

**Eleventh Meeting of the
GEO Science and Technology Committee**

15-16 September 2009

**Australian Bureau of Meteorology
700 Collins Street, Melbourne, VIC, Australia**

DRAFT MEETING RECORD

Annex 1: Meeting Outcomes and Actions

Annex 2: Agenda

Annex 3: List of Participants

Tuesday, 15 September 2009

1. Introduction (*Chair: S. Minchin*)

Opening remarks from the STC Co-chairs:

S. Minchin opened the meeting by welcoming all participants to Australia. He noted that the program was quite full and included for the first time a series of scientific talks and presentations on STC activities and tasks that should be of interest. Though participation was limited overall, it was good to have a few participants from Asia and Oceania. G. Ollier noted that the Co-chairs were pleased to be in Australia and thanked the Bureau of Meteorology for hosting. He went on to say that it is important to hold GEO Committee meetings globally; they should not all be held in Europe and US if the global message of GEO was to be consistent. He concluded by stating his hope that, despite the full agenda, a number of actions could be decided upon. J. Hoffman observed that things had got off to a good start the previous day during the joint Committees session, and noted that there had been one important change to the STC Co-chair line-up with Val Munami replacing Boni Mehlomakulu. He was also pleased to see quite a bit of activity in past few months: the kick-off meetings for ST Tasks had been successful and they were already starting to produce results. The concern for the STC is to determine how to best to support them. Finally, he was pleased to confirm the support of a contractor through the Environmental Protection Agency (EPA) who would immediately start work on various projects on behalf of the STC.

From the GEO Secretariat, D. Cripe delivered the Director's remarks, which included:

- i) In the time leading up to the Beijing Ministerial Summit, the GEO community should be focused on GEOSS implementation. Special emphasis needs to be placed on end to end information systems and interoperable data sets.
- ii) There is a need for a sustained effort in the Agriculture, Water and Forest SBAs, as these particular areas are playing an increasingly key role in potentially contentious issues surrounding climate change.
- iii) Given the intensification of urbanization world-wide, there is also a need to establish a new multidisciplinary project on urban development, one that would combine socio-economic and environmental information.
- iv) The Director's personal regards to the STC.

The participants then introduced themselves in turn.

The 10th STC Meeting Record was then approved, with the note that point 7 in Annex I (10th STC Meeting Outcomes and Action Items), needed to be modified to reflect the focus was on Activity 1a of the STC Roadmap (not the entire document).

Changes to agenda: items 7.1 and 7.2 were swapped, and it was noted that Terrence van Zyl of (CSIR) would

give the "An update on progress with task AR-09-02c: Sensor Web Enablement for In-Situ Observing Network Facilitation" in place of Dr Andrew Terhorst.

2. Status of actions decided at the 10th STC meeting ([link to 10th STC Meeting Record and Annex I](#))

- 1) Complete, although there is some question as to whether C4 has really taken it up the message. The STC needs to convey to C4 that its opinion has not changed, and asks C4 to make certain that Executive Committee takes action on this. There are guidelines in the Annex to the Work Plan, but Executive Committee needs to take this on board. The STC view is that Work Plan Annex should be concretized, and that the Executive Committee needs to inform the Secretariat that Letter if Intent should be sent by the Secretariat. S. Minchin suggested that the Co-chairs bring up this issue with C4, to reinforce the message.
- 2) The STC Roadmap is now on website; EPA contractor to handle other two items.
- 3) Closed.
- 4) In progress. Ian D. trying to determine the level of interaction between GEO and the scientific unions.
- 5) In progress. Have been interactions with UIC, Co-chairs meeting scheduled Wednesday evening.
- 6) Closed.
- 7) Closed.
- 8) Closed: Max Craglia is on both Data Sharing Task Force (DTSF) and STC. Suggestion is that the STC should have a full-time representative on DSTF. Perhaps we should canvass the STC to see if someone is interested. S. Minchin noted that the issue is how the Committee connects with this. Should also have Max give updates during non-collocated meetings.
- 9) Closed: message was conveyed to C4. Tasks will be presented tomorrow.
- 10) Closed: organized for Saturday, 14 November.

3. Status of Task ST-09-01: Catalyzing Research and Development (R&D) Resources for GEOSS

Point of Contact K. Fontaine provided a summary presentation of ST-09-01, featuring highlights of the kick-off meeting hosted by the European Commission 29-30 July 2009, in Brussels ([link to presentation](#)).

Approaching donor organizations.

On the topic of approaching donors, during the kick-off meeting in July, Alan Edwards shared his experiences with the Capacity Building efforts to identify donor organizations/resource providers who might be interested in supporting GEO activities. The key lesson learned is that one must do the homework on discovering what types of projects donors are interested in, to "know their buttons" and then pursue a marketing campaign with them. It is crucial to try to match GEO activities with the relevant donor objectives, otherwise efforts will be useless. S. Minchin observed that donors fund for a particular goal, for example aid agencies prefer to address the needs of developing countries, hence the need to approach them with an applied project. R&D is different; here the message needs to be tailored such that the "path to impact" is evident. In other words, what is tool that will have an impact or provide value for person at end of chain? This could take the form of an enabling activity. H. Unusa made the point that aid is not always about money; sometimes computers or help with technology is needed. With respect to the proposed donor forum, K. Fontaine noted that ST-09-01 is narrower in scope than the concerted approach taken by the Call for Proposals (CFP), and the idea of conducting a donor forum is simply about asking funding agencies to come and see if they are interested in helping out with various proposals under GEO. In the discussion, the question of what it really means to be a "contributor" to the Task was raised, to which K. Fontaine answered that the definition is rather loose, that it simply means they have some activity or item to bring to the Task.

GEO and the private sector.

Progress is stalled because of the uncertainty surrounding interaction between GEO and the private sector. The 3 categories of non-commercial roles that private sector can play include service as data providers, processors and/or users. S. Minchin reiterated the point he had made at the 11th STC meeting in Stresa, that in EO-space, data and information systems should be promoted as infrastructure, a benefit upon which the

private sector could build their own services, which in turn has implications for pricing policies. In our context, for GEO to be useful, GEOSS needs to be as accessible as roads and railways are, as an infrastructure to be used by the public. This is what governments should be providing through GEO. GEO and the private sector could follow Google's example which provides the infrastructure for free, then sells the services on top. For S&T to benefit the largest audience possible it cannot be focused solely on governments – the private sector must be entrained as well.

