# Terms of Reference
# Global Geodetic Observing System (GGOS)
## 2008

*(Terms of Reference adopted by the IAG Executive Committee at the IAG EC Meeting in San Francisco, December 2008)*

## ***Preamble***

The proposal for the Global Geodetic Observing System (GGOS) was developed by the GGOS planning group between 2001 and 2003 according to the Bylaws of the International Association of Geodesy (IAG). The proposal was accepted by the IAG Executive Committee and the IAG Council at their meetings during the XXIII IUGG General Assembly in Sapporo in July 2003. GGOS was endorsed by the IUGG through Resolution No. 3 at the same General Assembly. During the IAG General Assembly held at Cairns in August 2005, the GGOS implementation plan was accepted as a draft, the Chair (Prof. Ch. Reigber) retired, and the IAG appointed a new Chair (Prof. M. Rothacher) and two supporting Vice-Chairs (Ms. R. Neilan and Prof. H.-P. Plag) to lead the next phase of GGOS development through 2009.

Changes in the IAG Bylaws in 2007 resulted in GGOS being recognized as an integral component of IAG along with Services and Commissions. This transformed the status of GGOS from that of an IAG Project to an IAG Component. Specific to the GGOS is IAG Bylaw number 15.

In July 2008, four Calls for Participation were issued for the establishment of new components of GGOS (Coordinating Office, Bureau for Standards and Conventions, Bureau for Networks and Communications and Bureau for Satellite Missions) leading also to modifications in the GGOS Terms of Reference.

These revised GGOS Terms of Reference are to be approved by the IAG Executive Committee at the IAG Executive Meeting in San Francisco, December 2008.

GGOS provides the basis on which future advances in geosciences can be built. By considering the Earth system as a whole (including the geosphere, hydrosphere, cryosphere, atmosphere and biosphere), monitoring Earth system components and their interactions by geodetic techniques and studying them from the geodetic point of view, the geodetic community provides the global geosciences community with a powerful tool consisting mainly of high-quality services, standards and references, and theoretical and observational innovations.

According to the IAG Bylaws:

> *"The Global Geodetic Observing System works with the IAG components to provide the geodetic infrastructure necessary for monitoring the Earth system and global change research."*

***GGOS Mission***

The mission of GGOS is to advance geodetic observing methods for Earth and planetary system science and applications by:

- defining the geodetic infrastructure needed by science and society;
- advocating for the establishment and maintenance of this geodetic infrastructure;
- improving the quality and accessibility of geodetic observations and products;
- coordinating interaction between the IAG Services, Commissions, and stakeholders; and
- educating the scientific community about the benefits of geodetic research and the public about the fundamental role that geodesy plays in society.

***GGOS Goals and Tasks***

- Provide the scientific basis and coordinate the necessary infrastructure as geodesy's significant contribution to Earth sciences and other scientific and application disciplines to assert the position of geodesy in geosciences.
- Collect and archive, through the Services, Commissions and their participating organizations, geodetic observations, products and models, and ensure their reliability, consistency and availability.
- Maintain the stability of and provide open access to the geometric and gravimetric reference frames as well as time series of data and products, by ensuring the generation of uninterrupted state-of-the-art global observations related to the three fundamental aspects of geodesy, namely *geometry and kinematics, Earth orientation and rotation*, and the *gravity field and its variability.*
- Ensure the consistency between the different geodetic standards used in the Services and the geosciences community, in agreement with the international unions.
- Identify and promote a consistent set of geodetic products and establish the requirements concerning the products' accuracy, time resolution, and consistency; target at an overall

accuracy and consistency of GGOS products as required for the most demanding applications.

- Identify IAG service gaps and develop strategies to close them.
- Improve and integrate different techniques, different models, and different approaches in order to achieve a better consistency, long-term reliability and understanding of geodetic, geodynamic and global change processes.
- Integrate the work of IAG and emphasize the complementarity of the broad spectrum of geodetic research and application fields.

In order to accomplish its mission and goals, GGOS depends on the IAG Services and Commissions. The Services provide the infrastructure and products on which all contributions of GGOS will be based. The IAG Commissions provide expertise and support for the scientific development within GGOS. In summary, GGOS is IAG's central interface to the scientific community and to society in general.

IAG is a Participating Organization of the Group on Earth Observations (GEO). GGOS acts on behalf of the IAG in GEO and actively contributes to the Global Earth Observation System of Systems (GEOSS).

