

# The Global Geodetic Observing System (GGOS) of the International Association of Geodesy (IAG)

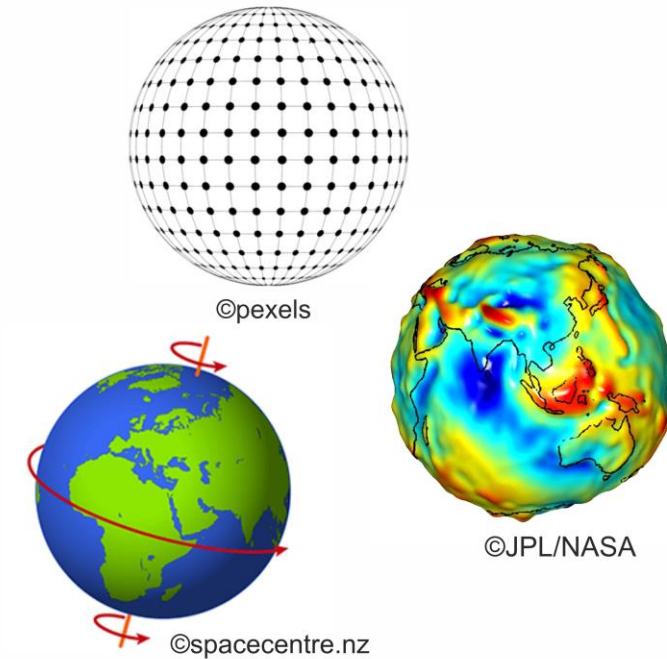
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GGOS President

Deutsches Geodätisches Forschungsinstitut (DGFI-TUM),  
Technische Universität München, Germany

