



**3<sup>rd</sup> GTOS Steering Committee Meeting  
FAO, Rome, Italy**

**25-27 January 2006**

**GTOS 41**

**Draft version 5.0  
26-05-2006**

## Table of Contents

Table of Contents .....	2
Acronyms .....	3
1. Welcome and introduction .....	4
2. Adoption of the Agenda.....	4
3. Self introduction of participants.....	4
4. Review of action items from previous meeting .....	4
5. GTOS introduction and current activities .....	5
6. GOFCC-GOLD overview and activities .....	5
7. IGOL current status.....	5
8. TCO new strategy .....	6
9. TOPC overview.....	7
10. GCOS overview and current activities.....	8
11. GEO in relation to GTOS .....	8
12. ICPC and its role in the UN coordinated response to GEO .....	9
13. Breakout sessions.....	9
14. TEMS developments.....	9
15. World Data Centers.....	10
16. Coastal GTOS current and proposed activities .....	10
17. GOOS activities .....	11
18. GTOS framework and stocktaking exercise .....	11
19. GTOS Biodiversity initiative .....	12
20. GTOS and the conventions .....	12
21. UNFCCC requirements from GTOS .....	13
22. UNCCD and crosscutting issues .....	13
22. GTOS Sponsors Session .....	13
Annex I: List of participants .....	15
Annex II: Meeting Agenda .....	17
Annex III: Actions listed.....	19
Annex VI: B-GTOS Action Plan .....	22
Annex V: Results to breakout sessions .....	23

## Acronyms

B-GTOS	Biodiversity initiative of GTOS
C	Carbon
CARBOEUROPE	A cluster of projects to understand and quantify the carbon balance of Europe
CBD	Convention on Biological Diversity
C-GTOS	Coastal initiative of GTOS
COP	Conference Of the Parties
CRIC	Committee for the Review of the Implementation of the Convention
CSIR	Council for Science and Industrial Research (South Africa)
CST	Committee on Science and Technology
CV	curriculum vitae
EEA	European Environment Agency
ESA	European Space Agency
ECVs	Essential Climate Variables
EOS	Earth Observing System
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GCOS	Global Climate Observing System
GEO	Group of Earth Observations
GEOSS	Global Earth Observation System of Systems
GLCN	Global Land Cover Network
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics (GTOS)
GOOS	Global Ocean Observing System
GSSC	GOOS Scientific Steering Committee
GTOS	Global Terrestrial Observing System
GTOS SEC	Global Terrestrial Observing System Secretariat
G3OS	Global Observing Systems (GOOS, GCOS, and GTOS)
ICPC	Interagency Coordination and Planning Committee for GEO/GEOSS
ICSU	International Council for Science
IGBP	International Geosphere and Biosphere Programme
IGOL	Integrated Global Observations for Land
IGOS	Integrated Global Observing Strategy
IGOS-P	Integrated Global Observing Strategy Partnership
ILTER	International Long-Term Ecological Research
IOC	Intergovernmental Oceanographic Commission
ISO	International Organization for Standardization
LADA	Land Degradation Assessment in Drylands
LCCS	Land Cover Classification System
MA	Millennium Ecosystem Assessment
MoU	Memorandum of Understanding
SBSTTA	Subsidiary Body for Scientific, Technical and Technological Advice
SC	Steering Committee
STB	Science and Technical Board
TCO	Terrestrial Carbon Observation
TEMS	Terrestrial Ecosystem Monitoring Sites
TOPC	Terrestrial Observation Panel for Climate
ToRs	Terms of Reference
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
WCMC	World Conservation Monitoring Centre (UNEP)
WCP	World Climate Programme
WDC	World Data Centers
WMO	World Meteorological Organization

## 1. Welcome and introduction

Ms Fresco, Officer-in-Charge of the Sustainable Development Department welcomed participants to the meeting and noted the importance of the meeting in allowing GTOS to achieve the objectives required by stakeholders.

## 2. Adoption of the Agenda

The GTOS Chairman opened the meeting and called for the adoption of the agenda. ICSU proposed that the issue of developing a GTOS strategic plan be discussed in plenary. As it is one of the most important issues to be addressed by the GTOS SC, its discussion should not be restricted to breakout groups. It was noted that the plenary would discuss this issue under agenda item 18 (see annex II). The agenda was therefore approved.

<b>Action 1</b>	GTOS Secretariat: to finalise meeting report and consult with SC members on the elements of a new strategic plan. This should take into consideration feedback and information gathered by Lai during the stocktaking exercise	Due by: March 2006
-----------------	--	--------------------

## 3. Self introduction of participants

Participants at the meeting provided a brief self-introduction on their status and current activities.

**Participants:** André BASSOLÉ (GTOS SC member), Robert CHRISTIAN (C-GTOS), Norberto R. FERNANDEZ (UNEP), Gisbert GLASER (ICSU), Mario HERNANDEZ (UNESCO), Eric LAMBIN (GTOS SC member), Jacqueline McGLADE (GTOS SC member), Berrien MOORE (GTOS Chairman), John LATHAM (GTOS Programme Director), Robert SCHOLES (B-GTOS), John TOWNSHEND (GOFC-GOLD), Jeff TSCHIRLEY (FAO) and Riccardo VALENTINI (TCO).

**Observers:** José ACHACHE (GEO), Keith ALVERSON (GOOS), Antonio BOMBELLI (TCO), Michael BRADY (GOFC-GOLD), David GOODRICH (GCOS), KC LAI (GTOS Secretariat), Stefano Mazzilli (GTOS Secretariat), Olga PILIFOSOVA (UNFCCC), Paolo PROSPERI (GTOS Secretariat), Tonie PUTTER (B-GTOS), Reuben Sessa (GTOS Secretariat), Lucilla Spini (GTOS Secretariat) and Ferris WEBSTER (World Data Centers).

See annex I for details.

## 4. Review of action items from previous meeting

The GTOS Chairman, Berrien Moore, commented on the action items of the previous meeting and congratulated the GTOS Steering Committee on achievements made in 2005 (see meeting document 4 at [www.fao.org/gtos/meetGTOS3.html](http://www.fao.org/gtos/meetGTOS3.html)).

## 5. GTOS introduction and current activities

The GTOS Programme Director, John Latham, introduced GTOS current activities, and administrative and financial status. His concerns included on how to make GTOS more effective at the regional and national level and ensuring that the products and services developed are relevant to the GTOS stakeholders, especially its Sponsors. See presentation 04, and documents 05 to 08).

## 6. GOF-C-GOLD overview and activities

The Executive Director of GOF-C-GOLD, Micheal Brady, presented the progress and current activities of the Global Observation of Forest and Land Cover Dynamics (GOF-C-GOLD). He highlighted the newly developed GOF-C-GOLD strategic plan. For additional details see presentation number 05, and document 09. The main issues of concern included:

- Clarify roles of GTOS and FAO in GEOSS;
- Obligations of Panels in relation to the Conventions;
- Coordination between GTOS and GCOS in relation to the GCOS Implementation Plan & terrestrial ECVs;
- Coordination of activities through regional networks;
- Inter Panel communications and collaboration;
- Clarify nature of support to Panels;
- Role of FAO programmes in GTOS and links to Panels (e.g. FRA and GLCN).