Next, J. Hoffmann questioned why Task progress should not go forward despite the unresolved issues surrounding GEO and the private sector, that there was nothing contentious about simply compiling a list of potential donors. K. Fontaine responded that, because there has been minimal guidance on how private industry is to interact with GEO, we do not want to act prematurely. Putting a list together for the sake of doing so is pointless; there may be sensitivities involved and we don't want to waste efforts. S. Minchin observed that the nature of the GEO-private sector interaction has to be understood before advancing too far. In the example of Google, GEO may be willing to use some of its resources initially, but when things get serious Google may want in turn to have a say in defining data continuity and policies. K. Fontaine added that the GEO-private sector interaction issue arose because the Secretariat wanted to explore options to bolster the Trust Fund. Once the Executive Committee has had the chance to study the issue and provide guidance, this could serve as guide for this activity. G. Ollier noted that ESRI and Compusult are already engaged with GEO. K. Fontaine responded that they are indeed involved but providing their own resources for the time being. We simply need to define the ground rules, based on what the Executive Committee says. R. Lefevre then questioned what the attraction of GEO for service providers really is, since they are mainly interested in returns on their investment. H-P Plag responded that in the case of Norwegian government mapping, a way was found to work with oil companies to produce something of benefit to them. S. Minchin added that by articulating data that is useful to private sector, they may be interested in collaborating. J. Hoffmann concluded by saying GEO needs to look at the private sector as resource providers. Thus, the need to compile list of providers, especially those are already providing services to GEO.

Work Plan review

K. Fontaine stated the Task team was still not clear on the boundaries of STC Roadmap Activity 1a and the Work Plan review of this Task. It was decided to elaborate this point under agenda item 5.

Miscellaneous

- K. Fontaine noted there had been some dissatisfaction with the title of ST-09-01. The decision was made to change the word “funding” to “resources” in both the title and supporting text, in order to less narrowly define the types of support that could be contributed.
- S. Minchin remarked that no one had been filling out the “S&T box” on Task sheets, because it would take pages to answer this question. Perhaps this could be a component of Task Symposium.

4. Status of Task ST-09-02: Promoting Awareness and Benefits of GEO in the Science and Technology Community

Point of Contact H-P Plag provided a summary presentation of ST-09-02, featuring highlights of the kick-off meeting hosted by the European Space Agency 27-28 July 2009, in Frascati ([link to presentation](#)).

Outreach to scientific organizations

H-P Plag initiated discussion by asking what the goal of outreach efforts to scientific organizations (activity 1) actually should be - simply an effort to increase the number of Participating Organizations (POs)? Moreover, the difference between PO and Observer status needed clarification. And how to link interested agencies to GEO? Through the STC, or through the Members and POs? G. Ollier replied that the outreach effort grew out of concerns that the right science input be brought into GEO. S. Marsh observed that when approaching a major science organization, after the overtures, there has to be clarity about where things are going and what the expectations are. S. Minchin added that each scientific organization on list may need to be approached differently. G. Ollier clarified that the original idea was to counter the deficit in scientific input

by soliciting the input of scientific organizations, but that the point was not really to merely increase the number of POs.

Slide library

In connection with slide library, it would be helpful to document who gives GEO presentations and where. Also, videos: 06 and 07 IGARSS are quite helpful; the URL pointing to these should go into library.

GEO label

H-P Plag noted that there had been very little support for this idea at the kick-off meeting in Frascati. The participants had different understandings of the term “label” and there was some concern over what the label would represent in terms of ownership. What happened in Brussels in terms of defining the GEO label was not widely supported by kick-off team. S. Minchin’s view is that the label should express that the data is valued and recognized as such by GEO. G. Ollier concurred that the idea behind the GEO label was that it should express an added value. S. Minchin elaborated that the GEO label was not about components, branding, or ownership, but rather a way to recognize the value added. G. Ollier suggested it would be worth writing a paper to define the concept more clearly, in collaboration with the work being done by the Data Management Task DA-09-01a: GEOSS Quality Assurance Strategy.

Compelling examples

H-P Plag noted that this is probably the most important section of the Task. G. Ollier agreed, but said there was a need to come up with solid examples for the Ministerial summit. Only 2 compelling examples submitted thus far, but more should be forthcoming. S. Minchin suggested raising this as a call to STC community, to communicate examples. J. Hoffmann responded by stating that compelling examples should come from the Work Plan by examining the S&T component of each task. S. Minchin added that it is important the examples highlight both what S&T brings to GEOSS, and vice-versa. G. Ollier noted that the Ministerial Task Force would be soon making suggestions for developing a reporting process on compelling examples.

Save-the-Earth game

It was noted that the Save-the-Earth game already had a home under Task CB-09-02e: Building Individual Capacity in Earth Observations – Earth Observation Game for Youth.

Transition from research to operational

H-P Plag stated that this process is in need of clear guidelines that define this process. J. Hoffmann added that the goal of this activity should be to devise a community-based approach that allows differentiation between interesting projects and those that have broad value, and would profit from transitioning into operational mode. Should come up with a proposal on how to do this. G. Ollier suggested that a proposal be submitted to the EC’s FP7 for support for this. Members from the STC representing the Joint Research Centre (JRC), British Geological Survey (BGS) and MeteoFrance agreed to start work on such a proposal.

5. STC Roadmap Implementation (Chair: G. Ollier)

STC Co-chair J. Hoffmann provided a status overview of the STC Roadmap implementation ([link to presentation](#)).

Relation with ST-09-01

The discussion following the STC Roadmap implementation presentation focused initially on the difference between Activity 1a of the Roadmap and ST-09-01. J. Hoffmann underlined that ST-09-01 is largely concerned with catalyzing resources, whereas the Roadmap tries to find ways to promote GEO to scientific organizations. By means of the Roadmap, the STC wants to make GEOSS more meaningful to scientists. K. Fontaine added that Activity 1a of the Roadmap takes a broader, more strategic view of GEO. Until now, GEO has been seen largely as an applications entity, not a research entity. She noted that GEO is trying to use science to meet the needs of each SBA; however, there have been very few scientific programs dedicated

to GEO thus far. G. Ollier observed that scientists are also part of the "user community" that GEO is targeting, so research needs should also figure into the equation. S. Minchin suggested that Activity 1a could be seen as playing a quality control role. Currently, Task Leads do not know how to respond to the "S&T box" on task sheets because the questions are not specific enough. What is needed are targeted questions, for example about continuity or science components, that will allow us to move forward. J. Hoffmann reiterated that the Work Plan review is targeted to assessment from a scientific perspective, in order to enhance GEO. The ST-09-01 task team, on the other hand, has the clear objective to ask what is needed to implement GEOSS. What are the gaps, so we can ask for resources to fulfill them? Gaps identified from the questions on the task sheets can then be fed into the larger perspective of the Roadmap. K. Fontaine observed that ST-09-01 is concerned mainly with current SBA gap assessments, whereas the Roadmap is oriented towards the future and how to fill the gaps from a long-term perspective. S. Minchin then summarized by saying that ST-09-01 focuses on S&T gaps in describing GEOSS implementation. On the other hand, the Roadmap is about identifying S&T enhancements that could make GEO attractive to the science community. Thus, the scope for Roadmap extends beyond current Work Plan to making recommendations for future Work Plans. S. Marsh cautioned that we should not reinvent the wheel, as several assessments along these lines have already been produced by NASA, ICSU, etc.