GGOS Days 2023  
Alcalá de Henares, Spain, Sep 20 - 22, 2023

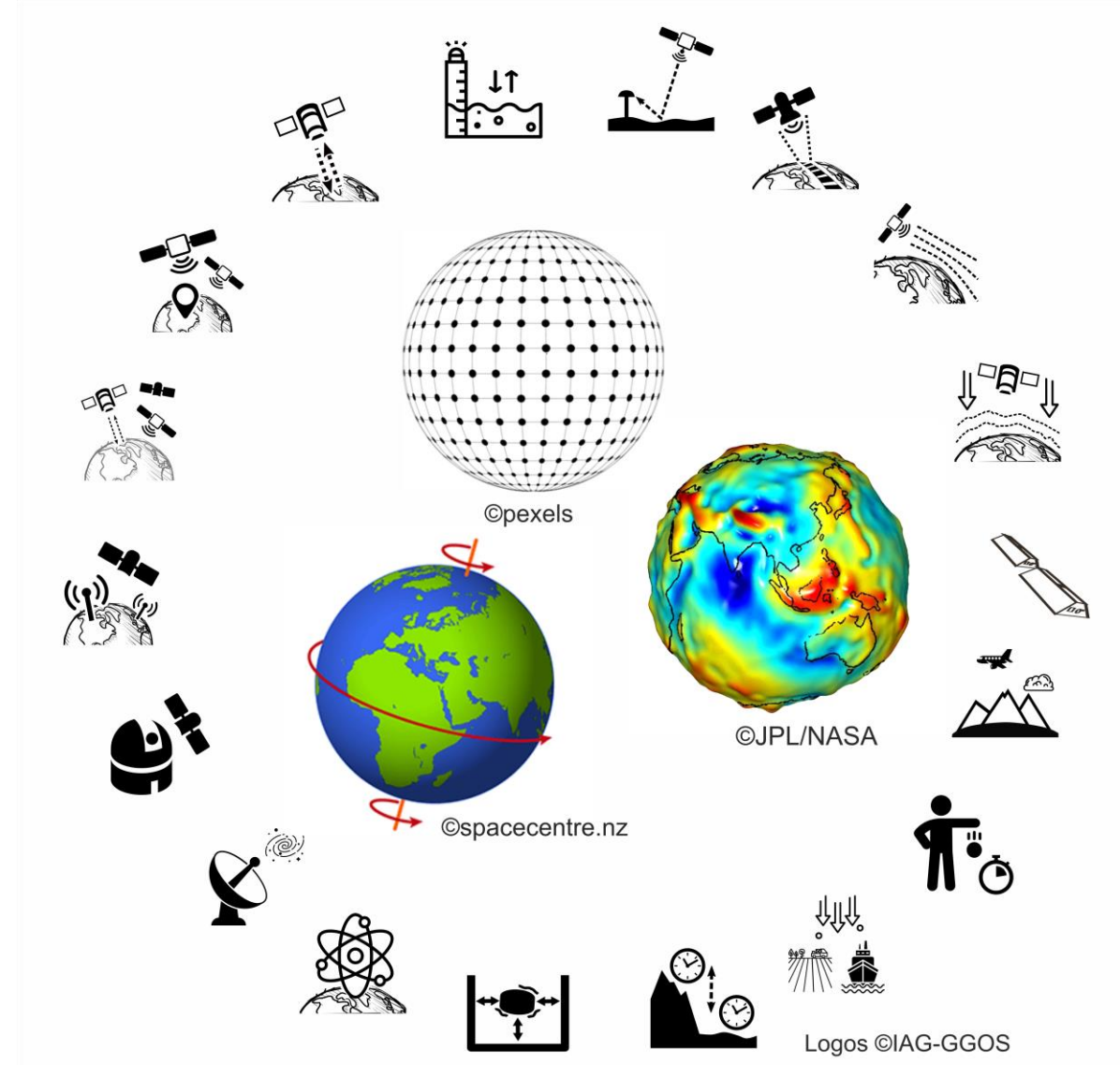
# Geodesy

Determination of Earth's size, shape, gravity field and orientation as functions of space and time.



# Geodetic techniques

- Various sensors and instruments on the ground (land and oceans), in air and in space.
- Space techniques dominate global and regional observations.
- Terrestrial techniques are mainly needed for interpolation in space and time, and for recording specific local features.

