



GROUP ON
EARTH OBSERVATIONS

GEO-IV

28-29 November 2007

Report from Science and Technology Committee

Document 10

This document is submitted to GEO-IV for acceptance.

REPORT FROM SCIENCE AND TECHNOLOGY COMMITTEE

1 INTRODUCTION

The purpose of the Science and Technology Committee is to engage the scientific and technological communities in the development, implementation and use of a sustained GEOSS in order to ensure that GEO has access to sound scientific and technological advice. One key role of the Committee as described in the Terms of Reference is to "ensure scientific and technological integrity and soundness of annual GEO work plans". Indeed the Committee should bring scientific guidance to and advice on the feasibility of all Work Plan tasks.

The Science and Technology Committee has no implementing responsibility for the various tasks, but it would ensure and monitor, on behalf of GEO Plenary, the tasks assigned to it. The Science and Technology Committee will also set priorities in order to identify those tasks which it sees as vital and to advise on how best to focus resources on these tasks, if necessary. Lead organizations are taking on the responsibility of successfully completing the tasks and to determine effective modalities with regard to interacting with other committees. Leads should ensure that they interact with Leads of other relevant tasks, regardless of the Committee responsible.

Substantial progress has been made in the critical areas of Science and Technology of GEOSS.

2 SCIENCE & TECHNOLOGY COMMITTEE ORGANISATION & STRUCTURE

1.1 Objectives

The Objectives of the STC as approved by GEO Plenary are to:

- Enable GEO to make decisions on best available and sound scientific and technological advice, through the solicitation of input from a broad, trans-disciplinary scientific and technological community
- Ensure scientific and technological integrity and soundness of GEO Annual Work Plans.
- Monitor and review output and deliverables of GEO Annual Work Plans.

- In collaboration with GEO Members and participating organizations, and through transparent processes, identify individual experts and groups to participate in GEO working groups.
- Facilitate linkages and partnership with major relevant international research programmes as well as organizations willing to contribute to GEO activities.

1.2 Organization and Structure

Over 55 GEO country members and participating organizations are represented within the STC. The 3 Co-Chairs are South Africa (Ms. Pontsho Maruping), the European Commission (Mr. Gilles Ollier) and Germany (Mr. Udo Gaertner). The Committee is supported by the GEO Secretariat (Ms. Alexia Massacand and Mr. Giovanni Rum). The STC was assigned to coordinate the work of 19 of the 76 tasks contained in the GEO 2007 - 2009 Work Plan.

2 KEY ACCOMPLISHMENT IN 2007

The GEO S&T Committee finalised the document entitled "The Role of Science & Technology in GEOSS", whose purpose, amongst others, includes helping the S&T Community engage with, and find its way through, GEOSS implementation.

3 STC MEETINGS & TELECONFERENCES

SUMMARY

The STC Co-Chairs/Committee has held regular and frequent meetings and teleconferences in 2007. In addition, the whole STC met three times and the ADC Co-Chairs and the Drafting Team of the "The Role of Science and Technology in GEOSS" document met once since the 2006 GEO Plenary. E-mails and other electronic means were effective and used extensively within the Committee and in particular between the Co Chairs.

- **Meetings**
 - o Joint STC Co-Chairs and Full STC meetings
 - Bonn, 30 November 2006
 - Brussels, 31 May – 01 June, 2007
 - Geneva, 06 – 07 September, 2007
 - o STC Co-Chairs and Drafting Team meeting
 - Paris, 02 February, 2007
- **Teleconferences**
 - o Co-Chair & Document Drafting Team teleconferences
 - 27 July 2007, 31 August 2007

2ND STC MEETING

The Second Meeting of the GEO S&T Committee in Bonn (30 Nov 2006), following GEO-III, refined the theme of a draft document entitled "The Role of Science & Technology in GEOSS", which was developed as a "framework for a Science and Technology Committee Science Plan" to include both – the role of S&T in GEOSS implementation and the role of GEOSS in driving scientific and technological advances to benefit society. The meeting also reviewed multiple implementation aspects of the 2007-2009 Work Plan. The target audience for the document should go beyond the science community and possibly include the private sector, foundations and high-level decision-makers.

The main purpose of the document is to:

- Foster linkages and partnerships with major international research programmes, organisations and identify areas of synergy with international conventions (e.g. UNFCCC - United Nations Framework Convention on Climate Change; UNCCD - United Nations Convention to Combat Desertification).
- Emphasize the socio-economic dimension of Science & Technology.
- Make the connection between technological progress and science advancement. What technological progress would best serve scientific advancement in the context of GEOSS implementation?
- Identify data gaps, missing parameters and needs for new observations.

