



**FALL 2005 SECUREARTH WORKSHOP
SUNDAY, SEPTEMBER 11–TUESDAY SEPTEMBER 13
COLORADO SCHOOL OF MINES
GOLDEN, CO**

AGENDA

PURPOSE OF THE WORKSHOP: Develop the SECUREarth science plan in the form of a proposal for the science and funding communities, and for consideration by a National Academy of Sciences committee.

GOALS OF THE WORKSHOP:

1. Address the hypothesis that to accelerate the advancement of earth sciences, interdisciplinary, problem-focused research related to subsurface issues is needed to augment the current research base.
2. Determine which common or recurring themes for addressing subsurface problem areas should be addressed using a SECUREarth (SE)- type approach, and establish why this is the case.
3. Assuming progress on Goals 1 and 2, define the scientific appearance (structure or format) of an SE-like program.

Sunday (Evening), September 11, 2005

Ben Parker Student Center

6:00 p.m. – 8:00 p.m. Registration & Informal Reception

Monday, September 12, 2005

Ben Parker Student Center Ballroom

7:30 a.m. Continental breakfast

8:00 a.m. Attendee introductions

8:15 a.m. Review of SECUREarth (Bo Bodvarsson)

- SECUREarth concept: Understanding fluid flow in the subsurface, control of fluid flow, and the relationship between fluid flow and subsurface biogeochemical processes.
- Drivers for SECUREarth (i.e., list of applications and problems that require immediate attention. Themes are science, engineering and rate of progress).

- Compare SE to other analogous programs, indicate the progress made regarding SE to this point in time, and indicate why we believe that development of a science plan is a critical step in gaining advocacy.
- Outline how people can stay informed and involved, and how participation in the workshop will benefit them.
- Develop a general vision of how a SE science campaign would function. Define a “SE-like” program (i.e., a loose confederation of researchers or a centrally organized group that has funding and input into the science agenda).
- Discuss how results of this workshop will be used – e.g., where we will go from here.

8:50 a.m. Tasks for Attendees (Ernie Majer and Rick Colwell)

- Develop the science plan for SECUREarth (What are the critical science roadblocks that we face and what science is needed? How will it be carried out?)
- Form interdisciplinary breakout groups and problem areas to be addressed (carbon sequestration, environmental remediation, water quality and supply, nuclear waste isolation, energy extraction, geothermal)

Note: Group leaders were selected early in the development of the workshop and have helped to guide the selection of attendees and the formation of the groups. In addition to the leader, each group needs a scribe. The groups must be interdisciplinary if they are to succeed in developing the science plan for SECUREarth. Selected participants will not be affiliated with any specific groups but rather will roam from group to group, trying to encourage the cross-linking of ideas as they develop in the respective groups.

- Identify products of the workshop
 - An overall science plan consisting of a set of interdisciplinary problem-focused research plans
 - Potential architectures for SE organization and possible facilities (existing or new)
 - Criteria needed to attract good scientists to apply, and for funding agencies to see SE as a major enhancement to currently funded research (i.e., not in competition with currently funded research).
- Example SE science campaigns—Primers for the breakout sessions
 - Identify the problem(s) and the science used to address these problems. What attributes define a problem as a SE target for research?
 - Explain how interdisciplinary science will be organized around a stated problem.
 - Discuss example campaigns without need for resolution to prepare breakout groups.

9:15-12:00 p.m. Breakout Groups Work Independently with Their Leaders (break at leader's discretion):

Focus on roadblocks *that require SE for solutions* to accomplish key breakthroughs in problem areas. Confine discussion to the problem area, with stress on the need for interdisciplinary research having sufficient organization to result in relatively rapid progress towards solutions. Aim is to identify the science that stems from the integration, or how progress will be significantly accelerated relative to the urgency of the problem. Group leaders should have a sense of what the future holds for society if problems are not solved by target dates (years).

12:00 p.m. Lunch

1:00–3:00 p.m. Continue Breakout Group Activity

3:00–3:15 p.m. Break

3:15 p.m. Break out Groups Return to General Assembly

- Breakout Groups will report their findings regarding major roadblocks need for SE, thoughts on how the roadblocks can be overcome, estimated rates of progress, and new science that may account for solutions.
- One person reports per group; include an outline of the expected deliverables from the first breakout sessions (What new science? Is SE essential? How will progress be accelerated? Will it be cost effective?)

5:30 p.m. Group Leaders Meet

- Determine if there are crosscutting themes that occur in all of the problem areas.
- Identify themes that can ONLY be addressed by SE
- Create teams for Day 2 and define their responsibilities. New teams will be charged with:
 - Converting the breakout session discussions into science plans
 - Outlining how the science campaigns would be run

6:30–7:30 p.m. Reception (cash bar)
Three Tomatoes at Fossil Trace

7:30 p.m. Banquet Dinner and After-Dinner Presentation

Tuesday, September 13, 2005

Ben Parker Student Center Ballroom

7:30 a.m. Continental Breakfast

8:00 a.m. Meeting Begins

- Briefly, review overall goals for the workshop.
- State results of the group leaders' meeting in the evening, any changes that are needed.
- Identify specific goals for the day – which includes a discussion on how SE would function

9:00 a.m. Breakout Groups Work Independently with Their Leaders to Identify:

The science campaign that would overcome each group's respective problem. Include:

- Evidence that SE is justified to tackle the problem (and cost effective)
- Common themes among problems (the "cross-cutting" themes that require SE)
- Possible organization of SE, including facility needs
- Incentives for collaborating scientists (facilities, administrative support, professional credit for contributions)
- Write outline for science campaign

12:00 p.m. Lunch

1:00–2:00 p.m. Continue Breakout Group Activity

2:00–3:30 p.m. Break out Groups Return to General Assembly

Breakout Groups will report on their Findings regarding the science campaigns they have developed.

- Discussions attempt to consolidate candidate science plans and candidate programmatic structures.
- One person reports per group

3:30–4:00 p.m. Break

4:00 p.m. Wrap Up

Explain, again, how and when the results for the workshop will be used (NAS). Summarize next steps

- Determine unresolved or weak aspects to SE
- Determine the types of advocacy required for SE

5:00 p.m. Adjourn