

CIG Software Release

- **CitcomS 3.0.1** - CitcomS is a finite element code designed to solve thermal convection problems relevant to Earth's mantle. This release features two implementations of compressible convection; the ability to resume computation from previous checkpoints; multi-component chemical convection; a fixed non-Newtonian solver; a rheology option for pseudo-plasticity; composition dependent viscosity and heat generation; compressed ASCII output; an easier way for mesh refinement for the radial coordinate; an exchanger package for solver coupling; an option to disable monitoring of maximum temperature, and other new features. See CitcomS for source code and manual. You can also run this latest version of CitcomS on the TeraGrid.

CIG Science Gateway Available

- **SPECFEM3D GLOBE Web Portal** provides automated and on-demand simulations, e.g., seismic wave propagation and synthetic seismograms. This web site launches a simulation on remote supercomputers (mostly TeraGrid machines) using data gathered from various web sites and databases, and returns the results to the user. Create an account and login at SPECFEM3D GLOBE Web Portal to run default and customized seismology simulations (click "Accept this certificate..." when prompted). Use the invitation code **cig-seismo-2007** when registering to start running simulations immediately.

CIG Awarded Petascale Code Development Grant

- **NSF Approves Proposal for High-Resolution Mantle Convection Simulation on Petascale Computers.** Although mantle convection is key to our understanding of the dynamics of the solid Earth, simulation of global mantle convection at realistic Rayleigh numbers down to the scale of faulted plate boundaries is currently intractable, due to the wide range of time and length scales involved. The new project, funded by NSF's Office of Cyberstructure (OCI) through the Peta-Apps competition, is led by PI Omar Ghattas (U. Texas at Austin), and co-PIs George Biros (Penn), Michael Gurnis (Caltech), and Shijie Zhong (Colorado U., Boulder), and will capitalize on upcoming petascale computing systems to carry out the first high resolution mantle convection simulations that can resolve thermal boundary layers and faulted plate boundaries, leading to breakthroughs in the understanding of the dynamics of the solid Earth. To accomplish this, CitcomS will be improved and scaled up to the petascale. Then parts of CitcomS will be incorporated with new parallel algorithms for adaptive mesh refinement (AMR) and inverse solution that can scale to hundreds of thousands of processors. CIG will freely distribute the resulting software.

Magma Code Alpha Release

- The Magma Development team has finished the alpha release of the Magma Dynamics Demonstration Suite (MADDs). The initial code implements the zero porosity/no melting magma benchmark for mid-ocean ridge solid flows in 2D and 3D built on the Underworld framework. The purpose of this code is principally to validate accurate pressure solvers for Stokes flow in current CIG supported software. Alpha code and initial instructions are available at Running stgMADDs Benchmarks.

TeraGrid Time Available

- **Try out CIG's community allocations on TeraGrid** - On July 1, CIG's Medium Resource Allocation award went into effect, enabling CIG to offer the geodynamics community blocks of time on TeraGrid machines. Sign up for an allocation to benchmark codes or to try out CIG codes to see if the TeraGrid can work for your research. To apply for some of CIG's TeraGrid time, send in the application at Community Software Area on TeraGrid.

Meeting Announcements and Reports

- **CIG Business Meeting**, December 11 (during AGU), 6-8:30 p.m., Parc 55 Hotel, Da Vinci Room (4th Floor), San Francisco. You are invited to this public forum for members of the Geosciences community to discuss the future development of CIG over the next few years. Expect a major change in format this year, with presentations by chairs of CIG working groups and members of the Science Steering Committee.
- **AMR 2007 Workshop Summary.** Held October 24 to 27 in Boulder, Colorado, the workshop was attended by 25 participants. The invited talks and tutorials allowed participants to see the potential benefits of AMR and the feasibility of building the software. Discussion centered on how to implement AMR in codes that are not easily extended to incorporate AMR capabilities. Read the full report here; workshop participants are invited to login and comment.

EC and SSC Committee Updates

New EC and SSC Members - We are pleased to announce that the following people will be CIG's new officers filling 3-year terms:

- **EC:** Peter Olson (Johns Hopkins), Carolina Lithgow-Bertelloni (University College, London), Alan Levander (Rice)
- **SSC:** Bruce Buffett (U Chicago), Jeroen Tromp (reelected), Omar Ghattas (reelected)

In addition, EC members elected a new chairman, Mark Spiegelman (Columbia), and new vice chair, Brad Hager (MIT), and SSC members elected Brad Aagaard (USGS) as their new chairman.

Thanks to all who agreed to stand for election, and thanks also to the outgoing members of the EC and SSC for their service to CIG: Bill Appelbe for his hard work on the EC, especially for his invaluable advice in computational science and software engineering; Mark Richards for chairing the EC since October 2004 with his unique ability to both foster discussion and bring everyone to a final consensus; and Peter Olson for leading the SSC as chairman this past year. We also appreciate the efforts of the Nominating Committee, Brad Hager, Laurent Montesi, and Magali Billen, for their fine work putting together the slate of candidates.

CIG Administration, contracts, travel, etc.: Ariel Shoresh, (626) 395-1699, 

Equation solvers (PETSc) and PyLith development: Matt Knepley, 

Gale and Magma development: Walter Landry, (626) 395-4621, 

Benchmarking, Cigma, and visualization: Luis Armendariz, (626) 395-1695, 

Build procedure and computational seismology: Leif Strand, (626) 395-1697, 

Citcom and Mantle convection benchmarks: Eh Tan, (626) 395-1693, 

Website and user manuals: Sue Kientz, (626) 395-1694, 

Geodynamo, SVN software repository, and systems administration: Wei Mi, (626) 395-1692, 

Software architecture and Pyre framework: Michael Aivazis, (626) 395-1696, 

Administration: Mike Gurnis, (626) 395-1698, 

[Science Steering Committee](#): contact Chairman Brad Aagaard (USGS), 

[Executive Committee](#): contact Chairman Marc Spiegelman (Columbia), 