Terms of Reference
Global Geodetic Observing System (GGOS)

2018

Revision of the GGOS Terms of Reference
Adopted by the IAG Executive Committee
10 December 2018

Section 1: GGOS Background

1.1 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.

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 GGOS are IAG Bylaw numbers 1(d) and 15.

During 2009-2016, and again in 2017, revisions to the structure of GGOS were discussed leading to these 2018 Terms of Reference, primarily to update changes to the organizational structure of GGOS.

According to the IAG Bylaws 1(d):

"The Global Geodetic Observing System (GGOS) works with the IAG Services to provide the geodetic expertise and infrastructure necessary for the monitoring of the Earth system and global change research."

1.2 GGOS Vision

ADVANCING OUR UNDERSTANDING OF THE DYNAMIC EARTH SYSTEM

BY QUANTIFYING OUR PLANET'S CHANGES IN SPACE AND TIME.

1.3 GGOS Mission

To provide the observations needed to monitor, map, and understand changes in the Earth's shape, rotation, and mass distribution.

To provide the global geodetic frame of reference that is the fundamental backbone for measuring and consistently interpreting key global change processes and for many other scientific and societal applications.

To benefit science and society by providing the foundation upon which advances in Earth and planetary system science and applications are built.

We live on a dynamic planet in constant motion that requires long-term continuous quantification of its changes in a truly stable frame of reference. GGOS and its related research and IAG services will address the relevant science issues related to geodesy and geodynamics in the 21st century, but also issues relevant to society (global risk management, geo-hazards, natural resources, climate change, severe storm forecasting, sea level estimations and ocean forecasting, space weather, and others). It is an ambitious program of a dimension that requires strong cooperation within the geodetic, geodynamic and geophysical communities, and the establishment of strong links to other international organizations. GGOS will provide this integration at the highest level, in service to the technical community and society as a whole.

Section 2: GGOS Strategic Direction

2.1 Overarching Strategic Areas of GGOS

The GGOS Goals, Objectives, and Outcomes are built around four strategic areas that are directly attributable to the established GGOS goals. These areas were established in the 2011 Strategic Plan and continue to be relevant to the activities and future efforts of GGOS in subsequent strategic plans. The strategies are related to each goal but are overarching in nature—just as each goal acts in support of other goals, each strategy has a role in all of the goals.

1. **Geodetic Information and Expertise** *(intangible assets)*
   GGOS outcomes will support the development and maintenance of organizational intangible assets, including geodetic information and expertise. The development of this strategic area will benefit all other goals and objectives.

2. **Global Geodetic Infrastructure** *(advocacy for, and sustenance of, tangible assets)*
   Development of, advocacy for, and maintenance of existing global geodetic infrastructure is in direct support of each GGOS goal.

3. **Services, Standardization, and Support** *(internal and external coordination)*
   Optimal coordination, support, and utilization of IAG services, as well as leveraging existing IAG resources, are critical to the progress of all GGOS goals and objectives.

4. **Communication, Education, and Outreach** *(public relations, external education and outreach, internal continuing education and training)*
   Marketing, outreach, and engagement are critical elements for sustaining the organizational fabric of GGOS.

2.2 IAG Services, Commissions, and Inter-Commission Committees in Support of GGOS

In order to accomplish its mission and goals, GGOS depends on the IAG Services, Commissions and Inter-Commission Committees. The Services provide the infrastructure and products on which all contributions of GGOS are based. The IAG Commissions and Inter-Commission

Committees 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).

The GGOS 2020 Book[1] serves as the initial basis for the implementation of GGOS, as the observing system of IAG, and is used to derive work plans based on its recommendations.

1 *Global Geodetic Observing System: Meeting the Requirements of a Global Society on a Changing Planet in 2020, H.-P. Plag and M. Pearlman (editors), Springer, 2009*

Section 3: GGOS Structure

3.1 Overview of Key GGOS Elements

3.1.1 Structural Elements

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

GGOS Consortium—is the collective voice for all GGOS matters.

