The IGS: *an IAG service that delivers*

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International Association of Geodesy

A Constituent Association of the IUGG

... advancing geodesy ...

IAG Services

Geometry

IERS: International Earth Rotation and Reference Systems Service *(ILS in 1899, BIH in 1912, IPMS in 1962, IERS in 1987)*

IGS: International GNSS Service *(1994)*

IVS: International VLBI Service *(1999)*

ILRS: International Laser Ranging Service *(1998)*

IDS: International DORIS Service *(2003)*

Gravimetry

IGFS: International Gravity Field Service *(2004)*

BGI: Bureau Gravimetrique International *(1951)*

IGeS: International Geoid Service *(1992)*

ICET: International Centre for Earth Tides *(1956)*

ICGEM: International Centre for Global Earth Models *(2003)*

Ocean

IDEMS: International Digital Elevation Models Service *(1999)*

PSMSL: Permanent Service for Mean Sea Level *(1933)*

IAS: International Altimetry Service *(2008)*

Std

BIPM: Bureau International des Poids et Mesures *(Time 1875)*

IBS: IAG Bibliographic Service *(1889)*

Global Geodetic Observing System

- GGOS uses the technologies, methodologie… infrastructures of *Modern Geodesy* to st… th" with *unprecedented* spatial and te… and timeliness.
- Addresses challenge… .
- Requires co…
- Depe… nology, ground … and international
- …ervices, *to build a synoptic geo-m…*

GNSS(technology) and IGS(service) are critical to delivering on the GGOS vision

But the IGS infrastructure & its products do much *more…*

IGS underpins society's requirements for a high quality, accessible geospatial framework, & a high accuracy GNSS-PNT capability…

This *versatility* gives the IGS a "special role", even beyond its IAG responsibilities, but nevertheless poses significant challenges.

IGS's Key Strategies

- Deliver world-standard quality GNSS data and products to all users globally with leading-edge expertise and resources.
- Develop, integrate, and participate with new and changing GNSS systems, and understand user needs to continuously improve the IGS to provide value to a broad range of users.
- Continuously improve the effectiveness of the IGS governance and management to support growth of the service.

http://igscb.jpl.nasa.gov/overview/pubs.html

What the IGS pioneered…
(& why the IAG is so proud of it)

Products… *highly professional, operational service with performance far better than any other GPS service provider… trail-blazer for other IAG services*.

Democratisation… *of geodetic technologies & knowhow… involving organisations & agencies from many countries.*

Dense global coverage… *engaging with station operators around the world, promoting IAG ideals*.

Adaptability… *ability to extend & maintain tracking network… experiment & develop new products… with inbuilt "self-improvement" mechanism.*

Engagement… *scientific & professional organisations… respected "brand" with unrivalled GNSS expertise… encouraging* an *open & inclusive "culture" across the geodetic community.*