G. Ollier suggested that activities of ST-09-01 should continue as outlined, but that the implementation approach of the Roadmap be reworked to insure a workable process has been put in place. One solution would be a scientific panel that would review everything. K. Fontaine responded the US experience had been that the panel approach can work, so long as there is at least one expert per SBA which, admittedly, is a huge undertaking. H. Wen agreed that the panel approach would be the best, despite the difficulty of implementation. G. Ollier underlined that we need to have systematic approach for treating all SBAs under ST-09-01. He then suggested that the 3rd World Climate Conference (WCC3) could serve as a starting point for Climate SBA assessment. S. Minchin proposed that the STC make use of EPA consultant to collate information, and then decide on an SBA of interest to EPA. The EPA could then draft an assessment report on the chosen SBA, which would then be delivered back to STC. J. Hoffmann agreed to liaise with Jan Conner, the EPA consultant, regarding the feasibility of this idea. A natural SBA for the EPA would be Health. The goal would be a preliminary report to be delivered at the 12th STC meeting in Washington DC, on 14 November 2009.

Review indicators

R. Lefevre noted that this topic was addressed in GCI IOC report. There seems to be an issue with certain providers that will not vouch for quality of components provided. S. Minchin clarified that the point is to allow some feedback or peer review in retrospect of services/components offered, and that this feedback should be, user-driven. A short dialogue online in the GCI with a few questions pertaining to usefulness and trustworthiness of data and information would be useful, and a star rating system implemented, such as on Amazon. S. Minchin offered to contact ADC with respect to a prototype implementation.

Assessing continuity requirements

G. Ollier felt that this topic may have a tendency to go beyond the remit of the STC. J. Hoffmann agreed, but also noted that this is an area where the STC could be attractive to scientists, giving them a say in continuity issues. S. Minchin added that the point is to identify the data sources used in the tasks, and the likelihood that they might dry up if continuity issues are not addressed. In this respect, J. Hoffmann noted a Task already exists on this topic, AR-09-03: Advocating for Sustained Observation Systems, and wondered how much overlap there might be. S. Minchin commented that the satellite community tends to understand this issue easily. As you move away, in water for example, message is less clear as fundamental data sets draw on many sources. G. Ollier remarked that there was a discussion during the drafting of the strategic targets concerning this: does the question of continuity belong under Data Management or under STC? The STC has to ensure that the science component is well taken by ADC. S. Minchin indicated that, at a minimum, the STC needed to provide guidance to Task Leads as to how to provide appropriate input. S. Marsh reiterated that the S&T questions on the current task sheets are too complicated - they need to be reformulated to spell out in clear terms what is needed. The STC Co-chairs decided to report to C4 that questions related to data source and continuity requirements should appear in task sheets. The current S&T questions need

modification and the STC will provide new wording centered on questions such as: Does your Task make use of an observing system? What are continuity requirements needed, to maintain data output? What is known about the future of this mission?

6. Keynote address: "An Australian water resources assessment system: integrating hydrological models with on-ground and satellite observations." Dr Albert Van Dijk (CSIRO Land and Water) ([link to presentation](#))

Discussion

D. Cripe observed that this prototype water observation system that exists for Australia as outlined in the presentation could serve as a template for regional and possibly global efforts to achieve the Water SBA strategic target of producing comprehensive sets of data and information products for decision-making and integrated water resource management. Although there are many individual efforts under the Work Plan in Tasks of the Water SBA (e.g. WA-08-01), the necessary integration between these does not seem to be happening. S. Minchin noted that the changes that have occurred in the Australia climate over the past few decades have resulted in water being considered as a commodity. The problem is that when the resource fluctuates, markets can crash. The appropriate response is devising some type of water accounting system, and this has motivated integration in water observing systems in Australia through the National Water Initiative which brought together BoM Water Information (Data Information Insight) and the Water information R&D alliance (WIRADA) [see www.climatechangeinaustralia.gov.au]. D. Halpern cautioned that water products of this type already existed pre-GEO. S. Minchin responded that integration is the added value that GEO can offer. What is perhaps missing in the Work Plan is a subtask to serve as an integrating framework for water observations. H-P Plag commented that the water tasks are focused on right problem, and that is understanding the water cycle, a very complex problem. The issue of accounting becomes all the more important when considering virtual water aspects (40 liters in a tomato, vs 100 liters in beef). G. Ollier observed that tasks in Work Plan are dominantly research tasks, but modeling has yet to be integrated in overall system. What is the role that modeling can play in water accounting systems? In conclusion, S. Minchin remarked that over 50% of proposals submitted under the CFP dealt with water, which should be an important message for GEO.

Wednesday, 16 September 2009

7. STC Interaction with other WP Tasks (*Chair: Val Munsami*)

7.1 Task Reports

- Terence Van Zyl (CSIR)

"An update on progress with task AR-09-02c: Sensor Web Enablement for In-Situ Observing Network Facilitation"

In-situ sensors can alert to unfolding events, to which Unmanned Aerial Vehicles (UAVs) or other remote monitoring systems are sent for closer observations (volcanic eruptions, for example). The idea is to "task" the sensors for the data desired, allowing scientists to monitor as events unfold. Also changes way information is delivered: this Task is a major contribution is Water Mark-up Language, a standard way for encoding water information in Sensor Web.

- Dr Peter Dexter (Australian Bureau of Meteorology and Co-President of JCOMM)

"[Progress with development of a Global Ocean Observing System.](#)" (reference CL-09-02)

GEO can help particularly by convincing governments of necessity to invest in coastal monitoring through an initiative such as Open Ocean. Governments should recognize the value of the data and how data can be of benefit, just as governments now invest in weather systems. GEO needs to stress the message that data are being collected for the common good.

- Dr Alex Held

"[An update on progress with task CL-09-03b: Forest Carbon Tracking](#)"

Given that up to 20% of increases in GHG concentrations can be traced to deforestation in the tropics, a quick response is possible through initiatives to reduce deforestation, with EO playing a monitoring role. The key message is that operational forest monitoring systems need to focus on questions of economic and policy drivers.

