuse values for environmental assets when markets do not exist to provide economic values. Such values are used in benefit-cost analyses to support public and private decision-making. Examples might include valuing the damages from an oil spill for those who use coastal resources for recreation (use values) and those who do not use coastal resources directly but still value protection of the integrity of these ecosystems (nonuse or passive-use values).
D. Additional Information: Research Support and/or Scholastic Performance

**Ongoing Research Support**


**Completed Research Support**


BIOGRAPHICAL SKETCH

Anamaria Bukvic

PROFESSIONAL PREPARATION

University of Zagreb     Zagreb, Croatia   Landscape Architecture     BE 1998
University of Cincinnati    Cincinnati, OH     Biological Sciences     MS 2002
University of Cincinnati    Cincinnati, OH     Community Planning     MCP 2006
Virginia Tech, VA     Blacksburg, VA Planning, Governance, Globalization     PhD 2012

APPOINTMENTS

Research Assistant Professor   Virginia Tech, Geography     2015-present
Visiting Assistant Professor Virginia Tech, Urban Affairs and Planning  2012-2015
Adjunct Faculty      Virginia Tech, Urban Affairs and Planning  2011-2012

PUBLICATIONS


2. Bukvic, A., Owen, G. (2016) Attitudes towards relocation following Hurricane Sandy: should we stay or should we go? *Disasters* 41:1. DOI: 10.1111/disa.12186


FIVE OTHER RELATED PRODUCTS


SYNERGISTIC ACTIVITIES

1. *Affiliations that foster interdisciplinary research* with the Center for Global Change and associated Interdisciplinary Graduate Education Program (IGEP)—Interfaces of Global Change since 2013; Disaster Resilience IGEP since 2014, and the Center for Gerontology (all at Virginia Tech).

2. *Recipient of Curriculum Development Grant* from the Virginia Tech’s Global Education Office for the development of course on Global Climate Change and Societal Impacts.
3. **Public outreach initiative** – organizing screening of the documentary Climate Refugees for Virginia Tech and Blacksburg community and expert panel discussing the implications of disaster-induced population movement.

4. **Recipient of the Richard E. Zody Award for Outstanding Dissertation in Planning, Governance, and Globalization** in April 2013 for development of relocation decision-support tools (relocation scenario and relocation suitability index).

5. **Facilitating engagement** with science on coastal hazards and response options (adaptation and disaster risk reduction) among local decision-makers, emergency managers, and other stakeholders (e.g., invited presentations at the Hampton Roads Sea Level Rise/Flooding Adaptation Forum, Suffolk, VA, October 30, 2015, and at the Mitigation and Adaptation Research Institute, Suffolk, VA, August 11-13, 2015).
Daniel H. Catlin
Research Assistant Professor, Department of Fish and Wildlife Conservation
Virginia Tech
134 Cheatham Hall (0321), Blacksburg, VA 24061
dcatlin@vt.edu, (540) 231-1692, Fax: (540) 231-7580

(a) Professional Preparation
Hamilton College Biology B.A. 2001
Oregon State University Wildlife M.S. 2004
Virginia Tech Wildlife Ph.D. 2009

(b) Appointments
2010 – Pres. Research Assistant Professor, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University
2009 – 2010 Research Associate, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University

(c) Publications
(i) 5 Products Closely Related to Proposal


(ii) 5 Other Significant Products


(d) Synergistic Activities

Member and Organizer, Local Planning Committee for the Western Hemisphere Shorebird Group Meeting, September 2015.

Member, Missouri River Ecosystem Restoration Program Technical Team, 2010–2013.


Member, Great Plains Piping Plover Recovery Team. 2010–present.
ASHLEY ANNE DAYER

Department of Fish and Wildlife Conservation Phone: 540-231-8847
Virginia Tech Fax: 540-231-7580
Cheatham Hall, 310 West Campus Drive E-mail: dayer@vt.edu
Blacksburg, VA 24061

(a) Professional Preparation:

Harvard University Cambridge, MA Environmental Science & Public Policy B.A. 2001
Colorado State University Fort Collins, CO Human Dimensions of Natural Resources M.S. 2006
Cornell University Ithaca, NY Natural Resources Ph.D. 2013

(b) Appointments:
Assistant Professor of Human Dimensions, Department of Fish and Wildlife Conservation, Virginia Tech. 2016-current.
Affiliated Faculty Member, Global Change Center, Virginia Tech. 2016-current
Visiting Assistant Professor, State University of New York-Environmental Science & Forestry. 2014-2016.
Conservation Social Scientist/Research Associate, Cornell Lab of Ornithology. 2015-2016.
Education & Outreach Director, Klamath Bird Observatory. 2006-2009.

(c) Publications:

(i): five products most closely related to the proposed project (undergrads, graduate students*)

(ii) five other significant products:
ASHLEY ANNE DAYER


(d) Synergistic Activities:

As an applied conservation social scientist and communications practitioner and scholar, my research is designed to have both scholarly and policy/programmatic impacts. I work closely with my colleagues in conservation agencies (international, national, and state levels) and organizations to co-produce research that is usable and necessary. Five key examples:

-Science review panel member on invasive animal species, National Park Service, 2017.

-Board member, Society for Conservation Biology, Social Science Working Group, 2016-present.

-Winner of competitive Land Grant Fellow, 2010-2012 at Cornell University, conducting research and extension to inform the New York State Department of Environmental Conservation’s Young Forest Initiative.

