

Call for Workshop Participation (Submission Deadline: April 17, 2015)

Emerging Trends in Data-Intensive, High Performance, and Scalable Geocomputation

Workshop Organized in Conjunction with GeoComputation 2015

May 20, 2015

<http://web.ornl.gov/sci/gist/workshops/2015/geocomputation/>

Synopsis: Geocomputation has undergone an extensive transformation during the past few decades, particularly through the explosive growth and adoption of inexpensive multicore computers, GPUs and coprocessors, and cloud-based architectures on the hardware front and the revolution it has catalyzed in open source and cyberGIS software development, web services and application programming interfaces (APIs), and “Big Data” analysis and visualization. We are now positioned to realize data-intensive, high performance, and scalable geocomputation in compelling ways and seek solutions that have significant impacts on numerous challenging geospatial problems (e.g., climate change and environmental sustainability). However, substantial challenges and opportunities exist for moving this new frontier forward. In particular, major theoretical and experimental advances across the broad spectrum of hardware, software, and applications are urgently needed to reap the benefits of the transformation while guiding the future of the field. This workshop provides a unique opportunity to bring together experts from academia, industry, government, and non-profit sectors to (1) discuss emerging trends in data-intensive, high-performance, and scalable geocomputation through theoretical investigations, empirical studies, and technology demonstrations; and (2) share perspectives on pathways forward with the broader geocomputation community. It offers a unique venue for participants to learn from one another and work together to determine how best to take advantage of what is currently available and, potentially, help drive the development of future hardware and software systems that can synergistically address the interests of the community.

Target Audience and Format: Anyone who is interested in the future of geocomputation is encouraged to attend this workshop. It will be discussion-driven, focused on a small number of topics framed by presentations about emerging trends, and will follow the format of a National Center for Geographic Information and Analysis (NCGIA) specialist meeting: Introductory talks by the organizers, followed by shorter presentations by selected speakers, followed by Q/A and discussion of prospective research agendas, and concluding with a plenary discussion.

Topics: Presentation and discussion topics will include, but are not limited to:

- High performance computing architectures
- Geographic data intensive science use cases, software, and related performance and scalability
- Algorithms and programming models/paradigms
- Geographic data acquisition and dissemination methods
- Spatiotemporal data mining
- Cyber-GIS for dynamic data integration
- Geographic exploration systems
- Scientific knowledge generation
- Spatial model calibration, verification, and validation
- Geosensor networks

Paper Submission: Participants should submit a short (2 page) position paper that discusses one or more emerging trends in data-intensive, high-performance, and scalable geocomputation by highlighting a theoretical investigation, empirical study, and/or a technology demonstration. Submission of a two-page CV is also required with the position paper. Submissions should be uploaded through the workshop website.

Deadline for Paper Submission: April 17, 2015

Contact: Budhendra Bhaduri (bhaduribl@ornl.gov); Shaowen Wang (shaowen@illinois.edu), Devin White (whiteda1@ornl.gov), Anand Padmanabhan (apadmana@illinois.edu)