

## CIG Software Releases

- **CitcomS 2.2.1** - CitcomS is a finite element code designed to solve thermal convection problems relevant to Earth's mantle. This release adds the feature of tracking particles, which can be used to infer the composition field and to compute thermo-chemical convection, or to define low viscosity wedges/channels in the subduction zones. See CitcomS for source code and manual. You can also run CitComS on the TeraGrid.
- **Gale 1.2.0** - Gale is a 2D/3D code that solves problems related to orogenesis, rifting, and subduction with coupling to surface erosion models. This latest release can simulate shortening, extension, and subduction models with a variety of boundary conditions in 2D and 3D in serial or parallel, and scales well on parallel computers. Gale is a joint effort between CIG, Victorian Partnership for Advanced Computing (VPAC), and Monash University. See Gale for binaries, source code, and manual. Gale is also now available on the TACC TeraGrid site; see TeraGrid Activities below.
- **MAG 1.0.2** - MAG is a serial version of a rotating spherical convection/magnetoconvection/dynamo code that solves the non-dimensional Boussinesq equations for time-dependent thermal convection in a rotating spherical shell filled with an electrically conducting fluid. The latest release includes the Gauss coefficients as standard MAG output and two new postprocessing idl programs: magmovCMB.pro and magmovEQ3.pro. The former processes MAG output "mm" files and displays composite images of Br on the outer spherical surface in three map views (aitoff, north and south polar), while the latter creates an array from MAG output "me" files, consisting of three scalar fields in the equatorial plane as a function of time. Both procedures can generate movies. See MAG for source code and manual.
- **Mineos 1.0.0** - Mineos is used to simulate synthetic seismograms in 1D models of the spherical symmetric nonrotated Earth by normal mode summation. Attenuation, gravity and transversal anisotropy effects may be optionally taken into account. The package computes mode eigenfrequencies and eigenfunctions, Green's functions and synthetic seismograms for sources with a moment tensor defined in time as a step-function. Mineos was donated to the community by Guy Masters (UC San Diego) and Michael Ritzwoller (U. Colorado, Boulder), at which time it was cleaned up and its documentation assembled and revised by Misha Barmine (U. Colorado, Boulder). See Mineos for source code and manual.
- **PyLith beta 0.8.2** - PyLith is a finite element code for the solution of visco-elastic/plastic deformation that was designed for lithospheric modeling problems. This release offers both tetrahedral and hexahedral linear elements, the use of traction boundary conditions, load histories for split nodes, a number of new material models, including power-law Maxwell and generalized Maxwell (3 Maxwell models in parallel), the use of .cfg files for setting simulation parameters, much simpler top-level code structure, and several bug fixes. See PyLith for source code and manual.

## Software Bug Fixes

- **Ellipsis3d 1.0.2**- Ellipsis3d is a three-dimensional version of the particle-in-cell finite element code Ellipsis, a solid modeling code for visco-elastoplastic materials. The particle-in-cell method combines the strengths of the Lagrangian and Eulerian formulations of mechanics while bypassing their limitations. This release includes minor portability fixes. See Ellipsis3d for source code and documentation.

## TeraGrid Activities

- **Gale installed on TACC** - Gale is now preinstalled on TeraGrid's TACC Lonestar. See Community Software Area on the TeraGrid for instructions on how to access the CSA on TeraGrid and for an application to get a small amount of CPU time from CIG to get you started.
- **CIG seeks to increase community allocations** - Hoping to expand its ability to offer the geodynamics community allocations of time on TeraGrid, CIG recently submitted a proposal to TeraGrid's Medium Resource Allocations Committee (MRAC). The proposal requests a more substantial allocation in order to offer user training at workshops, to run benchmarks, and to nurture new users who wish to try out CIG codes before applying for their own allocations. The proposal and appendix are available at CIG Documents.

