Global Geoscience Initiative Summary Report

From

34th International Geological Congress

Brisbane, Australia

Major Forum F.2

Global Geoscience Initiative – Towards Developing a Geoscience Roadmap to the Belmont Forum

Plaza Room 1, 1-4 pm, Wednesday, August 8, 2012

Convenors — IUGS, ICSU

Organizers — Edmund Nickless, John Ludden, Pat Leahy and Jack Hess

Discussants — Provided by Young Earth Scientists (YES) Network

Schedule

1.00 pm: Pat Leahy — Introduction (GGI history and synopsis; goals of session)

1.05 pm: John Ludden — Belmont Forum Goals, Objectives and Priorities

1.20 pm: Suzette Kimball — Priorities for the Geosciences in the United States

1.35 pm: Chris Pigram - Priorities in geosciences for Australia

1.50 pm: Yao Yupeng - Geosciences in Asia - goals and priorities

2.05 pm: Mike Sandford — Geoscience priorities with the Social Science Community

2.20 pm: Edmund Nickless — Assignment of task to breakout groups

2.25 pm. Facilitated Breakout groups (25 minutes) — Discussants provided by Young Earth Scientists (YES) Network

2.50 pm: Jack Hess — Report of Breakout groups and General Discussion (30 minutes)

3.20 pm: John Ludden — Summary and Closing remarks

3.30 pm: Reception (30 minutes)

Total Time - 3 hours

Potential Question for breakout groups

What are three critical geoscience topical priorities that should be included in the GGI and Belmont Forum agenda and given the strategy developed by the Forum, how can the social sciences be integrated effectively into the research design to ensure relevance to decision makers?

Presentations of the five speakers are available on the American Geosciences Institute (AGI) website http://www.agiweb.org/members/ggi/ :

Speaker: Dr. John Ludden

Affiliation: Executive Director, British Geological Survey Talk Title: *Future Earth: Research for Global Sustainability* File Download: 2 MB PDF document (.pdf)

Speaker: Dr. Suzette Kimball

Affiliation: Deputy Director, U.S. Geological Survey Talk Title: *A Geosciences Vision for the United States* File Download: <u>3.5 MB PDF document (.pdf)</u>

Speaker: Dr. Chris Pigram

Affiliation: CEO Geoscience Australia Talk Title: *Priorities for Geoscience in Australia* File Download: <u>3 MB PDF document (.pdf)</u>

Speaker: Dr. Yao Yupeng

Affiliation: National Natural Science Foundation of China Talk Title: *Tethys Belt: ROAD OF GEOLOGY AND LIFE -- a proposal for GGI* File Download: <u>18 MB PDF document (.pdf)</u>

Speaker: Dr. Mike Sandiford

Affiliation: School of Earth Sciences, University of Melbourne Talk Title: *Geoscience and Society* File Download: <u>2 MB PDF document (.pdf)</u>

John Ludden's presentation discussed the Belmont Forum and the Future Earth initiative.

Suzette Kimball presented USA activities that we can take on as a global community including

- ecosystem resilience,
- climate variability and long term weather patterns,
- ecosystem services,
- critical materials where and how they are distributed,
- water issues on a global scale,
- global assessment Earthquakes
- global perspective of risk multidisciplinary efforts Primo
- pacific islands resilience
- vulnerability of coastal environments
- mega deltas and deltas
- workforce next generation of science African focus.

Chris Pigram discussed global geoscience issues from the Australian perspective including:

- megathrust earthquakes
- disaster risk reduction
- palaeo tsunami 10 Year International paleotsumami program
- Intraplate continental deformation.

Yao Yupeng proposed a GGI program focused on the Tethys Belt: Road of Geology and Life. The program could involve 50 Countries. Scientific Themes include:

• Continental Dynamics

- Environment
- Biodiversity
- Civilization and Society
- Natural Hazards
- Resources

Mike Sandiford discussed geoscience and society and the geophysical scale of the planet.