-Science and Communications Teams for the first four U.S. *State of the Birds* reports, released with the Secretary of the Interior and/or Agriculture, culminating in congressional briefings and national media coverage.


e) Collaborators & Other Affiliations:

- Graduate and Postdoctoral Advisors. Shorna Allred (Cornell University), Michael Manfredo (Colorado State University), Amanda Rodewald (Cornell University/Lab of Ornithology), Richard Stedman (Cornell University)

James D. Fraser  
Professor, Department of Fish and Wildlife Conservation  
Virginia Tech  
106 Cheatham Hall (0321), Blacksburg, VA 24061  
fraser@vt.edu, (540) 231-6064, Fax: (540) 231-7580

(a) Professional Preparation

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<th>Institution</th>
<th>Degree</th>
<th>Year</th>
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<tr>
<td>University of Minnesota</td>
<td>Wildlife Ph.D.</td>
<td>1981</td>
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<tr>
<td>University of Minnesota</td>
<td>Wildlife M.S.</td>
<td>1978</td>
</tr>
<tr>
<td>University of Idaho</td>
<td>Wildlife-Fishery Res. B.S.</td>
<td>1974</td>
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(b) Appointments

- 2013-Present Visiting professor, Nanchang University, Jiangxi, China
- 1992 – Present Professor, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University
- 1986 - 1992 Associate Professor, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University.
- 1981 - 1986 Assistant Professor, Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University.

Expertise

- Population ecology of birds 43 years of experience
- Shorebird/coastal ecology 31 years of experience
- Foraging ecology of birds 26 years of experience
- Scientific publication; > 90 publications in refereed literature

(c) Publications 5 Related to Proposal


5 Additional Publications


(d) Synergistic Activities

- Member, Delaware Bay Ecosystem Technical Committee. Advises the Atlantic State Marine Fisheries Commission on scientific matters relating to the management of shorebirds and horseshoe crabs on the Delaware Bay. 2011-
- Member Atlantic Flyway conservation Action Plan Committee. 2011-
- Consultant (pro bono) to the Great Plains and Atlantic Piping Plover Recover teams 1986-present.
- Visiting Professor Nanchang University, Jiangxi Province, China
### NAME: Gohlke, Julia M

**eRA COMMONS USER NAME (credential, e.g., agency login):** jgohlke

**POSITION TITLE:** Assistant Professor of Environmental Health

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

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<th>FIELD OF STUDY</th>
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<tr>
<td>University of Michigan, Ann Arbor, MI</td>
<td>B.S.</td>
<td>12/1997</td>
<td>Biology</td>
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<tr>
<td>University of Washington, Seattle, WA</td>
<td>M.S.</td>
<td>12/2001</td>
<td>Environmental Health</td>
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<tr>
<td>University of Washington, Seattle, WA</td>
<td>PhD</td>
<td>12/2004</td>
<td>Environmental Health</td>
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<tr>
<td>National Institute of Environmental Health Sciences, RTP, NC</td>
<td>Postdoc</td>
<td>08/2009</td>
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### A. Personal Statement

For the Global Systems Science destination area concept in coastal systems, Dr. Gohlke’s expertise in environmental exposure measurement in environmental epidemiology and toxicity pathways will play a critical role to the development of the theme. Her broad depth of knowledge in environmental health is established by research methods she employs, which includes utilization of epidemiological, bioinformatics, and toxicology techniques. Regarding work in coastal areas, she evaluated seafood safety following the Deepwater Horizon blowout. After outlining a set of data gaps and recommendations for further state and federal monitoring, samples collected from fishermen were also evaluated and compared to federal level testing. She is on the advisory board for the Gulf of Mexico Reef Fish Shareholders Alliance, a NOAA Coastal Response Research Center panel on the safety of dispersant use in Arctic waters, and is a member of the recently formed NAS Committee on the Evaluation of the Use of Chemical Dispersants in Oil Spill Response. She is currently performing research on the effects of human exposure to high temperatures and volatile organic compounds in urban versus rural settings in Alabama. As PI of an R21 award under the inaugural NIH Climate Change and Health Program, and subsequent R01 awardee, her research team is developing risk estimates for preterm birth and non-accidental mortality using 20 years of Alabama birth and death records, satellite-derived climate data, and personal exposure techniques. Several additional accomplishments and recognitions make her particularly suited for her role in this application. Dr. Gohlke has served on the Board of Scientific Counselors for the National Center for Environmental Health/Agency for Toxic Substances and Disease Registry (NCEH/ATSDR), Centers for Disease Control. Her previous work developed bioinformatics techniques combining genomics and genetics datasets to prioritize environmentally regulated molecular pathways important in human toxicity.

### B. Positions and Honors

**Positions and Employment**

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<td>08/98 to 12/98</td>
<td>Research Assistantship</td>
<td>University of Michigan, Ann Arbor, MI</td>
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<td>06/01 to 09/01</td>
<td>Research Assistantship</td>
<td>University of Washington, Seattle, WA</td>
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<td>03/02 to 06/02</td>
<td>Research Assistantship</td>
<td>Environmental Protection Agency, RTP, NC</td>
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<tr>
<td>09/02 to 12/02</td>
<td>Teaching Assistantship</td>
<td>University of Washington, Seattle, WA</td>
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2002 to 2004 Research Assistantship University of Washington/EPA, Seattle, WA
2002 to 2004 Research Internship Environmental Protection Agency, RTP, NC
01/05 to 08/09 Postdoctoral Fellowship NIEHS/National Institutes of Health, NC
07/08 to 08/08 Temporary Advisor World Health Organization, Switzerland
09/09 to 08/10 AAAS Fellow Department of State, Washington DC
8/10 to 07/15 Assistant Professor University of Alabama at Birmingham
8/15 to present Assistant Professor Virginia Polytechnic Institute and State University

