

SBA Review: Disasters

Reducing loss of life and property from natural and human-induced disasters

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- Work Plan Tasks: Overview
- S&T Questionnaire
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More information at http://www.geo-tasks.org/stc_disaster_review

Work Plan Tasks: Overview

DI-06-09	Use of Satellites for Risk Management	Canada, China, CEOS, ESA, UNOOSA, PoC: Guy Seguin
DI-09-01	Systematic Monitoring for Geohazards Risk Assessment	
DI-09-01a	Vulnerability Mapping and Risk Assessment	China, Greece, (France) Italy, UNITAR, (UNISAT), WMO, GHCP, PoC: Fabio Dell'Acqua
DI-09-01b	Seismographic Networks Improvement and Coordination	China, (EC), (Mexico), USA, (FDSN), (ISC), GHCP, PoC: George Choy
DI-09-02	Multi-Risk Management and Regional Applications	
DI-09-02a	Implementation of a Multi-Risk Management Approach	(France), WMO, GHCP, PoC: Maryam Golnaraghi
DI-09-02b	Regional End-to-End Disaster Management Applications	France, CEOS, UNOOSA, GHCP, IGWCO, PoC: Guy Seguin
DI-09-03	Warning Systems for Disasters	
DI-09-03a	Tsunami Early Warning System of Systems	(IOC), (UNOSAT), GHCP, PoC: Klaus Peter Koltermann
DI-09-03b	Implementation of a Wildland Fire Warning System at Global Level	<i>Australia</i> , Canada, EC, Germany, (GTOS), GHCP, Forest CoP, PoC: Bill DeGroot

Work Plan Tasks: Overview

S&T Questionnaire:

1. What **S&T issues** are relevant for the Task?
2. What **S&T activities** are currently carried out in the frame of the Task, and what scientific and/or technological components and/or developments are being used to complete this task?
3. Does the Task Team have **sufficient expertise** to complete the task? If not, what is missing?
4. Does the Task Team have **sufficient resources** to complete this task (resources can be defined as funding, data, in-kind support, or any other element)?
5. What relevant **S&T issues should be addressed** but are currently not covered by the Task? In particular, do you see any scientific or technological barriers or science and technology gaps that might prevent you from completing this task within the Work Plan time frame?
6. Are there any **issues with sustained operation/continuity** (e.g., of sensors, observation, data archives, modeling, etc) that should be addressed in the frame of your tasks or in support of your task? Is there any help from ST-09-02 your Task would like to facilitate in order to promote a transition from research to more sustained operation?
7. How would you **prioritize the science or technology issues** relevant for your task?

Work Plan Tasks: Overview

S&T Questionnaire (cont.):

8. What **linkages** exist between your Task and other Disaster Tasks?
9. What **cross-cutting issues** are most relevant for the Task and how are these addressed?
10. Does your Task draw on **other activities inside or outside GEOSS**?
11. What **additional resources** could be leveraged (existing and new) to complete this task?
12. Could your Task be used as a “**compelling example**” of how GEO and GEOSS works for science and technology communities? If so, who would be the contact person between Task ST-09-02 and your Task to develop the documentation of the example?
13. What **other circumstances** are relevant for the completion of the Task?
14. Would you be available to **participate in the STC 13 Session** (e.g., by webex/telecon)? The session is scheduled for March 25, 14:30 – 17:30 local time (12:30 – 15:30 UTC).

Work Plan Tasks: Outputs and S&T Issues

DI-06-09 Use of Satellites for Risk Management Canada, China, CEOS, ESA, UNOOSA, PoC: Guy Seguin

Outputs:

Use of Satellites for Risk Management – user requirements (volume I)	completed
Assessment of the use of satellite data for the management of different disasters	Q4 2009
Gap analysis for floods, including identification of measurements and reconciliation with CEOS Missions database.	Q4 2010
Video showcasing EOS Contributions to Disaster Management.	Q4 2010
Multi-hazard gap analysis and 1st draft of plan for satellite data use	Q2 2011
Recommendations for future satellite system and final satellite data use plan	Q4 2011

Questionnaire:

- Not returned. “The task is a planning task and does not use any S&T on its critical path.” (Andrew Eddy).