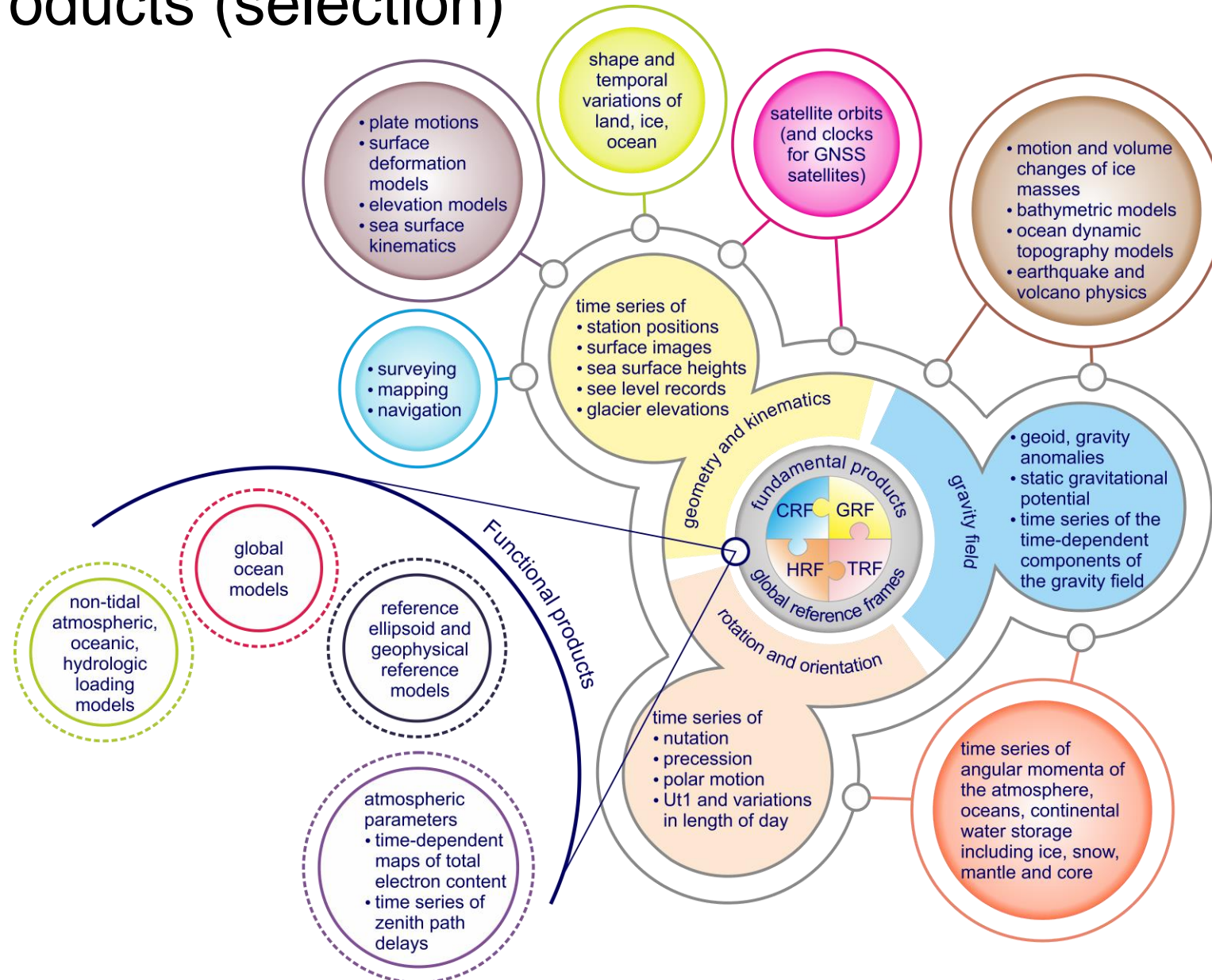


# Geodetic observation of the Earth system

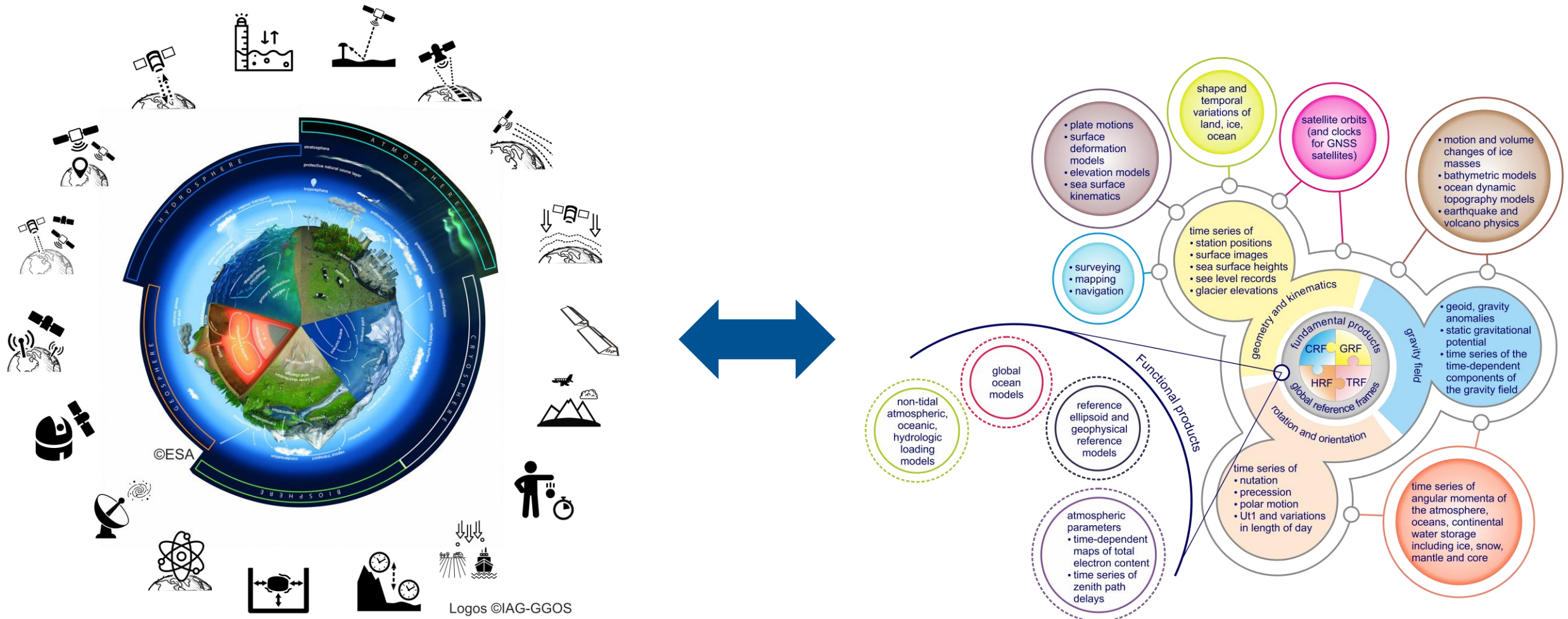
- Changes in the Earth's size, shape, gravity field and orientation are inherently related to the Earth's dynamics and the transport of mass and energy throughout the Earth system.
- Any change within the system affects any geodetic observation.
- In order to achieve its primary goals, geodesy is necessarily involved in the detection and analysis of the signals emitted by the Earth system.