Other Experience and Professional Memberships

2012-2015 Member of the Board of Scientific Counselors, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
2016 Army Corps of Engineers Engineer Research and Development Center FY 16 Basic Research Proposal Reviews
2016 NIOSH Special Emphasis Panel (PAR 15-353: Centers for Agricultural Safety and Health)
2016 NASA ROSES 2015 A.46 Health and AQ Applied Sciences Team (H-AQAST) review panel
2015 Environmental Protection Agency, Science to Achieve Results (STAR) Graduate Fellowship Program review panel member
2014- Editorial Board member, Journal of Health and Pollution, Blacksmith Institute, NY
2014- Review Editor, Frontiers in Public Health-Radiation and Health specialty section, Frontiers, Lausanne, Switzerland
2014 Invited Reviewer: National Science Foundation Graduate Research Fellowship Program
2013,2012 Invited Reviewer: NIH Climate Change and Health Special Emphasis Panel (ZRG1 PSE-D (56)), NIH Behavioral Interventions to Address Multiple Chronic Health Conditions in Primary Care (ZRG1 HDM-T(02)); Army Corps of Engineers Engineer Research and Development Center FY 14 Basic Research Proposal Reviews; EPA's draft "Next Generation Risk Assessment: Incorporation of Recent Advances in Molecular, Computational, and Systems Biology Interim Report."
1/08-12/12 Editorial Board member, Reproductive Toxicology, Elsevier, NY
2011- Gulf of Mexico Reef Fish Shareholders' Alliance Advisory Board member
2010 Ad Hoc Expert Reviewer, Centers for Disease Control and Prevention, Environmental Health Tracking Branch, Atlanta GA
2009-2010 Member of the U.S. Interagency Working Group on Climate Change and Health
2009 External Review Panel Member for EPA Toxicogenomics in Risk Assessment Report
1999- Society of Toxicology member
1999- Teratology Society member

Honors
2001-2006 Six Society of Toxicology awards from Risk Assessment Specialty Section and Biological Modeling Specialty Section for papers, presentations, and posters of predoc and post-doc research results.

2004 Dose-Response Specialty Group best poster presentation award, Society for Risk Analysis

2005 James C. Bradf ord Memorial Post-doc Poster Award, Teratology Society

2009 Best Publication in Birth Defects Research in 2008

2011 Invited participant in NIH Director's 'Innovation Brainstorm: Transforming Discovery into Impact' to develop ideas for scientific programs for the NIH Common Fund

2011 Invited participant in NIEHS Strategic Planning meeting, July 12-14th and Oct 13-14th, RTP, NC

2011 Winner of UAB NORC “Creativity is a Choice” Award

2013 Future Leader Award, International Life Sciences Institute, N.A.

2014 F. Clarke Fraser New Investigator Award, Teratology Society, Reston, VA

2016 First prize, NIEHS Climate Change and Environmental Exposures Challenge for PIE Viz, Populations, Infrastructures, and Exposures Visualization Tool with Samarth Swarup and Dawen Xie, Biocomplexity Institute, VT

C. Contributions to Science

Throughout my career, my primary interest has been determining how environmental processes impact health outcomes. To pursue this interest I have employed a variety of computational, bioinformatic, and epidemiological approaches.

Quantitative methods for estimating interspecies differences in brain development. Early in my career, I was interested in understanding how datasets generated in model species can be used to predict effects in humans. The current methods for determining risk associated with environmental pollutants relies heavily on testing conducted in rodent species. Chemicals are evaluated for neurodevelopmental effects through exposure in rodents and subsequent behavioral testing and pathology exams. Compared to the neocortex of the rodent brain, the primate neocortex is overdeveloped and this is thought to underlie higher order processes such as executive functioning present in primates but not rodents. To address this translational issue, I developed computational models to predict neuronal cell number in the developing rat, mouse, monkey, and human neocortex based on cell cycle kinetics and apoptosis during neurogenesis. We examined the effects of ethanol on neuronal proliferation, differentiation, and death as a case study for use in assessing the risk of chemicals using rodent datasets to predict effects in humans.


Bioinformatic techniques for disseminating the molecular underpinnings of environmental effects on human health. After exploring interspecies differences in cellular processes during neocortical development, I became interested in understanding the molecular changes necessary to produce these cellular differences. Collaborating with Francois Guillemot’s lab, who produced transcriptomics datasets in several proneural bHLH loss of function and gain of function mice, I was able to develop a gene regulatory network describing differentiation into glutamatergic and GABAergic neurons. This work led to a broader application of network theory and pathway analysis to define hypotheses of the most likely molecular targets of environmental factors affecting disease processes based on available datasets from genetic association studies in humans and toxicology studies performed in rodent and other model organisms. We are currently evaluating lifespan and transcriptomic differences associated with early-life exposures to mixtures using D. pulex as a model organism.

Human health implications of global environmental change. Traditionally the field of environmental health has focused on health outcomes associated with exposure to single chemicals. More recently, large-scale changes in the environment such as climate change, urbanization, and land use change have been characterized by earth and physical scientists but have been largely unexplored by human health scientists. I have developed a research program examining health outcomes associated with large-scale environmental changes across urban and rural landscapes. Using a combination of satellite-derived datasets and vital records, we have confirmed associations between mortality and extreme heat events and we were also able to detect an association between preterm birth and extreme heat events. Importantly, we were able to detect mediation of the association by rurality, suggesting persons in urban centers may be more at risk. To assess adaptation strategies in human populations, community engaged research is being conducted in underserved urban and rural communities in Alabama, where we have piloted a method for measuring individual level exposure using a small device attached to the shoe.

Assessing human health risk after a large-scale oil spill. Applying my expertise in risk assessment, I evaluated seafood safety protocols used following the Deepwater Horizon blowout. After outlining a set of data gaps and recommendations for further state and federal monitoring, samples collected from fishermen were also evaluated and compared to federal level testing. Our assessment concluded there was minimal human health risk associated with seafood consumption after waters were re-opened for fisheries.

List of published work in Google Scholar:
https://scholar.google.com/citations?hl=en&user=RKwPrDoAAAAJ

D. Research Support

Ongoing Research Support

NIH/NIEHS R01ES023029 Gohlke (PI) 02/01/15 – 10/31/19
Project Title: Environmental exposures across urban and rural communities in the Deep South
Working with community groups, we will determine whether significant differences in vulnerability to heat-related health impacts exist between underserved urban and rural communities in the Deep South.
ICTAS Diversity Seed Grant (Virginia Tech)        Gohlke (PI)        11/01/16 – 6/30/17
Project Title: Radon Education, Testing, and Mitigation in Rural Communities
Working with Bluefield State College, we are running educational sessions, recruiting homes for radon testing, and providing mitigation to selected homes with high radon levels in Tazewell Cty, VA and Mercer Cty, WV.