GGOS Coordinating Board—is the central oversight and decision-making body of GGOS.

GGOS Executive Committee—serves at the direction of the Coordinating Board to accomplish day-to-day activities of GGOS tasks.

GGOS Science Panel—advises and provides recommendations to the Coordinating Board relating to the scientific content of the GGOS 2020 book and its updates; and represents the geodetic and geoscience community at GGOS meetings.

GGOS Coordinating Office—coordinates the work within GGOS and supports the Chair, the Executive Committee and the Coordinating Board; and coordinates GGOS external relations.

GGOS Bureau of Products and Standards—tracks, reviews, examines, evaluates all actual standards, constants, resolutions and products adopted by IAG or its components and recommends their further use or proposes the necessary updates.

GGOS Bureau of Networks and Observations—develops a strategy to design, integrate and maintain the fundamental geodetic infrastructure including communication and data flow; monitors the status of the networks and advocates for implementation of core and other co-located network sites and improved network performance.

GGOS Affiliates—are national or regional organizations that coordinate geodetic activities in that country or region. GGOS Affiliates allow increased participation in GGOS, especially by organizations in under-represented areas of Africa, Asia-Pacific, and South and Central America.

GGOS Committees, Working Groups and Focus Areas (formerly known as Themes)—address overarching issues common to several or all IAG components, and are a mechanism to bring the various activities of the Services, Commissions and Inter-Commission Committees together, or to link GGOS to external organizations. Focus Areas are cross-disciplinary and address specific focus areas where GGOS contributors work together to address broader and critical issues.

3.1.2 Fundamental Supporting Elements of GGOS

IAG—promotes scientific cooperation and research in geodesy on a global scale and contributes to it through its various research bodies. GGOS is the Observing System of the IAG.

IAG Services, Commissions and Inter-Commission Committees—are the fundamental supporting elements of GGOS. GGOS works with these IAG components to provide the geodetic infrastructure that is necessary for monitoring the Earth system and for global change research. GGOS, built upon the existing IAG Services and their products, will provide a framework for existing or future Services and will strive to ensure their long-term stability.

GGOS Inter-Agency Committee (GIAC)—was a forum that sought to generate a unified voice to communicate with Governments and Intergovernmental organizations (GEO, CEOS, UN bodies) in all matters of global and regional spatial reference frames and geodetic research and applications. GIAC was dissolved when the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) Working Group on the Global Geodetic Reference Frame (GGRF) was elevated to the permanent Subcommittee on Geodesy of the UN-GGIM.

United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)—led by United Nations Member States, UN-GGIM aims to address global challenges regarding the use of geospatial information and to serve as a body for global policymaking in the field of geospatial information management.

UN-GGIM Subcommittee on Geodesy (SCoG)—provides an intergovernmental forum for cooperation and exchange of dialogue on issues relating to the maintenance, sustainability and enhancement of the Global Geodetic Reference Frame (GGRF).

3.2 Details of the Structure of GGOS

3.2.1. GGOS Consortium

The GGOS Consortium is the voice and essentially the large steering committee of GGOS. It reviews GGOS progress and activities and nominates and votes for the candidates for the elected positions on the GGOS Coordinating Board.

The GGOS Consortium is comprised of up to two designated representatives from each IAG Service, Commission, and Inter-Commission Committee and one representative from each GGOS Affiliate. The Chair of an IAG Service Governing or Directing Board, and the Director of the Central Bureau or Coordinating Office, as well as Commission and Inter-Commission Committee Presidents and Vice Presidents and Chairs of GGOS Affiliates may be those designated members.

However, no person may represent two or more components, and no one may have more than one vote. The presiding Chair of GGOS is ex-officio the Chair of the Consortium. GGOS Consortium decisions are based on consensus. Decisions requiring a vote are decided by simple majority of the votes cast. The quorum is met when at least fifty percent of members are present, but electronic voting is acceptable provided a quorum responds.