The GTOS Programme Director was pleased that GOF-C-GOLD had adopted LCCS and indicated that GLCN and GOF-C-GOLD were fully compatible.

SC Member, Jacqueline McGLADE (EU), indicated that guidelines of the essential climatic variables (ECVs) should be circulated as soon as possible to ensure relevancy and endorsement by other initiatives (for example international Conventions).

<b>Action 2</b>	GOF-C-GOLD Executive Director: to circulate CEOS document reporting progress made on the ECVs.	<b>Due by: February 2006</b>
-----------------	--	------------------------------

<b>Action 3</b>	GOF-C-GOLD Executive Director: to circulate details of the GOF-C-GOLD Jena meeting in March 2006.	<b>Due by: February 2006</b>
-----------------	---	------------------------------

## 7. IGOL current status

The GOF-C-GOLD Chairman (and co-chair of IGOL), John Townsend, presented the current status and activities of the land theme of the Integrated Global Observing Strategy (IGOL). This included a comprehensive review of the current data capacities and requirements for expansion of remote sensing and *in situ* capabilities that are required to meet land observation needs. For details please see presentation 7 and document 10.

The GOF-C-GOLD Chairman noted that the IGOS partnership was a good mechanism for defining requirements for GEOSS. IGOS-P would then take a lesser role in implementation but would be involved in any review process.

The Director of GOOS, Keith Alverson, warned against developing plans/strategies which are intended to be implemented by countries unless countries have already indicated their commitment for implementation. He also warned of the danger of concentrating efforts in re-writing strategies or delegating work to sub-panels with the result of not reaching an implementation and development stage.

There was a broad consensus on the importance for adequate socio economic data which should be linked and integrated with environmental data and information. Certain IGOS themes (e.g. coastal and water cycle) have made some effort to do this but more efforts are needed to bring socio-economic data to the same level as the environmental variables. FAO, Jeff Tschirley, also suggested that IGOS-P could play a role in the integration of socio-economic variables within GTOS and other observing systems. The Conventions and member countries needs to be engaged and their needs assessed (GTOS could take an active role in this).

<b>Action 4</b>	IGOL Co-Chairs: to ensure that there is adequate socio-economic components in the theme report. If possible the report should include economic estimates and potential “value” of the observations included in the next IGOS theme reports.	Due by: April 2006
<b>Action 5</b>	GTOS Secretariat: to circulate to the members of the GTOS SC the first draft of IGOL theme report for review and comments.	Due by: April 2006
<b>Action 6</b>	ICSU: to circulate the report on socio-economic data resulting from a workshop organised by ICSU, in cooperation with IGOS-P	Due by: February 2006

## 8. TCO new strategy

TCO Chairman, Riccardo Valentini, provided an overview of the new TCO members and initial strategy. Additional details in document 11 and presentation 08.

Steering committee congratulated the implementation that has so far been achieved on TCO.

SC Member, André Basolé, requested clarification on the Carbo-Africa initiative and if it would deal with Clean Development Mechanisms. The TCO Chair, Riccardo Valentini, informed participants that the Carbo-Africa project will have a work package that will specifically deal with sequestration, socioeconomic and environmental related concerns. UNEP, Norberto Fernandez, also indicated the importance of identifying the required data (and scale) needed at the local, national and regional level. He also indicated that additional urban analysis is required in developing countries in the Southern hemisphere.

The Steering Committee indorsed the proposed next steps for TCO:

- First TCO Panel meeting;
- Expert workshops;
- Identifying data gaps and validation of models;
- Address the role of cities;
- Concrete products (database, standard methodologies, manuals);
- Launch of a global database for GHG gases;
- Launch of a Carbon-School in developing countries;
- Stronger linkage with the international convention and end users.

<b>Action 7</b>	Recommendation: Ensure that cross referencing and links are established (maybe with cross membership or cross participation in each respective activities) with other Panels (GOFC-GOLD and TOPC) to improve synergy and to avoid duplication.	Due by: March 2006
-----------------	--	--------------------

## 9. TOPC overview

The GCOS Director, David Goodrich, on behalf of the TOPC Panel Chair, Allan Belward, provided an overview of the TOPC Panel current and proposed activities (details in documents 12 to 14 and in presentation 09).

TOPC recommended:

- TOPC should remain focused on climate issues and the new Chair selected should reflect this.
- New Chair needs to link closely with GOFC-GOLD because this panel could/should assume responsibility for the land cover and fire components of the implementation plan.
- TOPC should now concentrate on implementing the GCOS implementation plan.
- Panel also needs to look at assimilation of these variables.

It was noted that the process used in developing the 2<sup>nd</sup> Adequacy report of GCOS, was very useful for the development of a strategy for GCOS and a similar process may be useful for the development of a strategy for GTOS.

<b>Action 8</b>	TOPC Chair: to revisit the Terms of Reference of TOPC to address new issues that now must be addressed as TOPC matures, including the issues of regional studies requiring further guidance and information.	Due by: March 2006
-----------------	--	--------------------

<b>Action 9</b>	SC Members: requested to provide guidance on TOPC membership, including identification of new Panel Chair.	Due by: March 2006
-----------------	--	--------------------

<b>Action 10</b>	GTOS Secretariat: to send a letter of thanks to Alan Belward for his time as chairman of TOPC and as co-Chair of GOFC-GOLD.	Due by: March 2006
------------------	---	--------------------

<b>Action 11</b>	GCOS Director: to make available the document to CEOS on “Systematic Observation Requirements for Satellite-based Products for Climate”.	Due by: March 2006
------------------	--	--------------------

## 10. GCOS overview and current activities

The GCOS Director, David Goodrich, reported on past, current and future activities of GCOS (for details see presentation 10 and document 15).

SC member, Jacqueline McGlade, noted the importance of developing calculations of the costs of undertaking observations and the estimated financial benefits that would be generated from the generated products. The need for legal requirements for reporting and commitment to the Observing Systems should be considered.

<b>Action 12</b>	GCOS, TOPC, GOOS: recommendation that GOOS, GCOS, TOPC, interact to ensure there is no unnecessary overlap in GCOS African networks and GOOS planed station installations.	Due by: 2006
------------------	--	--------------

## 11. GEO in relation to GTOS

The GEO Secretariat Director, Jose Achache, provided an overview of GEO and the current progress being made on the implementation of GEOSS. The three main advantages of GEO were highlighted:

- The political visibility and commitment towards GEO;
- A non UN system and can therefore provide a more rapid response;
- It is cross cutting focusing on nine societal benefit areas.

He indicated that GTOS could contribute to GEOSS especially in regards to *in situ* measurements and data. A priority area for IGOS collaboration is on identifying gaps in existing observations and strategies, needed for the nine GEOSS Social benefit areas. For example GEO has requested IGOS-P to provide reports on the two societal benefit areas: Health and Energy. There will be a need to set priorities, variables required by more than one social benefit area will be given priority. GEO will also play a key role in improving data access and promoting capacity building. Ensuring stakeholder participation is also important, and GEO is bringing together, although difficult, data providers, assimilators and users (especially for Health).