The document also recognizes the need for GEO to serve Science and Technology such as to:

- Increase the understanding of the integrated Earth system (and underlying cross-linkages).
- Build on the "Earth observation" approach, to bridge observing, modelling, disseminating systems, and capacity building.
- Coordinate international verification and assessment initiatives; (iv) translate Science and Technology advances into societal applications.
- Provide data and information required for strategic decision making.

The meeting was informed that 15 Tasks were tentatively allocated to the Science & Technology Committee (out of 71 in total), comprising of 10 Tasks continuing from 2006 and 5 New tasks. It was proposed that other communities should be considered for contribution to some of the tasks. The Science & Technology Committee also resolved to request the oversight of additional Work Plan tasks (beyond the initial 15 tasks). Committee members were invited to review all Work Plan tasks for possible attribution to the Science & Technology Committee using the following criteria:

- Strong evolving research component (not only in task definition but also in task implementation)
- Strong Earth system science integrating element

- Established links to international research programmes
- No operational aspect

The Committee welcomed the European Commission (represented by Gilles Ollier) as a new Co-Chair and Pontsho Maruping as the new South Africa Co-Chair representative (succeeding Adi Paterson). Co-Chairs and the GEO Secretariat will approach CIESIN and generally encourage socio-economic partners to join the Committee.

3RD STC MEETING

The GEO Science & Technology (S&T) Committee held a full meeting on 31May-1 June in Brussels to finalize the draft of the "Role of Science & Technology in GEOSS" document, review the progress of selected 2007-09 Work Plan Tasks, and discuss relevant aspects of the GEO Ministerial Summit preparation.

The participants in the third Meeting of the GEO S&T Committee discussed the latest version of the "The Role of Science & Technology in GEOSS" document. Changes to the structure and contents of the documents were proposed. The changes included putting emphasis on some aspects in the document such as:

- Human and societal dimension of GEOSS (including benefits to society)
- Policy relevance of GEO activities
- Earth observations as a combination of surface-based and space-based measurements
- Role of biological/chemical processes beyond physical processes
- GEO as an opportunity to develop research on the global scale
- Need for bringing user requirements into research priorities
- Technology required for capacity building & development

The changes also included the changing of titles of Chapters, the shortening of captions of figures and the acknowledgement of sources. The purpose of the document includes helping the S&T Community engage with, and find its way through, GEOSS implementation.

The meeting was also informed that Version 4 of the GEO 2007-09 Work Plan, which allocated 19 tasks of the 76 total GEO tasks to the Science and Technology Committee, was issued on 19 April 2007.

A comprehensive review of existing tasks was done. Some tasks exhibited good progress and others were relatively progressing slowly or not started at all. Some of the tasks were terminated and their remaining activities transferred to other tasks. STC discussed termination, combination with other tasks, linking or identifying synergies amongst tasks and improve intra-task coordination, integration of tasks with other activities, encouraging involvement of other communities in tasks, and connecting developing countries to tasks. The meeting also suggested that the Secretariat should identify and approach potential Leads for tasks that have not started or progressing slowly.

The Co-Chairs requested that proposals on Tasks should not be submitted to GEO governing bodies without prior consultation or correspondence with Task Leads and Committee Co-Chairs. The Co-Chairs also recommended that Task "Points of Contact" be systematically invited to Committee Meetings to ensure optimum reporting and constructive discussions on all Tasks.

IGOS-P reported on IGOS-P Plenary Meeting outcomes and the possible folding of IGOS-P into GEO. Three steps in particular were emphasized (inter-alia): Introduction of IGOS-P Themes into GEO activities; Introduction of overall IGOS-P features into GEO; and Preparation of a white paper on “across Theme” integration.

The Committee was informed of resignation of one of the four Co-Chairpersons, ICSU’s T. Rosswall, from the Co-Chairmanship. ICSU will nevertheless continue to support, and be a Member of the Committee. Committee Co-Chairs will thank Thomas Rosswall for his work & support in the form of a letter.

The GEO Secretariat gave a brief update on the preparation for Ministerial Summit to be held in Cape Town, South Africa on 30 November 2007.

4TH STC MEETING

The GEO Science & Technology (S&T) Committee held a full meeting on 6-7 September in Geneva to review the progress of selected 2007-09 Work Plan Tasks, finalize the draft of the “Role of Science & Technology in GEOSS” document, and discuss relevant aspects of the GEO Ministerial Summit preparation.

A comprehensive review of existing tasks was done. STC discussed the broadening of the implementation scope of some of the tasks to cover a broader spectrum, the redesigning of some tasks for suitable implementation and the raising of user awareness and development of applications for some of the tasks. The implementation of some of the tasks should take into account the transition of the IGOS-P themes into GEO. A proposal to formalize the distribution of tasks and workload between tasks was also tabled.

