

WORKSHOPS

Community Finite Element Models for Fault Systems and Tectonic Studies

June 26-30, 2006
Golden, Colorado
This meeting will focus on computational models addressing the seismic cycle across single and multiple events.

Magma Migration Workshop

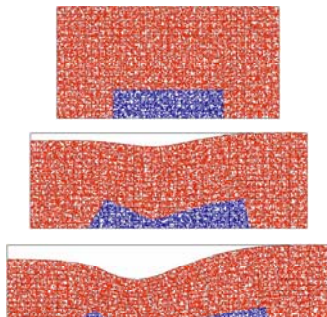
August, 2006
Lamont-Doherty Earth Observatory
Palisades, New York
The workshop addresses community needs and priorities for software development in magma dynamics.

Scientific Computing Workshop

October 16-17, 2006
Austin, Texas
The workshop, designed to bring together mathematicians, computational scientists and geoscientists, will address meshing, solvers, graphics, and other common issues.

More workshop information and registration is available at www.geodynamics.org

CIG, in collaboration with the Victoria Partnership for Advanced Computing, is developing GALE in response to community demand for a parallel implicit tectonic modeling code with three-dimensional capability. Courtesy of Walter Landry, CIG.



PEOPLE

Science Steering Committee

Marc Parmentier, Chair, Brown University
Brad Aagaard, USGS
Wolfgang Bangerth, Texas A&M
Roger Buck, Columbia University
Omar Ghattas, Carnegie Mellon University
Peter Olson, Johns Hopkins
Jeroen Tromp, Caltech
Shijie Zhong, University of Colorado at Boulder

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Mark Richards, Chair, University of California, Berkeley
Marc Spiegelman, Columbia University
Bill Appelbe, Victorian Partnership for Advanced Computing
Brad Hager, Massachusetts Institute of Technology

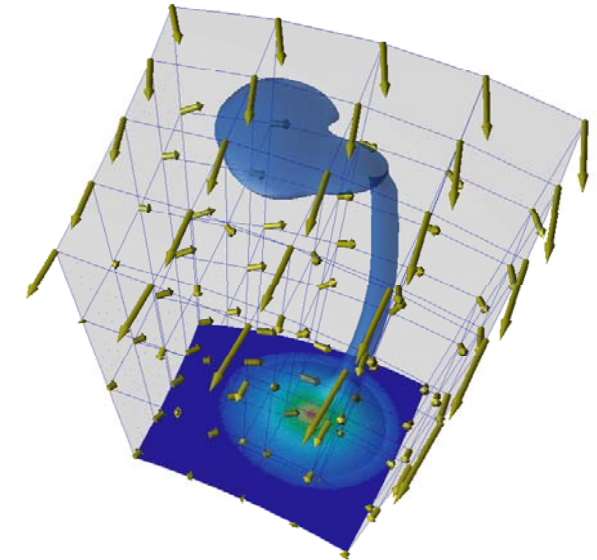
Staff

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COMPUTATIONAL INFRASTRUCTURE FOR GEODYNAMICS



Regional model of mantle convection embedded within a global model generated by CitComS, a code CIG distributes to the community.



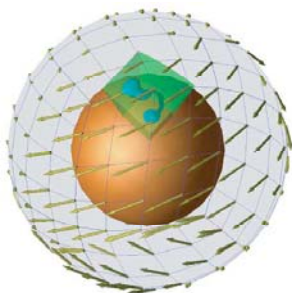
Software for the
Geophysics Community

SOFTWARE DEVELOPMENT

Introduction

Computational Infrastructure for Geodynamics (CIG) is a membership-governed organization that supports and promotes Earth science by providing state-of-the-art tools for computational geophysics using modern software development practices. CIG currently has 39 member institutions and 6 foreign affiliates. CIG, managed by Caltech for the NSF, consists of: (a) a coordinated effort to develop reusable, well-documented and open-source geodynamics software; (b) the basic building blocks — an infrastructure layer — of software by which state-of-the-art modeling codes are quickly assembled; (c) extension of existing software frameworks to interlink multiple codes and data through a superstructure layer; (d) strategic partnerships with the larger world of computational science and geoinformatics; and (e) specialized training and workshops for both the geodynamics and larger Earth science communities.

Geophysics researchers are encouraged to participate in the CIG community, CIG-supported workshops and training sessions, and to visit our website, www.geodynamics.org to sign up for various mailing lists.



Model of mantle convection embedded within a global model generated by CitComS, a code CIG distributes to the community.

Software

Examples of codes available through CIG at www.geodynamics.org

CitComCU A finite element parallel code capable of modeling thermochemical convection in a three dimensional domain appropriate for convection within the Earth's mantle.

CitComS A finite element code designed to solve thermal convection problems relevant to Earth's mantle.

GALE Currently available as an alpha release, GALE is an Arbitrary Lagrangian Eulerian code. The code solves problems related to orogenesis, rifting, and subduction with coupling to surface erosion models.

ellipsis3d A three-dimensional version of the particle-in-cell finite element code Ellipsis, a solid modeling codes for visco-elastoplastic materials.

LithoMop A finite element code for the solution of visco-elastic/plastic deformation that was designed for lithospheric modeling problems.

SPECFEM3D These spectral-element packages propagate seismic waves on global, regional and local scales.

Codes under development

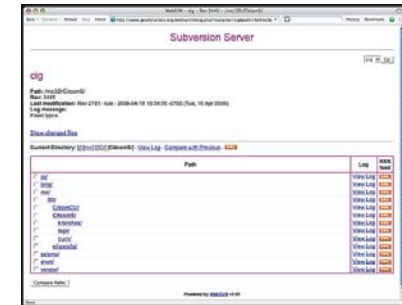
PyLith A rewrite of LithoMop (above) that will incorporate Pyre, a modeling framework. Expected completion, March 1, 2007.

To Be Named A new spherical compressible mantle convection code. Expected completion, Feb. 1, 2007.

Software Repository

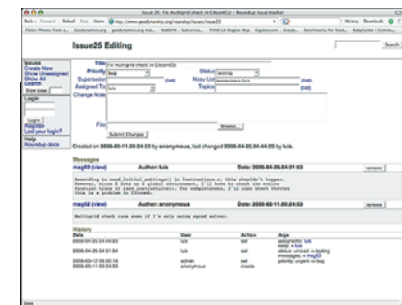
CIG software is available via the open-source Subversion version control system. A PHP-based web interface, WebSVN, allows users to view the log of any file or directory and see a list of all the files changed, added or deleted in any given revision.

<http://www.geodynamics.org/websvn/>



Bug Tracking

Users can submit bug reports through the CIG website, which utilizes the Roundup Issue Tracker. Reports are assigned to a CIG software developer. Users can check the status of their bugs and how close they are to resolution, including messages and history. <http://www.geodynamics.org/roundup/issues/>



Automated Building and Testing

CIG uses an automated system, BuildBot, to compile and test a code every time it is checked into the repository. The code is built on a number of platforms. Developers can follow the progress following each software commit via the web or email.