Observing systems as a whole need to be simplified (reduce number of Panels and Committees) and become coordinated. IGOS is an important mechanism for technical inputs. GEO has to show deliverables and results to keep Ministers interested (next Ministers meeting is in 2007).

ICSU, Gisbert Glaser, noted that GTOS aims at delivering integrated products resulting from both *in situ* and space-based observations. Why would GEOSS limit its interest in GTOS to *in situ* observations? Jose Achache responded that this is a major gap in the observing system, and would therefore be a useful contribution of GTOS. This is not necessarily the only contribution of GTOS.

Berrien Moore requested further clarification on the funding dimension to the next stages of the GEOSS process, Jose Achache responded that there where a number of mechanisms available depending on the task matrix analysis: 1) Improved coordination will reduce duplication of efforts

allowing funds to be used in areas where there is a need 2) Funding mechanisms are available through the EU, and 3) Other Private sector donations. GEO currently only has small amount of funds to support workshops and capacity building (these can be requested through the GEO Secretariat).

## 12. ICPC and its role in the UN coordinated response to GEO

David Goodrich and John Latham reviewed the Interagency Coordination and Planning Committee for GEO/GEOSS (ICPC) meeting, highlighting the following major issues:

- Disbanded G3OS replaced by ICPC, a three tiered structure, including heads of the Sponsoring organizations.
- Will allow the Sponsor organizations and observing systems to better engage in the GEOSS process.
- ICPC play a role in creating a joint mechanism for terrestrial observations and the required standards, regulatory material and guidelines.

Jose Achache noted that development of standards for all variables would have to be done in coordination and through the GEO data committee.

## 13. Breakout sessions

Participants were divided into breakout groups to develop the following topics:

1. Future direction and needs of GTOS
2. GTOS involvement and role in GEOSS;
3. Land cover and related issues;
4. Revisiting the GTOS implementation plan.

Results summarized in annex V.

## 14. TEMS developments

The TEMS database manager, Paolo Prospero, reviewed the current developments of TEMS and the proposed next steps (see presentation14 and document 18).

Steering Committee showed interest in TEMS developments. It noted that the database is an important first step as it is essential to know what sites are available and the activities being undertaken.

B-GTOS, Robert Scholes, noted the importance of providing positive feedback to sites registered in TEMS. The provision of TEMS stickers or electronic TEMS logos could be a good visible recognition (and would give TEMS visibility as well).

<b>Action 13</b>	GTOS Secretariat: to improve functions and visibility of TEMS (especially visibility to T-sites).	<b>Due by: June 2006</b>
------------------	---	--------------------------

<b>Action 14</b>	GTOS Secretariat: to introduce into the site efficient and easy mechanisms which ensures feedback from TEMS users and allows analysis of the success of the database. Establish criteria for success and determine targets that should be reached.	Due by: April 2006
<b>Action 15</b>	GTOS Secretariat: metadata should allow users to determine if data is suitable for their requirements. GTOS should avoid getting into quality control issues (complicated and not enough resources).	Due by: June 2006
<b>Action 16</b>	GTOS Secretariat: should provide on the Web a reference citation to be used in publications which use TEMS resources.	Due by: February 2006

## 15. World Data Centers

The ICSU Panel Chair on World Data Centers (WDC), Ferris Webster, presented the WDC current focus (see presentation 15 and document 19). It was noted that the majority of the WDCs are clustered in the Northern Hemisphere in developed countries, with only one centre in the Southern hemisphere. Major next steps in WDC include:

- WDC system modernization (creation of new centers and global science programmes);
- WDC reform is an element of ICSU's plan to develop an international framework for the production, management, and dissemination/access of scientific data and information.

<b>Action 17</b>	The GTOS Secretariat: to contact relevant World Data Centers to initiate discussions on possible collaboration. GTOS Panel Chairs to investigate which existing WDC is a depository of data relevant to their focus areas.	Due by: 2006
<b>Action 18</b>	ICSU WDC Panel Chair: circulate documentation regarding the criteria used to determining eligibility of institutions to become a WDC.	Due by: February 2006
<b>Action 19</b>	Meeting participants: Send Ferris Webster details of possible institutions which could qualify and maybe interested in becoming a WDC (implies a long term commitment). Institutions especially needed in Africa as there is a need to improve data access in this region.	Due by: March 2006

Note: WDC may be interested in using the infrastructure of Geonetwork (a free system developed by FAO) which allows users to access data and information from a number of nodes all over the world through a single Web portal. For details see: [www.fao.org/geonetwork](http://www.fao.org/geonetwork)

## 16. Coastal GTOS current and proposed activities

The C-GTOS coordinator, Christian Robert presented the developments of the initiative (see presentation 16 and documents 23 to 22).

The GTOS SC approved C-GTOS to become a full Panel of GTOS.

For discussion on C-GTOS becoming a GTOS Panel see end of section 17.

## 17. GOOS activities

The GOOS Director, Keith Alverson, presented the activities of GOOS (see presentation 17 and documents 23 to 24). Specifically he noted that GOOS is interested in having a joint Panel on Coastal issues with GTOS but the following requirements should be met:

- 50-50 GOOS-GTOS sharing in cost and administration of panel (through a Memorandum of Understanding);
- Terms of Reference (TOR) including explicit milestones, goals and sunset clause;
- Panel should be less than 12 people, balance of scientists and ‘operational’ coastal managers, which should meet annually;
- No sub-panels;
- 50% technical secretary;
- \$50k/year ‘regular’ budget;
- Endorsement by GSSC, I-GOOS (March ‘06) and IOC Executive Council (June ‘06).

The GTOS Chairman and the members of the Steering Committee congratulated the C-GTOS coordinator on the work achieved and endorsed C-GTOS becoming a Panel. Participants also indicated that a joint Panel should be created with GOOS. The GTOS Chairman noted that funding maybe an issue and requested that a financial strategy should be developed. He also recommended that observations of changes occurring in high latitudes should be considered. ICSU, suggested that the planned International Polar Year (IPY) 2007/2008 should be used as an opportunity for GTOS, as appropriate in cooperation with GOOS and GCOS, to enhance observation capacity in high latitudes. Gisbert Glaser also suggested that this issue be discussed at the next GTOS-SC meeting as a specific item. In preparation, the GTOS secretariat, in coordination with the GTOS Panel Chairs, could prepare a paper outlining possible GTOS activities related to the IPY.

<b>Action 20</b>	C-GTOS Panel Chair: to develop a funding strategy, identifying existing and potential available resources and funding gaps.	Due by: May 2006
<b>Action 21</b>	GTOS and GOOS: to develop terms of reference for a joint panel on coasts with explicit milestones, a sunset clause and a Panel size limitation.	Due by: March 2006
<b>Action 22</b>	GTOS Secretariat: should develop specific criteria on what initiatives qualify as a Panel. Panel reporting guidelines should also be developed.	Due by: May 2006

## 18. GTOS framework and stocktaking exercise

GTOS Consultant, KC Lai, presented the status of the stocktaking exercise (see presentation 18 and document 25). See also breakout session (section 13).