- Dr David Halpern (NASA)

[“GEO contributions to the Global Ocean Observing System \(GOOS\) through GEO Tasks”](#)

The principal areas in which GEO can make significant contributions to GOOS is through tasks of the GEO Work Plan addressing:

- Coordination, collaboration and cooperation (e.g., to enhance integration of in-situ and satellite ocean observations)
- Continuity of ocean measurements
- Identification of priorities and gaps
- Increased efficiency in management of multi-variate measurements

7.2 Work Plan Interaction – discussion (*S. Minchin*)

Following the presentations, a proposal was advanced regarding the format that task reporting, a new feature for STC meetings, should take in the future. It was widely agreed that the above presentations were successful and served the purpose of providing more direct interaction between the STC and the Work Plan by allowing direct response from the STC to task leads. The proposal for discussion was thus:

1. At each STC meeting, key challenges of Work Plan tasks should be highlighted that STC can address and provide guidance for, and
2. Responsibility of reporting on tasks ought to lie with STC Committee members.

S. Minchin opened the discussion by remarking that it was unrealistic to expect reports on all tasks of the Work Plan, and also unfair to expect people to constrain themselves to a presentation of only a few minutes. A better idea might be to focus on one SBA at a time, with perhaps the Secretariat contacting task leads and helping prepare presentations, maybe by use of a template. R. Lefevre concurred that it was not realistic to attempt to bring in all task leads for a 5-minute presentation. He would rather see Committee members contact SBA task leads individually to help plan the presentations. J. Hoffmann responded that it was necessary to cover more than one SBA per meeting; otherwise it would take too long to get through all SBAs considering there are only 2 STC meetings per year. S. Marsh emphasized that no one will travel the world to give a 5 minute presentation. Moreover, there needs to be some focusing mechanism so that substantial opportunity can be given to those who speak. Presenters need to be offered something in return as well, such as assurances that the STC will bring relevant issues before the C4, Executive Committee and Plenary. Further, referring to the former IGOS protocol, he noted all themes were expected to report at each meeting (8 in all). D. Cripe concurred, having had the opportunity to assist the 13th IGOS Annual Planning meeting. He noted that reports from each of the themes was an effective to ensure progress was happening, and also provided the opportunity for the IGOS Plenary to respond and give feedback. D. Halpern remarked that IGOS was unique in that it brought in-situ and satellite platforms together. Although GEO was not necessarily setup to do this, the STC could perform this function – in general there is a lot of room for the STC to perform functions that IGOS did in the past. S. Marsh suggested the STC should think in terms of one STC member taking responsibility for each SBA such as in IGOS where themes had leaders who took responsibility for reporting. G. Ollier noted that GEO is still a young initiative, and even though many governments globally have voted in favor of the GEO framework, there is still an issue with sufficient participation on the part of Member nation delegates. STC membership is a reflection of this. His recommendation would be that mentors should be selected by Secretariat to oversee and report on the Over Arching Tasks (OATs), affording a comprehensive overview of the OATs and Work Plan as a whole. Reports at the OAT level could then be provided. It is important to find the correct structure so that in the end governments really will support GEO, and mentors should help monitor Work Plan activities. J. Hoffmann remarked that the STC would be strengthened if Committee members were assigned to keep a finger on each of the SBAs. R. Lefevre was supportive of the idea that a subset of Committee members should be responsible for developing a report to the STC. The web could be an efficient tool for this purpose. G. Ollier added that the online reporting system currently under development by the Secretariat should be able to

assist in this process. S. Minchin observed that the STC needed to be clear on which SBAs were going to be examined from a science and technology perspective, so that task leads had ample opportunity to raise any necessary issues. It should be made clear to SBA task leads that this interaction is a Committee process, providing a way to bring scientific issues before the STC. S. Marsh agreed that task leads should be given plenty of lead time to prepare for this exercise to be successful. D. Halpern emphasized that one of the responsibilities of the STC is to enable cooperation and coordination between OATs and across SBAs, so that cross-cutting synergy is allowed to develop. J. Hoffmann suggested that the notion of a Work Plan Task Symposium would be a way to encourage the cross-cutting SBA coordination. S. Marsh added that the upcoming GEO-IGOS symposium could provide initial momentum and serve a springboard for future Work Plan Task symposia. V. Munsami suggested that the Task Symposium be held first, followed by a joint session on OAT issues, then later sessions devoted to specific issues for the STC. J. Hoffmann proposed an initial trial effort be focused on the Health SBA, with a one-hour report to be delivered at the 12th STC November meeting. S. Minchin wondered to what extent the EPA contractor could be tapped to generally help in the reporting process, and A. Held questioned whether there was a priority in the treatment of the SBAs.

In summary, S. Minchin noted there seemed to be strong support for the idea of a Work Plan Task Symposium, one that could be co-located with Plenary to encourage participation. The objective of the Symposium would be to highlight potential cross-cutting linkages of tasks, as well as report on progress, taking the positive example of the IGOS meetings as a cue. It was also decided that the idea of STC members working with SBA experts and task leads for reporting on each SBA should be decided on an ad-hoc basis. S. Marsh wondered if the Symposium should not be primarily viewed as a reporting mechanism, distinct from the Plenary. S. Minchin responded that, in his view, the Symposium should rather be seen primarily as a linking process, with reporting secondary. In the meantime, J. Hoffmann offered to work with P-Y Whung to prepare an hour presentation for review at the 12th STC meeting of tasks within the Health SBA task. The focus would be on addressing issues that STC might be able to respond to, finding areas where the STC can be of assistance. Task leads and the relevant Secretariat expert should also be consulted in the preparation of the review. At end of session, time will be allotted to discuss whether the exercise had been a useful one.

8. STC contribution to preparation of 2010 Ministerial Summit

STC Co-chair G. Ollier provided an overview of the preparations for the 2010 Ministerial Summit ([link to presentation](#)).