Work Plan Tasks: Outputs and S&T Issues

DI-09-01 Systematic Monitoring for Geohazards Risk Assessment
DI-09-01a Vulnerability Mapping and Risk Assessment China, Greece, (France) Italy, UNITAR, (UNISAT), WMO, GHCP, PoC: Fabio Dell'Acqua

Outputs:

D. Polli et al., 2009: First Steps Towards a Framework for Earth Observation (EO)-Based Seismic Vulnerability Evaluation. *Environmental Semeiotics*, 2, 16-30.

D. Polli, F. Dell'Acqua, 2010: Fusion of optical and SAR data for seismic vulnerability mapping of buildings. In S. Prasad et al. (eds.) *Optical Remote Sensing - Advances in Signal Processing and Exploitation Techniques*. In press.

Report on literature analysis over simplified methods for seismic vulnerability assessment, relevant to possible EO-data input. Q4 2009

Report on possible methods to extract –from EO data- information relevant to the methods cited in the previous report. Q4 2010

Preliminary report on validation of seismic risk assessment based on data on environmental effects: selected case studies Q4 2010

Report on research performed over methods for information extraction from EO data relevant to vulnerability estimation. Q4 2011

Final report on validation of seismic risk assessment based on data on environmental effects Q4 2011

Work Plan Tasks: Outputs and S&T Issues

DI-09-01	Systematic Monitoring for Geohazards Risk Assessment	
DI-09-01a	Vulnerability Mapping and Risk Assessment	China, Greece, (France) Italy, UNITAR, (UNISAT), WMO, GHCP, PoC: Fabio Dell'Acqua

S&T Questionnaire:

1. Relevant S&T issues:

- Major: some relevant parameters (vulnerability estimation) either can not be extracted from remotely sensed data at all, or they can only by relying on weak correlations. Recommended: study of correlation between remotely sensed data and relevant features such as construction techniques.

2. S&T activities:

- Extraction of relevant parameters from remotely sensed data with existing and new techniques

3. Sufficient expertise:

- Lack of input by experts on construction techniques and structural issues.

4. Sufficient resources:

- Data collected is sufficient;
- in-kind support is utilized;
- fund raising is difficult and funds are insufficient

Work Plan Tasks: Outputs and S&T Issues

DI-09-01	Systematic Monitoring for Geohazards Risk Assessment	
DI-09-01a	Vulnerability Mapping and Risk Assessment	China, Greece, (France) Italy, UNITAR, (UNISAT), WMO, GHCP, PoC: Fabio Dell'Acqua

S&T Questionnaire:

5. Uncovered S&T issues:

- Likely to be finished for a set limited set of case studies;
- problem: uncertainty in vulnerability estimates due to lack of information on relevant feature not extractable from remotely sensed data;
- Would benefit from in situ data (e.g., street-view like data).

6. Continuity/operation issues:

- no continuity issues;
- operation issues due to limited amount of very high resolution (VHR) radar data;
- ideally, whole Earth surface should be covered, but data age would be a problem.

7. S&T priorities:

- studying uncertainty due to limited set of data available from remote sensing.

8. Linkages to other tasks:

- output provides input (exposure data) to risk-connected tasks such as DI-09-02 and DI-06-09.

9. Cross-cutting issues:

- availability of VHR data might be cross-cutting.

