Paper Session:

1112 Spatiotemporal Thinking, Computing and Applications 1: General Introduction

is scheduled on Tuesday, 4/8/2014, from 8:00 AM - 9:40 AM in Room 12, TCC, First Floor

Sponsorship(s):
Cyberinfrastructure Specialty Group
Association of American Geographers
Spatial Analysis and Modeling Specialty Group

Organizer(s):
Chaowei Yang - George Mason University
A-Xing Zhu - Univ of Wisconsin
Weihe Wendy Guan - Harvard University

Chair(s):
Keith C. Clarke - University Of California, Santa Barbara

Abstract(s):

8:00 AM Author(s): *Maia Call - The University of North Carolina at Chapel Hill
Paul Voss - The University of North Carolina at Chapel Hill

Abstract Title: *Spatio-temporal modeling of childhood poverty in the United States*

8:20 AM Author(s): *Keith E. Wresinski - University of Wyoming

Abstract Title: *How differing spatial and temporal scales shape the concept of sustainable development*

8:40 AM Author(s): *Justin J. Hartnett - Syracuse University

Abstract Title: *Spatial and Temporal Trends of Snowfall in Central New York - A Lake Effect Dominated Region*

9:00 AM Author(s): *A-Xing Zhu - Univ of Wisconsin-Madison
Junzhi Liu, Professor - School of Geography, Nanjing Normal University

Abstract Title: *A layered approach to parallel computing for spatially distributed hydrological modeling*

9:20 AM Author(s): *Chaowei Yang - George Mason University

Abstract Title: *Spatiotemporal Innovation*

Session Description: Many 21st century challenges, such as climate change, natural disaster and interdisciplinary discovery, exist within a 4-dimensional (3D space and 1D time) framework. Integrating our understanding and methods across all four dimensions would lead to new approaches to help us address the challenges by providing: 1) new methodologies to improve our knowledge; 2) new computational tools and software to advance relevant technologies; and 3) applications to directly address the challenges. For example, how could we save thousands more lives if an earthquake hits a densely populated area or a huge volcano erupted near a major city? A spatiotemporally aware

and optimized approach could help advance GIScience, Cyberinfrastructure, Cloud Computing, Big Data, Social Media, Digital Earth and future generations of GIS and geographic solutions. A better understanding of the spatiotemporal linkage among different domains of geography would enable us to
address problems that were previously unsolvable. The NSF Spatiotemporal Innovation Center is established to collectively investigate just such solutions.

Following the success of last year's spatiotemporal thinking, computing and application sessions, we are organizing a series of sessions (paper, illustrative, interactive, and panel) on STCA to move the discussion forward and to build a research agenda. Possible topics include but are not limited to:

1. Are there undiscovered spatiotemporal principles or laws?
2. How to detect spatiotemporal patterns from observation and simulations?
3. How to analyze spatiotemporal patterns in various geographic sciences, such as climate change, ocean science, environmental science, disaster and sustainability studies.
4. How to formulate and/or utilize spatiotemporal thinking as a methodology and conceptualization process in geographic science discovery and application.
5. What are the new computing, software, and application products to address spatiotemporal problems?
6. How can spatiotemporal thinking and computing be used to manage and develop cloud computing and Big Data solutions?
7. Does a spatiotemporal approach facilitate better understanding of the physical and social sciences, such as climate change, energy, political, and population sciences?
8. How to educate the next generation workforce with spatiotemporal knowledge and methods?
9. How best to communicate spatiotemporal knowledge.

Organizers
- Peter Bol, Harvard University
- Keith Clarke, University of California at Santa Barbara
- Jeff Dozier, University of California at Santa Barbara
- Michael Goodchild, University of California at Santa Barbara/ESRI
- Wendy Guan, Harvard University
- Diansheng Guo, Univ. of Southern Carolina
- Paul Houser, George Mason University
- Qunying Huang, Univ. of Wisconsin-Madison
- Shaowen Wang, Univ. of Illinois at Urbana-Champagne
- Chaowei Yang, George Mason University
- Axing Zhu, Univ. of Wisconsin-Madison

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