

CHARTER RENEWAL APPLICATION

This CHARTER RENEWAL APPLICATION applies to the SIAM Activity Group on Geosciences (SIAG/GS). The SIAG/GS was originally formed under the aegis of SIAM on July 7, 1991 by the SIAM Council and on July 13, 1991 by the SIAM Board of Trustees with its initial operating period beginning January 1, 1992 and ending December 31, 1994. Its charter has been renewed by the council and board five times thereafter. This SIAG has 323 members as of December 31, 2007.

According to its Rules of Procedure, the objective(s) of the SIAG on Geosciences is to provide an established forum for interdisciplinary interactions among mathematicians, engineers, chemists, physicists, and other scientists having special interests in flow in porous media and geophysics.

Within the framework of SIAM, the SIAG/GS will organize activities, including conferences and publications, to promote the interaction of practitioners and researchers and to keep the SIAM membership up to date on trends in geosciences.

The SIAG/GS has complemented SIAM's activities and supported its proposed functions. The answers to the questions below indicate how this was accomplished and what the officers propose as the future directions for the SIAG.

1. How is the field covered by the activity group doing? Is it growing; is the focus shifting? What have been the significant advances over the last three years?

The Activity Group covers the very rich and interdisciplinary area of mathematical and computational geosciences. The research problems addressed by its members are very important to the larger community and include, amongst others, critical areas such as global climate modeling, groundwater hydrology, reservoir simulation, ocean and atmospheric modeling, and carbon sequestration. The attention paid to these grand challenges is certainly growing, which is reflected in the available governmental (NSF, DoE, DoD, ONR, amongst others) and industry funding, as well as number of SIAG GS members, and the success of its bi-annual conference.

In the last years, the Activity Group has seen a stronger emphasis on the modeling and simulation of multi-scale modeling, inverse modeling and uncertainty assessment, all of which are crucial to geosciences processes. Members of the Activity Group spearhead many of these fields. Because of the very high computational complexity of the processes addressed by the members of this Activity Group, continued attention is being paid to higher resolution schemes, solver efficiencies and parallelization.

2. How is the activity group doing? Is it remaining vibrant? Is the size of the SIAG stable or increasing? How is the SIAG keeping up with the changes in the field? How are the broader interests of SIAM reflected in the activities of the SIAG?

The SIAG is vibrant. Its bi-annual conference on Mathematical and Computational Issues in the Geosciences remains one of the leading conferences in this field in the world, and attracts a very large number of eminent researchers. At the 2007 conference in Santa Fe, NM, there were 282 registered people, up from 255 registered people at the 2003 meeting and 270 registered at the 2005 meeting in Avignon, France. All talks at the meeting were very well attended, and discussions were lively. Key note addresses were well chosen to highlight hot and important research areas in the field, including stochastic modeling, carbon sequestration, and large scale computing. The business meeting at the conference drew a large number of members, many of whom were actively participating in discussions regarding prizes, student attendance, general direction of the SIAG, and focus and location of next geosciences meeting, amongst others. It was especially good to see great enthusiasm from our European members to help organize the next Geosciences conference. Holding the 2005 conference in Europe (Avignon) clearly had a very positive effect on the involvement of European scientists in the SIAG.

A strong SIAG/GS presence at the annual SIAM conference and related meetings (such as AGU and APS-DFD) further helped to disseminate research and create a wider interest in our field. For example, the annual SIAM conferences in 2006 and 2007 saw well attended minisymposia on carbon sequestration, reservoir modeling, and global climate modeling.

The membership of the Activity Group is gradually increasing. We are currently (2007) at 323 members total, up from 266 in 2006. Student membership is going up, which we are very happy about. In the period 2005 – 2007 student numbers increased from 56 to 61 to a current 82.

Where we need to improve is attracting members/participants in seismic modeling (wave propagation/inversion problems), ocean modeling, atmospheric modeling, and participants from industry. For the 2007 meeting we have an ocean modeler on the organizing committee, made a concerted effort to invite persons in seismic modeling as plenary speakers and to organize sessions, and we are holding the meeting in Santa Fe, NM, which is close to Houston where there are numerous industrial researchers working in oil reservoir modeling.

3. Please list conferences/workshops the activity group has sponsored or co-sponsored over the past three years, and give a brief (one sentence or phrase) indication of the success or problems with each.

- SIAM Conference on Mathematical and Computational Issues in the Geosciences (GS05), co-sponsored by INRI, held in Avignon, France, June 7-10, 2005. Had 270 attendees; attracted many members from Europe; successful.
- SIAM Conference on Mathematical and Computational Issues in the Geosciences (GS07), Santa Fe, NM, March 19-22, 2007. Had 282 attendees; successful.

4. Please indicate the number of minisymposia directly organized by the activity group at the last two SIAM annual meetings. When did the SIAG last organize a track of minisymposia at an annual meeting?

- 2006: Modeling and Simulation of Geological CO₂ sequestration Processes MS71, Numerical and Modeling Advances in Geosciences MS 73 and MS91
- 2007 (ICIAM): unknown

5. Please indicate other activities sponsored by the activity group, to include newsletters, prizes and websites. Have each of these been active and successful?

All of these have been initiated this year. Prizes will be discussed at next SIAM council meeting. Website has been created at <http://wiki.siam.org/wiki/siag-gs/>, and first newsletter was distributed in Spring 2008.

6. What activities are planned and proposed for the next period of the charter? Please describe scheduled and suggested future activities in detail.

- 2009 biannual meeting in June 2009 in Leipzig, Germany.
- Several minisymposia at SIAM Annual 2008.
- Submitting articles for SIAM news.
- Will add podcasts/viewgraphs of interesting talks to website; continue newsletters

7. How can SIAM help the activity group achieve its goals?

So far, SIAM has been very helpful. We especially appreciate the support in setting up the website, and the extensive article on the conference that appeared in SIAM News after SIAM GS 2007.

8. How can the activity group help SIAM in its general role of promoting applied mathematics and computational science?

- Continued organization of world-class conference on geosciences.

- Bringing more diverse participants to our bi-annual meetings, especially persons who are in other fields and tend to be more theoretical, become exposed to SIAM, and this should increase the awareness and interest in SIAM.
- More active role in SIAM student chapters.
- More information, including downloads of keynote talks in this area, at SIAG website.

The SIAG/GS requests that the SIAM Council and Board of Trustees renew its charter for a two-year operating period beginning January 1, 2009.

Signed
[SIAG/GS Chair]
[Date]