The three proposals put forward by the GEO Secretariat (Task team symposium for January 2010; establishment of a “2010 Baseline” for a wide range of Earth parameters; establishment of a “wise-persons” committee) were viewed with interest, although it was noted that many details had yet to be defined. J. Hoffmann remarked that, in his view, the three proposals were not aggressive enough in that no demands are being made, no requests being put forward to ministers. The opportunity of having influential people in one place must not be missed. S. Marsh felt that the idea of the Task Team Symposium was not really compatible with the Work Plan Symposium previously discussed in that the GEO-IGOS Symposium will be looking to the future, what the challenges are now and how are they going to be met. J. Hoffmann agreed and added that what would be needed for a Task Symposium aimed at the ministerial would be content more focused on showcase examples, how GEO is adding value. D. Cripe commented that his understanding was the Task Symposium would aim to do both: highlight past accomplishments where GEO has added value, and also provide a glimpse of future challenges and projects. D. Halpern remarked that, in any case, the Plenary is the place to have real discussion, and to achieve the kind of far-reaching impact by the STC suggested. G. Ollier suggested it would be good if the STC could think in practical terms of what would make good showcases. V. Munsami added that the STC should pick showcases that support the Millennium Development Goals (MDGs), since ministers understand the MDGs and would more readily see the value-added contribution of GEO. As another idea, H-P Plag suggested that perhaps the STC should investigate what has been done regarding uncertainties identified by the Intergovernmental Panel on Climate Change (IPCC). What can GEO do to reduce these uncertainties? By bringing to the fore examples where GEO did something to reduce uncertainties, this would demonstrate added value. S. Minchin remarked there are several areas where GEO

can show its value added, such as data set quality control. H-P Plag went on to question whether there is something more fundamental that could be accomplished. The IPCC was looked at differently once it was awarded the Nobel peace prize; what could the STC do to show that GEO has brought to light a previously undetected trend, for example?

S. Minchin reiterated that, although trying to demonstrate the added value of the STC within GEO, it must be borne in mind that there will be other showcases as well (put forward by CBC, UIC, and ADC). The STC must therefore try to find agreement on what represents an S&T contribution. To that end, the STC should limit its focus to showcases that are spectacular and highlight advances in global assessment. G. Ollier then questioned whether the aim should be to try to demonstrate that GEO has brought about a better assessment of the environment. H-P Plag added that it might be convincing to depict a series of situations where GEO has made a difference, through use of before- and after-maps. J. Hoffmann reminded everyone that there will not be “Committee” showcases; rather the point is to highlight Committee contributions to showcases. The goal should be to make the work of the STC visible through the Ministerial showcases. The STC has a responsibility to play in implementing GEOSS – the question is how to demonstrate that role. Moreover, things should be different post ministerial than prior, so perhaps some sort of decision should be requested that would allow progress on adoption of data sharing principals. Additionally, ministers should be asked to commit to finding ways to respond to gaps identified by STC. D. Halpern suggested the most effective way to communicate with ministers is through a paper or report; however this sort of approach is time-consuming and takes more than 12 months to prepare. H-P Plag commented that datasets in themselves are not so interesting, but rather how they can make a difference is what is important. Thus the need to find research cases that have been improved through GEO. D. Halpern commented that each Committee will have a moment to give a presentation at Plenary. This could be used as platform to showcase an example, such as GOOS where GEO is being used in bilateral discussions as a means of opening up collaboration and data provision. Thinking back to the previous ministerial summit, one of the biggest news items from Cape Town was the announcement that China and Brazil were making CBERS2 data freely available to Africa. G. Ollier remarked that another great example would be if GEOBON, through maps or other media, can show that we have a better understanding the environment.

In summary, the STC noted with satisfaction that there is shared membership between STC and the Ministerial Task Force (G. Ollier, representing the EC). J. Hoffmann observed that a bold statement highlighting the value of STC still needed to be crafted. The STC should also consider putting together a report or flyer for distribution at the ministerial and possibly even set up an information booth. S. Minchin noted there was no fundamental disagreement with 3 items put forth by Secretariat, just a need for more clarification. In particular:

- 1) There was concern regarding the timing of Task Symposium and whether it would be possible to organize such an event by January 2010.
- 2) The baseline dataset idea is interesting, but needs to be communicated in right way – what will it actually represent?
- 3) There was little enthusiasm for the “Committee of Wise-persons:” as it was not clear who would sit on the Committee nor what its function would be.

The consensus view was that further work is needed on defining what the STC wants to obtain from the ministerial declaration/announcement. J. Hoffman commented that ministerial documents should contain both a reporting component and decision component. In his view, the Secretariat proposals were lacking the decision component at this point. At the previous ministerial summit, the main issue was GCI continuity and a commitment to support it ended up in the ministerial declaration. The key is to find a similar approach for the upcoming summit. S. Minchin suggested 3 items to be addressed in drafting a ministerial discussion paper: continuity of observations, data sharing, and resources to address gaps in STC. These concerns should be communicated to C4. J. Hoffmann added that the objective is to have ministers commit to language that helps the STC do its job, along the lines of: “We will commit to support a process that allows...” S. Marsh cautioned that with this process, the more specific the language gets, the less likely a minister will be to endorse it. J. Hoffmann responded by reiterating the need to find one or two items the ministers can sign on to; however, it is critical to be clear on what the ministers are being asked to endorse – this is the greatest

contribution the STC can make through the ministerial task force.

9. STC Membership and Relations (Chair: J. Hoffmann)

Result of Membership confirmation round

D. Cripe provided an overview of the current STC membership status. Although there had been a good response to the two membership nomination/confirmation letters that the Secretariat had sent out and membership had appeared to stabilize, there were still several GEO Member countries and Participating Organizations that had not responded and were therefore not represented on the STC. In light of this, he proposed that rather than eliminate those individuals who had not responded, the STC membership roster be divided into 4 categories: “Co-chairs;” “Co-chairs for information” (for Co-chair assistants); “active member;” and “for information” (comprised of those individuals from whom no response to the membership letters was received). Thus, regardless of activity level, all interested persons are kept informed of STC activities, while some degree of focus can be maintained.

Discussion then arose as to how STC meeting attendance might be improved. S. Marsh enquired as to whether it would be useful to maintain participation records. D. Halpern noted that one difficulty is the STC discusses processes and ways forward, but does not tend to deliver products that could draw others in, as did IGOS. Perhaps the idea of an IGOS-style report would bring people together, providing an activity that would carry on from meeting to meeting. Also, one way to encourage more people to attend would be to open agenda planning to input from the entire STC membership. H-P Plag remarked that the STC is not about convening science workshops; rather it attempts to organize tasks and give input to C4 and Executive Committee – maybe not as exciting as a science symposium, but this fills an important role since it has an impact on how GEO evolves. G. Ollier observed that the attendance at the 9th STC meeting in San Francisco had been enhanced due to pro-active efforts to telephone STC members personally and inviting them to participate. What we are now seeing are the limits of the voluntary contribution. H. Wen commented it was important that each Member country and Participating Organization should have at least one representative on each of the Committees, the STC included, and efforts should be focused to improve this situation.

In summary J. Hoffmann observed that it was key for the STC to have as many members as possible attend meetings and contribute actively. To improve on the current situation, perhaps an active approach would produce better results. His suggestion would be that the STC Co-chairs send personal invitations to all STC membership in advance of each meeting. S. Minchin further suggested that the Secretariat split up the membership list so that each of the STC Co-chairs would have an equitable number of individuals to contact. The invitation, to be drafted by the Co-chairs, would inform the individual of the upcoming meeting and agenda, and if attendance were not possible, to request issues he/she would like to see addressed. D. Halpern commented that earlier distribution of the agenda would also help since, even though the date may be well known in advance, people often wait to see the agenda before making a decision to attend. R. Lefevre agreed that general invitations are not effective; however, if the Co-chairs were to individually address members by names, that should produce better results.