# Geodetic products (selection)

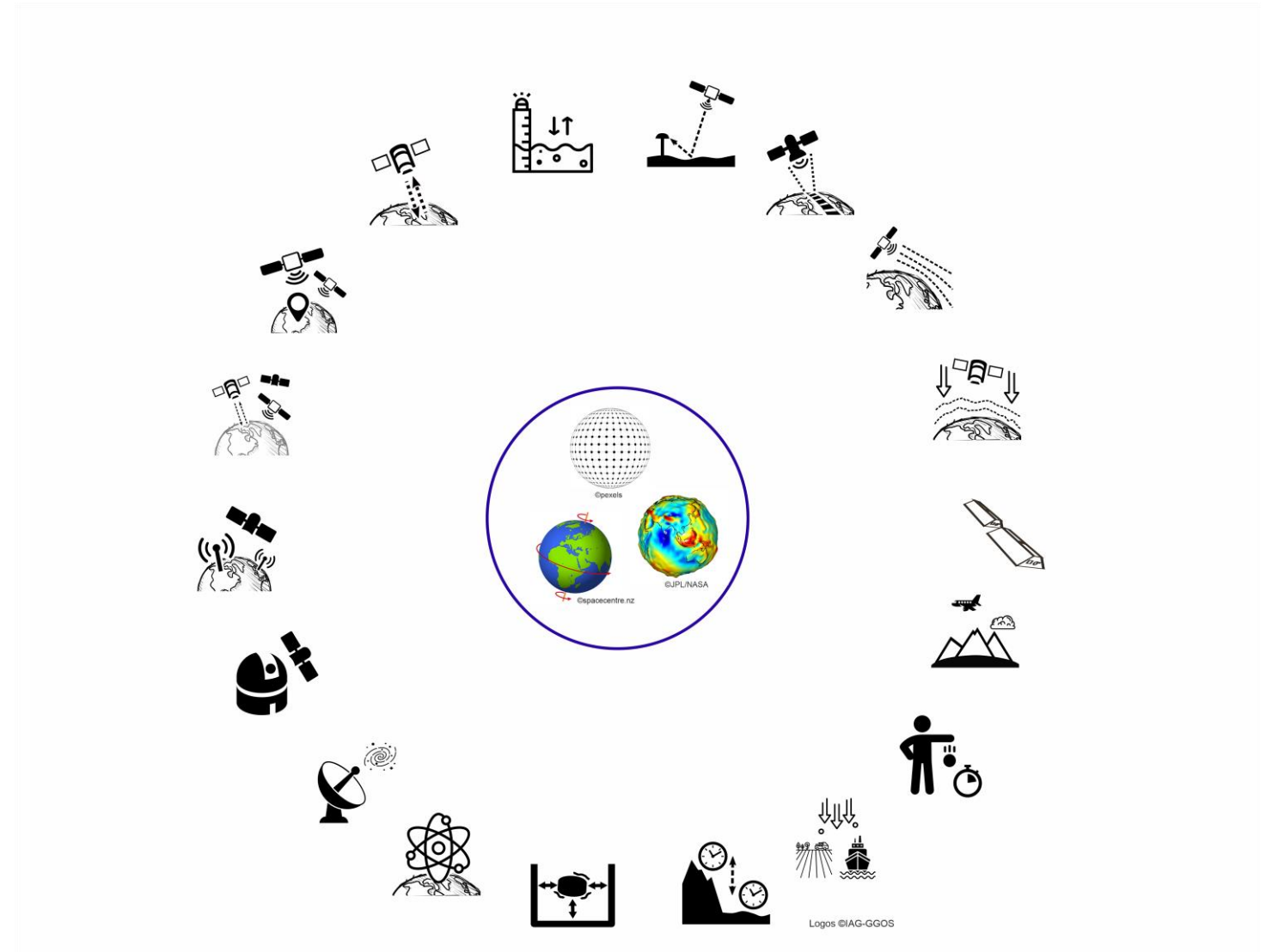


# From geodetic measurements to Earth system modelling



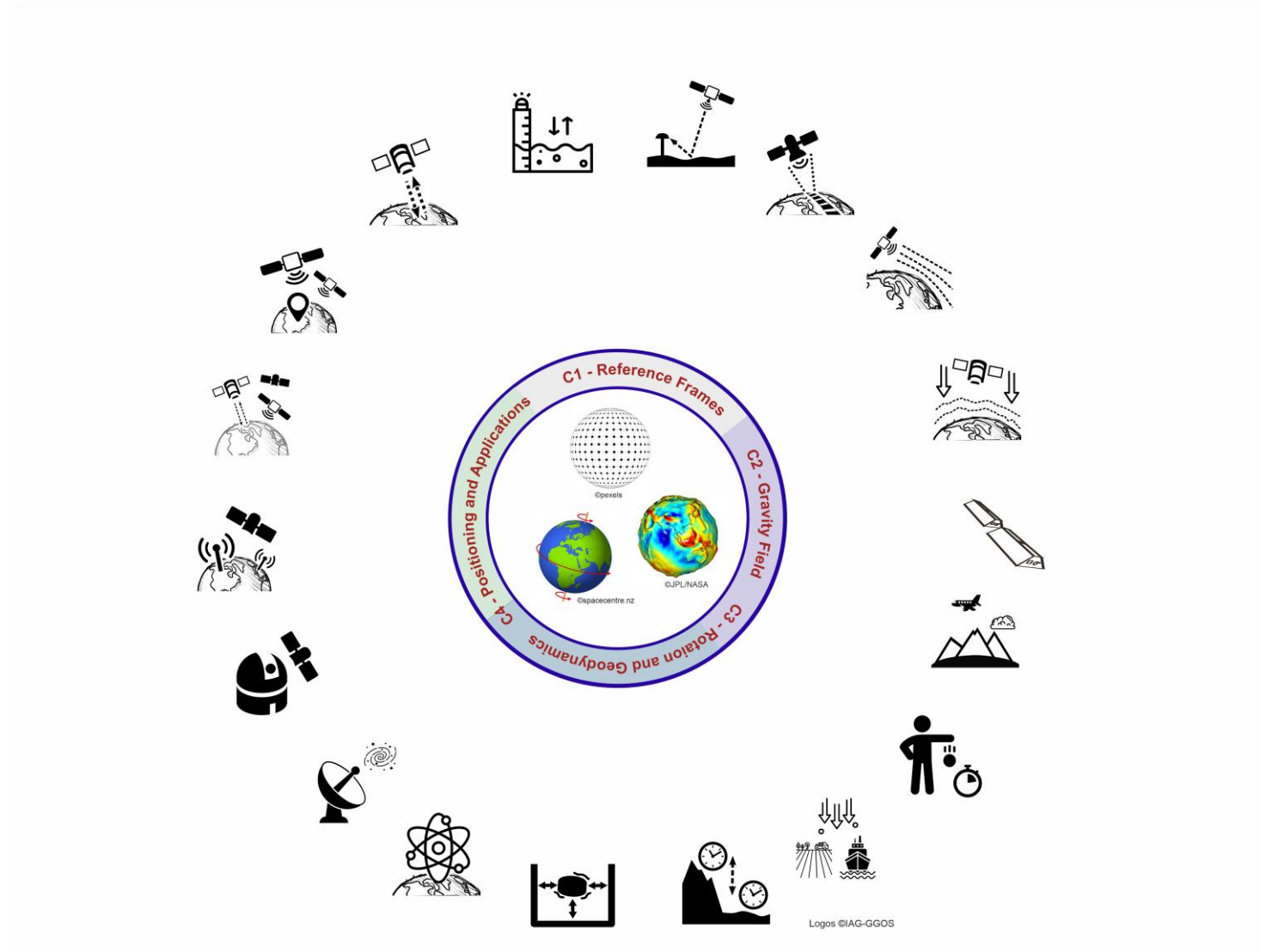
# The International Association of Geodesy (IAG)

- IAG is the organisation responsible for the advancement of geodesy.
