

**Sub-task Number:** AR-09-03a

**Sub-task Title:** Global Terrestrial Observations

**Overarching Task:** Advocating for Sustained Observing Systems

**Area:** ARCHITECTURE

**Relevant Committee:** ADC

**Related Targets:** (to be included in 2009)

**Sub-task Definition** (as given in the 2009-2011 Work Plan):

Develop intergovernmental mechanisms for coordinating terrestrial observations needed for climate studies and forecasting. Develop a framework for the preparation of guidance materials, standards, and reporting guidelines for terrestrial (including land-coast interface) observing systems for climate and associated data, metadata, and products to expand the comprehensiveness of current networks and facilitate exchange of data.

**Leads** (GEO Member or PO, Entity carrying out the work, Contact: e-mail):

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**Motivation/Background**

Globally consistent sets of observational data are needed to be able to attribute the causes of climate change, analyse the potential impacts, evaluate the adaptation options and enable characterization of extreme events such as floods, droughts and heat waves. Without such baseline data it will not be possible develop the products needed by policy and other stakeholders.

The climate observing system in the terrestrial domain is, however, still poorly developed, while at the same time increasing significance being placed on terrestrial data for impact, adaptation and mitigation activities. The precise quantification of the rate of climate change also remains important to determine whether feedback or amplification mechanisms, in which the terrestrial surface plays an important role, are operating within the climate system.

The Global Terrestrial Observing System (GTOS) is supporting its Sponsors (FAO, ICSU, UNEP, UNESCO and WMO) and the broader stakeholder community to address issues of climate change and climate variability, especially with regard to its effects on food security, the environment and sustainable development. The GTOS Secretariat, with the assistance of its Panels, is also supporting the observational requirements of the UNFCCC, in particular the development of possible mechanisms for a terrestrial framework and assisting in the implementation of the 13 terrestrial Essential Climate Variables (ECVs), including the assessment of the status of available standards, protocols and methodologies. These terrestrial (with oceanic and atmospheric) ECVs were originally identified in the implementation plan developed by GCOS and its partners as the observations that are currently feasible for global implementation, and have a high impact on the requirements of the UNFCCC and other stakeholders.

**Outputs** (e.g. products and services which result from the activities of the Task/sub-task; outlined in the form of deliverables with timelines)

Planned:

- |           |  |
|-----------|--|
| June 2009 | Submit to UNFCCC SBSTA 30 detailed report for a UN/ISO type mechanism and the final assessment reports on available standards for the 13 terrestrial ECVs. |
| Dec 2009  | Development of work plans for the 13 terrestrial ECVs to address the recommendations of the technical reports.   |

*Produced (current status):*

Dec 2007	UNFCCC COP and SBSTA 27 to review progress and make recommendations on the framework and standards activities.
May 2007	Submission of status reports to UNFCCC SBSTA 26 session
April 2007	Status reports on possible framework mechanisms and available standards submitted to UNFCCC.
Dec 2007	Reporting to UNFCCC SBSTA 27 <sup>th</sup> Session, Bali, Indonesia.
Dec 2008	Submission of final framework mechanism proposal and draft reports submission and assessment of standards at UNFCCC SBSTA 29 <sup>th</sup> Session, Poznan, Poland.

*Activities (operations or work processes through which resources are mobilized to produce specific outputs; outlined in the form of milestones including timelines)*

*Planned: ...*

*Progress (current status): ...*

1. GEO members endorse the recommendations of the GTOS/GCOS report in November, 2005 to the UNFCCC COP on the establishment of a proposed mechanism for the creation of international standards for global terrestrial observations.
2. Informed by the activities of the Climate Data Task Force (see Task CL-06-02), ensure that the data exchanges agreed upon in that task adequately cover the data requirements for the terrestrial sector.
3. Propose a structure for an intergovernmental mechanism for coordinating terrestrial climate observations.
4. SBSTA has welcomed the efforts by the GTOS Secretariat to develop a framework for the preparation of guidance materials, standards and reporting guidelines for terrestrial observing systems for climate and encouraged the GTOS to continue its work. It also called on the GTOS Secretariat to also assess the status of the development of standards for each of the essential climate variables in the terrestrial domain. The SBSTA invited the GTOS secretariat to report on its progress by SBSTA 26 (May 2007).
5. Web pages created for the framework activities and the assessment of available standards (see links below). GTOS submitted status reports and made a statement to SBSTA 27 (Dec 2007, Bali, Indonesia) on the importance of the ECVs, the need for standards and harmonized observations and the need to support the observational networks. SBSTA welcomed the progress made on the assessment of the standards and requested that the work be completed. In addition, SBSTA requested that GTOS develop a final framework proposal following a number of criteria and using existing institutional bodies and processes, where appropriate. Progress should be reported to SBSTA at its twenty-ninth session (December 2008).
6. A summary report has been developed on the importance and the observational status of the 13 terrestrial Essential Climate Variables (ECVs): see [www.fao.org/gtos/doc/pub52.pdf](http://www.fao.org/gtos/doc/pub52.pdf)
7. Progress report on the terrestrial framework and draft copies of the assessment of the availability of standards, methods and protocols for the 13 terrestrial ECVs have been submitted to UNFCCC SBSTA 29, 1-12 December, Poznan, Poland.