- Humans as geophysical agenda
- The idea of crustal services
- The story of our planet as foundation myth

Breakout Groups:

Each group's responses to the Belmont Forum Question:

"What are the three critical geosciences topical priorities that should be included in the GGI and Belmont Forum agenda and given the strategy developed by the Forum, how can social science be integrated effectively into the research design to ensure relevance to decision makers?"

Group 1 (Led by Michelle Cooper YES network member)

1) Water

Water with a particular focus on groundwater, the most neglected aspect of the water cycle. It is important to understand more about the connectivity of groundwater and other water cycle components as until recently they have been looked at as separate systems. Groundwater can have a significant impact on ecosystems. The goal should be to increase the focus on groundwater and develop a detailed integrated model.

The role of geology in the water cycle is less recognised and there is scope to improve research and increase community understanding. There is a lot of potential to progress knowledge through research projects and collaboration.

It is possible for example to apply 'new' techniques such as those used in mineral exploration to better map and understand groundwater and water systems. A good understanding of the system is needed in order to recognise changes.

Water relates to communities, economics and is vital for all life. It will be important to work with social scientists to communicate the science and to consider the psychology behind implementation/communication. The question of human need versus ecosystem need will have to be addressed.

2) Coastal Vulnerability

Although the Belmont Forum is already investigating this topic, this group felt that there is a role for geoscientists to bring together and communicate the role of geology/geoscience in the area of coastal vulnerability. The Belmont Forum would have the ability to draw together researchers, organizations and communities to make research into this topic more global and less 'individual study area' focused. Social science would need to be incorporated into the program to ensure community 'buy-in'.

3) Energy

Geoscientists should play a bigger role in communicating the geoscience and 'background' of climate science. Geoscience has a large role to play in the area of developing and promoting alternate energy sources and pollution mitigation (e.g. carbon capture and storage).

The group also discussed:

- Urban Development and the Subsurface: Particular emphasis could be placed on the subsurface, 'the invisible element'.

- Intraplate Deformation: The group discussed this topic but felt it might be better suited to collaboration between geosurveys.

- Geohazards: The group felt that this topic was already receiving a lot of attention and that there is already substantial international cooperation

Group 2 (Led by Gabriela Perlingeiro YES Network member)

1) Mining Waste Contamination

How mining has been affecting humans health in regards to its wastes? For example, how do mining wastes cause cancer in people that live nearby mines? How are the soils in these regions affected? Does it also contaminate food production in such areas?

2) Cities on Deltas

Seventy percent of the world's population lives around or on deltas. We do not fully understand how they work. Perhaps we could focus on research in the Asia region (as pointed out in the last talk given by the Chinese).

3) Regional Small Hazards

Rather than paying attention to global scale events, there is the necessity of studying small-scale disasters that affect small communities.

Group 3 (Led by Amel Barich Yes Network member)

1) Natural hazards:

The group posed the following question: How can geologists be more effective in spreading awareness and help government mitigate natural hazards consequences? It is known that geologists tend to be reached for by the public and governments almost exclusively when natural disasters occur; they're then asked for explanations and also responsibility of spreading awareness and assessing risks. Geological hazards are usually unpredictible. However, geologists play a key role to help governments mitigate their risks.

The idea suggested is to create a "field" organization (e.g. under the name of "Geologists of the World", analogically to "Médecins sans frontières") whose aim is to be active in the zones with potential risk and whose activities will be centered on spreading awareness among populations about geological hazards in their regions, help governments setting mitigation plans and be present in disastered areas to explain the geological aspects and assess future risks.

2) Geologists and Society:

The role of social sciences in the geologists work is crutial sometimes when it comes to dealing with topics like natural disasters. Although it can seem a difficult match, but geologists can work with social scientists in order to get closer to the public and spread the maximum of awareness about the geological aspects that surround them in their area of living, and which can affect them directly or indirectly.

It would even more ideal, if geologists could be formed to have a social scientist profile, through special formations and trainings. This would not only help them to reach directly the society, but also to be more effective and powerful in the decision making area.

To improve also the image of geologists, there is a need of more positivity when dealing with geological implications in societal aspects; as Earth gives "services" to the humanity, there are some side effects for these services, and geologists need to use this balance to incorporate this science with all its aspects into sustainable development.