NSF 1605355        Dietrich (PI)        07/01/16 - 06/30/19
Project Title: Assessing Inhalation Exposure to Aerosolized Contaminants from Drinking Water.
The project is determining exposure and assessing potential health risks from inhalation of metals from humidifier use.

**Selected Recently Completed Research Support**

NIH/NIEHS 1R21ES020205        Gohlke (PI)        08/15/11 – 07/31/2014
Extreme Heat Events-Evolving risk patterns in urban and rural communities
This study examined the impacts of heatwaves in urban versus rural communities in Alabama using retrospective analysis of birth and death records and satellite-derived datasets.

Red Cross        Gohlke and Zaitchik (Co-PIs)        09/01/15-02/15/16
American Red Cross and Red Crescent Climate Center Contract
Project title: Health impacts of extreme heat in the informal settlements of Nairobi
The goal of this project was to estimate a threshold temperature that would like increase mortality due to extreme heat exposure in Nairobi via a meta-analysis of studies conducted elsewhere.

NIH/NIOSH 2 T42 OH008436 08        Lungu(PI)        07/01/13 – 6/30/15
Deep South Occupational Safety and Health Education and Research Center
Developing professionals who protect and promote the health and safety of workers through interdisciplinary education, research, and outreach programs.

EPA/VDH        Marmagas(PI)        03/25/16-7/15/16
Environmental Protection Agency/Virginia Department of Health Contract
Project title: Home radon testing in Tazewell County, VA
The goal of this work was to evaluate radon exposure in Tazewell County by randomly recruiting 300 homeowners to conduct home radon testing.

VT GCC        Krometis(PI)        01/01/16-09/30/16
Global Change Center at VT Seed Grant
Project title: How does environmental landscape change shape community and ecological health in the Central Appalachian Coalfields? A pilot study in Tazewell County, Virginia.
The goal of this pilot project is to analyze VA vital statistics (birth, death records) for trends in birth weight and primary causes of mortality as it relates to landuse/land cover changes over the past 30 years.

UAB CSCH ROSA Award        Gohlke(PI)        09/01/15-08/30/16
UAB Center for the Study of Community Health Researchers Omnibus Survey of Alabama
Project Title: An environmental health phone survey of Alabama residents and public health professionals
The aim of this work is to determine urban and rural environmental health priorities, preferred methods for addressing those priorities.

UAB ETM pilot        Gohlke(PI)        10/01/12 – 09/30/13
UAB Environmental and Translational Medicine Program
Project Title: Geospatial analysis of health outcomes in North Birmingham: A spatial time-series analysis of birth and death records (1990-2010) to determine whether living in close proximity to coke facilities.

NIH Fogarty 5 D43 TW05497-09        Sathiakumar(PI)        10/01/12 – 10/30/13
Project Title: UAB International Training and Research in Environmental and Occupational Health in South East Asia: the Aga Khan University in Karachi, Pakistan; Manipal University (MU) in Manipal, India; and University of Kelaniya (UKe) in Sri Lanka.
JENNIFER L. IRISH

PROFESSIONAL PREPARATION
Lehigh University     Bethlehem, PA    Civil Engineering                B.S. 1992
Lehigh University     Bethlehem, PA    Civil Engineering                M.S. 1994
University of Delaware Newark, DE    Civil Engineering                Ph.D. 2005

APPOINTMENTS
Aug 2016 – present:  Professor, Civil and Environmental Engineering, Virginia Tech
Aug 2011 – Aug 2016:  Associate Professor, Civil and Environmental Engineering, Virginia Tech
Aug 2006 - Aug 2011:  Assistant Professor, Civil Engineering, Texas A&M University
Aug 1998 – Sep 2001:  Research Coastal Engineer, Coastal and Hydraulics Laboratory, U.S. Army Engineer Research and Development Center
Aug 1997 – Aug 1998:  Research Assistant, Center for Applied Coastal Research, University of Delaware
Jul 1994 – Aug 1997:  Coastal Engineer, Coastal Engineering Research Center, U.S. Army Engineer Waterways Experiment Station

PRODUCTS (OF 46 JOURNAL PUBLICATIONS AND 34 CONFERENCE PAPERS)
*Indicates Irish graduate student

Most Closely Related to Proposed Project

Other Significant Products
SYNERGISTIC ACTIVITIES

1. **Recruitment, retention, and graduation of women graduate students:** When I started as faculty in 2006, women made up just 10% of the Ocean Engineering senior class and 12% of the Ocean Engineering graduate student body at Texas A&M University. I am passionate about increasing women participation in the engineering profession and specifically within the Civil and Coastal Engineering fields. Research indicates that for ethnicity, gender, etc. to become a nonfactor in the classroom and in the workplace that demographic must make up about one third of the total group. To that end, I have actively recruited women students; 50% of my graduate students to receive their degrees have been women, and 40% of students in my research group--graduate and undergraduate--are women. My current graduate student group at Virginia Tech is 50% women. I have exceeded the critical one-third fraction within my research group thereby creating an environment that promotes learning in a bias-free environment. I am committed to the continued recruitment of women students.

2. **Appointed Member,** Strategic Sciences Group--Operation Group Sandy, U.S. Department of Interior (2013-2014). This group reports directly to the Secretary of the Interior, who in turn reports directly to the Hurricane Sandy Rebuilding Taskforce (established by President Obama by executive order).

3. **Appointed Chair** of the American Society of Civil Engineers (ASCE) Committee on Technical Advancement (2016-present; **Appointed Vice Chair** 2015-2016; **Appointed Member** 2014-present) | **Elected Member** of ASCE Coasts, Oceans, Ports, and Rivers Institute (COPRI) Coastal Engineering Research Council (2014-present) | **Elected Secretary** of the COPRI Governing Board (2008-2012) | **Nominated Secretary** of the ASCE COPRI Coastal and Estuarine Hydraulics (formerly Tidal Hydraulics) Committee (2005-2012; **Member** 2005-present) | **Member**, ASCE COPRI Sustainability Committee (2012-present).