*Resources (indication of resources – e.g. financial, human – contributed by GEO Members or Participating Organizations to produce outputs)*

No contribution from GEO Trust Fund.

Financial contributions from FAO.

In kind contributions from institutions listed in table below.

**Architecture and Data Component**

1) Please briefly describe any task-related Earth observation resources (data set, system, website/portal) and any related Web Service interfaces that are contributed to GEOSS. State whether these items are or will be registered with the GEOSS Component and Service Registry for access via the GEO Web Portals, and whether any associated standards or other interoperability arrangements will be registered in the Standards and Interoperability Registry.

2) Please also describe what data and information your activity/system needs that you would request to be accessible through the GEOSS Common Infrastructure.

**Capacity Building Component**

(capacity building is defined to include the development of capacity related to: (i) Infrastructure and technology transfer (Hardware, Software and other technology required to develop, access and use EO); (ii) Individuals (education and training of individuals to be aware of, access, use and develop EO) and (iii) Institutions – building policies, programs & organizational structures to enhance the value of EO data and products).

1) In accordance with the above definition does this Task have a capacity-building component? If so, please provide a short description of this component including a description of end users.

Currently no but a capacity-building component should be developed once standards, protocols and guides have been developed.

2) Have any additional CB needs for this Task been identified? Please provide a short description.

No

**User Engagement Component**

(please briefly describe to what extent end users are engaged in this Task and influence the nature of the outputs produced)

End users have been involved in the review and assessment process on available standards in addition reports are submitted to delegations of the UNFCCC at the COP conferences.

**Science and Technology (S&T) Component**

1) Please briefly describe the elements of scientific research or technological development contained in this Task.

2) In relation to the S&T component(s) of this task, please describe gaps, priorities, continuity needs, barriers, scientific expertise and additional resource needs (this information will be used for developing a gaps and needs assessment in Task ST-09-01)

**Members and POs' Contributions to Outputs and Activities above:**

(Input is optional. This section gives the chance to Members and POs to provide more details (3-5 lines) on their individual activities, making a clear connection with the Outputs and Activities outlined above).

**Germany**

University Hohenheim, Institut für Physik und Meteorologie: Supporting the definition of science homogeneity and validation requirements for weather observing systems.

We are very interested to contribute in this task by data collection and quality control. We think that our experience in handling and quality control of large European data sets in connection with Research and Development Projects of the World Weather Research Programme will be very beneficial for this task.

**Japan**

JAMSTEC will maintain the following observation systems:

- 1) Land hydrological experiment observation system in Eastern Siberia and Mongolia.
- 2) Hydro-meteorological observation System including radar, GPS, stable isotope, precipitation network in Asia and Western Pacific Region, related to MAHASRI Project.

**Portugal**

University of Beira Interior /Instituto D. Luíz (UBI/IDL): We can contribute in terms of identifying and connecting existing and new global and regional (special focus in Africa) geodetic networks (GPS, tide-gauges).

**UK**

CTCD, Sheffield: member of TOPC hence advise GTOS on terrestrial observations for climate.

**GCOS**

GCOS/GTOS Terrestrial Observation Panel for Climate: Ensure that needs for terrestrial datasets for climate are met.

**EC**

EU-project HYPOX (WP7): build oxygen sensing capacities in land locked water bodies in compliance with GEOSS standards (interoperability, data and metadata standardization, archiving, and sharing)

**EEA**

Conference on global environmental monitoring scheduled for 13-15 May 2009 in Copenhagen.

**Participation (Table to be filled in 2009):**

Type	Member or PO	Representing	Contact Name	EmailAddress
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