Research Highlight

SCOPED: Seismic COmputational Platform for Empowering Discovery

Seismic waves are our primary tools to explore the multi-scale structure of Earth— from its surface down to the inner core—and its wide range of processes, including earthquakes, volcanic activity, glacial processes, oceanic and environmental processes, and human-caused processes such as hydraulic fracturing or nuclear explosions.

The unprecedented growth of data and computational power have formed two pillars of seismology during the last decade. While numerical tools allow us to take full 3D complexity of wave propagation in seismic source and structural modeling, exponentially grown seismic data from traditional broadband seismometers as well as emerging instruments (i.e., distributed acoustic sensors, MERMAIDs, nodal arrays, etc.) offer new opportunities to monitor seismic activity and to improve resolution beneath continents and oceans. We need high-performance and Cloud computing to efficiently process large data sets and accurately model them. Seismic workflows involve various pieces depending on the problem, from retrieving field data from data repositories to processing and modeling them. Data processing requires easy access to large data sets, which becomes much more challenging for (near-) real-time monitoring studies, while seismic modeling of source and structure often deals with iterative workflows involving large earthquake or noise data, which can quickly turn out to be overwhelming tasks for researchers. The steep learning curve of modern computational technics and workflows, together with computational challenges, leaves limited time for students and researchers to focus on seismological and broader Earth science interpretations.

SCOPED ... [continued]

contributed by
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Updates from HQ

Dear Community,

Our current website has been serving our community since 2013. In the past 8 years, much has changed not only in technology but also in the needs of our community. We are excited to be partnering with hubzero on a new website platform. hubzero is part of the Science Gateways Community Institute and provides science gateway support for a number of communities. Leveraging their expertise, we plan to roll out new services and streamline processes. Look for the launch announcement later this month.

This does mean change. And change can be frustrating. The biggest change will be fully transitioning from our mail list serve which is no longer being supported to the community forum and a more user friendly ticketing system. In the forum, remember to navigate to the category you are interested in receiving email from and select how often you wish to be noticed (look for the icon next to the *+ New Topic* button). To assist you, we have also developed a few FAQs as content has moved around.

Please use the ticketing system to send feedback, if you have technical issues, and for other communications to CIG HQ Staff.

Lorraine Hwang, Director

News

G3 Special Issue: Frontiers in lithospheric dynamics ...

One outcome of the CIG 2020 Tectonics Community meeting was strong support for a new special issue that focused on future directions in cross-disciplinary lithospheric dynamics investigations. Future advances in our understanding of the complex nature of lithospheric dynamics will require cross-disciplinary investigations that address multi-physics processes across a wide range of temporal and spatial scales. The CIG Long-Term Tectonics working group proposed the idea to the editorial board at Geochemistry, Geophysics, Geosystems, and the idea was met with enthusiasm.

We are pleased to announce that the special volume, titled *"Frontiers in lithospheric dynamics: bridging scales through observations, experiments, and computations",* is now open for submission at *G3*. We are also excited to announce that both Review and Frontier articles will be accepted for review with prior editorial approval, in addition to standard research and methods articles. [more info][AGU website]
Submission Deadline: November 30, 2023

Website Launch

Our new website is launching this month! But don't worry, our old website will still be around however, content will no longer be updated. We have worked to move and consolidate content from our old website to the new platform. Navigation has been changed and some new features have been added. Access a software package from the home page and check out the new features. We are particularly excited that citations are much easier to find. Look for software statistics as we complete Phase II of our rollout.

Take a sneak peek of the new website at geodynamics.hubzero.org. Check the FAQs if the content is not where expected. Don't forget to send us your feedback to help us improve the website for all users.

Speaker Series

Do you know someone who would be a great ambassador for CIG research? The CIG Speaker Series is looking for talented speakers who can promote computational modeling in geodynamics and related earth sciences to a broad scientific audience. Send your nominations to speakers@geodynamics.org. More information for speakers and institutions looking for speakers can be found on our website. Deadline is **February 28, 2022**. [info]

Congratulations

Congratulations to Takumi Kera who won the Student Presentation Award (Aurora Medal) awarded at the Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS) General Assembly in October 2021. The medal is awarded to student researchers based on their research's potential and originality.

Job Opportunities

We are hiring! CIG HQ is looking for a Community Manager to lead community engagement, education, and diversity initiatives for our community and a Research Software Engineer to lead development of modern workflows and repositories for reproducible high-performance computational models in geodynamics. For full consideration, apply before March 15.

Governance

Elections

Please join us in welcoming Carolina Lithgow-Bertelloni and Brad Aagaard to the Executive Committee (EC) and Harriet Lau, Peter Driscoll, Dave May, and Ebru Bozdag to our Science Steering Committee (SSC). Many thanks to former EC member Katie Cooper and Louis Moresi and SSC members Ebru Bozdag, Min Chen, Krista Soderlund, and Cian Wilson for their contributions to the community as well as everyone who participated by running and/or voting in this year's elections.

Call for Focused Working Groups

CIG seeks to encourage new ideas from the community by forming Focused Working Groups (FWG). FWG's should address a specific topic and have a clearly defined scope e.g. workshop, white paper, benchmark, etc. A FWG should define concrete outcome(s) achievable within a short time frame, < 2 years. Anyone can propose one! We look forward to your ideas in continuing the CIG community's dynamic leadership in the Earth sciences. [email]

Events

Webinars

Webinars are held the second Thursday of the month at 2P PT. *Registration is required*. Please see our website for webinar registration links.

Workshops

Registration for Workshops will be announced as they become available.

Remember to join our forum to receive announcements for these and other 2021-2022 events.