5. **Elected Member,** Board of Trustees, Academy of Coastal, Ocean, Port and Navigation Engineers, which awards Diplomate certification beyond the Professional Engineering license (2012-2015).
Luke Juran, Ph.D.
Assistant Professor
Dept. of Geography and Virginia Water Resources Research Center
Virginia Tech
Blacksburg, VA 20461 (USA)
Ph: 540-231-0265, Fax: 540-231-2089, ljuran@vt.edu

Education
University of Northern Iowa  Social Science Education  B.A.  2003
University of Iowa   International Studies  M.A.  2008
University of Iowa   Geography  Ph.D.  2012

Appointments
2013-Present - Assistant Professor, Dept. of Geography, Virginia Tech
2013-Present - Assistant Professor, Virginia Water Resources Research Center, Virginia Tech
2013           - Adjunct Assistant Professor, Dept. of Geography, University of Iowa
2012           - Instructor, Dept. of Geography, University of Iowa

Products Most Relevant to Proposed Project

Other Significant Products
Synergistic Activities

1. Appointment at Virginia Water Resources Research Center requires synergistic work across Virginia Tech, with >85 water faculty from >15 departments represented (e.g., secured approval for new interdisciplinary B.S. degree in “Water Resources, Policy, Management”). This Appointment also entails collaborations, information dissemination, and regular meetings with water stakeholders throughout Virginia (e.g., state agencies, local governments, nonprofits, industry, farmers, etc.).

2. Steering Committee member of Virginia Geographic Alliance, which supports geographic and environmental literacy in Virginia through workshops, student competitions, and grant programs (also previous Steering Committee member of Geographic Alliance of Iowa).

3. Executed 24 water quality and quantity workshops among marginalized communities suffering from water insecurity in coastal Tamil Nadu, India, which was accompanied by meetings, presentations, and reports to governments and nonprofits in the region.

4. Active service learning projects with the Virginia Department of Health (composting and community gardens for food security in Appalachia); Plenty! (a food pantry that promotes food security in Appalachia); Harding Avenue Elementary (education dissemination on natural resource use); and 10+ other local entities.

5. Delivered 50+ presentations to civil society organizations (e.g., Rotary, Lion’s Club, libraries, not for profit hospitals).
Sarah M. Karpanty, Ph.D.
540-231-4586; Karpanty@vt.edu

**Education**

Miami University Zoology BS 1998
SUNY Stony Brook Ecology and Evolutionary Biology PhD 2003

**Academic Positions**

2012-Present  Associate Professor (with tenure), Assistant Department Head, Graduate Program Coordinator, Department of Fish and Wildlife Conservation, Virginia Tech.

2006-2012  Assistant Professor, Department of Fish and Wildlife Conservation, Virginia Tech.

2004-2006  Postdoctoral Associate, Department of Fish and Wildlife Conservation, Virginia Tech.

**Selected External Funding as a PI**

(Total grants and contracts awarded: $14,139,087; Total as Lead PI: $3,242,472. Total as Co-PI: $10,896,615)


Karpanty, S.M. 8/1/14-7/31/18. VCR Long Term Ecological Research on Shorebirds and Predators. NSF LTER via University of Virginia. $150,000.


Karpanty, S.M., Simons, T., and Fraser, J.D. 08/09-07/12. Assessing the responses of breeding shorebirds to military jet overflights of the Core MOA at Cape Lookout National Seashore. U.S. Marine Corps, $1,025,007 total, $678,583 to VT.


**Selected External Funding as a co-PI**


Selected Coastal-Focused Journal Publications (43 peer-reviewed journal publications total; *graduate,**undergraduate student, ***post-doctoral associate under my direction)


Selected Teaching, Mentoring and Curriculum Development Experience

- Advised and graduated 5 M.S., 1 M.N.R, 2 Ph.D. students; Currently advising 2 M.S. and 4 Ph.D. students.
- Recipient of Outstanding Teaching Award (2015-2016); Outstanding Advisor Award (2013-2014); Certificate of Teaching Excellence (2011) in Virginia Tech’s College of Natural Resources and Environment
- Lead Instructor at Virginia Tech for Principles of Fish and Wildlife Management (FiW 2114, Fall 2006-present), Vertebrate Population Ecology and Management (FiW 5314, Fall 2007-present), Conservation Biology (FiW 4314, Fall 2014-present)
- Co-Instructor at Miami University and SUNY Stony Brook for Behavioral Ecology, Biodiversity Field Research in a Tropical Rainforest and Ornithology, teaching assistant for introductory biology

Selected Leadership, Service, Outreach Initiatives

- Science Review Panel Member, New Jersey Sea Grant Committee Regarding Conflicts between Red Knots and Oyster Aquaculture, October 2016-present.
- Chair, Atlantic States Marine Fisheries Commission Shorebird Advisory Panel, Commonwealth of Virginia appointee, 2010-present.
- Virginia Tech Faculty Senate President (2012-2013)
a. Professional Preparation

1978  B.S.C.E.  Civil Engineering  University of Massachusetts - Amherst
1979  M.S.C.E.  Structural Engineering  Stanford University
1983  Ph.D.  Civil Engineering  University of Texas at Austin

b. Appointments

1/12-  Burrows Professor  Virginia Polytechnic Institute and State University
1/95- 12/11  Professor  Georgia Institute of Technology
9/89 - 12/94  Associate Professor  University of Minnesota
9/83 - 8/89  Assistant Professor  University of Minnesota
9/79 – 8/83  Research Assistant  University of Texas at Austin

c. Products

PRODUCTS MOST CLOSELY RELATED


OTHER SIGNIFICANT PRODUCTS


d. Synergistic Activities

1. Experimental testing, advanced analysis and development of design recommendations for partially restrained steel connections, bolted T-stub connections, and concrete-filled composite columns.

