GROUP ON EARTH OBSERVATIONS | Geohazard Supersites & Natural Laboratories

Status and new directions of the GSNL initiative

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Results 2014 - 1

- Two new Candidate Supersites formally established:
  - Tungurahua and Cotopaxi volcanoes, Ecuador: PoC Patricia Mothes, Instituto Geofísico, EPN
  - Taupo volcanic zone, New Zealand : PoC Nico Fournier & Ian Hamling, GNS Science
- First draft of a proposal for a Southeast Asia Natural Laboratory prepared and circulated by Falk (he will present it later on)
- Three new Event Supersites proposed to CEOS: Sinabung eruption, South Napa earthquake, Ludian earthquake (only Sinabung and South Napa ES are receiving data)

Results 2014 - 2

- Better coordination with the CEOS Working Group on Disasters:
  - Support to the GSNL is a formal objective of the new CEOS Disaster Risk Management pilots
  - S. Salvi and M. Poland are involved in the new seismic and volcanic pilots
  - Discussions are ongoing on the CEOS data policy for the DRM pilots

Results 2014 - 3

- Better coordination with the CEOS Data Coordination Team (DCT):
  - New DCT lead is Brenda Jones, Disaster Response Coordinator at USGS EROS Data Center, who is also strongly involved in the Disaster Charter
  - A new procedure for Supersite approval and assessment has been drafted (under revision by SAC members)
  - A document listing all different access procedures for CEOS satellite data (for both the GSNL and the CEOS pilots) has been prepared (under revision by the CEOS DCT)
  - Talks have been started to verify the interest of the Charter in the re-distribution of GSNL Event Supersite research products to local End-users during disaster response

Results 2014 - 4

- Supersite reporting:
  - Definition of the content/template for the biannual extended report
  - First biannual report received from Hawaiian volcano Supersite (see Mike's presentation)
  - Definition of content/template for a new annual synthetic report to be compiled online
  - Definition of a questionnaire to be sent to each Point of Contact to report on the in situ data policies (to be sent in January)

Update on Supersite data distribution

- The SAC has agreed on pursuing a long term strategy of providing Supersite data through federated and fully interoperable infrastructures as well as through GEOSS
- In the short term each Supersite should establish all possible actions to provide in situ data through OGC-compliant web services for full and open access (see Scott Baker presentation)
- The EPOS Research Infrastructure will assimilate and re-distribute the data from the European Supersites.
- Web services for discovery and access to satellite data to be provided by space agencies: DLR and ESA already active, ASI to join in Q1 2015

Data policy

- Endorsement of a plain GSNL data policy is required especially for Supersites in countries where there is no national legislation on the matter
- We should avoid establishing Supersites for which data provision commitments are not taken by institutions but only by single scientists

Need for a GSNL 2.0

Need to fulfill the GEO vision: exploit the improved data access and the new science generated in the GSNL initiative to provide direct societal benefits

Some of the conditions in which GSNL was born have changed.

Data access in increasingly less a problem for scientists. Operational SAR satellite data are now available for free (ESA Sentinels). In many countries open access to public in situ data is becoming integrated in the national legislation.

What has not changed is the slowness by which in many countries new geohazard science is assimilated into DRM practice.

At the same time the overpopulation implies increasingly larger impacts of earthquakes and volcanic eruptions, and scientists must do their part to support effective risk mitigation.

GSNL 1.0

*"A **global collaboration** between geohazard monitoring agencies, satellite data providers and the scientific community to improve our scientific understanding of the processes causing geological disasters. Such scientific information **is the first element of the end-to-end approach to disaster management**.*

*This information **will be openly available in a timely manner to local governments for risk assessment** and to reduce vulnerability (e.g. by improving disaster mitigation and preparedness)."*

Presently however,

- GSNL is a "data supermarket" where scientists can access in situ data (often not all and not the most recent ones) and satellite images for free
- Research is certainly effective, but it is carried out independently by each scientist, there is little collaboration, poor capacity building
- The societal benefit arising from the new scientific results is lagging, since DRM End-users are not involved and research uptake is slow

GSNL 2.0

Supersites are indeed special areas of the world where seismic and volcanic hazards are high and there is a strong need for new science to support DRM activities and eventually reduce risks.

However, they should not just provide the access to data but also promote and experiment:

- New schemes for scientific collaboration (e.g. Virtual Research Platforms)
- New paradigms for ensuring a fast uptake of new hazard science by the society
- Cooperative work for ethics-based research in support of DRR (this especially in developing countries)
- Building of research capacity through cross-fertilization of research communities across different countries

Pillars of the GSNL 2.0

- Involve DRM decision makers in the Supersites
- Establish virtual collaborative platform(s) for the cooperative work of the globally distributed Supersite research community
- Identify local authoritative bodies providing interface between the global scientific community and the local DRM decision makers
- Exploit synergy with more DRM-oriented initiatives, as the other GEO Task DI components, the Community of Practice, the CEOS pilots, the CEOS WG on Capacity Building and Data Democracy, the Charter, Sentinel Asia, Copernicus-EMS, GDACS, GEM, VDAP, etc.

How to proceed (2015)

- Discussion (today)
- Discussion (in the SAC and in GEO)
- Discussion (at FRINGE 2015)
- Discussion (with the wider community)
- Community involvement
- Pilot project to experiment solutions and collaborative work schemes (on the SE Asia Natural Laboratory?)

In the meantime (still on GSNL 1.0)

1. Provide remote processing capacities exploiting existing initiatives (ESA Geohazard Platform) or new projects (EC proposal for a VRE)
2. Develop a Science Repository to collect scientific products (not just papers!) with standard metadata and license (CC-like), for dissemination to decision makers
3. Establish metrics for periodic assessment evaluating also collaborations, direct societal benefits, capacity building, etc.
4. Increase outreach (possibility of a special volume on Pure and Applied Geophysics). Refurbishment of website.

Web site improvements

Status

- Two web sites: one for documents and one for data access info and showcase of results
- Lack of consistency across web sites
- Provides good visibility, mostly during disasters, allows discovery of other scientists' work, but not useful for decision makers
- Need for flexibility ad easy updating

Proposed actions (funding sought)

- *Make the GSNL website the main info point for scientists (in the mid term) and End-users (in the long term), by providing: a science product repository, Web processing tools to compare, validate, reformat products, specific info on best practices, use cases, software tools, publications, teams, capacity building opportunities. and in general valuable information for the scientists and the possible End-users*
- *Stimulate links to GSNL web site from the community member's web sites*