The Steering Committee noted the process and looked forward to the final consultant report. It is hoped that elements of the report can be used for the development of a future GTOS strategy and revised implementation plan (should be finalized as soon as possible and based on user needs). Funding issues should also be considered.

## 19. GTOS Biodiversity initiative

Robert Scholes and Tonie Putter (B-GTOS initiative) provided an overview on initial discussions and plans related to this new initiative, as well as the functionalities of Ecoport and how this database could be used in the B-GTOS initiative (see presentation 19 and document 26).

The Steering Committee noted with interest the B-GTOS proposal and agreed that GTOS could play an important role in assisting the CBD with regard to its observational data needs. Upon the request by the GTOS SC Chairman, Robert Scholes and Tonie Putter prepared a Preliminary B-GTOS Action Plan which was approved by the Committee (see Annex VI). In particular, the Steering Committee endorsed that Robert Scholes should coordinate a design team to further develop the B-GTOS initiative. Road map, stakeholders, products, costs should all be considered. How Ecoport will be used should be clarified (maybe through a pilot project).

UNESCO, Mario Hernandez, suggested it could support B-GTOS both technically and with other in-kind contributions.

It was noted that GTOS is already struggling to support its existing Panels, so funding of B-GTOS will be an issue. A funding strategy for B-GTOS, even at the early stages, is required.

Note that an additional presentation was provided by UNEP, Norberto Fernandez, on the work of UNEP-WCMC on the investigation on the CBD achieving 2010 targets and assessing which measurements are realistically feasible.

<b>Action 23</b>	Establishment of a B-GTOS design team, to be chaired by Robert Schole's, based on the specifications in Annex VI, approved by the GTOS-SC. Development of a B-GTOS draft strategy and implementation plan by the design team, following the mandate provided by the SC in Annex VI.	Due by: September 2006
------------------	---	------------------------

## 20. GTOS and the conventions

GTOS Programme Officer, Lucilla Spini, presented the progress made by the GTOS Secretariat and its Panels in work with the conventions (see presentation 20 and document 27).

Participants recommended that the GTOS Secretariat through its Panels continue its involvement with the conventions. Panels should ensure collaboration and coordination on crosscutting issues.

SC member, André Bassolé, also indicated that GTOS could play a key role in capacity building to allow countries in meeting their environmental conventions requirements and reporting. He also noted that international community should support the reduction of pollution instead of using carbon credit mechanisms.

**Proposal:** GTOS could develop a report on scientific relevant information which is cross cutting to all the conventions.

**Proposal:** GTOS to provide capacity building to developing countries to allow them to submit higher quality reporting.

**Proposal:** GTOS Secretariat to apply for GTOS observer status at the CBD.

**Proposal:** GTOS becomes a partner in the 2010 Biodiversity Indicators Partnership.

## 21. UNFCCC requirements from GTOS

UNFCCC, Olga Pilifosova, presented the current activities of UNFCCC and the contributions that GTOS could provide (see presentation 21 and document 27).

It was agreed that GTOS should continue its support of the UNFCCC and it was recommended that the Panels (GOFC-GOLD, TCO and TOPC) should interact closely to develop a coordinated response and develop strategic products relevant to UNFCCC and other conventions.

The TCO Chair, Riccardo Valentini, noted that GTOS could play a much bigger role to UNFCCC. For example could be involved in vulnerability of carbon stocks (including vulnerability hotspots). Deforestation is also another important topic.

<b>Action 24</b>	GTOS Secretariat: Chairs of GOFC-GOLD, TCO, TOPC to hold a teleconference to discuss strategies on developing products for the conventions.	Due by: April 2006
------------------	---	--------------------

## 22. UNCCD and crosscutting issues

The TCO Chairman, Riccardo Valentini, introduced the activities of UNCCD. He noted that UNCCD is undergoing a reform process with a task force developing a new implementation plan. GTOS could play an important role in providing technical inputs (see presentation 22).

GTOS Chairman noted that during this process of restructuring UNCCD needs scientific and technical guidance in which GTOS could contribute. He also noted that there are synergies between the observational requirements of the three conventions (climate, biodiversity and desertification). An analysis of these synergies could be useful in prioritising tasks.

<b>Action 25</b>	Based on conventions document (document 27), a paper should be developed on synergy between the conventions in terms of observational data needs..	Due by: September 2006?
------------------	--	-------------------------

<b>Action 26</b>	GTOS Secretariat, in coordination with the GTOS Panel Chairs, to develop a position paper on the International Year on Deserts and Desertification 2006.	Due by: September 2006?
------------------	--	-------------------------

## 22. GTOS Sponsors Session

<b>Action 27</b>	GTOS Sponsors: to review and select 4 new members of SC (considering expertise, regional location, gender, etc.).	Due by: April 2006
------------------	---	--------------------

<b>Action 28</b>	GTOS Chairman: to organize a two day GTOS Panel Chairs meeting in Paris at ICSU headquarters (GTOS Sponsors invited to attend but not required).	Due by: April 2006
------------------	--	--------------------

<b>Action 29</b>	GTOS Secretariat: to place details of new GTOS SC members on the GTOS Website.	Due by: April 2006
------------------	--	--------------------

<b>Action 30</b>	GTOS Secretariat: to identify next meeting date in February or March of 2007.	Due by: April 2006
------------------	---	--------------------

<b>Action 31</b>	GTOS Secretariat to organize a teleconference between GTOS Sponsors to discuss new SC members and the contribution of UNESCO to the GTOS initiative.	Due by: April 2006
------------------	--	--------------------

Sponsors also recommended that GTOS needs to improve its visibility and needs to concentrate on a few products which serve wide stakeholder requirements, give GTOS credibility and injects resources into the core activities. GTOS should continue and increase its involvement with the conventions and meet the needs of its sponsors and donors.