2. Leadership in the development of the Network for Earthquake Engineering Simulation Consortium: Past President, Board of Director, Past Chair, Committee on Site Operations and Shared Use of Facilities; co-PI MOM contract FY04-FY09

3. Development of innovative composite construction systems and involvement in technical committees: American Institute of Steel Construction (AISC): Member, Specification Committee; Past Chairman and member, TC5 – Composite Construction

4. Professional leadership: American Society of Civil Engineers (ASCE): Chair, Executive Committee, Technical Activities Division; President, Board of Governors, Structural Engineering Institute

5. Leadership in seismic design: Building Seismic Safety Council (BSSC): Past Chairman, TS 11 – Composite Construction; Past Member, TC 6 – Steel and Composite Structures; Past Member, Provisions Update Committee; American Institute of Steel Construction (AISC): Member, TC 9 – Seismic Design; Past Member, Connection Prequalification Review Panel (CPRP).
LOREN PAUL REES

Professional Preparation:
Georgia Institute of Technology School of Electrical Engineering B.E.E., 1970
Polytechnic Institute of Brooklyn Department of Electrical Engineering M.S.E.E., 1972
Georgia Institute of Technology School of Industrial & Systems Engineering Ph.D., 1980

Appointments:
1995 - Present Andersen Professor of Business Information Technology Virginia Tech
1989 - 1995 Professor of Management Science Virginia Tech
1984 - 1989 Associate Professor of Management Science Virginia Tech
1981 - 1984 Assistant Professor of Management Science Virginia Tech
1977 - 1980 Teaching/Research Assistant Georgia Tech
1970 - 1976 Member of Technical Staff Bell Telephone Laboratories

PRODUCTS
Most Closely Related to Proposed Project

Other Significant Products
SYNERGISTIC ACTIVITIES

1. Winner of Stanley T. Hardy Award, national award for the journal article in *Decision Sciences* making the greatest contribution to the field of production and operations management
2. Virginia Tech Finalist, State Council of Higher Education for Virginia, Outstanding Faculty in Virginia Award, five years; State Finalist in 1990
3. Distinguished Service Award winner, Past President, and past meeting Program Chair for the Southeastern Chapter of INFORMS
4. Featured expert on "Just in Time" television production, TV program aired on educational and cable television in Virginia and West Virginia
5. Contributor of a review article to *Handbook of Decision Support Systems*

COLLABORATORS & OTHER AFFILIATIONS

Collaborators and Co-Editors (Collaborators during the past 48 months)
Arnette, Andrew N. (Wyoming), Baker, Wade H. (Cybertrust, Inc; Virginia Tech), Blanton, B. (UNC Chapel Hill), C. Briggs (Global Inter. LLC), Bukvic, A. (Virginia Tech), Chacko, J (Virginia Tech), Deane, Jason K. (Virginia Tech), Fetter, Gary (Deceased), Goldberg, David M. (Virginia Tech), Hertweck, Bryan M. (Virginia Tech), Holt, Brandon (1901 Group, CRC, Blacksburg, VA), J. Irish (Virginia Tech), Ragsdale, Cliff T. (Virginia Tech), Rakes, Terry R. (Virginia Tech), Donald Resio (Univ. of North Florida), Russell, Roberta S., (Virginia Tech), Scheibe, Kevin P. (Iowa State), Sforza, Peter (Virginia Tech), R. Weiss (Virginia Tech), Zhang, Y. (Virginia Tech), Zobel, Christopher W. (Virginia Tech).

Graduate Advisors and Postdoctoral Sponsors
Porter, Alan L. (PhD), and Heikes, Russell G. (PhD), Georgia Tech

Thesis Advisor (2 advisees) and Postgraduate-Scholar Sponsor (none) during the past 5 years
*Thesis committee member:* Arnette, Andrew (Wyoming), Awaysheh, Abdullah (Virginia Tech), Falasca, Mauro (East Carolina University), Fetter, Gary (Deceased), Kennedy, Trevor (Unknown), Santamaria, Suzanne (International Health Terminology Standards Development Organization, Virginia Tech), Vance, David (Redeemer Presbyterian Church, Blacksburg, VA) | *PhD Thesis Advisor:* J. Chacko (Virginia Tech), W. H. Baker (Verizon, Virginia Tech)
Toddd Schenk, Ph.D., M.C.P.
Assistant Professor, School of Public and International Affairs, Virginia Tech
http://www.toddschenk.com
tschenk@vt.edu

(a) Professional Preparation

University of Guelph                     Guelph, Canada Geography (Intl. Development minor) B.A.  2002
Massachusetts Institute of Tech.  Cambridge, MA  Dept. of Urban Studies and Planning M.C.P. 2009
Massachusetts Institute of Tech.  Cambridge, MA  Public Policy and Planning (DUSP) Ph.D.  2015

(b) Appointments

2015-Present     School of Public and International Affairs, Virginia Tech         Assistant Professor
2014-2015    Program on Negotiation at Harvard Law School                     Graduate Research Fellow
2013-2014    MIT Science Impact Collaborative             Assistant Director

(c) Select Publications

i. Five Related Publications


ii. Other Relevant Publications


(d) **Synergistic Activities**

1. *Affiliations at Virginia Tech*: Global Change Center; the Center for Communicating Science (advisory board member); and the Global Forum on Urban and Regional Resilience.

2. Organizing *Joint Fact-Finding Network*, including hosting network meeting. Ongoing activities with members of network around the world.

