THE FUTURE OF SCEC RESEARCH COMPUTING WORKSHOP

WORKSHOP OBJECTIVES KEY QUESTIONS, AND INTRODUCTIONS

Conveners: Phil Maechling, Yifeng Cui, Christine Goulet, and Tran Huynh
Dates: July 29 - 30, 2019
Location: San Diego Supercomputer Center
Welcome to The Future of SCEC Research Computing Workshop

Welcome from the Workshop Conveners

Philip Maechling
Yifeng Cui
Christine Goulet
Tran Huynh
Welcome on Behalf of the Southern California Earthquake Center Leadership

SCEC Interim Director, Yehuda Ben-Zion (USC)

SCEC co-Director, Greg Beroza (Stanford)

SCEC Planning Committee co-Chair, Judi Chester (Texas A&M)

Applied Science, Christine Goulet (USC)

Research Computing, Phil Maechling (USC)

Science Operations, Tran Huynh (USC)

Communication, Education, & Outreach, Mark Benthien (USC)

SCEC Board of Directors Chair, John Shaw (Harvard)
Welcome to Future of SCEC Research Computing Workshop

Thanks to our hosts at San Diego Supercomputer Center including:

Mike Norman – SDSC Director
Shawn Strande – SDSC Deputy Director
Yifeng Cui – Director for SDSC High-performance GeoComputing Laboratory
Chaitan Baru -- Director for SDSC Center for Large-scale Data Systems research
Michael Zentner – Lead SDSC Sustainable Scientific Software Group
Ilkay Altintas – Chief SDSC Data Science Officer
Mai Nguyen – Lead SDSC Data Analytics
Amit Majumdar -- Division Director, Data-Enabled Scientific Computing
Jan Zverina -- Division Director, External Relations
Dmitry Pekurovsky – SDSC Senior Computational Scientist
Amit Chourasia – Lead Visualization Services

Thanks to all attending and participating remotely.
Workshop is Motivated by Recognition of Changes:

Changing SCEC’s scientific research goals:

(1) Advanced PSHA
(2) Validation of hazard products for engineering use
(3) Earthquake Forecast testing
(4) Developing and delivering earth structure models
(5) Developing methods for long duration and dense array seismogram processing
(6) Operational ground motion monitoring and transient detections
Workshop is Motivated by Recognition of Changes:

Changing Computing and Data Management Technologies:

1. CPU and GPGPU advances including single precision computing
2. Exascale computing
3. Extended, distributed, complex workflows
4. Impact of Machine Learning
5. Data Intensive Computing
6. Virtualization and Cloud Computing
7. SQL and NoSQL data management
8. Increasing call for data accessibility and reproducibility of computational results.
Workshop is Motivated by Recognition of Changes:

Changing NSF/USGS/DOE open-science research computing environments

1. Changing generations of NSF and DOE computers
   (1) SDSC Expanse
   (2) TACC Frontera
   (3) DOE Exascale Project

2. Re-definition of Geoinformatics and SI2 (CSSI) programs

3. Era of NSF 10 Big Ideas
   (1) Harnessing Data revolution
   (2) Mid-scale Research Infrastructure
   (3) Emphasis on multi-domain projects (e.g. EarthCube)

4. Developing concepts for scientific software sustainability
   (1) Development of Scientific Software best practices
   (2) Focus on validated toolkits over open-source applications
   (3) Access to research computing through science gateways
Workshop Goals

Goals for this workshop include:

1. Assess the current and future research computing needs of the SCEC community.
2. Prepare SCEC researchers for future NSF and DOE computing environments.
3. Design a research computing organization that will support future SCEC research.
4. Initiate future collaborative SCEC research computing projects.
Desired Outcomes from the workshop:

1. SCEC has communicated future computing-based research goals to potential collaborators

2. Participants have identified potential future research collaborators/collaborations.

3. SCEC has identify effective strategies for sustaining SCEC Research Computing

4. SCEC has plans for a document that expresses the importance, benefits, and urgency for additional support for SCEC’s research computing activities.
Meeting Logistics

Hotel, re-imbursement, travel, information or issues: email <scecmeet@usc.edu>
SDSC will provide Internet access for participants
Parking on campus must be self-paid on re-imbursement basis. Ask at break for other parking options

Remote participants supported through Blue Jeans and polycom (try to consider remote participants when speaking)

Monday and Tuesday Morning Light Breakfast before 9am
Monday Box Lunches in this building
Monday evening dinner at hotel which will be paid by SCEC/SDSC. Please note the updated Restaurant for this dinner. https://www.theshoresrestaurant.com/
Meeting Adjourns Tuesday at noon - no meal provided

We plan to run the ShakeAlert Earthquake Early Warning (EEW) User Display in the room. If it goes off and announces strong shaking, we recommend “Duck, Cover, and Hold on”
Meeting Logistics

Meeting Agenda and Sessions – Posted and Handouts:
Workshop has Full schedule with breaks
Website: https://www.scec.org/workshops/2019/computing

Each Session has assigned Moderator and Recorder
Moderator – Monitors speaker time
Recorder – Captures discussion and action items

Request you upload presentations (including lightning talks) as a PowerPoint, PDF, or Google slides) to google drive OR, bring your presentation on thumb drive to load on the meeting laptop between 8:30-9:00am on the day you are scheduled to present.

Presenters will be asked to contribute a distributable version of their slides which will be linked from the workshop webpage

Now - Group Introductions