

SIAM Activity Group Geosciences Charter Renewal Application

This CHARTER RENEWAL applies to the SIAM Activity Group on Geosciences (SIAG/GS). The SIAG/GS was originally formed under the aegis of SIAM in July 1991 by the SIAM Council and 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 nine times thereafter.

This SIAG has 491 members, including 182 student members and 308 nonstudent members, as of December 31, 2019.

According to its Rules of Procedure, the objective of the SIAM Activity Group 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.

Its purposed functions were:

1. The SIAG 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.
2. The SIAG shall not present awards or otherwise recognize scientific achievement, professional service, or the like without prior approval by both the SIAM Major Awards Committee and the SIAM Council of the award criteria, the method of selection of recipient(s), the nature of the award, and all other aspects, if any, of each such award must have the prior approval of the SIAM Board of Trustees.

Other activities may include:

3. Organize minisymposia at the SIAM Annual Meeting in years where there is no SIAG conferences.
4. At least once every five years either organize a track of at least six minisymposia at the SIAM Annual Meeting or have an activity group meeting held jointly with the annual meeting. The VP for Programs and the VP at Large will coordinate the scheduling with the SIAG chair.
5. Organize a biennial SIAM Conference on Geosciences. The SIAG will consider dovetailing specialized workshops and conferences with the SIAM Annual meeting or other SIAG conferences. The chair of the conference organizing committee shall be either the program director or the chairperson of the SIAG or their designee. The organizing committee must be approved by the VP for Programs at least 16 months before the conference.
6. With the approval of the SIAM Program Committee, the SIAG may organize special sessions at SIAM meetings, and conduct special one- or two-day meetings immediately before or after a

regular SIAM meeting. Other SIAG meetings may be organized only with the approval of the SIAM president and vice president for programs.

7. Award the biennial SIAG/GS Career Prize and the SIAG/GS Junior Scientist Prize.
8. Maintain a wiki site for the activity group <http://wiki.siam.org/siaggs/index.php/Main> Page

The SIAG 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. *List all current officers of the activity group (including advisory board, if relevant).*

- Chair: Beatrice Riviere
- Vice-Chair: Marc Hesse
- Program Director: Youssef Marzouk
- Secretary: Inga Berre

2. *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 two years?*

The field of mathematics of geosciences continues to flourish. Challenges and opportunities arise in modeling of climate, atmosphere, ocean and earth processes. Research in climate, renewable energy, subsurface modeling and earthquake modeling is booming. Significant progress over the last two years center around the combination of physics-based models and data-driven models to solve problems in geosciences. There is a shift towards modeling natural hazards. The various advances reported at SIAM-GS19 included and covered diverse topics in fields such as tsunami simulations, weather simulations, geodynamics, storm surge modeling, sea ice modeling, subsurface processes, seismic imaging, and multiscale and multiphysics modeling in geosciences. There is an even greater need for improved and sophisticated mathematical and computational tools that include data science, multiscale modeling, uncertainty quantification and large-scale computing.

3. *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 group has been stable for many years. While at its creation more than thirty years ago, the activity group consisted of mostly scientists working in subsurface modeling, it is now much more diverse with topics including tsunami/hurricane modeling, sea-ice modeling, storm-surge modeling, weather modeling and others. Currently the field of computational geosciences is being transformed by data revolution from Earth observing satellites and challenges will be to maximize information about Earth systems from this data. This requires the development of new mathematical and computational approaches that keep the field vibrant for the foreseeable future.

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

In 2019 the SIAM Geosciences conference was held in Houston, Texas. There were 361 attendees to the meeting and there were 66 minisymposia. There was an effort to involve more participants from industry: the organizing committee has one representative from industry; one of the plenary speakers was from industry; and one of the panelists for the career panel was from industry.

In June 2021, the next SIAM Geosciences conference will take place at Politecnico di Milano, Milan, Italy.

5. *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 at an annual meeting or meet jointly with the SIAM Annual Meeting?*

Because of the number of Activity Groups, the current guidelines are that an Activity Group should organize a track about every seven (7) Annual Meetings or meet jointly with the Annual Meeting within a seven (7) meeting period.

The SIAG-GS had a track with SIAM Annual 2018, held in Portland, Oregon, with one invited (plenary) speaker and eight minisymposia. The 2019 SIAM Annual meeting was held jointly with ICIAM 2019. Several SIAG-GS members attended and gave talks at ICIAM 2019. The exact number of these talks is not known. Unfortunately, because of the covid-19 pandemic, the conference SIAM Annual 2020 has been canceled.

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

The activity group maintains a wiki (website), that has been revamped. Information is regularly sent via the listserv to the activity group members: for instance, information on job openings, summer schools and professional events. There are two prizes given at each of the SIAM Geosciences meetings: a Career Prize and a Junior Scientist Prize.

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

Plans are underway for the next SIAM Geosciences conference in Milan, Italy on June 21-24, 2021. The University Politecnico di Milano will host the meeting. The conference chairs are Lucca Formaggia and Youssef Marzouk. There is a representative from industry in the organizing committee.

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

SIAM continues to provide support for the activity group members, in particular students.

9. *How can the activity group help SIAM in its general role of promoting geosciences?*

The SIAM GS activity group helps SIAM connect with industry on the topic of geosciences. Overall the activities of SIAG-GS raise awareness of SIAM for diverse communities.

This SIAG/GS requests that the SIAM Council and Board of Trustees renew its charter for a two year operating period beginning January 1, 2021.

Signed,

A handwritten signature in black ink, appearing to be 'BR', written over a horizontal line.

Beatrice Riviere, SIAG/GS Chair

May 6th 2020