Work Plan Tasks: Outputs and S&T Issues

DI-09-01 Systematic Monitoring for Geohazards Risk Assessment

DI-09-01a Vulnerability Mapping and Risk Assessment China, Greece, (France) Italy, UNITAR, (UNISAT), WMO, GHCP, PoC: Fabio Dell'Acqua

S&T Questionnaire:

10. Other activities:

- Supersite initiative might eventually be useful for assessment of results (vulnerability compared to damage, calibration);
- links to (Italian) Civilian Protection Department and space agency

11. Additional resources:

- additional data; promising initiatives did not result in data access.

12. "Compelling example":

- not really; S&T issues are not of broad interest.

13. Other circumstances for task completion:

- low-cost project completion with reuse of data purchased for other purposes;
- personal interest of people.

Comments:

- Science-oriented task implementation;
- Supersite initiative is part of task, but almost not reflected in activities and outputs.

Work Plan Tasks: Outputs and S&T Issues

DI-09-01 Systematic Monitoring for Geohazards Risk Assessment

DI-09-01b Seismographic Networks Improvement and Coordination China, (EC), (Mexico), USA, (FDSN), (ISC), GHCP, PoC: George Choy

Outputs:

Task sheet has no information on outputs.

S&T Questionnaire:

1. Relevant S&T issues:

- Integrating of existing national or regional activities at global level.
- Justifying effort to achieve rapid/real-time access to data.
- Translating the resulting understanding of the physical mechanisms of disasters into useful mitigation or preventive measures.

2. Current S&T activities:

- FDSN and GSN working on standardizing installation, operation and maintenance techniques for the major networks.
- Increasing the number of real-time stations; closing gaps on continents and oceans.
- software developments to improve product dissemination and the quality of information delivered.

4. Sufficient resources?

- Long tradition in data sharing;
- additional synergies may be difficult to achieve.

Work Plan Tasks: Outputs and S&T Issues

DI-09-01 Systematic Monitoring for Geohazards Risk Assessment

DI-09-01b Seismographic Networks Improvement and Coordination China, (EC), (Mexico), USA, (FDSN), (ISC), GHCP, PoC: George Choy

Outputs:

Task sheet has no information on outputs.

S&T Questionnaire:

7. S&T prioritise:

- Primary earthquake hazards often difficult to predict; but secondary hazards can be predicted.

8. Linkages to other Tasks:

- Information about earthquakes has evolved from simple source information to rapid estimates of impacts on local population.

- To estimate these impacts, catalogues of building vulnerabilities, population distributions and geological characteristics have been compiled, which may be used for other disasters such as fires, landslides and tsunamis.

12. Compelling example?

- Multi-Hazards Demonstration Project of USGS: multidisciplinary experts develop a hypothetical tsunamigenic earthquake scenario, followed by the development of a disaster response by a suite of governmental and civilian agencies. Combines earthquake physics and disaster economy.

Work Plan Tasks: Outputs and S&T Issues

DI-09-02 Multi-Risk Management and Regional Applications
DI-09-02a Implementation of a Multi-Risk Management (France), WMO, GHCP,
Approach PoC: Maryam Golnaraghi

Outputs:

Task sheet has no information on outputs.

S&T Questionnaire:

- PoC was not willing to return the questionnaire (but offered to talk to us).
- PoC asked what this very large task is about, “approach to what”?

Task Objectives:

Define and implement an integrated and comprehensive approach to systematically address all risk and disaster phases, including risk assessment and mapping. Support ISDR in the implementation of the Hyogo Framework for action and promote the development of a Disasters Community of Practice (CoP) that would provide guidance for activities and initiatives in the Disasters societal benefit area (the Disasters CoP would include existing hazard-thematic CoPs such as the Geohazards CoP).