# Annex I: List of participants

(O) = Observer, (P) = Participant

---

José ACHACHE (O) Group on Earth Observations (GEO) Secretariat WMO Headquarters Building, 7 bis, Avenue de la Paix, Geneva, Switzerland	tel.: (+41) 22 7308505 fax: (+41) 22 7308520 e-mail: <a href="mailto:secretariat@geosec.org">secretariat@geosec.org</a>
Keith ALVERSON (O) Global Ocean Observing System (GOOS) IOC/UNESCO, 1 rue Miollis, 75732 Paris Cedex 15, France	tel.: (+33) 1 45684042 fax: (+33) 1 45685813 e-mail: <a href="mailto:k.alverson@unesco.org">k.alverson@unesco.org</a>
André BASSOLÉ (P) CERPINEDD and EIS 249, Avenue de l'Armée, 01 BP 6398 Ouagadougou 01 - Burkina Faso	tel.: (+226) 5030 2901 or 5030 2902 fax: - e-mail: <a href="mailto:abassole@fasonet.bf">abassole@fasonet.bf</a>
Antonio BOMBELLI (O) Department of Forest Science and Environment (DISAFRI), University of Tuscia via S. Camillo de Lellis, 01100 Viterbo, Italy	tel.: (+39) 0761 357251 fax: (+39) 0761 357389 e-mail: <a href="mailto:bombelli@unitus.it">bombelli@unitus.it</a>
Michael BRADY (O) Canadian Forest Service, Natural Resources Canada 5320-122 St. Edmonton, Alberta, Canada T6H 3S5	tel.: (+1) 780 4357259 fax: (+1) 780 4357359 e-mail: <a href="mailto:mbrady@nrcan.gc.ca">mbrady@nrcan.gc.ca</a>
Robert CHRISTIAN (P) Biology Department, East Carolina University Greenville, NC 27858, United States of America	tel.: (+1) 252 3281835 fax: (+1) 252 3284178 e-mail: <a href="mailto:christianr@mail.ecu.edu">christianr@mail.ecu.edu</a>
Norberto R. FERNANDEZ (P) Division of Early Warning and Assessment, UNEP P.O. Box 30552, Nairobi, KENYA	tel.: +254 (0)20 62 34 50 fax: +254 (0)20 62 43 09 e-mail: <a href="mailto:norberto.fernandez@unep.org">norberto.fernandez@unep.org</a>
Gisbert GLASER (P) International Council for Science (ICSU) 51, boulevard de Montmorency, FR-75016 Paris, France	tel.: +33 1 4525 0329 fax: +33 1 4288 9431 e-mail: <a href="mailto:gisbert.glaser@icsu.org">gisbert.glaser@icsu.org</a>
David GOODRICH (O) Global Climate Observing System (GCOS) WMO, 7 bis, avenue de la Paix, P.O. Box 2300, 1211 Geneva 2, Switzerland	tel.: (+41) 22 7308067 fax: (+41) 22 7308052 e-mail: <a href="mailto:GCOSJPO@wmo.int">GCOSJPO@wmo.int</a>
Mario HERNANDEZ (P) Division of Ecological Sciences and Man and the Biosphere programme UNESCO, 1, rue Miollis 75732 Paris cedex 15, France	tel.: (+33) 1 45684090 fax: (+33) 1 45685804 e-mail: <a href="mailto:Ma.Hernandez@unesco.org">Ma.Hernandez@unesco.org</a>
KC LAI (O) Evaluation Consultant for FAO 11 Cambridge Road, Twickenham TW1 2 HN, England	tel.: (+44) 208 8914842 fax: - e-mail: <a href="mailto:KCLAIH3@aol.com">KCLAIH3@aol.com</a>
Eric LAMBIN (P) Department of Geography, University of Louvain 3, place Pasteur, B-1348 Louvain-la-Neuve, Belgium	tel.: (+32) 10 474477 fax: (+32) 10 472877 e-mail: <a href="mailto:lambin@geog.ucl.ac.be">lambin@geog.ucl.ac.be</a>
John LATHAM (P) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel.: (+39) 06 57054026 fax: (+39) 06 57053369 e-mail: <a href="mailto:john.latham@fao.org">john.latham@fao.org</a>

---

Stefano MAZZILLI (O) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel.: (+39) 06 57053519 fax: (+39) 06 57053369 e-mail: <a href="mailto:stefano.mazzilli@fao.org">stefano.mazzilli@fao.org</a>
Jacqueline McGLADE (P) European Environment Agency (EEA) Kongens Nytorv 6, DK-1050 Copenhagen K, Denmark	tel.: (+45) 33 367100 fax: (+45) 33 367199 e-mail: <a href="mailto:Jacqueline.McGlade@eea.eu.int">Jacqueline.McGlade@eea.eu.int</a>
Berrien MOORE (P) Morse Hall Suite 305, Institute for the Study of Earth, Oceans, and Space University of New Hampshire, Durham, New Hampshire 03824, USA	tel.: (+1) 603 8621766 fax: (+1) 603 8621915 e-mail: <a href="mailto:b.moore@unh.edu">b.moore@unh.edu</a>
Olga PILIFOSOVA (O) Adaptation, Science and Technology Programme, UNFCCC Secretariat Haus Carstanjen, Martin-Luther-King-Strasse 8, 53175 Bonn, Germany	tel.: (+49) 228 815 1428 fax: e-mail: <a href="mailto:opilifosova@unfccc.int">opilifosova@unfccc.int</a>
Paolo PROSPERI (O) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel.: (+39) 06 57052246 fax: (+39) 06 57053369 e-mail: <a href="mailto:paolo.prosperti@fao.org">paolo.prosperti@fao.org</a>
Tonie PUTTER (O) EcoPort Foundation 225 St Patricks Road, Muckleneuk, Pretoria 0002, South Africa	tel: (+27) 12-341-3269 fax: (+27) 12 341-1664 e-mail: <a href="mailto:t.putter@ecoport.org">t.putter@ecoport.org</a>
Robert SCHOLES (P) CSIR - Environmentek P.O. Box 395, Pretoria 0001, South Africa	tel.: (+27) 012 8412045 fax: (+27) 012 8412689 e-mail: <a href="mailto:bscholes@csir.co.za">bscholes@csir.co.za</a>
Reuben SESSA (O) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel: (+39) 06 57056519 fax: (+39) 06 57053369 e-mail: <a href="mailto:reuben.sessa@fao.org">reuben.sessa@fao.org</a>
Lucilla SPINI (O) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel: (+39) 06 57054174 fax: (+39) 06 57053369 e-mail: <a href="mailto:lucilla.spini@fao.org">lucilla.spini@fao.org</a>
John TOWNSHEND (P) Dept. of Geography, University of Maryland 2181 Lefrak Hall, College Park, MD 20742, United States of America	tel.: (+1) 301 4054558 fax: (+1) 301 3149299 e-mail: <a href="mailto:jtownshe@geog.umd.edu">jtownshe@geog.umd.edu</a>
Jeff TSCHIRLEY (P) SDRN, Food and Agriculture Organization of the UN Viale delle Terme di Caracalla, 00100 Rome, Italy	tel: (+39) 06 57053450 fax: (+39) 06 57053369 e-mail: <a href="mailto:jeff.tschirley@fao.org">jeff.tschirley@fao.org</a>
Riccardo VALENTINI (P) Department of Forest Science and Environment (DISAFRI), University of Tuscia Via S. Camillo de Lellis, 01100 Viterbo, Italy	tel: (+39) 0761 357394 fax: (+39) 0761 357389 e-mail: <a href="mailto:rik@unitus.it">rik@unitus.it</a>
Ferris WEBSTER (O) College of Marine Studies, University of Delaware Lewes, DE 19958, USA	tel: (+1) 302 6454266 fax: (+1) 302 6454007 e-mail: <a href="mailto:ferris@udel.edu">ferris@udel.edu</a>

## Annex II: Meeting Agenda

**Tuesday, 24 January**

**India Room (A327)**

**14.00 start**

**14.00** GTOS Chairman and Panel Chairs meeting

*Berrien Moore*

This session is intended to finalize agenda items and ensure that there is agreement on the different issues before they are presented to the Steering Committee. Issues include: GEO representation, rationalization of the GTOS endorsement process, panel priorities, etc. The session should be finished by 17:00.

**Wednesday, 25 January**

**Mexico Room (D211)**

**09.00 start**

Please note that each speaker has a 30 minute slot: this is intended for a 10 to 15 minute presentation and a 15 to 20 minute discussion (questions and any action items).