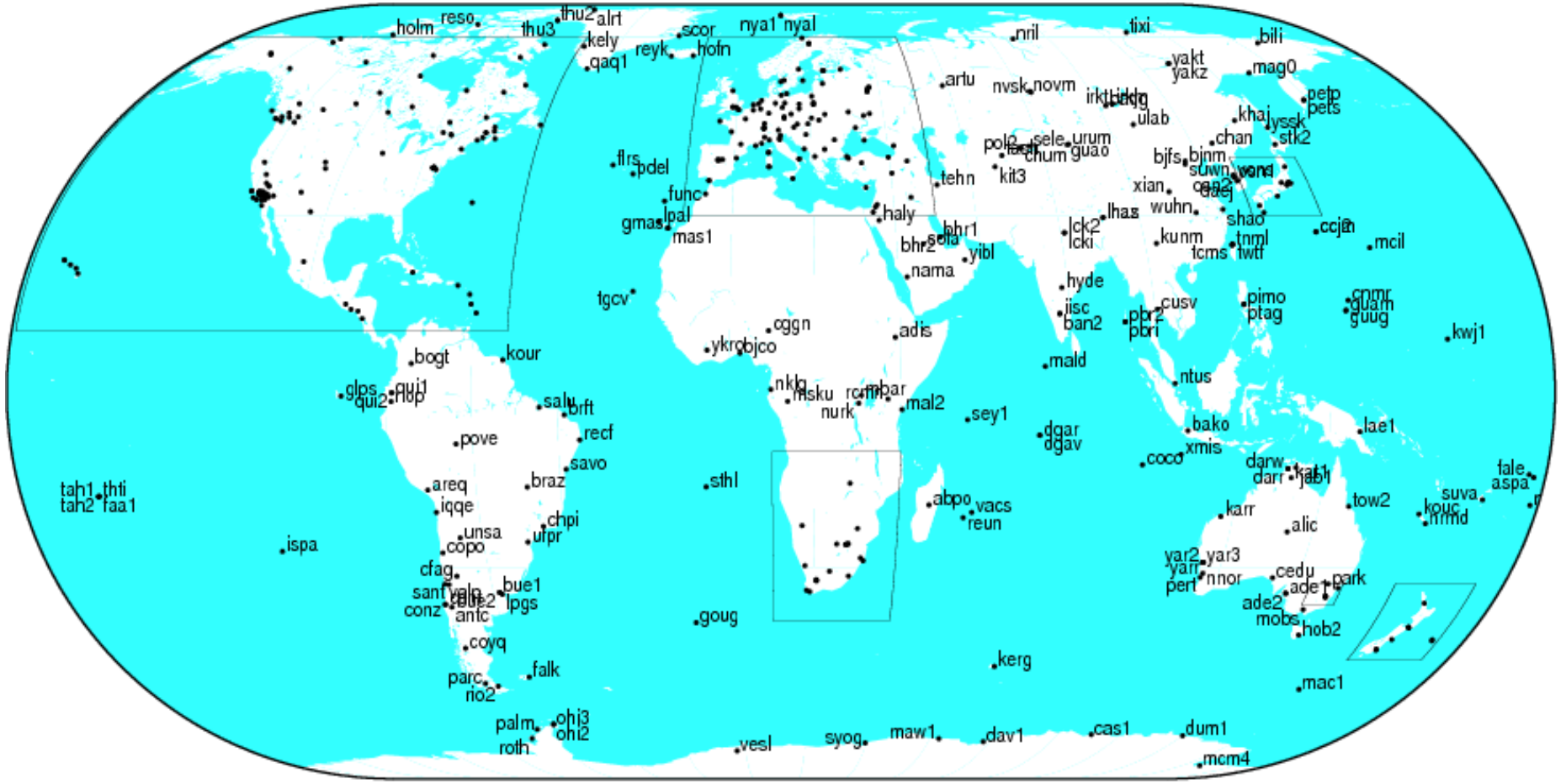
1. IGS & tracking networks…

- Network densification
- Project-specific support
- Application of IGS products
- Access to ITRF
- Inculcate IGS "culture" of open data policies
- "Nursery" for new IGS participants
- Cooperate with IAG Comm1
- IGS link to operational geodesy & precise positioning apps

WHY?

- Outreach & technology transfer
- Encourage adoption of IGS standards, models...
- Align with national geodetic initiatives
- Engagement with sister professional & scientific associations
- Support less developed countries
- Investment from which new IGS products & roles evolve