G. Ollier gave a presentation highlighting the links between GEO STC and major scientific groups ([link to presentation](#)).

Discussion

Links to Task forces and Working Groups

The general impression is that the links between the various GEO task forces and working groups with the STC was good. In particular, connections to working groups and task forces should be highlighted at time invitations to attend meeting are issued.

Links to major relevant scientific groups, particularly IPCC

IPCC: D. Cripe noted that the Secretariat and IPCC are planning a joint workshop in the spring 2010 to explore future collaboration. GEO has the potential to supply the IPCC with data necessary to assist with

mitigation and adaptation analyses.

WCC-3: G. Ollier indicated that the WMO is committed to establishing a major program for climate services; however, it was not entirely clear where GEO fits in at this point.

ICSU: G. Ollier commented that ICSU is committed to supporting observations for monitoring, prediction, modeling and user interface programmes, but once again it is not evident yet where GEO fits in.

H-P Plag suggested that more science could be brought into the STC by inviting people from these major programs (IPCC, ICSU) to supplement STC meetings with presentations, perhaps in coordination with task reports. J. Hoffmann noted that WCC2 created GCOS, which is a part of GEO, so there is an example of a natural link that could be pursued further. G. Ollier remarked that something which has not been clear with GEO is who has ownership of systems. The STC should focus on streamlining activities and helping avoid duplication of efforts. H-P Plag added that the fact that GEO does not seem come to mind when people think about observations highlights an identity problem. Perhaps the reason for this is GEO has not yet established itself as an authority. The STC could help GEO find a way to portray itself as an assessment authority. IGOS had a process for identifying gaps, but GEO has yet to really fulfill this objective. A major effort in this regard would be for GEO to produce a comprehensive assessment report on the state of Earth observing systems, just as IPCC does for climate, and using the IGOS approach for gap analysis. This would help gain visibility GEO is currently lacking. S. Minchin agreed that GEO as a whole still needs to find a way to articulate what niche it fills, so that it is not viewed as competing with other initiatives. Perhaps the ministerial summit could provide the platform to articulate what GEO's niche is, for example that GEO can help address questions surrounding continuity.

In summary, both tasks ST-09-01 and ST-09-02 have activities exploring which scientific groups GEO should link with, and they should therefore be allowed to carry on before drawing too many conclusions. Links already existing between scientific groups and GEO (GCOS for an example) need to be enhanced by inviting representatives to attend STC meetings and make presentations. Additionally G Ollier will liaise with G. Glaser (ICSU) to shape the content of his talk at the upcoming GEO-IGOS Symposium, such that the focus is on what STC can bring to scientific groups, and vice-versa.

10. IOC Outcome and Recommendations (R. Lefevre)

R. Lefevre (STC and IOC Task Force member) provided a résumé recommendations from the GCI/IOC Task Force Report ([link to presentation](#)).

Discussion

Based on the 1st GCI Useability test phase, the ADC and IOC Task Force have worked hard to improve the Component and Standards registries of the GCI. However, there still appears to be no decision regarding narrowing down multiple clearinghouses/portals/registries. S. Minchin remarked there is a difference between providing a recipe and cooking the meal for people: perhaps GEO's focus should be on services (cooking the meal), yet it should not come as a surprise if agencies are only able to provide data. Agencies want to be confident that a given service is trustworthy. Another big issue behind services is the question of maintenance – who takes responsibility for this? Perhaps this is an area where GEO could bring added value. R Lefevre noted that there have been instances data not being used because of services that were inadequate. J. Hoffmann responded that some type of feedback mechanism (blog?) be incorporated in the GCI so that reporting/recommendations go back to the ADC. The Co-chairs agreed to liaise with the IOC TF to explore feedback mechanisms within the GCI.

11. Any Other Business

Data Sharing Task Force (DTSF)

Linda Moodie reiterated her request that the STC respond to the 6 questions of the DSTF. The Co-chairs agreed to respond as quickly as possible, before the end of the month.

Next meeting



D. Cripe confirmed that the 12th STC meeting venue will be Hemisphere A of the Ronald Reagan building in Washington DC, on 14 November 2009.

Beyond this, the Executive Committee has not yet set its 2010 schedule. Therefore, a decision on date and location of 2010 STC meetings is postponed until GEO-VI Plenary. Suggested dates are February (STC only) and June (Committees co-located). Possible locations include Department of Science and Technology (DST, Cape Town, South Africa), TÜBİTAK Scientific and Technological Research Council of Turkey (Istanbul, Turkey), UNEP (Nairobi, Kenya), and the International Institute for Geo-Information Science and Earth Observation (ITC, Enschede, Netherlands).

Annex 1: Meeting Outcomes and Actions

11th STC Meeting
15-16 September 2009
Australian Bureau of Meteorology
700 Collins Street, Melbourne, VIC

Draft Outcomes and Action Items

Agenda Item	Outcome	Action	Who	When
1	STC view on “Letter of Acknowledgement” is the Executive Committee should instruct the Secretariat to send letter as suggested in GEO 2009-2011 Work Plan Annex.	<i>STC11-01</i> Co-chairs to reinforce message with C4 in Melbourne.	GO, JH, SM, VM	18 Sep 09 <i>closed</i>
	10 th STC meeting record accepted.	<i>STC11-02</i> Point 7 to be modified to specify telecon addressed only activity 1a of STC Roadmap.	SEC	25 Sep 09 <i>closed</i>
2	Still seeking clarification on level of interaction between GEO and the scientific unions.	<i>STC11-03</i> I. Dowman requested to pursue and report to STC at Washington meeting.	SM	14 Nov 09
	UIC-STC Co-chairs need follow-up meeting regarding Stresa interaction.	<i>STC11-04</i> UIC-STC Co-chairs to meet 17 September.	Co-chairs	17 Sep 09 <i>closed</i>
3	Difference between ST-09-01 Output 3 and Roadmap WP Review (Activity 1a) clarified: former focuses on S&T gaps within WP description of GEOSS, whereas latter takes strategic view about S&T enhancements of the Work Plan and its Tasks aiming at making GEO attractive to science community. Scope for Roadmap extends beyond current WP and will make recommendations for future WPs, whereas as ST-09-01 output will focus on gaps with respect to delivering each WP.			