- 160 years of geodetic excellence based on strong international voluntary cooperation based on best efforts.



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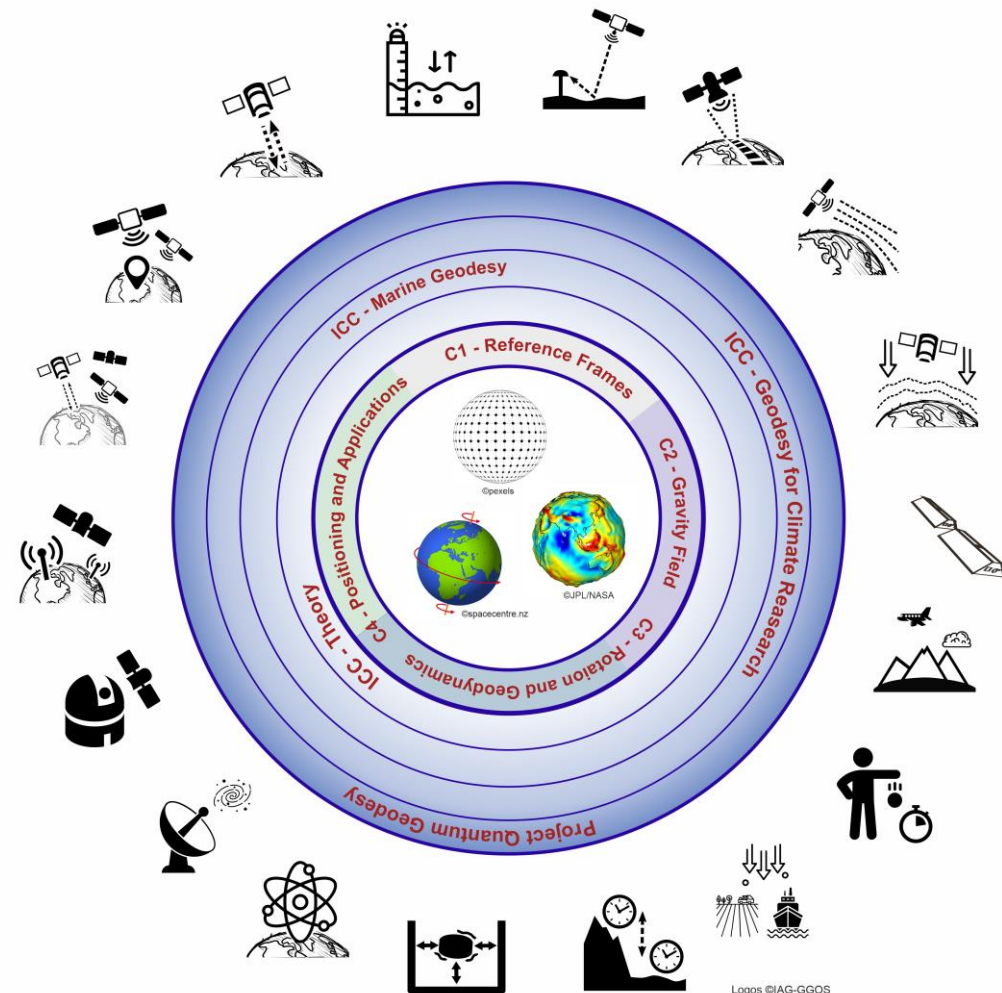
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- The **IAG Commissions**, Inter-Commission Committees and Projects address key scientific issues.