Work Plan Tasks: Outputs and S&T Issues

DI-09-02 Multi-Risk Management and Regional Applications
DI-09-02b Regional End-to-End Disaster Management Applications France, CEOS, UNOOSA, GHCP, IGWCO, PoC: Guy Seguin

Outputs:

Development of flood prediction software, application on trial basis to flood zones, initial automated tasking of satellite resources. Mitigation projects addressing issues related to Caribbean and African disasters. Q2 2011

Operational Flood Prediction and Response Monitoring using medium and high-resolution satellites – Caribbean (2010 and 2011); Southern Africa (2010 and 2011) 2009-2011

Final Review of Phase I Caribbean Satellite Disaster Pilot and Namibia Flood and Health Activities - June 2011. Q2 2011

S&T Questionnaire:

- Provides comprehensive overview

Work Plan Tasks: Outputs and S&T Issues

DI-09-02	Multi-Risk Management and Regional Applications	
DI-09-02b	Regional End-to-End Disaster Management Applications	France, CEOS, UNOOSA, GHCP, IGWCO, PoC: Guy Seguin

S&T Questionnaire:

1. Relevant S&T issues:

- Application of S&T in an end-to-end context
- Transition from research to operations
- Terrestrial applications of space-borne technologies
- Remote sensing and geomatics
- End user driven applications of S&T

2. S&T activities:

Caribbean Satellite Disaster Pilot and the African Flood and Health Pilot:

- integrate data from optical and radar satellites with hydrological models
- use interferometric radar measurements to identify long-term damage

3. Sufficient Expertise: Yes

4. Sufficient resources: agreements under development; likely to provide sufficient resources.

5. S&T gaps and obstacles: No identified barriers or S&T gaps

6. Sustained operation/continuity issues:

- is a pilot/testbed for application of technological solutions to disaster management issues;
- is working with local users at the national and regional level and with international donor agencies to ensure there is a clear vision for long-term sustainability.

Work Plan Tasks: Outputs and S&T Issues

DI-09-02	Multi-Risk Management and Regional Applications	
DI-09-02b	Regional End-to-End Disaster Management Applications	France, CEOS, UNOOSA, GHCP, IGWCO, PoC: Guy Seguin

S&T Questionnaire:

7. S&T priorities:

- ensuring that technology is “packaged” in a user friendly fashion and made available without undue restrictions at a reasonable cost.

8. Linkages:

- satellite input to disaster tasks is coordinated under the CEOS Disaster SBA Team;
- this team identifies potential synergy between tasks and when appropriate suggests moving specific activities between tasks;
- lessons learned from DI-09-02B will be reported to the CEOS Disaster SBA Team and may be used to broaden successful applications of the multi-hazard end-to-end approach.

9. Cross-cutting issues:

- not clear: “cross-cutting” issues;
- e.g., flooding pilot deals with water management, and weather, and disasters, etc.;
- is the responsibility of the specific pilot leaders to address cross-cutting issues as they arise.

Work Plan Tasks: Outputs and S&T Issues

DI-09-02	Multi-Risk Management and Regional Applications	
DI-09-02b	Regional End-to-End Disaster Management Applications	France, CEOS, UNOOSA, GHCP, IGWCO, PoC: Guy Seguin

S&T Questionnaire:

10. Other activities:

- Some of the Task partners are not GEOSS members;
- many of the related projects under a given pilot are sponsored by development agencies;
- GEO serves as an umbrella to bring together a wide range of partners;
- CEOS serves as a mechanism to coordinate satellite input.

11. Additional resources:

- All available resources have been leveraged to develop the task workplan.

12. “Compelling example”:

- focus of task is not S&T, although applications of satellite technology are at the heart;
- no concrete results to report before March 2011;
- could be considered as example for the S&T community after that.

13. Other circumstances for task completion:

None identified.

Work Plan Tasks: Outputs and S&T Issues

DI-09-03 Warning Systems for Disasters
DI-09-03a Tsunami Early Warning System of Systems (IOC), (UNOSAT), GHCP,
PoC: Klaus Peter Koltermann

S&T Questionnaire:
- Not returned

Response (March 18, 2010):

Dear GEO,

*You might find in your files the statement on the IOC's primary mandate, and the position it maintains towards requests from GEO. You also might find that the Group you refer to has **never been established nor met due to the lack of funds from GEO**. It was also requested that **the task be struck from your list** for above reasons.*

This has not been changed as of visible benefits the ICG member states might secure from GEO.