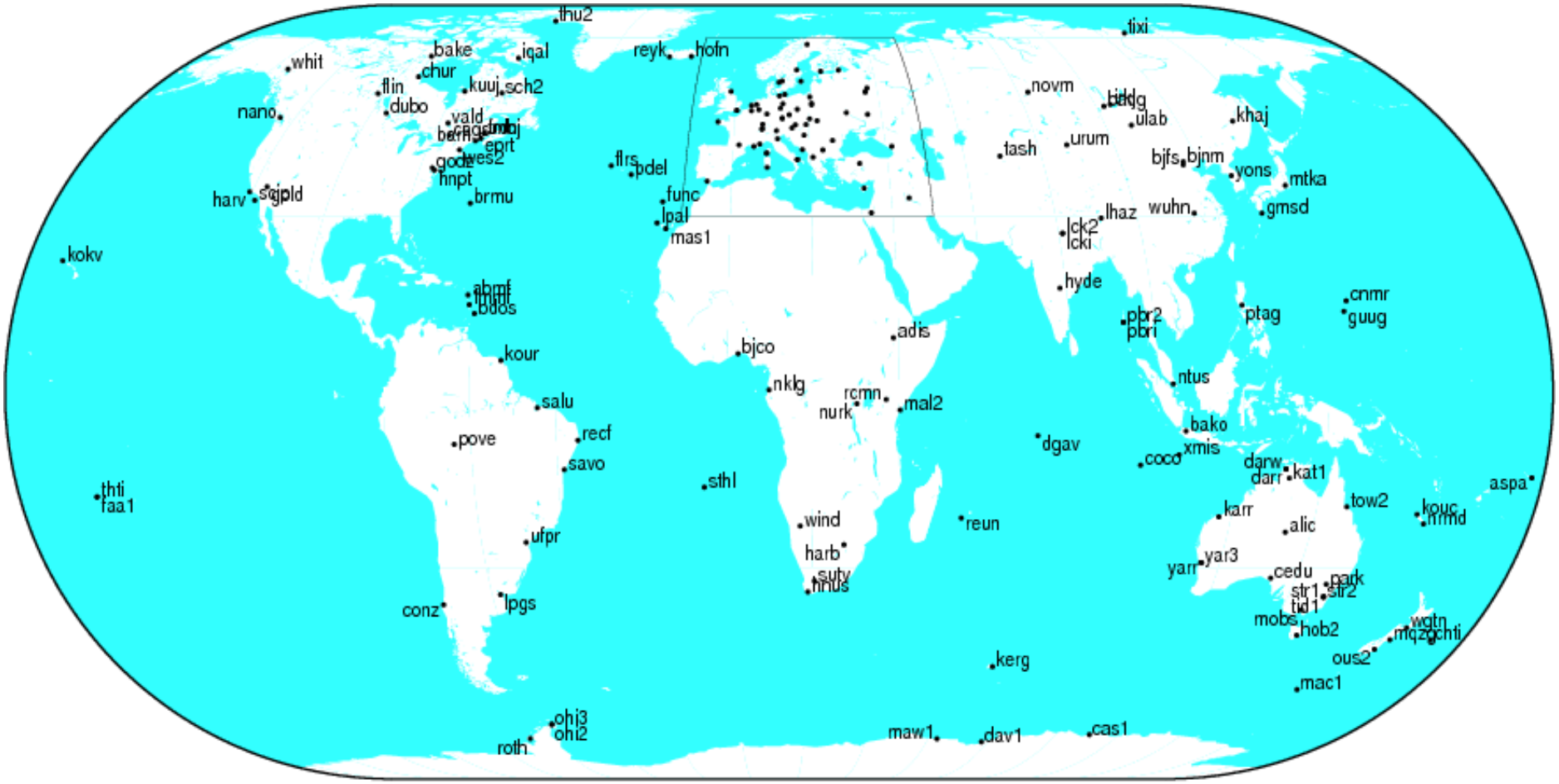
IGS Tracking Network



GMT 2012 Apr 29 16:45:47

http://igs.org

IGS GPS+GLONASS Network



GMT 2012 May 05 16:47:07

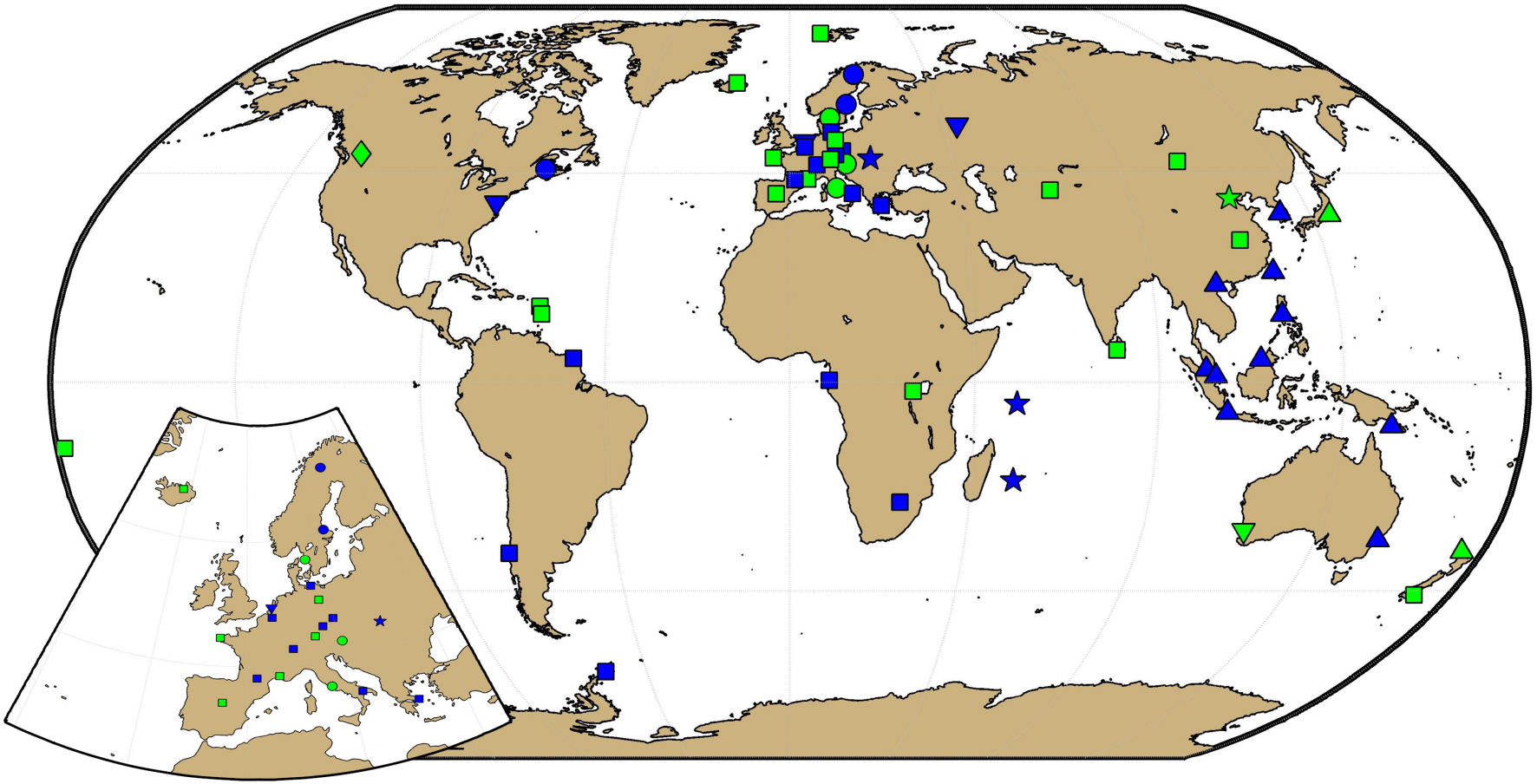
http://igs.org

IGS Real-time Tracking Network

GMT 2011 Oct 14 17:42:15

http://www.rtigs.net

IGS M-GEX Network



- GPS/GLONASS
- GPS/GLONASS + QZSS
- GPS/GLONASS + GIOVE/Galileo
- GPS/GLONASS + GIOVE/Galileo + Compass/Beidou
- GPS/GLONASS + GIOVE/Galileo + Compass/Beidou + QZSS
- GPS/GLONASS + GIOVE/Galileo + QZSS
- + SBAS

2. IGS & multi-GNSS…

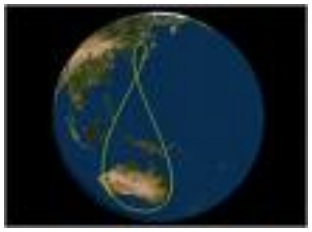
- New GNSS experimentation
- Inculcate IGS "culture" of open data policies, etc.
- "Nursery" for new IGS ACs
- Doesn't impact on production of core products
- Ensures IGS is recognised as "GNSS experts"
- Collaborate with other IAG Components
- Extend IGS expertise

WHY?