The Consortium is the nominating and electing body for the GGOS Coordinating Board. The Consortium will meet at least once a year. Observers may participate in meetings of the Consortium at the discretion of the Chair.

3.2.2 GGOS Coordinating Board

The Coordinating Board (CB) is the decision making body of GGOS. Decisions are based upon consensus, whenever possible. Decisions requiring a vote are decided by simple majority of the votes cast. The quorum for a valid vote is participation of fifty percent of the voting members of the Coordinating Board. Votes may be held in person at meetings, or by appropriate electronic means at the discretion of the GGOS Executive Committee. The Coordinating Board will meet at least once yearly, although twice yearly is preferable. Observers may participate in meetings of the Coordinating Board at the discretion of the Chair.

Coordinating Board Members

Voting members:

GGOS Chair (votes in case of a tie)	1
GGOS Vice-Chair	1
GGOS Science Panel Chair (ex-officio)	1
GGOS Coordinating Office Director (ex-officio)	1
GGOS Manager of External Relations (ex-officio)	1
GGOS Bureau Directors (ex-officio)	2
GGOS Affiliate Representatives (elected by the Consortium)	2
IAG President or designated representative (ex-officio)	1
IAG Service Representatives (elected by the Consortium)	4
IAG Commission and Inter-Commission Committee Representatives (elected by the Consortium)	2

Members-at-Large (elected by the GGOS CB)	3
Total Voting Members	**19**
Non-voting members:	
GGOS Committee and Working Group Chairs (ex-officio)	6
GGOS Focus Area Leads (ex-officio)	4
GGOS Web and Social Media Manager (ex-officio)	1
Immediate Past Chair of GGOS (ex officio)	1
Total Non-Voting Members	**12**

Total membership of Coordinating Board	**19 Voting Members**
	12 Non-Voting Members
	31 Total members

Chair

The Chair of the GGOS Coordinating Board is determined according to the IAG Bylaws. The Chair of the GGOS Coordinating Board is also known as the GGOS Chair. The GGOS Chair presides over meetings of the GGOS Consortium, Coordinating Board, and Executive Committee. The Chair is the principal spokesperson and representative of GGOS to the IAG and outside organizations.

Vice Chair

The Vice Chair of the GGOS Coordinating Board is elected by the Coordinating Board. The Vice Chair assists the Chair and serves as the Chair in the absence of the Chair or when a motion involving the Chair is being discussed.

Members-at-Large

Members-at-Large are invited to join the Coordinating Board in order to provide balance in representation of geographical regions or unique capabilities. The Chair, with the assistance of the Coordinating Office, appoints an Election Committee to organize the voting process and to ensure availability of the nominated candidates. The Election Committee then presents the final list of Members-at-Large candidates to the CB for a vote.

Appointment of the Chair and Election of Coordinating Board Members

The process for elections to the GGOS Coordinating Board will follow the four-year IAG General Assembly, which takes place during the IUGG General Assembly (see IAG Bylaws for more detail). Candidates nominated to serve on the Coordinating Board as IAG Service, Commission, and Inter-Commission Committee representatives must be members of the GGOS Consortium. Candidates nominated to serve on the Coordinating Board as GGOS Affiliate representatives must be members of the GGOS Affiliates. The CB elects the Vice-Chair of the GGOS CB by a vote. However, the GGOS Chair is elected by the IAG in consultation with the GGOS Coordinating Board.

3.2.3 GGOS Executive Committee

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

GGOS Chair	1
GGOS Vice-Chair	1
GGOS Coordinating Office Director	1
GGOS Manager of External Relations	1
GGOS Bureau Directors	2
Voting Members of the CB selected for EC membership	2
Total	**8**

Every other year, the GGOS Chair submits a list of his or her candidates for the two open EC member spaces to the CB for approval. These candidates must be voting members of the CB in order to be nominated to the EC.