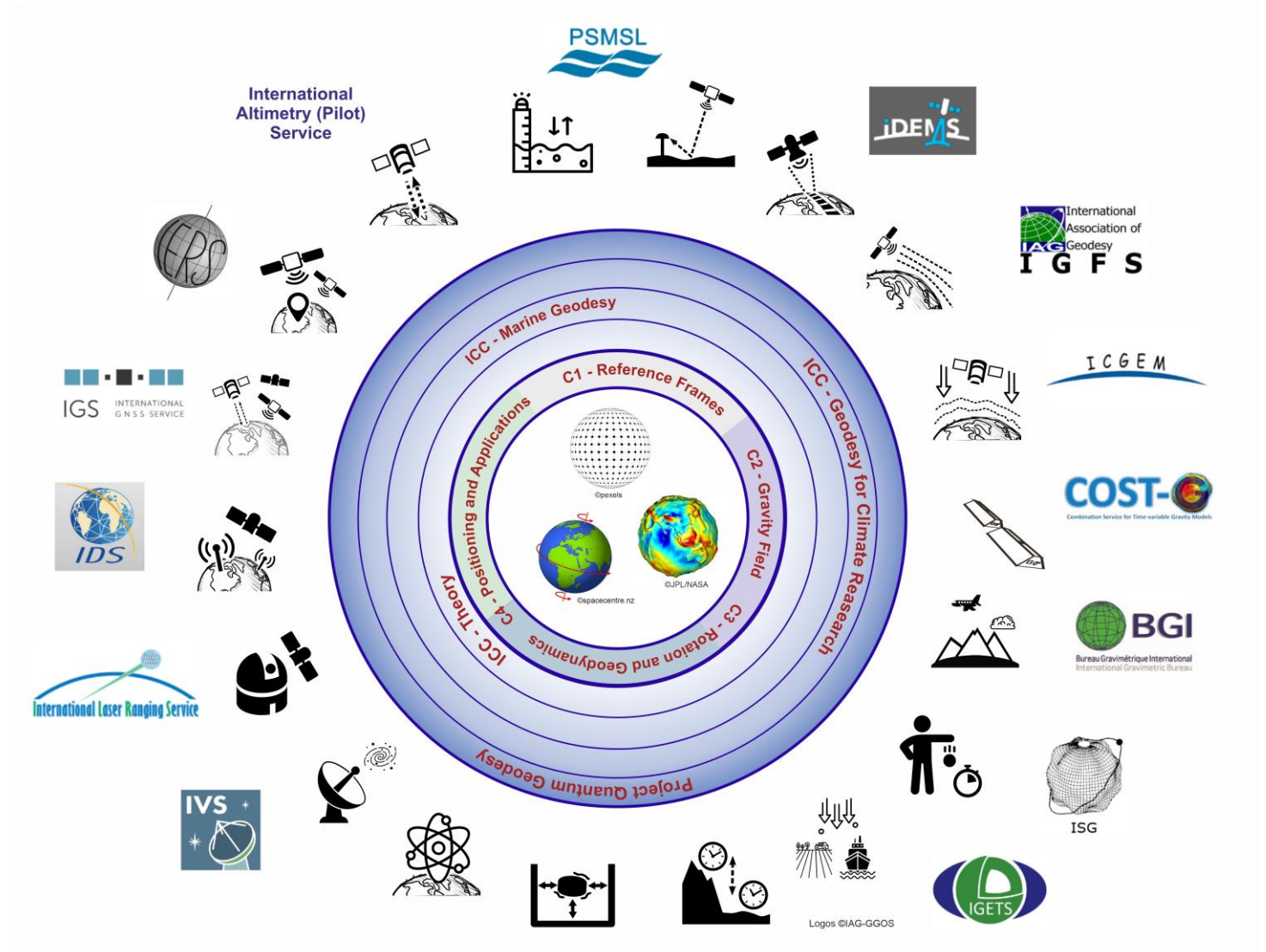
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