GGOS addresses relevant science issues related to geodesy and geodynamics in the 21st century, but also issues relevant to society (including but not limited to management of natural resources, natural hazards, global risk management, monitoring of climate change and related phenomena, ocean forecasting and sea level projections, early warning of severe storms, tsunamis, and other hazards, and space weather). It has an ambitious agenda, requiring a strong cooperation within the geodetic and Earth science communities, and externally, to related endeavors and communities.

The GGOS2020 Book will serve as the basis for the implementation of GGOS as the observing system of IAG, and will be used to derive working plans. The GGOS2020 Strategy Document, a short summary of the GGOS Book, will become an important document for presentation to potential future partners, sponsors,clients, and policy makers.

***Overview of GGOS Structural Elements***

The organizational structure of GGOS is comprised of the following key elements:

1. **GGOS Steering Committee** – is the central oversight and decision making entity and represents the IAG Services and Commissions.
2. **GGOS Executive Committee** – serves at the direction of the Steering Committee to accomplish day-to-day activities of GGOS tasks.
3. **GGOS Science Panel** – advises the Steering Committee and represents the geodetic and geoscience community.
4. **IAG Services, Commissions and relevant Inter-Commission Committees** – are the building blocks upon which GGOS is built.
5. **GGOS Working Groups** – address overarching issues common to several or all IAG components, and are a mechanism to bring the various activities of the Services and Commissions together, or to link GGOS to external organizations (especially GEO and its related committees and working groups).
6. **GGOS Coordinating Office** – coordinates the work within GGOS and supports the Chairs, the Executive Committee and the Steering Committee**.**
7. **Bureau for Standards and Conventions** – tracks, reviews, examines, evaluates all actual standards, constants, resolutions and conventions adopted by IAG or its components, and recommends its further use or proposes the necessary updates.
8. **Bureau for Networks and Communications** – develops a strategy to design, integrate and maintain the fundamental geodetic network of co-located instruments including communication and data flow.
9. **Bureau for Satellite Missions** – assures the integrity and continuity of the contributions from satellite missions to the GGOS, working in close partnership with the space agencies.

***Details of the Structure of GGOS***

**1. GGOS Steering Committee**

The Steering Committee is the decision making body of GGOS with 2/3-majority vote required for changes to the Terms of Reference. Other decisions are, as far as possible, based on consensus. Decisions requiring a vote are decided by simple majority of the votes cast. The quorum for a valid vote is participation of one half of the voting members of the Steering Committee. Votes may be held at meetings or by appropriate electronic means at the discretion of the GGOS Executive Committee. The Steering Committee will meet at least once yearly.

Steering Committee Members (all voting members except those indicated as non-voting):

| | | |
|---|---|---|
| GGOS Chair (votes in case of a tie) | 1 | |
| Vice-Chairs | 2 | |
| Chair of GGOS Science Panel | 1 | |
| Chairs of GGOS Working Groups* | 1 | or more (non-voting) |
| Head, Coordinating Office | 1 | (ex-officio) |
| Directors of Bureaus* | 3 | (ex-officio) |
| GGOS Portal Manager | 1 | (ex-officio, non-voting) |
| IAG President | 1 | (ex-officio) |
| IAG Commission Representatives* | 4 | |
| Service Representatives* | 10 | or more (1 per service) |
| Members-at-Large | 4 | (or more) |
| Total | 29 | (or more) |

* Each primary representative designates one fixed alternate person who can assume the responsibilities (including voting where applicable) when the primary delegate can not attend.

The chair of the GGOS Steering Committee is determined according to the IAG Bylaws. The Chair of the GGOS Steering Committee is also known as the GGOS Chair. The two Vice-Chairs of the GGOS Steering Committee are elected by the Steering Committee (see Executive Committee below).

The Members-at-large are to balance the Steering Committee with regard to geographical region or unique capability. The candidates for the four or more positions on the Steering Committee are nominated by the Steering Committee in consultation with the GGOS community. The Chair appoints an Election Committee to organize the voting process and to ensure availability of the nominated candidates. The Election Committee presents the final list of nominations for the Members-at-large to the Steering Committee for a vote.