	STC-09-01 Task Team to monitor response of Executive Committee to <i>Document 18: Engaging the Private Sector in GEO and GEOSS</i> . However, task should proceed unless Executive Committee takes different view.	STC11-05 Task Team to provide brief report to STC at November meeting.	KF	14 Nov 09
	STC recommends word change from “funding” to “resources” in title and text of ST-09-01 (work plan and task sheet).	STC11-06 Implement change prior to release of WP for Plenary.	SEC	30 Sep 09 <i>closed</i>
4	ST-09-02 Task Team to monitor response of Executive Committee to <i>Document 16: Role of Participating Organizations and Observers</i> . Task Team should not wait for this response to start engaging major scientific organizations and enterprises.	STC11-07 Task Team to provide brief report to STC at November meeting.	HPP	14 Nov 09
	ST-09-02 needs clarity on process for reviewing “compelling examples” to showcase the impact of Science and Technology in GEOSS implementation.	STC11-08 STC to liaise with HPP on process timeline.	GO	31 Oct 09
	The Activity on implementing the IEEE “Save the Earth” game is moved from the ST-09-02 Task to Capacity Building CB-09-02e.			
5	The Scientific Work Plan Review (Activity 1a of Roadmap) will be piloted with one SBA. Health SBA suggested for 12 th STC Meeting.	STC11-09 Liase with Pai-Yei Whung and Jan Connery to discuss this and start preparing this.	JH, FB, SMa	30 Sep 09 <i>closed</i>
	STC to report to C4 importance of data source and continuity requirements. Specific questions should appear in task sheets and current STC task sheet questions need to be modified to reflect this. <ul style="list-style-type: none"> • Does Task make use of an Earth observing system? • What continuity requirements are needed to 	STC11-10 Co-chairs to convey message to C4 in Melbourne.	GO, JH, SM, VM	18 Sep 09 <i>closed</i>

	maintain Task output?			
		STCII-11 STC to provide exact wording of modified questions to all Committees.	SM	30 Sep 09
	Systematic review of ST Tasks vis-à-vis STC Roadmap is needed to monitor alignment. Co-chairs will initiate, with a view towards sharing responsibility with broader STC for future reports.	STCII-12 STC to prepare status paper for discussion at November meeting	GO, JH	14 Nov 09
6	Keynote presentation was highly appreciated by the Committee. The Committee plans to continue this format in the future.			
7	STC approves concept of SBA Task reviews and recommends they be conducted in concert with Task Leads, Secretariat SBA Expert, and relevant STC member. Focus should be issues that STC can respond to, how STC can help.			
	First Work Plan review to focus on single SBA (Health), keeping in mind IGOS-P format and ST-09-01 activities.	STCII-13 JH to ask PYW to prepare a ~1h discussion of the Tasks under the Health SBA for the 12 th STC meeting including presentations of selected tasks and a discussion of selected issues.	JH, PYW	14 Nov 09
8	Three Secretariat proposals in <i>Document 21: Preparing the 2010 Ministerial Summit</i> accepted in principle with some adjustments needed: The Task Lead symposium should not happen as early as suggested and should be co-located with either a joint committee meeting or the Plenary. The proposed baseline activity should be clarified and expanded to include capacities for applications and decision support supported by the new datasets	STCII-14 Co-chairs to convey message to C4 in Melbourne.	GO, JH, SM, VM	18 Sep 09 <i>closed</i>

	and services. The proposed “committee of wise persons” should be clarified. What would be their charge, who would be part of this group?			
	STC also emphasized the importance of preparing things that the Ministers should decide and agree on to support future GEOSS implementation. (e.g. a 2010 ministerial declaration). Ministers should be requested to commit to something. The STC proposed three issues to be included: <ul style="list-style-type: none"> • Earth observation continuity issues. Ministers agree to support a process of coordinated response to threats of discontinuity of observing systems or services • Data sharing. • Resources to address gaps in S&T identified by STC. Ministers agree to support process of coordinated response to provide S&T resources for implementing GEOSS. 	STCII-15 Co-chairs to convey message to C4 in Melbourne.	GO, JH, SM, VM	18 Sep 09 <i>closed</i>
9	STC Membership email lists will be categorized as proposed by Secretariat (Co-chair; Co-chair for info; members; members for info).	STCII-16 Modify categories.	SEC	16 Oct 09 <i>closed</i>
	Invitations to be standardized. If member is not able to attend, he/she invited to suggest agenda items. Connections to task force/working groups should be highlighted at time invitations are issued.	STCII-17 Draft invitations for Washington meeting.	VM	09 Oct 09 <i>closed</i>
	To improve attendance at STC meetings, Co-chairs to divide up email list and issue direct invitations to members. Actively contacting individuals (phone)	STCII-18 Proposal for division of email master list among Co-chairs, and issue invitations.	SEC+ Co- chairs	16 Oct 09 <i>closed</i>

	is encouraged.			
	Agenda should be issued earlier to facilitate travel plans. At minimum, identify key issues to be addressed. STC agendas should be devised to include relevant organizations, also seek broader STC member input to encourage attendance.	STCII-19 Conduct teleconference with PYW to discuss.	SEC + Co-chairs	7 Oct 09 <i>closed</i>
	ST-09-02 task should be allowed to complete its work on identifying linkages with scientific entities. In the meantime, GEO-IGOS Symposium a good platform to encourage linkages. Suggested focus includes issues STC can address, reminder of role of GEO in science, relates to main objectives.	STCII-20 G. Glaser (ICSU) to be contacted regarding content of GEO-IGOS Symposium talk.	GO	30 Sep 09 <i>closed</i>
10	STC recommends including a user feedback mechanism on usefulness of GCI components and services (e.g. usability of data).	STCII-21 Co-chairs to convey message to C4 in Melbourne.	GO, JH, SM, VM	18 Sep 09 <i>closed</i>
		STCII-22 One page on user feedback mechanism for GCI to be developed and sent to Committees and IOC TF.	SM	25 Sep 09 <i>closed</i>
	UIC GEO Portal Usability Testing Phase II underway. First Usability test provided helpful feedback.	STCII-23 Secretariat to encourage all STC members to complete IOC Usability Test phase II.	SEC, STC All	23 Sep 09 <i>closed</i>
11	Data Sharing Task Force (DTSF) requests feedback on 6 questions posed in letter.	STCII-24 Initial DSTF response to be prepared.	JH	30 Sep 09 <i>closed</i>
		STCII-25 Comments solicited from all Co-chairs to DTSF response, then submit to L. Moodie.	Co-chairs	16 Oct 09 <i>closed</i>
	DH proposed the compilation of a follow-up report on the use of GEOSS in science and technology, and vice-versa. Requests discussion of this proposal	STCII-26 Follow-up with DH for clarification (determine audience, type of media).	STC	14 Nov 09