**9.00** 1. Welcome and Introduction

*Louise O. Fresco*

**9.15** 2. Adoption of the Agenda

*Berrien Moore* Doc 2

**9.25** 3. Self introduction of new SC members and other participants

*Berrien Moore* Doc 3

**9.40** 4. Review of action items from previous meeting

*Berrien Moore* Doc 4

**9.55** 5. General introduction to GTOS activities and current status

*John Latham* Doc 5 to 8

**10.30** 6. GOF-C-GOLD overview and activities

*Michael Brady* Doc 9

**11.00** **Coffee break**

**11.30** 7. IGOL current status

*John Townshend* Doc 10

**12.00** 8. TCO new strategy

*Riccardo Valentini* Doc 11

**12.30** 9. TOPC overview

*David Goodrich* Doc 12 to 14

Includes identification of a possible new TOPC Panel Chair

**13.00** 10. GCOS overview and current activities

*David Goodrich* Doc 15

**13.30** **Lunch**

**14.45** 11. GEO in relation to GTOS

*José Achache* Doc 16

GTOS panel and secretariat contributions to the 2006 work plan

**15.15** 12. ICPC and its role in the coordinated UN response to GEO

*Buruhani Nyenzi* Doc 17

**15.30** **Coffee break** (collection and go to breakout sessions)

**15.35** 13a. Breakout sessions introduction

*Berrien Moore*

Four possible breakout sessions:

1. Future direction and needs of GTOS (Mexico Room: D211)

Jacqueline McGlade

2. GTOS involvement and role in GEOSS (Nigeria Room: C215)

Robert Scholes

3. Challenges and demands for land cover and biomass (Cuba Room: B224)

Eric Lambin

4. Revisiting the GTOS implementation plan (Mexico Room: D211)

KC Lai

**17.30** **Close of first day**

**Reception**

**Indonesia Room 8<sup>th</sup> floor, building B**

**17.30 start**

<b>Thursday, 26 January</b>	<b>Mexico Room (D211)</b>	<b>08.45 start</b>
-----------------------------	---------------------------	--------------------

- 8.45 13b. Review of breakout session results *Berrien Moore*
- 10.15 **Coffee break**
- 10.30 14. TEMS web developments and proposed future steps *Paolo Prosperi* Doc 18
- 11.00 15. World Data Centers *Ferris Webster* Doc 19
- 11.30 16. Coastal GTOS current and proposed activities *Robert Christian* Doc 20 to 22
- 12.00 17. GOOS activities related to GTOS *Keith Alverson* Doc 23 to 24  
Current activities and the proposed joint observing system
- 12.30 18. GTOS framework and stock taking exercise *KC Lai* Doc 25
- 13.10 **Lunch**
- 14.10 19. Proposal for a GTOS biodiversity initiative *Bob Scholes* Doc 26
- 14.40 20. GTOS and the Conventions *Lucilla Spini* Doc 27
- 15.10 **Coffee break**
- 15.15 21. UNFCCC requirements from GTOS *Olga Pilifosova* Doc 27
- 15.40 22. UNCCD and crosscutting issues *Riccardo Valentini* Doc 27
- 16.30 **Close of second day**

<b>Reception</b>	<b>AVENTINO 8<sup>th</sup> floor, building B</b>	<b>17.30 pm start</b>
------------------	--	-----------------------

<b>Friday, 27 January</b>	<b>Mexico Room (D211)</b>	<b>09.00 start</b>
---------------------------	---------------------------	--------------------

- 9.00 Summary of workshop results and finalization of action items and final discussion on issues that emerged from the workshop *Berrien Moore*
- 10.45 Date and venue of the next Steering Committee meeting *Berrien Moore*
- 11.00 **Closure of main meeting**
- 11.00 GTOS Sponsors Meeting *John Latham*

This session is intended to allow the Sponsors to review the results of the meeting and address a number of other issues, including: review any additional nominations for SC membership, review of the MOU, role of donors, etc.

See separate agenda.

- 13.00 **Closure of Sponsors meeting**

## Annex III: Actions listed

<b>Action 1</b>	GTOS Secretariat: to finalise meeting report and consult with SC members on the elements of a new strategic plan. This should take into consideration feedback and information gathered by Lai during the stocktaking exercise	Due by: March 2006
<b>Action 2</b>	GOFC-GOLD Executive Director: to circulate CEOS document reporting progress made on the ECVs.	Due by: February 2006
<b>Action 3</b>	GOFC-GOLD Executive Director: to circulate details of the GOFC-GOLD Jena meeting in March 2006.	Due by: February 2006
<b>Action 4</b>	IGOL Co-Chairs: to ensure that there is adequate socio-economic components in the theme report. If possible the report should include economic estimates and potential “value” of the observations included in the next IGOS theme reports.	Due by: April 2006
<b>Action 5</b>	GTOS Secretariat: to circulate to the members of the GTOS SC the first draft of IGOL theme report for review and comments.	Due by: April 2006
<b>Action 6</b>	ICSU: to circulate the report on socio-economic data resulting from a workshop organised by ICSU, in cooperation with IGOS-P	Due by: February 2006
<b>Action 7</b>	Recommendation: Ensure that cross referencing and links are established (maybe with cross membership or cross participation in each respective activities) with other Panels (GOFC-GOLD and TOPC) to improve synergy and to avoid duplication.	Due by: March 2006
<b>Action 8</b>	TOPC Chair: to revisit the Terms of Reference of TOPC to address new issues that now must be addressed as TOPC matures, including the issues of regional studies requiring further guidance and information.	Due by: March 2006
<b>Action 9</b>	SC Members: requested to provide guidance on TOPC membership, including identification of new Panel Chair.	Due by: March 2006
<b>Action 10</b>	GTOS Secretariat: to send a letter of thanks to Alan Belward for his time as chairman of TOPC and as co-Chair of GOFC-GOLD.	Due by: March 2006
<b>Action 11</b>	GCOS Director: to make available the document to CEOS on “Systematic Observation Requirements for Satellite-based Products for Climate”.	Due by: March 2006
<b>Action 12</b>	GCOS, TOPC, GOOS: recommendation that GOOS, GCOS, TOPC, interact to ensure there is no unnecessary overlap in GCOS African networks and GOOS planned station installations.	Due by: 2006