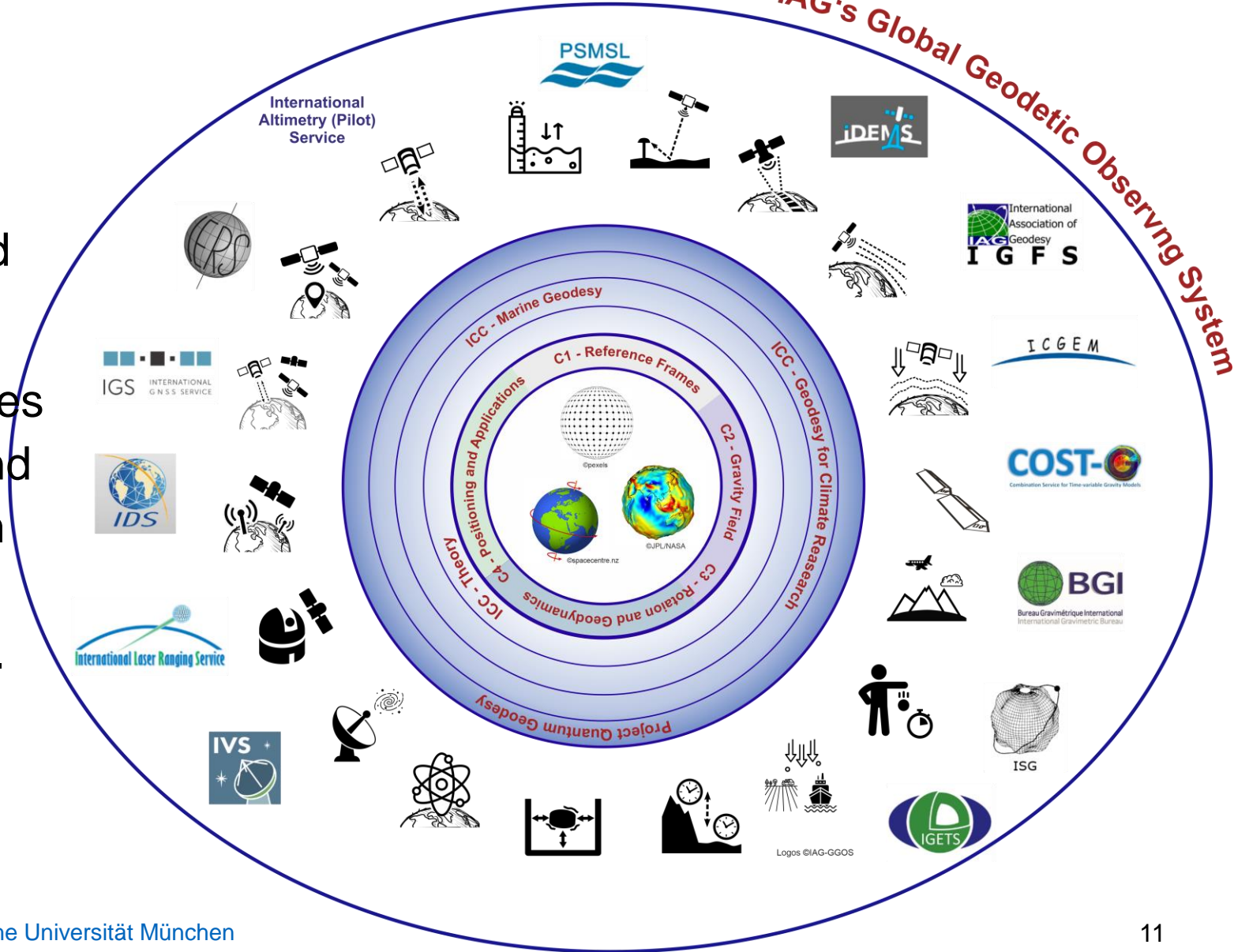
# The International Association of Geodesy (IAG)

