

## Forward looking session at the SIAM 2011 Geosciences Conference

The session had been organized by Knut-Andreas Lie, and was attended by about 50 people.

Tom Russell (NSF - OIA) presented the FY 2012 budget (\$7.77 billion), and the 3 programs most of interest to GS-SIAG members :

- SEES (*Science, Engineering, and Education for Sustainability*), with funding of \$1 billion ;
- CIF21 (*Cyberinfrastructure Framework for the 21st Century*), a new initiative, with \$117 million ;
- INSPIRE, with \$12 million in the first year.

Junping Wang (Program Director, DMS, NSF) presented the [CMG](#) (Collaboration between Math and Geosciences) program, with a budget of \$12 million. The program currently sees an imbalance in funding between the Earth (more proposals, less funding) and Atmospheric and Polar Sciences (less proposals, more funding) divisions, which could be dangerous for the future budget of the program. The program is under evaluation. An involvement from the community is needed to achieve a better balance.

K.A. Lie then introduced the panel, composed of: M. Peszynska (Oregon State, and SIAG Chair), B. Mallison (Chevron), R. Leveque (U. Washington), W. Symes (Rice U.), T. Russell (NSF) and J. Wang (NSF). The panel was asked to answer 3 questions:

1. What are current research trends?
2. Are we focusing on the right problems?
3. How can we make computational Geosciences a “real” science?

Current research topics mentioned were: multiscale problems, natural disasters (tsunamis), reproducible science. It was noted that NSF now requires a “data management plan” with each proposal. In particular, as concerns code developed within NSF-funded projects, may mean that the code \*may\* have to be somehow made available online.

The meaning of the provocatively worded question 3) relates to the notion of reproducible research. How can we make sure that published results can be reproduced by interested readers? R. Leveque argued for publication of source code, and mentioned that SIAM has formed an ad-hoc committee (of which he is a member) on publishing supplementary materials in journals. An argument was: “is there a difference between a published proof and a computer code?” On the other hand, participants mentioned the difference between software intended for general use, and mere demonstration code, and raised the issue of codes used or developed in industry. The issue of funding for delivering and supporting software, which needs a long term commitment, was stressed. The NSF SI2 (*Software Infrastructure for Sustained Innovation*) was quoted as a possible source of funding for storing and maintaining public versions of code(s).

A need for more benchmarks was also noted.

As a last item, J. Wang asked for a written document from the community, indicating new research directions and trends. The SIAG-GS will organize a workshop with interested parties to coordinate the writing of such a document.