...

Veronica,

*Fine with me. ... **IOC can not use the GEO mechanism in parallel to its agreed work structure**, therefore is only monitoring developments in and contributions of GEO that might impact on the IOC's mandate and performance re TWSs. IOC ... very much interested to **received relevant information** from or about GEO. **For parallel work there are NO resources** available at IOC that could cover this extra work load at the level of quality that meets IOC's standard requirements.*

Work Plan Tasks: Outputs and S&T Issues

DI-09-03 Warning Systems for Disasters

DI-09-03b Implementation of a Wildland Fire Warning System at Global Level

Australia, Canada, EC, Germany, (GTOS), GHCP, Forest CoP, PoC: Bill DeGroot

Outputs:

- proposal for a Global Early Warning System for Wildland Fire ... consortium of international agencies proposing this system are focusing efforts on the search for funding opportunities.

Q4 2009

- The Fire Information for Resource Management System (FIRMS) was contributed to the task DI-09-03b. FIRMS provides global MODIS hotspot/fire detections ... (FIRMS ... funded by NASA is in the process of being transitioned to an operational system at UN FAO).

Q4 2009

A. 2008-2009 Definition document (technical, operational) for a global early warning system for wildland fire

2008 - 2009

B. 2009-2010 Periodical update of the GMFC website and its linkage with GEO

Web/clearinghouse

2009 - 2010

C. -2011 Regional and global prototypes of the System pre-operational, including its link to GEO Web/clearinghouse

2010 - 2011

D. 2011-2012 Continue progressive implementation and operations

2011 - 2012

S&T Questionnaire:

- Provides comprehensive overview

Work Plan Tasks: Outputs and S&T Issues

DI-09-03 Warning Systems for Disasters

DI-09-03b Implementation of a Wildland Fire Warning System at Global Level

Australia, Canada, EC, Germany, (GTOS), GHCP, Forest CoP, PoC: Bill DeGroot

S&T Questionnaire:

1. S&T issues: communication to local (community) level is a problem in many areas globally (closing the gap of the “the last mile”).
2. S&T activities: The Global EWS for Wildland Fire based on existing fire danger science, weather forecasting models, and integrated GIS and remote sensing models.
3. Sufficient expertise: Yes
4. Sufficient resources:
 - Funding of a GIS expert to assist in developing and running the system is insufficient.
 - There is no assistance by GEO Secretariat or member states.
5. Uncovered S&T issues:
 - communication to local level and funding for sufficient demonstration projects.
6. Continuity/operational issues: funding for operational implementation.
7. S&T prioritise: builds on existing S&T; no serious S&T issues.
8. Linkages:
 - No direct contacts;
 - wildfire disaster is very different from other natural disasters;
 - early warning capacity and system drivers of wildland fire are unique.

Work Plan Tasks: Outputs and S&T Issues

DI-09-03 Warning Systems for Disasters

DI-09-03b Implementation of a Wildland Fire Warning System at Global Level

Australia, Canada, EC, Germany, (GTOS), GHCP, Forest CoP, PoC: Bill DeGroot

S&T Questionnaire:

9. Cross-cutting S&T issues:

- None.

10. Draw on other activities:

- collaboration of scientists from the wildland fire, weather, and remote sensing communities;
- aligned as a Project of the UNISDR Global Wildland Fire Network, its Secretariat Global Fire Monitoring Center (GFMC);
- endorsed and supported by the Fire Implementation Team of GOFC-GOLD;
- was subsequently registered with GEO under the Disasters Theme.

11. Leveraging additional resources:

- maybe GEO has some suggestions.

12. “Compelling Example”:

- would be inappropriate as GEO and GEOSS did not contribute to the work or success of the Task.

13. Other circumstances for completion:

N/A