- The **IAG Services** facilitate the global coordination of geodetic activities and ensure the generation of high accuracy and reliable geodetic products.
- The **IAG determines and provides the framework for monitoring and understanding the Earth system as a whole**, including its solid, fluid, and gaseous components.

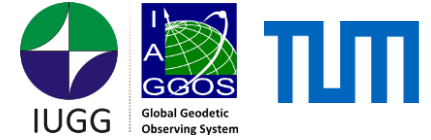


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- This framework is **GGOS**, the **Global Geodetic Observing System**.



# Challenges



- Bring together the different geodetic observing techniques, services and analysis methods to ensure that the **same standards, conventions, models and parameters** are used in all data analysis and modelling of Earth system processes.
- **Combine geometric, gravimetric, and Earth rotation observations** in data analysis and data assimilation, and jointly estimate and model all necessary parameters representing the different elements of the Earth system.
- Identify science and societal needs that can be addressed by (new) geodetic products and define the **requirements for accuracy, time resolution, and consistency of these products**.
- Identify **service gaps** and develop strategies to fill them.
- To promote and enhance the **visibility of geodesy** by improving the accessibility of geodetic observations, information and products to the widest range of users.

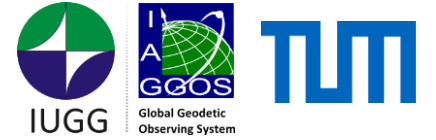
# Implementing IAG's Global Geodetic Observing System

- The IAG decided to establish **an operational component** to deal with the day-to-day business of implementing, maintaining and ensuring the long-term availability of the observing system GGOS.
- This operational component (also called GGOS) should
  - serve as a **clearinghouse** for geodetic information expertise,
  - provide an **integrating framework** for all IAG Components (Services, Commissions, Inter-Commission Committees and Projects), and
  - act as a **central interface** between science and society.



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# Implementing IAG's Global Geodetic Observing System



- 1998 – Initial ideas, symposium “Towards an Integrated Global Geodetic Observing System”
- 2001 – GGOS is the first IAG Project
- 2001 – GGOS Planning Committee established
- 2002 – GGOS Implementation Committee
- 2003 – IAG becomes a member of the Group on Earth Observations (GEO)
- 2003 – GGOS becomes a component of the Global Earth Observation System of Systems (GEOSS)
- 2007 – GGOS is upgraded to a component of IAG (at the same level of Commissions and Services)
- 2009 – Intergovernmental Committee (IGC) for GGOS (major infrastructure funding)
- 2010 – GGOS-IGC changes to GGOS Inter-Agency Committee (GIAC)
- 2010 – GGOS Focus Areas for integrated (or new) products
- 2011 – GGOS becomes a member of the Committee on Earth Observation Satellites (CEOS)
- 2015 – GIAC functions are transferred to the UN-GGIM Subcommittee on Geodesy, GIAC discontinued.
- 2017 – GGOS Affiliates established to increase the participation in GGOS.

# Where are we now?

## Wednesday, September 20<sup>th</sup>

- 09:00 Opening Session
- 10:30 Recent Activities within IAG and GGOS
- 11:30 Keynote Speaker Session
- 14:10 GGOS Affiliates
- 15:00 Technical Visit of Yebees Observatory

Geodesy in Portugal and Spain

GGOS organisational structure

GGOS new Strategic Plan

Identification of potential new geodetic products

GGOS Affiliates

# Where are we now?

## Thursday, September 21<sup>st</sup>

- 09:00 GGOS External Activities
- 10:30 Making Geodetic Data & Products FAIR
- 11:15 Bureau of Networks and Observations
- 14:15 Bureau of Products and Standards
- 16:00 Splinter Meeting: GGOS Implementation Plan
- 18:00 Visit of Alcalá de Henares

IAG and geodesy-related initiatives of UN

Potential new regional GGOS activities

Outreach activities

GGOS Portal

DOIs in Geodesy

Advances in geodetic infrastructure

Advances in standardisation, integration and definition of new products



# Where are we now?

Friday, September 22<sup>nd</sup>

09:00 GGOS Focus Areas

11:20 Closing Session

Advances in existing Focus Areas

Themes for potential new Focus Areas

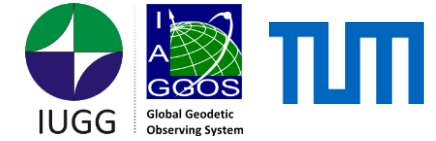
# GGOS DAYS

2023

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20.09 - 22.09

  
 Yebes Observatory  
Alcalá de Henares, Spain



I wish us a productive meeting.

Welcome to the GGOS Days 2023!

*“When you take on a task, finding the best ways to achieve the desired result is always your responsibility.”*

W. Gilbert