The participants in the Fourth Meeting of the Science & Technology Committee discussed the latest version of the “The Role of Science & Technology in GEOSS” document, which resulted from comments and recommendations made since the Third Meeting of the Science & Technology Committee (Brussels, 31 May – 1 June 2007) and the document consolidation by the Co-Chairs. The Document is intended to serve as information and outreach document to better engage the Science & Technology Community in GEO activities, with the target audience being primarily the science community and possibly the private sector, foundations and high-level decision-makers. The document will be submitted to the GEO Plenary in the framework of GEO-IV for information only. The document addresses primarily natural sciences. A need to improve the representation of Social Sciences and related socio-economic aspects in the documents was highlighted.

Committee Co-Chairs briefly reported on the content of the Summit documents under preparation and the GEO Secretariat gave a brief update on the Ministerial Summit preparation timeline. The discussion also touched upon the Plenary documents for GEO IV, in particular focusing on the need to ensure coordination among Committees Reports and individual Tasks progress. South Africa was invited to present the report on S&T Committee activities to GEO-IV in Cape Town.

The European Commission reported on “FP7 support to GEO S&T activities” related to:

- “Earth Observation and Assessment tools for sustainable development”
- “Earth and Ocean observation systems and monitoring methods for the environment and sustainable development”

On interactions with other Committees, Germany reported on the last Co-Chair Coordination teleconference (25 July 2007) and EPA presented the results of the last User Interface Committee Meeting (1-3 August 2007, Washington DC). The S&T Co-Chairs recommended that other Committee Co-Chairs be systematically invited to STC Committee Meetings in order to foster interactions and ensure constructive discussions. The GEO Secretariat should provide Committee Co-Chairs with relevant ADC, UIC, CBC information (e.g. date and place of meetings, possibility to contribute). EPA volunteered to update the Architecture and Data Committee on the results of the 4th STC meeting.

Committee Members expressed great sadness at the sudden death of Tony Hollingsworth, an extraordinary contributor to the world of Atmospheric Science and dedicated Member of the GEO Science & Technology Committee.

ICSU will inform the Committee Co-Chairs of its Executive Council decision on Co-Chairmanship since the resignation of one of the Co-Chairs. GOOS was considered as a replacement candidate to Co-Chairmanship

IGOS-P reported on the transition of IGOS-P themes into the GEO process: Reports on six of the eight themes have already been published. Tasks, Committees, Communities of Practice have been considered as possible mechanisms to facilitate the transition. The overall transition plan is due end of September 2007. IGOS-P theme leaders could become Leads of or Contributors to relevant GEO Work Plan Tasks.

Committee Members reviewed various options for broadening participation in the S&T Committee such as organising once a year an S&T Committee Meeting back to back with a major scientific meeting (e.g. EGU in Vienna in Spring 08, AGU in San Francisco in Fall 07, Baltimore in Spring 08) and/or organising once a year an S&T Committee Meeting in a developing country possibly also in connection with a major scientific meeting.

The issue of capacitating the GEO Secretariat with more staff resources to enable the Secretariat to follow up on recommendations made by the S&T Committee was raised for the Co-Chairs to follow-up on.

STC CO-CHAIRS AND DRAFTING TEAM

A Co-Chair and Drafting Team Meeting was held on 02 February 2007 to finalize the plan for developing "The Role of Science & Technology in GEOSS" Document and review the status and progress of 2007-09 Work Plan Tasks allocated to the Science & Technology Committee.

The meeting outlined the purpose of the document as to help:

- The S&T Community engage with, and find its way through, GEOSS implementation
- Clarify the relationship between Science, Technology and GEOSS
- Identify Science & Technology advances required for GEOSS implementation
- Emphasize the cross-cutting dimension of GEOSS (e.g. the relevance of multidisciplinary datasets)
- Explore linkages with industry & innovation, communication, outreach, education, and social sciences.

4 STATUS OF THE GEO TASKS ALLOCATED TO STC

4.1 OVERALL TASK STATUS

A preliminary assessment shows significant progress for some tasks while some others have started very slowly and others have not started at all. Some basic elements of GEOSS Science and Technology are quite advanced e.g.

- Forecast Models for Drought and Water Resource
- THORPEX Interactive Global Grand Ensemble
- Ecosystem Classification
- Biodiversity Observation and Monitoring Network

5 CHALLENGES ENCOUNTERED AND LESSONS LEARNED BY STC

The STC experienced instances where previous meetings' recommendations had not been followed upon by the GEO Secretariat. The same recommendations had to be re-iterated in the follow-up meetings. The challenge was attributed to lack of capacity in the GEO Secretariat.

6 STC WAY FORWARD

The S&T Co-Chairs recommended that other Committee Co-Chairs be systematically invited to STC Committee Meetings in order to foster interactions and ensure constructive discussions. The GEO Secretariat should provide Committee Co-Chairs with relevant ADC, UIC, CBC information (e.g. date and place of meetings, possibility to contribute).

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With support from GEO, STC expects to fully address these issues during 2008 through 2009.