## Science Steering Committee Needs Input for Strategic Plan

The CIG Science Steering Committee (SSC) will meet in May to develop a new 5-year strategic plan and map out CIG's activities for the coming year and beyond. The SSC seeks input from the community and urges you to contact its committee members and express your views as to what CIG's short-term and long-term goals should be in the various geodynamics subdisciplines.

- [Current CIG Five-year Strategic Plan](#): Sept. 1, 2006 to Aug. 31, 2011
- List of CIG's Working Groups
- List of SSC Members and Contact Information

## Magma Migration Development Initiated

CIG recently approved a proposal to develop a CIG Magma Dynamics Demonstration Suite as a partnership between VPAC and the Magma Dynamics working group. The MDWG is currently comprised of Marc Spiegelman, Ritske Huismans, Garrett Ito, Richard Katz, Boris Kaus, Laurent Montesi and Ben Phillips, but is always looking for new members who are interested in helping develop advanced software for coupled fluid-solid flow. The purpose of the proposal is to develop a benchmark suite of magma-dynamics problems culminating in 3D models of mid-ocean ridges with consistent coupled fluid and solid flow that leverages many of the existing components of CIG. A more thorough discussion of the magma-dynamics equations and a systematic set of benchmark problems are available at An Introduction and Tutorial on the "McKenzie Equations" for magma migration.

The first stage of this project will be to evaluate currently available solid flow solvers (e.g., Gale, Citcom) for use in magma dynamics problems (the critical technical issue will be the accuracy of dynamic pressure fields). An initial 3D spectral benchmark for 2D and 3D pressure and solid velocity for simple ridge geometries (SpecRidge) is available in the CIG software repository in the magma section (e.g., <http://geodynamics.org/wsvn/cig/magma/3D/SpecRidge/>). For additional information, contact Marc Spiegelman or post to the [CIG-Magma mailing list](#).

## Upcoming Meetings


- **Community Finite Element Models for Fault Systems and Tectonic Studies 2007 Workshop** - The next CFEM workshop will be held from June 25-29, 2007, in Golden, Colorado on the campus of the Colorado School of Mines. Limited reimbursement is available for all participants, for a portion of costs incurred. There are no registration fees. See CFEM 2007 for announcement and registration form.
- **Joint CIG/SPICE/IRIS Computational Seismology Workshop** - A joint workshop between SPICE (Seismic wave Propagation and

Imaging in Complex media: a European network), IRIS (Incorporated Research Institutions for Seismology), and the CIG Seismology Working Group is planned for October 9-11th, 2007, in Jackson, NH, at the Eagle Mountain House. It will be a joint meeting between European and American Seismologists to discuss current "hot topics": algorithm development, imaging developments, and the future goals of a united American-European scientific community. Funding will hopefully be available to support up to 100 participants who will examine the current and future possibilities for computational seismology. Stay tuned for details.


## Executive Committee (EC) Updates


- **Nominations for New EC Seat Solicited** - In December 2006 at the CIG Business Meeting, representatives of the member institutions voted to expand the membership of the Executive Committee from four to five. A detailed description of the duties of the EC can be found in the recently updated CIG By-laws (PDF). E-mail your nominations, suggestions, and other recommendations to the Nominating Committee, which consists of Brad Hager (chair; Massachusetts Institute of Technology), Laurent Montesi (Woods Hole Oceanographic Institution), and Magali Billen (University of California, Davis).
  - **New Software Support Policy Approved** - On March 16, the EC provisionally approved the CIG policy on the levels of software support for developed and donated software. The policy describes three levels of support ranging from highest (codes validated, benchmarks passed, qualified as "state-of-the-art" in one or more areas of geodynamics) to lowest (CIG provides links to the software but no resources for development, maintenance, or support). See Software Support Policy for full details.
- 


## Committees, Staff, Etc.


CIG Administration, contracts, travel, etc.: Ariel Shores, (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 Peter Olson (Johns Hopkins), 

Executive Committee: contact Chairman Mark Richards (Berkeley), 