- Develop new products
- Encourage adoption of IGS standards, models...
- Engagement with UN-ICG
- Encourage IGS "best practice"
- Encourage adoption of ITRF
- Assessment of "value" of new GNSSs for GGOS & other IGS products

Multi-Constellation GNSS

+

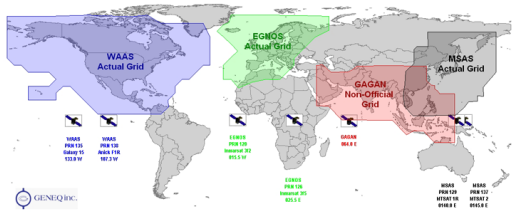


Global Constellations:

- GPS (32)
- GLONASS (30)
- Galileo (30)
- BeiDou (35)

SBAS:

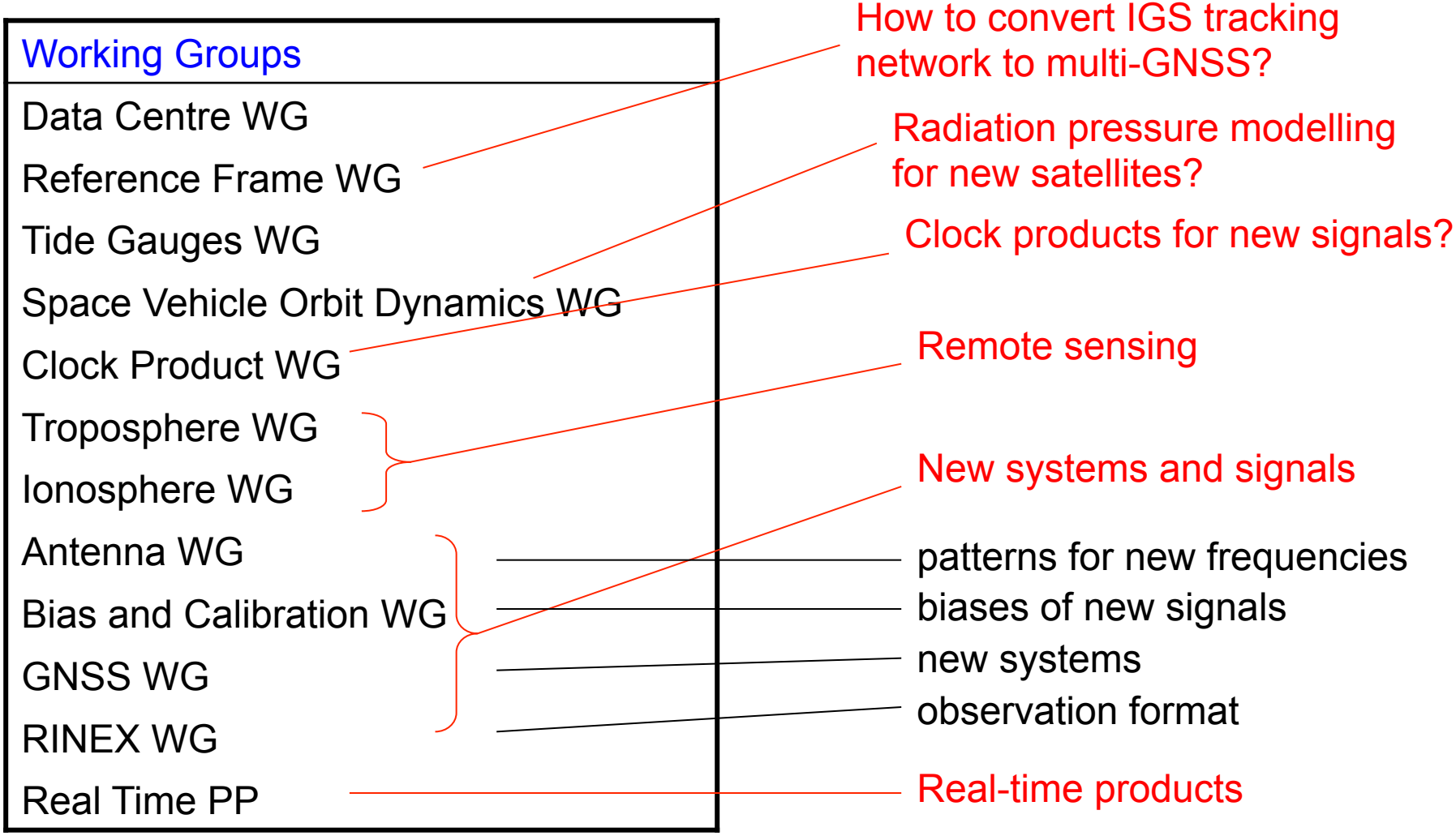
- WAAS (3)
- MSAS (2)
- EGNOS (3)
- GAGAN (2)
- SDCM (3)



