



May 2018

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Research Highlight

The Role of Mantle Convection in Understanding Paleoclimate Using ASPECT

Contributed by J. Austermann

Over the Plio-Pleistocene ice sheets have periodically advanced and retreated as the Earth oscillated between warm interglacial periods and cold glacial conditions. Understanding the extent of this ice variation and in particular climate during past warm periods is crucial to unraveling the drivers and feedback mechanisms active in our climate system. In my work I use the open source code ASPECT (Advanced Solver for Problems in Earth's Convection) to investigate what role mantle flow plays in our interpretation of paleo sea level and ice sheet records.

[\[caption\]](#)

The Mid-Pliocene Warm Period (~3 Myr ago) serves an analogue for future climate as it was the last time in Earth's history when atmospheric carbon dioxide was comparable to present values and temperatures were elevated by 2-3 °C. In Austermann et al. (2015) we analyze to what extent mantle flow changes the topography beneath the Antarctica continent and in turn affects the Antarctic ice sheet. We use a variety of initial and boundary conditions to calculate current mantle flow and the topography that arises due to flow driven stresses at the Earth's surface. We found that an upwelling under the Ross Ice Shelf (see Figure) affects topography in the neighboring Wilkes Basin. Coupling output from ASPECT to an ice sheet model predicted ... [\[more\]](#)

CIG Distinguished Speaker: Sarah Stamps

One of our 2017-2018 CIG Distinguished Speakers, Assistant Professor D. Sarah Stamps of the Department of Geosciences at Virginia Tech, gave a presentation at [Hampton University](#) entitled Advances in the Kinematics and Geodynamics of the East African Rift System. The presentation highlighted research on continental rifting processes based on the CIG computational code ASPECT. This experience provided an opportunity to communicate CIG-based science and an overview of the community code ASPECT to an audience at an HBCU. Please contact us if you are interested in hosting a Distinguished Speaker.

[\[info\]](#)[\[contact\]](#)

Bylaws Revisions - Online Meeting

CIG's Bylaws were last updated in 2012. Much has changed since then both in the way we do business and wider adoption of Codes of Conduct in the community. Please join us for an online meeting **Thursday May 31 @ 2pm PT** at which time we will highlight the proposed updates. Proposed revisions will be posted *after* the meeting. Member Representatives will have 2 weeks to vote. Revisions to the Bylaws must have an affirmative vote by two-thirds of the Member Representatives.

[\[2012 Bylaws\]](#) [\[Code of Conduct\]](#) [\[Member Representatives\]](#)[\[zoom\]](#)

Call for Focused Working Groups - Fall 2018

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. They 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. Look for more details this Fall.

2018 CTSP Workshop

A joint CSDMS-CIG workshop focused on Coupling of Tectonic and Surface Processes (CTSP) was held from April 25-27, 2018 to survey both questions and state of the art numerical techniques that simulate surface processes and long term tectonic (LTT) processes in an attempt to define a framework for the development of efficient numerical algorithms that couple across multiple length and time scales. Over 150 researchers attended, in person or virtually, the plenary talks and breakout sessions. The group is working on a white paper which will outline different mechanisms through which the LTT and surface processes communities can collaborate to tackle the science questions and the numerical challenges.

[\[website\]](#)

New Staff

CIG HQ welcomes new members to our team Dr. Juliane Dannberg and Dr. Rene Gassmöller. Their names should be familiar as lead developers of the code ASPECT as well as leaders of several ASPECT tutorials. Dr. Dannberg will continue her research into mantle plumes and contribute to code support and development along with investigations of deep carbon. Dr. Gassmöller joins our software engineering team supporting community code development and infrastructure.

[\[Dannberg\]](#) [\[Gassmöller\]](#)

Congratulations to ...

Congratulations to Bruce Buffett, former Chair of the CIG Executive Committee (EC), who was elected to the American Academy of Arts and Sciences. Congratulations to David Bercovici, former EC member, and to Michael Manga who were elected to the U.S. National Academy of Sciences.



WEBINARS

May 10 - ASPECT Team

[More info](#)

[Connect to webinar](#)

May 31 - CIG Bylaws Revision

MEETINGS

June 10-14: CGU *joint with CIG*

June 19-23: PyLith Hackathon

June 19-30: ASPECT Hackathon

July 9 - Aug 3: CIDER

September: Rayleigh Hackathon

NEW RELEASES

ASPECT 2.0

Rayleigh 0.9.1



click the icon for citation info

ALLOCATIONS

Stampede2: 19/85,608 SUs

Comet: 0/500,000 SUs

Comet GPU: 0/15,000 SUs

Oasis: 0/10,000 SUs

Ranch: 10,000 GB

QUICK LINKS

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CONTACT US

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