<b>Action 13</b>	GTOS Secretariat: to improve functions and visibility of TEMS (especially visibility to T-sites).	Due by: June 2006
<b>Action 14</b>	GTOS Secretariat: to introduce into the site efficient and easy mechanisms which ensures feedback from TEMS users and allows analysis of the success of the database. Establish criteria for success and determine targets that should be reached.	Due by: April 2006
<b>Action 15</b>	GTOS Secretariat: metadata should allow users to determine if data is suitable for their requirements. GTOS should avoid getting into quality control issues (complicated and not enough resources).	Due by: June 2006
<b>Action 16</b>	GTOS Secretariat: should provide on the Web a reference citation to be used in publications which use TEMS resources.	Due by: February 2006
<b>Action 17</b>	The GTOS Secretariat: to contact relevant Word Data Centers to initiate discussions on possible collaboration. GTOS Panel Chairs to investigate which existing WDC is a depository of data relevant to their focus areas.	Due by: 2006
<b>Action 18</b>	ICSU WDC Panel Chair: circulate documentation regarding the criteria used to determining eligibility of institutions to become a WDC.	Due by: February 2006
<b>Action 19</b>	Meeting participants: Send Ferris Webster details of possible institutions which could qualify and maybe interested in becoming a WDC (implies a long term commitment). Institutions especially needed in Africa as there is a need to improve data access in this region.	Due by: March 2006
<b>Action 20</b>	C-GTOS Panel Chair: to develop a funding strategy, identifying existing and potential available resources and funding gaps.	Due by: May 2006
<b>Action 21</b>	GTOS and GOOS: to develop terms of reference for a joint panel on coasts with explicit milestones, a sunset clause and a Panel size limitation.	Due by: March 2006
<b>Action 22</b>	GTOS Secretariat: should develop specific criteria on what initiatives qualify as a Panel. Panel reporting guidelines should also be developed.	Due by: May 2006
<b>Action 23</b>	Establishment of a B-GTOS design team, to be chaired by Robert Schole's, based on the specifications in Annex VI, approved by the GTOS-SC. Development of a B-GTOS draft strategy and implementation plan by the design team, following the mandate provided by the SC in Annex VI.	Due by: September 2006
<b>Action 24</b>	GTOS Secretariat: Chairs of GOF-C-GOLD, TCO, TOPC to hold a teleconference to discuss strategies on developing products for the conventions.	Due by: April 2006
<b>Action 25</b>	Based on conventions document (document 27), a paper should be developed on synergy between the conventions in terms of observational data needs..	Due by: September 2006?

<b>Action 26</b>	GTOS Secretariat, in coordination with the GTOS Panel Chairs, to develop a position paper on the International Year on Deserts and Desertification 2006.	Due by: September 2006?
<b>Action 27</b>	GTOS Sponsors: to review and select 4 new members of SC (considering expertise, regional location, gender, etc.).	Due by: April 2006
<b>Action 28</b>	GTOS Chairman: to organize a two day GTOS Panel Chairs meeting in Paris at ICSU headquarters (GTOS Sponsors invited to attend but not required).	Due by: April 2006
<b>Action 29</b>	GTOS Secretariat: to place details of new GTOS SC members on the GTOS Website.	Due by: April 2006
<b>Action 30</b>	GTOS Secretariat: to identify next meeting date in February or March of 2007.	Due by: April 2006
<b>Action 31</b>	GTOS Secretariat to organize a teleconference between GTOS Sponsors to discuss new SC members and the contribution of UNESCO to the GTOS initiative.	Due by: April 2006

## **Annex VI: B-GTOS Action Plan**

(Draft Resolution submitted by Bob Scholes and Tonie Putter; 26 January 2006.)

The GTOS Steering Committee (SC) mandates the establishment of a B-GTOS design team to develop a strategy and implementation plan that will enable the SC to make an informed decision regarding the long-term commitment of GTOS to terrestrial observation relating to biodiversity in its broad sense. Specifically, the B-GTOS design team and process will:

1. be initiated within three months and submit a first draft strategy and implementation plan for consideration by fourth meeting of the SC;
2. consist of a group with no more than 10 members;
3. have representation such that:
  - it covers all the major aspects of biodiversity;
  - represent key users (notably the Conventions); and,
  - links to partner organizations.

The design team's composition and Terms of Reference will be circulated electronically to the SC for endorsement. The team will report to the SC, will be chaired by Bob Scholes and will be provided with operational support by the GTOS Secretariat.

The B-GTOS design team will propose both the scope of B-GTOS' activities and mechanisms by which it is to achieve its objectives; including the integration of innovative ways of biodiversity knowledge generation based on new technologies and participatory approaches to knowledge management.

Indicative budget and resources:

- an amount of \$(US)40,000; and,
- 50% of the time of one professional staff member or a person appointed by the GTOS Secretariat.

## **Annex V: Results to breakout sessions**

### **Breakout 1: Future direction and needs of GTOS**

- Be cross cutting
  - To engage in inter-panel & inter-organizational activities
  - To develop capacity for joint panel activities
  - To review multilateral environmental agreements for cross-cutting items
  - To develop a multi-panel based product within Africa as test of process of interaction and to produce high visibility product.
  
- Promote standards
  - To establish sets of standards and guidelines for use of data sets & GTOS name
    - For reports
    - For proposals
  - To further evolve the terrestrial framework of standards on variables within UNFCCC with a broader view toward other multi-national conventions
  - To take note of stock taking exercise in developing strategic plan
  
- Be recognized
  - To develop regional and national focal points and determine routes of access
  - To make better use of new opportunities within the web and internet
  
- Assist conventions
  - To endorse at an appropriate level of formality with conventions
    - Standards for observations
    - Outreach activities
  - To have GTOS, partners and sponsors facilitate and advise establishment of policy formative guidelines on national reporting of convention needs (esp. CBD and CCD)
    - GTOS takes on observer status at CCD
    - GTOS supports 2010 targets of CBD & takes on observer status

**Breakout 2: GTOS involvement and role in GEOSS**

Discussion with Jose Achache

- **Official** communications need to come from GTOS, not subsidiary bodies, but **unofficial direct** communication by panels is encouraged.
- Key is efficiency and keeping everyone informed
  - GTOS must get panel endorsement for issues that affect them
  - Panels must copy GTOS on any direct communications
- GTOS communications to GEO *must not* be packaged and confused with FAO submissions.

Panel contribution to the Task Matrix

4 approaches that can be used in response:

- **Lead or co-lead**
  - because they are already doing this on an ongoing basis
  - have comparative advantage over other organizations
- **Lead if** we secure supplemental funding
- **Contribute to tasks** , typically because we are already doing it
- **Suggest other** organisations to be considered as lead or contributing.

Note: Lead task input < 10 lines text, contributing tasks > 5 lines

Proposed Lead Tasks

(to be confirmed by Panel Chairs)

All are multiyear: start in 2006. Some need funds.

- AG-06-04** Forest cover change - standardized classifications, harmonization
- AR-06-09** Advocate continuity of Landsat-equivalent remote sensing.
- AG-06-03** Global 1 km land cover

Potential Contributing Tasks

D1-06-13 Fire warning and monitoring	US-06-02 Communities of Practice in fire, forests, biodiversity, coasts
D1-06-12 Capacity building irt fire disaster management	D1-06-05 Coastal Observing system products
EC-06-02 Ecosystems Classification Task Force	WA-06-01 Water observations – RS and <i>in-situ</i> OS (GTN-H)
EC-06-03 Harmonisation of observation methods/standards	WA-06-04 Catchments and land cover (GTN-H)

D1-06-09 Meteorological geostationary satellites for fire	WA-06-05 Global <i>in situ</i> water observations (GTN's)
CL-06-03 Terrestrial observations for climate	EC-06-06 Networks for ecosystem <i>in situ</i> observations
EC-06-01 Carbon observations	EC-06-07 Inventory of archived data for ecosystems

Resolution: Any submitted GEOSS tasks that commit GTOS panels need to be endorsed by the panels themselves.