3. PI on #CivilityVT and the *Frenemies Project*, which are engaging students, staff and faculty from across the university and beyond.
Venkataramana Sridhar, Ph.D., P.E., D.WRE
Assistant Professor, Biological Systems Engineering Department,
Virginia Tech, Blacksburg, Virginia 24061
Tel: (540) 231-1797; Fax: 540-231-3199; E-mail: vsri@vt.edu

(a) Professional Preparation
Tamil Nadu Agricultural Univ. Coimbatore, India Ag Engineering B.S., 1991
Asian Institute of Technology Bangkok, Thailand Irrigation Engineering M.Eng., 1994
Oklahoma State University Stillwater, OK Biosystems Engineering Ph.D., 2001

(b) Appointments
2014-Present Biological Systems Engineering, Virginia Tech Assistant Professor
2012-2013 Civil Engineering, Boise State University Associate Professor
2007-2012 Civil Engineering, Boise State University Assistant Professor
2003-2007 School of Natural Resources, U. Nebraska Research Assistant Prof.

(c) Select Publications
i. Five Related Publications

ii. Other Relevant Publications
(d) **Synergistic Activities**

1. Providing leadership with ICTAS Center in India in the water sector through collaboration with colleagues (Lohani, Pruden and others), the Lower Mekong Basin (Cambodia, Thailand, Lao, Vietnam) for food-energy-water nexus impacted by hydropower development projects.

2. ITRA-Water, Government of India, Review Panel Member to review five major water projects funded across India from 2013 to 2016.


5. Review Panel Member, Horton Award Committee, American Geophysical Union, 2009-12.

**Total number of students mentored/advised:** 8
Biographical Sketch

Dr. Robert Weiss

Department of Geosciences, Virginia Tech, e-mail: weiszr@vt.edu, tel: +1-540-231-2334

(a) Professional Preparation

Friedrich-Schiller University, Jena, Germany; Geosciences; Pre-Diploma (equivalent to B.S.), 1999
Friedrich-Schiller University, Jena, Germany; Geosciences; Diploma (equivalent to M.S.), 2002
Westfalia-Wilhelms University, Münster, Germany; Geosciences; Dr. rer. nat. (Summa Cum Laude, equivalent to Ph.D.), 2005

(b) Appointments

2014–present: Associate Professor, Virginia Tech, Blacksburg, VA
2011–2014: Assistant Professor, Virginia Tech, Blacksburg, VA
2008–2011: Assistant Professor, Texas A&M University, College Station, TX
2005–2008: Visiting Scholar, NOAA Center Tsunami Research, University of Washington, Seattle, WA

(c) Products (40 Journal Papers and 2 Conference Papers)

(c).1 Most Closely Related to the Proposed Project


(c).2 Other Significant Products

(d) **Synergistic Activities**

1. **International Tsunami Survey Team (ITST):** These teams visit tsunami affected areas as soon as possible after a tsunami event to inspect the fresh physical evidence. The range of physical evidence ranges from impact on harbor structures and houses, erosion and deposition characteristics to the impact on ecological systems. As an example of the latter, the PI visited the Galapagos and the Midway Atoll to study the impact of the 2011 Tohoku Tsunami on the near-beach ecosystem. Findings from all the surveys have been presented on very different levels ranging from K-12 institutions and university seminars.

2. **UNESCO:** The PI was member of the steering committee for the IOC/UNESCO workshop Post-Disaster Assessment and Monitoring of Changes in the Coastal, Ocean and Human Systems in the Indian Ocean and Asian Waters (Feb. 20-23, 2006), in which the PI chaired the workshop Ocean Data, Observations, Disaster Warning and Risk Reduction.

3. **Creation of Knowledge:** In terms of creation of knowledge, the PI has contributed to the evaluation of oceanic impacts as sources of tsunamis. The PI and Dr. Kai Wünemann (Free University of Berlin, Germany) developed a hybrid computer code system that is able to simulate the generation, propagation and inundation of tsunami waves. In this model system, the simulation of impact processes with the state-of-the-art hydrocode iSALE is coupled to a non-linear propagation model and eventually to the MOST code, the standard code for inundation computations at the NOAA Center for Tsunami Research. Results published in 2006 indicated that even for waves initially hundreds of meters high, after propagation of approximately 1,000 km those waves were damped to amplitudes that correspond to amplitudes of the 2004 Sumatra Tsunami off Sumatra.
RANDOLPH HAMILTON WYNNE
Professor
Virginia Tech, Department of Forest Resources and Environmental Conservation
319 Cheatham Hall, Blacksburg, VA 24061
Tel.: (540) 231-5525; Fax: (540) 231-3698; Email: wynne@vt.edu

EDUCATION
University of North Carolina at Chapel Hill       B.S.       Env. Science & Engineering  1986
University of Wisconsin-Madison             M.S.       Environmental Monitoring  1993
University of Wisconsin-Madison            Ph.D.       Environmental Monitoring  1995

CURRENT POSITIONS
Professor, Virginia Tech Forest Resources and Environmental Conservation, 2008-present
Program Co-Lead, Interdisciplinary Graduate Program in Remote Sensing, 2012-present

HONORS/AWARDS (ALL SHARED WITH COLLEAGUES)
• First Honorable Mention for the 2005 American Society for Photogrammetry and Remote Sensing Talbert Abrams Award for best 2004 article in PE&RS
• Second Place, American Society for Photogrammetry and Remote Sensing Leica Geosystems Award for Best Scientific Paper in Remote Sensing in 2006
• First Place, American Society for Photogrammetry and Remote Sensing ERDAS Award for Best Scientific Paper in Remote Sensing in 2008

PROFESSIONAL ACTIVITIES
• Member, Landsat Science Team, 2006 to present
• Co-Author, Introduction to Remote Sensing, 5th edition, Guilford
• Senior Associate Editor, Remote Sensing

PROJECT MANAGEMENT EXPERIENCE
Principal investigator for over $10,000,000 in grants and contracts on which all deliverables were met with quantifiable science outcomes.

RECENT REFEREED ISI PUBLICATIONS


**DIVERSITY HIGHLIGHTS**

- CNRE Diversity Award, 2008.
- Virginia Tech Human Diversity and Community Committee, 2008-2010.

