The International Association of Geodesy’s Global Geodetic Observing System

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The Three Pillars of Geodesy

Shape & Deformation

Rotation

Gravity & Geoid
The Three Pillars of Geodesy

Shape & Deformation

Rotation

Gravity & Geoid

2002 08
Geodetic Observing Systems

Positioning

- GNSS
  (Source: NASA)
- SLR
  (Source: NASA)
- DORIS
  (Source: NASA)
- VLBI
  (Source: NASA)
Geodetic Observing Systems

Positioning

Fig 8 GPS Time Series for ‘blsa’, Orange County Basin

(Drake et al., 2012)
Geodetic Observing Systems

**Imaging**

- TerraSAR-X  
  *(Source: EADS Astrium)*

- RADARSAT-2  
  *(Source: CSA)*

- COSMO-SkyMed  
  *(Source: ASI)*

- RISAT-1  
  *(Source: ISRO)*
Geodetic Observing Systems

Imaging

(Argus et al., 2005)
Geodetic Observing Systems

Gravity

GRACE
(Source: NASA/JPL)

SLR
(Source: NASA)

absolute gravimeter
(Source: Micro-g LaCoste)

superconducting gravimeter
(Source: GWR Instruments)
Geodetic Observing Systems

Gravity

http://grace.jpl.nasa.gov
Geodetic Observing Systems

Altimetry

OSTM
(Source: NASA)

CryoSat-2
(Source: ESA)

HY-2A
(Source: CNES)
Recent articles

17th International Symposium on Earth Tides
April 15-19, 2013, Warsaw, Poland

Satellite, Lunar, and Planetary Laser Ranging: Characterizing the Space Segment

ABLOS Conference on the Law of the Sea

Call for papers on Regional and Global Geod-based Vertical Datums

Geodesy In a Nutshell (NASA movie)

IAG History

The International Association of Geodesy celebrates its 150th Anniversary in 2012. In order to celebrate these memorable years, several documents focusing on the history of Geodesy and our Association will be published on the IAG Website throughout the year.

Please click on this link to read these pages.

For more information, please click here!
The Global Geodetic Observing System (GGOS)

GGOS is the Observing System of the International Association of Geodesy (IAG).

GGOS works with the IAG components to provide the geodetic infrastructure necessary for monitoring the Earth system and for global change research. It provides observations of the three fundamental geodetic observables and their variations, that is, the Earth's shape, the Earth's gravity field and the Earth's rotational motion.

GGOS integrates different geodetic techniques, different models, different approaches in order to ensure a long-term, precise monitoring of the geodetic observables in agreement with the Integrated Global Observing Strategy (IGOS).

GGOS provides the observational basis to maintain a stable, accurate and global reference frame and in this function is crucial for all Earth observation and many practical applications.

GGOS contributes to the emerging Global Earth Observing System of Systems (GEOSS) not only with the accurate reference frame required for many components of GEOSS but also with observations related to the global hydrological cycle, the dynamics of atmosphere and oceans, and natural hazards and disasters.

GGOS acts as the interface between the geodetic services and external users such as the Group on Earth Observation (GEO) and United Nations authorities. A major goal is to ensure the interoperability of the services and GEOSS. With this the geodetic community can provide the global geosciences community with a powerful tool consisting mainly of high quality services, standards and references, and of theoretical and observational innovations.

The GGOS Portal will provide a unique access point to all geodetic products. Thus, the Portal will emphasize Geodesy’s contribution to Earth Observation for assessing geohazards and reducing disaster. The Portal consists of the GGOS Web site and the portal itself, comprising geoportal components like a clearinghouse, a map viewer, and a metadata editor. The GGOS Portal is currently under development.

© GGOS (Pages still under development. Comments, suggestions and corrections are welcome and should be sent to the GGOS Coordination Office ggos_co@asi.it)
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Global Geodetic Observing System

GGOS Consortium
Representatives of IAG Scientific Services
- Int’l GNSS Service (IGS)
- Int’l VLBI Service for Geodesy and Astrometry (IVS)
- Int’l Laser Ranging Service (ILRS)
- Int’l Doris Service (IDS)
- Int’l Earth Rotation and Reference Systems Service (IERS)
- Int’l Gravity Field Service (IGFS)
- Int’l Geoid Service (IGeS)
- Int’l Gravimetric Bureau (BGI)
- Bureau International des Poids et Mesures (BIPM)
- Int’l Altimetry Services (IAS)
- Int’l Center for Earth Tides (ICET)
- Int’l Centre for Global Earth Models (ICGEM)
- Int’l Digital Elevation Model Service (IDEMS)
- IAG Bibliographic Service (IBS)
- Permanent Service for Mean Sea Level (PSMSL)

Representatives of IAG Commissions
- Reference Frames
- Gravity Field
- Earth Rotation and Geodynamics
- Positioning and Applications

Representatives of Other Entities
- Int’l Federation of Surveyors (FIG)
- Universities
- Research Organizations
- Space Agencies
- ICSU Bodies
- UN Bodies
- GEO

Theme 1: Unified Height System
Theme 2: Geohazards
Theme 3: Sea-Level Change, Variability and Forecasting

Oct. 2011
Hans-Peter Plag, University of Nevada, Reno, NV, USA; Michael Pearlman, Harvard Smithsonian Center for Astrophysics, Cambridge, MA, USA (Eds.)

Global Geodetic Observing System

Meeting the Requirements of a Global Society on a Changing Planet in 2020

With the provision of accurate reference frames and observations of changes in the Earth’s shape, gravity field and rotation, modern geodesy takes a fundamental role for improved understanding of geodynamics, geohazards, the global water cycle, global change, atmosphere and ocean dynamics, and it supports many societal applications that depend on accurate geo-referencing. To advance geodetic theory, methods and infrastructure for Earth system science and applications, the International Association of Geodesy (IAG) has established the Global Geodetic Observing System (GGOS). This book provides a comprehensive overview of geodesy’s contribution to science and society at large, and it identifies user needs and requirements in terms of geodetic observations and products. Specifications for a global geodetic observing system that would meet these requirements lead to considerations of system design and implementation.