## **Breakout 3: Land cover and related issues**

### **Land use mapping and monitoring**

- LU highly relevant for policy issues of land cover.
  - Key need to link land surface attributes and people.
  - Merging *in situ* data (such as household data) with spatial data.
- Need to establish a widely acceptable legend
  - Workshop with GLP concerning LCCS forthcoming
    - but also other burgeoning projects who will need to be consulted (Global Environmental Change and Food Systems) plus getting buy-in from the Panels of GTOS.
- Any legend needs to include a measure of intensity of LU.
  - Need for knowledge of prior land use to understand land use legacies and intensity.
- Should be relevant to viability of short- and long-term land uses.
- Also relevant to land potential and sustainability.

### **Approach for global LU products**

1. Get agreement on the legend.
2. Distinguish between low-intensity vs. high-intensity LU
  - Everywhere on Earth has some level of land usage.
  - Convergence of evidence from existing sources plus use of Landsat data
3. Map the obvious high-intensity uses first, using Landsat-class observations.
  - Mechanized agriculture.
  - Pivot irrigation and other irrigation types.
  - Tropical plantations.
  - Deforested areas.
4. Urban areas and infrastructure (roads, dams, power lines)
5. Using 1-4 we can then identify residual areas where *in situ* knowledge plus ultrafine resolution sources are required.

### **Other sources of information to assist LU discrimination**

- Crop production
- Livestock densities
- Fertilizer use
- Levels of mechanization
- Infrastructures (roads, dams...)
- Logging rates, including selective logging.

### **Landsat continuity**

- Need for a mid-decadal Landsat-class global collection
  - Equivalent to Long Term Acquisition Plan (LTAP) of Landsat 7.
- Landsat 5 may provide for 50% plus of land area
  - Using receiving stations (including reactivated ones).
- Leaves major gaps that can potentially be filled by data from other satellites
  - Much of Africa, West Asia, Northern Russia.
- Need to decide on min. acceptable properties of these.
- Technical specs (spec bands, spatial resolution, radiometric resolution, geometric fidelity)
- Data availability
  - Especially in relation to data policy
  - Open sharing essential
- GEO should take lead (system of systems) working with CEOS with scientific advice.

### **Future Landsat-class observations**

- Many obvious improvements in capabilities can be readily identified.
- Increased frequency of data collection –say every 8 days, 4 days, 2 days, daily
  - Possibly by using GPM (Global Precipitation Mission) model, where different countries contribute components.
  - Different agencies agree to launch missions occupying orbits to achieve desired frequencies – do not have to be launched simultaneously.
  - Data policy likely to be a significant issue
- Thermal data – no plans to provide these by US or anyone else at 100m or better.

### **Biomass**

- Main current approaches
  - Scaling up from ground observations
  - Use standard equations relating to ecosystems or and cover types.
  - InSAR
    - Need to establish the acquisition strategy that our communities need.
    - Still being refined.
  - Lidars
    - Technology still under development
    - Lot of potential demonstrated from aircraft.
- Ensure that agencies know how important biomass is as a property to be monitored.
- Integrate with disturbance data for C release: fires, pests...

#### 4. Revisiting the GTOS implementation

Task: The group briefly reviewed the 1998 GTOS Implementation Plan, focusing on: Chapter V (Programme Elements), Chapter VI (GTOS Implementation) and Summary of Actions (timeline for 5 years).

The 1998 IP was an important initial start for GTOS, but context (institutional, global) has greatly changed since when it was written (during 1995 – 98, post Rio) e.g. WFS, WSSD, MDGs, 2000+5; also IGOS & GEOSS since. This poses new demands and requirements.

In addition to the Conventions' needs for global & national reporting:

- GTOS must take account of MDGs #1 and #7 (poverty and environment);
- Sustainable Development Initiatives e.g. CSD, National SD Commissions; and links to Local Agenda 21 needs (developed & developing countries);
- Need to consider environment, social & economic dimensions.

*Note: There are gaps in environmental statistics needed by CSD that could not be met by UN Statistics Division (and UNEP) – could this be an area for GTOS to also explore?*

Programme development section of Chapter V:

Under policy development: two of six policy areas (and related actions in Chapter VI) singled out for attention:

##### a) Societal Data for GTOS (policy & implementation)

The GTOS IP programme implementation actions also include: Developing a joint panel on socio-economic aspects (re identifying socio-economic variables needed for interpretation of global change & ways in which NR data be used in SE accounting effects):

- Little work by GTOS on this so far (note also LOICZ/ IGBP effort - no real answers yet); but note past GTOS support to BRIM.
- GTOS should take clearer lead on social and economic dimensions of data & products in future (re Driving Forces; State; Impacts; Societal Response framework)
- Need to embed social and economic expertise into GTOS structure: within Secretariat and reflected in SC membership profile.
- No need for panel; more effective thru recourse to Co-sponsor's in-house expertise e.g. FAO SD/ES departments; or Open Area Group (OPAGs) approach of WMO, plus workshops.

##### b) Data and Information release/ management policy

The GTOS IP programme implementation actions also include: Facilitating data distribution and access; setting up of standing panel on data and information release; panel on scales/ scaling; and establishing working groups on data management and information:

- There is a gap here in actual implementation. GTOS should define a data access & distribution policy across its various themes.
- Policy should focus on facilitating integration of different sources, types, & scales of data & products; and end users contact. Reconsider how the GHOST tiers could be operationalized in GTOS?
- Also need to build partnership on this with other co-sponsors
- Will not require panel – but Secretariat to assume advocacy & facilitation role e.g. re SDI (Spatial Data Infrastructure) initiatives (and without getting tangled up in controversial conventions); the OPAG approach may also be considered.

Worth exploring how to support custodianship aspects on some key datasets? Shades into issue of TEMS enhancement and overall concept (with reference to functionality of other sites e.g. GEWEX/ ISLSCP II – with GRDC & UNH datasets?); new technology on web services.

c) Review the five GTOS issues of Global Concern:

- Changes in land quality;
- Availability of fresh water resources;
- Loss of biodiversity;
- Climate change;
- Impacts of pollution and toxicity.

The first four issues are still valid, but need much more emphasis & efforts, especially on freshwater resources). GTOS also needs to complement the (mainstream) areas of:

- UNEP (on vulnerability assessment)
- - UNESCO (IHP, ground water, IGRAC, G-wadi, ICAM etc) - WMO (Hydrology & Water Resources programme/ Commission on Hydrology/ also GTNet-H).
- FAO's (AQUASTAT & others)

Also new statement on Agriculture (GEOSS societal benefit area):

- Agricultural meteorology (with WMO)
- Soil Moisture (agro-met stations/ terrestrial network)
- International Agricultural Assessment of Science & Technology for Development ?
- (UNEP/ICSU, UNESCO, FAO, WB partnership)

*As for impacts of pollution & toxicity, these could be dealt with/ subsumed under the land, water, biodiversity and climate issues. Observations include in-situ systems. Link to societal data issue above.*

d) Capacity Development:

There is need to coordinate with/dovetail into some sponsors mainstream activities in capacity building. For example UNEP has capacity building remit; WMO under its WCP (World Climate data and monitoring programme); UNESCO's biodiversity initiatives.