**STUDENT ADVISING**

I have completed 24 graduate students as major professor, 11 M.S. (two co-chaired) and 13 Ph.D. (five co-chaired) Five graduate students are currently under my direction, four Ph.D. and one M.S. I also have the normal load of undergraduate advising in the department (Environmental Resource Management and Environmental Informatics majors).
YANG ZHANG
Urban Affairs and Planning Program
School of Public and International Affairs
Virginia Polytechnic Institute and State University
Blacksburg, VA 24060
(540)-231-1128 yang08@vt.edu

Professional Preparation:

Peking University  Beijing, China  Geography   B.S. 1997
Peking University  Beijing, China  Geography   M.S. 2000
Texas A&M University  College Station, TX  Urban and Regional Science  Ph.D. 2006

Professional Appointments:

2015 to present  Associate Professor, Urban Affairs and Planning, Virginia Tech, VA
2008 to 2015  Assistant Professor, Urban Affairs and Planning, Virginia Tech, VA
2006 to 2008  Assistant Professor, Environmental Studies, University of Illinois at Springfield
Director, Geographic Information System Laboratory

Products (related):


Products (Other Significant):


Synergistic Activities

1. Founding member of Virginia Tech’s Interdisciplinary Graduate Education Program in Disaster Resilience (DR-IGEP)

2. Board of Directors for the International Association of China Planning (IACP), spring 2015 to present.


5. Co-PI for Virginia Sea Grant project: “Climate Change Adaptation Strategies For Middle Peninsula Counties in the Virginia Coastal Community,” 2010-2012
BIOGRAPHICAL SKETCH
Christopher W. Zobel

PROFESSIONAL PREPARATION

Colgate University  Hamilton, NY  Mathematics  B.A. 1991
University of North Carolina  Chapel Hill, NC  Mathematics  M.S. 1993
University of Virginia  Charlottesville, VA  Systems Engineering  Ph.D. 1998

APPOINTMENTS

R.B. Pamplin Professor of Business Information Technology, Virginia Tech, 2013-Present
Professor, Dept. of Business Information Technology, Virginia Tech, 2012-Present
Associate Professor, Dept. of Business Information Technology, Virginia Tech, 2004-2012
Assistant Professor, Dept. of Business Information Technology, Virginia Tech, 1998-2004

PRODUCTS (RELATED):


PRODUCTS (OTHER SIGNIFICANT):

SYNERGISTIC ACTIVITIES

- Co-Director of Virginia Tech's Interdisciplinary Graduate Education Program in Disaster Resilience (DR-IGEP)
- NSF Review Panelist, Infrastructure Management and Extreme Events, 2017
- Treasurer for ISCRAM (International Association for Information Systems for Crisis Response and Management), and Scientific and Technical Advisory Board member for IDRC 2016 (International Disaster and Risk Conference) and ISCRAM 2016.
- President of the Southeast Decision Sciences Institute, 2013-2014
- Fulbright Senior Scholar to Germany, Spring 2015
Table 1. Example of Coastal Systems Curriculum

<table>
<thead>
<tr>
<th>COURSE</th>
<th>COURSE TITLE</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG/NR 2004</td>
<td>Water, Environment &amp; Society</td>
<td>Pathways</td>
</tr>
<tr>
<td>FiW 2114</td>
<td>Principles of Fish and Wildlife Management</td>
<td>Pathways</td>
</tr>
<tr>
<td>SPIA 2XXX</td>
<td>Collaborative Policy and Planning</td>
<td>Pathways process (forthcoming)</td>
</tr>
<tr>
<td>SPIA 2XXX</td>
<td>Coastal Planning: Environment, Economy, Society, &amp; Security</td>
<td>New course, Pathways</td>
</tr>
<tr>
<td>GEOG 3104</td>
<td>Environmental Problems, Population &amp; Development</td>
<td>Pathways</td>
</tr>
<tr>
<td>UAP 4344</td>
<td>Law of Critical Environmental Areas</td>
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<tr>
<td>NR 4444</td>
<td>Practicing Sustainability</td>
<td>Service Learning course</td>
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<tr>
<td>FiW 4464</td>
<td>Human Dimensions of Fish and Wildlife</td>
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<tr>
<td>GEOG 4984/5984</td>
<td>Water, Hazards &amp; Development</td>
<td>New course</td>
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<td>GEOG 4984/5984</td>
<td>Climate Change &amp; Societal Impacts</td>
<td>New course</td>
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<td>GEOS 3034</td>
<td>Oceanography</td>
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<tr>
<td>GEOS 2104</td>
<td>Elements of Geosciences</td>
<td>In preps for Pathways</td>
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<tr>
<td>GEOS 4984</td>
<td>Quantitative geosciences</td>
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<tr>
<td>GEOS</td>
<td>Imprints and consequences of sea-level change</td>
<td>Taught by new FTE</td>
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<tr>
<td>New course</td>
<td>I Resilience Capstone Field Experience</td>
<td>New field experience/project-based course</td>
</tr>
</tbody>
</table>


Appendix III

Job Ad:

More than half of the world’s human population lives within 40 miles of the sea. Coastal cities are the backbone of global finance, trade, manufacturing, and transportation. Millions of people worldwide travel to beaches for recreation. By 2100 more than 100 million people could be displaced by sea-level change, 13 million in the U.S. alone. The stability of the global economy is threatened by sea-level change.

We seek to hire an Assistant or Associate Professor who employs the geologic record to reconstruct past sea levels and helps to establish and refine sea-level projections.

The position will be integrated within an interdisciplinary network of faculty spanning over eight colleges within Virginia Tech who work on contemporary and emerging challenges in the coastal zone. This interdisciplinary network is the backbone of the theme “Stresses and Instability in Coastal Systems: Sustaining Prosperity, Increasing Diversity and Achieving Resilience” within the Global System Science Destination Area. We seek an individual who is highly motivated and skilled in coastal geosciences, but also capable of integrating in interdisciplinary research and education programs.