**2. GGOS Executive Committee**

The GGOS Executive Committee (EC) is composed of the following members:

| | |
|---|---|
| GGOS Chair | 1 |
| Vice-Chairs | 2 |
| EC Members-at-Large | 3 |
| Total | 6 |

The two Vice-Chairs and the three EC Members-at-Large are elected for four-year terms (staggered by two years for the Vice-Chairs) and can be elected for a second term. The candidates

for the Vice Chairs and the EC Members-at-Large are nominated or self-nominated by the current members of the Steering Committee. The candidates must be current members of the SC. The Chair appoints an Election Committee to organize the voting process and to ensure availability of the candidates. The Nomination Committee presents the final list of nominations to the Steering Committee for a vote. First the two Vice Chairs are elected and then the three EC Members-at-Large.

The Director of the Coordinating Office, the Chair of the GGOS Science Panel, and the President of IAG are permanent guests at meetings of the Executive Committee. Other observers may be invited to attend EC meetings, usually teleconferences, as needed.

**3. GGOS Science Panel:**

The GGOS Science Panel is an independent and multi-disciplinary advisory board that provides scientific support to the GGOS steering and coordinating entities.

The GGOS Science Panel is composed of:

Independent and multi-disciplinary Science Panel members: 7-12 members

Members are based on recommendations from the GGOS community and candidates are approved by the Steering Committee. The Science Panel will elect its own Chair to be approved by the Steering Committee.

**4. Services, Commissions and Inter-Commission Committees:**

GGOS works with these IAG components to provide the geodetic infrastructure necessary for monitoring the Earth system and global change research. GGOS respects the bylaws and terms of reference for these essential components. GGOS is built on the existing IAG Services and their products. GGOS is not taking over tasks of the existing, and well working IAG Services. GGOS will provide a framework for existing or future Services and strive to ensure their long-term stability.

**5. GGOS Working Groups***:*

GGOS Working Groups (WG) are established by the Steering Committee as needed. The chair of a WG is appointed by the Steering Committee. A charter for each WG will be prepared and approved by the GGOS Steering Committee. The members of WGs are nominated by the WG Chair and confirmed by the Steering Committee. GGOS Working Groups can be set up for limited periods of time or as standing Working Groups.

There is a specific GGOS WG for interfacing with GEO and GEOSS, denoted as GGOS Working

Group on GEO Relations.

**6. GGOS Coordinating Office:**

The GGOS Coordinating Office (CO) performs the day-to-day activities in support of GGOS, the Executive Committee, the Steering Committee and the Science Panel, and ensures coordination of the activities of the various components. The CO ensures information flow, maintains documentation of the GGOS activities and manages specific assistance functions that enhance the coordination across all areas of GGOS, including inter-services coordination and support for workshops. The CO in its long-term coordination role ensures that the GGOS components contribute to GGOS in a consistent and continuous manner and adhere to GGOS standards. The CO also maintains and manages the GGOS Web site and Portal. The GGOS Portal will be a unique access point for all GGOS products through a database of relevant metadata and Web services established according to international standards. The portal will also provide a route to the heterogeneous IAG Service/technique-specific information systems.

**7. Bureau for Standards and Conventions:**

The Bureau for Standards and Conventions keeps track of the strict observation of adopted geodetic standards, standardized units, fundamental physical constants, resolutions and conventions in all official products provided by the geodetic community. It reviews, examines and evaluates all actual standards, constants, resolutions and conventions adopted by IAG or its components, and recommends its further use or proposes the necessary updates. It identifies eventual gaps in standards and conventions and initiates steps to close them with, e.g., resolutions by the IUGG and/or IAG Councils.

**8. Bureau for Networks and Communications:**

The Bureau for Networks and Communications develops a strategy to design, integrate and maintain the fundamental geodetic network of co-located instruments and supporting infrastructure in a sustainable way to satisfy the long-term (10 - 20 years) requirements identified by the GGOS Science Panel. Primary emphasis must be on sustaining the infrastructure needed to maintain the evolving global reference frames, while at the same time ensuring the broader support of the scientific applications of the collected data.

**9. Bureau for Satellite Missions:**

The Bureau for Satellite Missions is responsible for assuring the integrity and continuity of

the contributions from satellite missions to the GGOS. It acts as an interface between the geodetic community and the space agencies, ensuring that the geodetic requirements of various satellite missions are met, and facilitates the mission concepts required for GGOS. The Bureau maintains a record of the state of the space-based infrastructure for geodetic purposes. Together with the GGOS Science Panel, it identifies gaps in space-borne components of GGOS. Together with the other GGOS components, it facilitates the development of concepts for future satellite missions relevant to the goals and mission of GGOS.

These terms of reference can be changed by the GGOS Steering Committee with the new ToR becoming effective after approval by the IAG Executive Committee.