Regional Constellations:

- QZSS (4-7)
- IRNSS (7)

IGS Working Groups & M-GNSS



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3. IGS & real-time products…

- New geoscience capability
- Inculcate IGS "culture" of open data policies, etc.
- Encourage new IGS ACs & participants
- Engagement with new user communities
- Ensures IGS conrinues to be recognised as the "GNSS experts"
- Develop new products

WHY?

- Extend significantly the IGS's expertise
- Encourage adoption of new IGS standards, models...
- Increased visibility
- Extend IGS roles
- Ambitious performance targets
- Leads the IAG community into new field of "real-time geodesy"

The IGS in the international context… (& why the IAG is so proud of it)

- As an IAG service, the *performance*, *visibility* and *evolution* of the IGS is of particular interest to the IAG.
- The IGS is one of the best known of the IAG services.
- The IGS and the ITRF are viewed (by many) as inextricably linked.
- IGS products support not only GGOS and geoscience, but also many other societal precise positioning and datum modernisation needs.
- The IGS is “centre-stage” as far as new GNSS developments are concerned, *such a multi-GNSS deployment and testing, global GNSS monitoring, expansion of CORS services, the RTS, modern data services, and in making modern geodesy far more “accessible”*.

The IGS in the international context… (& why the IAG is so proud of it)

- This workshop will provide update on new GNSS developments, new products to support IGS mission, and new IGS services.
- Outreach, beyond the workshop participants, is crucial... *What do we want to say to others about where the IGS "is" and where it is "going"?* Explaining IGS evolution is important.
- Many "players" would welcome an expanded (more visible?) role for the IGS.
- Multi-GNSS offers both challenges and opportunities.
- Being timid is not part of the culture of the IGS.
- However, quality-of-service (current or future) must not be compromised.

The IGS in the international context… (& why the IAG is so proud of it)

- The IGS must be seen to pay more than “lip service” to the incorporation of new systems and signals into routine operations... *but groups can be trail-blazers*... track, archive, or analyse new signals.
- However, the complete portfolio of IGS products must also be improved… *tap into the IGS “culture”*.
- The launch of the IGS-RTS is a crucial, even revolutionary, development, and has *international ramifications*.
- The global GNSS tracking network is the most *international* part of the IGS... *it is both the IGS’s strength and a component that requires special attention*.

The IAG encourages the IGS to:

- *Maintain & improve its current capabilities & products.*
- *Be creative & remain open to experimentation.*
- *Engage with the other IAG components.*
- *Play its critical role within GGOS.*
- *Support global & regional initiatives that develop new GNSS capability for geodesy (& other users).*
- *Continue to play a unique & valued role in international forums.*
- *Continue its positive role as the most “visible” of the IAG Services.*

150th
Anniversary

1862-2012