The Immediate Past Chair of GGOS, the Chair of the GGOS Science Panel, and the President of IAG or designated representative are all permanently invited guests at meetings of the Executive Committee. Other observers may be invited to attend EC meetings (or teleconferences) as needed.

3.2.4 GGOS Science Panel

The GGOS Science Panel is an independent and multi-disciplinary advisory board that provides scientific support and guidance to the GGOS steering and coordination entities as requested. This support may include organization of relevant scientific sessions at conferences, workshops, and other events.

The IAG Commissions and Inter-Commission Committees each nominate two candidates and the GGOS Focus Areas each nominate one candidate to the Science Panel subject to approval by the CB. The CB may appoint additional Members-at-Large to the Science Panel in order to provide balance in representation of geographical regions or unique capabilities. The immediate past Chair of the Science Panel is a Member of the Science Panel.

The Science Panel will elect its own Chair to be approved by the CB.

3.2.5 GGOS Committees, Working Groups and Focus Areas

GGOS Committees and Working Groups (WG) are established by the Coordinating Board as needed. Working Groups are established for one 4-year period, Committees for longer periods of time. The Coordinating Board appoints their Chairs and prepares and approves their charters. The members of Committees and Working Groups are nominated by their Chairs and confirmed by the Coordinating Board.

Focus Areas are cross-disciplinary and are meant to consider gaps and needed future products. The GGOS CB approves the Focus Areas. The CB appoints Focus Area leads. Focus Areas outline their charter and propose plans to address the work that they will undertake.

3.2.6 GGOS Coordinating Office

The GGOS Coordinating Office (CO) performs the day-to-day activities in support of GGOS, the Executive Committee, the Coordinating Board, 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. The CO also maintains, manages, and coordinates the GGOS web presence and outreach.

The position of Manager of External Relations resides within the Coordinating Office. The GGOS Manager of External Relations coordinates GGOS engagement with external organizations such as the Group on Earth Observations (GEO), the Committee on Earth Observation Satellites

(CEOS), and the International Science Council (ISC) World Data System (WDS). The CB elects the Manager of External Relations by a vote.

3.2.7 Bureau of Products and Standards

The Bureau of Products and Standards keeps track of the strict observations of adopted resolutions, geodetic standards, standardized units, fundamental physical constants 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 ISO, ISC, IUGG, IAU, IAG and its components, and recommends further use or proposes the necessary updates. It identifies eventual gaps in standards and products, and initiates steps to close them with, e.g., resolutions by the IUGG and/or IAG Councils.

3.2.8 Bureau of Networks and Observations

The Bureau of Networks and Observations develops a strategy to design, integrate and maintain the fundamental infrastructure in a sustainable way to satisfy the long-term (10–20 years) requirements identified by the GGOS Science Panel. The Bureau advocates for implementation of core and other co-located network sites to satisfy GGOS requirements, monitors the present state of the networks and projects future status, and supports and encourages infrastructure critical for the development of data products essential to GGOS. 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. Coordinating and implementing the GGOS co-located station network is a key focus of the Bureau.

3.2.9 GGOS Affiliates

A GGOS Affiliate is a national or regional organization that coordinates geodetic activities in that country or region. GGOS Affiliates provide a forum for multi-technique, space-geodetic discussions, work to improve the quality of space-geodetic observations, and encourages the different agencies in that country or region that own, operate, and maintain the space-geodetic infrastructure there to collaborate with each other. To become a GGOS Affiliate, interested organizations submit an application to GGOS which is approved by the GGOS CB by a vote.

Section 4: Modification and Approval of Revisions

4.1 Changes to the GGOS Terms of Reference

These terms of reference can be modified by the GGOS CB with a two-thirds vote, and approval by the IAG Executive Committee.

The rules contained in the current edition of "Robert's Rules of Order Newly Revised" shall govern GGOS in cases to which they are applicable and in which they are not inconsistent with these Terms of Reference or any special rules that the GGOS CB may adopt.

4.2 Approval of the Terms of Reference

These Terms of Reference are submitted to the IAG for approval, 09 December 2018.