	<p>be put on the Washington STC meeting agenda.</p>			
	<p>HPP suggested STC develop a proposal to the GEO Plenary, asking GEO to prepare a first comprehensive and thoroughly reviewed assessment report of the state of the global Earth observation system, comparable to the ARs of IPCC on the state of the scientific knowledge with respect to climate change. The first task of the STC would be to develop a high-level proposal for the process that would lead to such an assessment report. After consideration of the proposal by the GEO Plenary, the STC could take the lead in implementing the process and initiating the preparation of the assessment report. The goal would be to have the STC proposal ready for consideration by the 2010 Plenary.</p>	<p>STC11-27 Co-chairs to consider placing discussion of the proposal on the agenda of the next STC meeting.</p>	<p>Co-chairs</p>	<p>7 Oct 09 <i>closed</i></p>
	<p>The Executive Committee has not yet set its 2010 schedule. Therefore, a decision on date and location of 2010 STC meetings is postponed until GEO VI Plenary. Suggested dates are February (STC only) and June (co-located). Department of Science and Technology (DST, Cape Town, South Africa), Tübitak Scientific and Technological Research Council of Turkey (Istanbul, Turkey), UNEP (Nairobi, Kenya), and the International Institute for Geo-Information Science and Earth Observation (ITC, Enschede, Netherlands).</p>			

Annex 2: Agenda

**Eleventh Meeting of the
GEO Science and Technology Committee
Australian Government Bureau of Meteorology (BoM) Head Office
700 Collins Street, Melbourne
15-16 September 2009**

AGENDA

Tuesday, 15 September 2009

- 9:30 -10:00** **Arrival and Registration**
- 10:00 -10:30** **1. Introduction (Chair: S. Minchin)**
Welcoming Remarks (GEO Secretariat, Host -, and Co-Chairs)
Round Table of Introductions
Approval of 10th STC Meeting Record
Adoption of the Agenda
- 10:30- 10:45** **2. Status of actions decided at the 10th STC meeting**
- 10:45 – 11:45** **3. Status of Task ST-09-01 (K. Fontaine)**
Report on kick-off meeting
Membership and resources
Issues requiring STC action
- 11:45 – 12:30** **4. Status of Task ST-09-02 (H. Peter-Plag)**
Report on kick-off meeting
Membership and resources
Issues requiring STC action
- 12:30 – 14:00** **Lunch**
- 14:00 – 16:00** **5. STC Roadmap Implementation (Chair: G. Ollier)**
Overview of roadmap activities status
- 14:00 – 15:00** **5.1 Process for scientific review of workplan (Activity 1a) (J. Hoffmann)**
Introduction (*Includes introducing the discussion to date and Terms of Reference*)
General discussion (opinion of S&T Committee on doc)
STC Endorsement and Commitment to Process
Resourcing needs for activities
- 15:00 – 16:00** **5.2 STC action on Roadmap implementation (J. Hoffmann)**
Implementing review indicators (Activity 1b)
Assessing the requirement for continuity and long-term monitoring (Activity 1c)
Engaging key commercial partners (Activity 2f)
Continuity and long term monitoring requirements (*S. Minchin*)
- 16:00 – 16:30** **Break**
- 16:30– 18:00** **6. Keynote address: Dr Albert Van Dijk (CSIRO Land and Water)**
"An Australian water resources assessment system: integrating hydrological models with on-ground and satellite observations."
- 18:00** **Adjourn**

Wednesday 16th September 2009

- 9:00 – 10:30** **7. STC Interaction with other WP Tasks (Chair: Val Munsami)**
7.1 WP Interaction – discussion (*S. Minchin*)
7.2 Task Reports:
- Dr Andrew Terhorst (CSIRO ICT Centre, Hobart, Tasmania)
"An update on progress with task AR-09-02c: Sensor Web Enablement for In-Situ Observing Network Facilitation"
 - Dr Peter Dexter (Australian Bureau of Meteorology and Co-President of JCOMM)
"Progress with development of a Global Ocean Observing System (CL-09-020)"
 - Dr Alex Held – "An update on progress with task CL-09-03b: Forest Carbon Tracking"
 - Dr David Halpern – "GEO contribution to the Global Ocean Observing System through GEO Tasks"
- 10:30-11:00** **Break**
- 11:00-12:00** **8. STC contribution to preparation of 2010 Ministerial Summit**
Preparation of 2010 Ministerial Summit (*G. Ollier*)
STC objectives for Ministerial Summit (*S. Minchin*)
Pursuing those objectives
- 12:00 – 13:30** **Lunch**
- 13:30 – 14:30** **9. STC Membership and Relations (Chair: J. Hoffmann)**
Result of Membership confirmation round (*GEO Secretariat*)
Links to Task forces and Working Groups
Links to major relevant scientific groups, particularly IPCC
- 14:30-15:30** **10. IOC Outcome and Recommendations (*R. Lefevre*)**
Discussion of IOC Task Force document
- 15:30-16:00** **Break**
- 16:00 – 16:30** **11. Any Other Business**
Date and place of next meetings
- 16:30 – 17:30** **12. Summary of meeting outcomes**
Main outcomes
Committee activities during 2009/2010
- 17:30** **Adjourn**

Annex 3: List of Participants

Participants in 11th Meeting of the GEO Science and Technology Committee				
15-16 September 2009, Melbourne, VIC, Australia				
	Family Name	First Name	Representative of	Email
1	Béroud	Florence	EC	florence.beroud@ec.europa.eu
2	Cripe	Douglas	GEO Secretariat	dcripe@geosec.org
3	Fontaine	Kathleen	NASA	kathy.fontaine@nasa.gov
4	Dexter	Peter	JCOMM	p.dexter@bom.gov.au
5	Halpern	David	NASA	david.halpern@nasa.gov
6	Held	Alexander	CSIRO	alex.held@csiro.au
7	Hoffmann	Jörn	Germany	joern.hoffmann@dlr.de
8	Kutser	Tiit	Estonia	tiit.kutser@sea.ee
9	Lefevre	Russell	IEEE	r.lefevre@ieee.org
10	Marsh	Stuart	BGS	shm@bgs.ac.uk
11	Minchin	Stuart	Australia	minchin@csiro.au
12	Munsami	Val	South Africa	val.munsami@dst.gov.za
13	Ollier	Gilles	EC	gilles.ollier@ec.europa.eu
14	Plag	Hans-Peter	IAG	hpplag@unr.edu
15	van Zyl	Terrence	CSIR	tvzyl@csir.co.za
16	Wen	Hongtao	CMA	kjsdeve@cma.gov.cn
	<i>Co-chairs in bold font</i>			