

# COSPAR's Contribution to the Scientific Applications of GNSS

*Pieter Visser*



**Chair Panel on Satellite Dynamics**

6<sup>th</sup> Meeting of the International Committee on Global Navigation Satellite Systems  
Tokyo, September 5-9, 2011

1



# Committee on Space Research

- Created by [ICSU](#) in 1958
- First Space Science Symposium in Nice in January 1960
- Interdisciplinary scientific organization
- [COSPAR](#)'s objective is to promote an international scientific research in space, open to all scientists
- All kinds of research carried out with the use of space means (including balloons)
- Members: 45 countries and 13 Intern. Scientific Unions



# Activities

- Biennial Scientific Assemblies
- Journal Advances in Space Research
- COSPAR Information Bulletin – Space Research Today
- Capacity Building Workshops
- Colloquia and Symposia,
- Participation in the UN and other intergovernmental organizations on space research
- Promotion of large international collaborative programs and projects of space research



# Committee on Space Research

COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organization of Scientific Assemblies, publications and other means.

<http://cosparhq.cnes.fr/>



# COSPAR scientific structure and ICG

- Sub-Commission B2 on International Coordination of Space Techniques for Geodesy and Geodynamics (CSTG)
- Technical Panel on Satellite Dynamics (PSD)
- Observer ICG



# Terms of reference

- CSTG: To develop links between various groups engaged in the field of space geodesy and geodynamics by various techniques, coordinate work of these groups, elaborate and propose projects implying international cooperation, follow their progress and report on their advancement and results (thus important role IAG).
- PSD: The aim of the Panel is to support and coordinate all activities aimed at the detailed description of the motion of artificial celestial bodies. This should be achieved by improvement of the theories of motion and by more sophisticated evaluation of the determining forces. Detailed theoretical understanding of the dynamics of satellites should be matched with the results of precise tracking in order to obtain the most precise knowledge possible of the orbit itself and of individual positions within the orbit.



# Panel on Satellite Dynamics

- Responsible for orbital problems
- Discussion of GNSS during scientific sessions:
  - ✓ 2006 Beijing: 15 papers
  - ✓ 2008 Montreal: 17 papers
  - ✓ 2010 Bremen: 14 papers
- Topics: GNSS products, LEO orbits, geodynamics
- In charge of collecting the information from all COSPAR groups and presentation to ICG



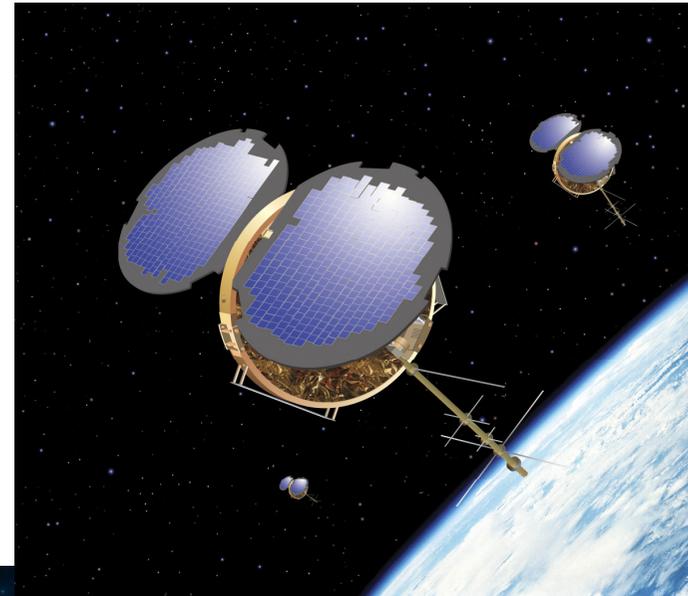
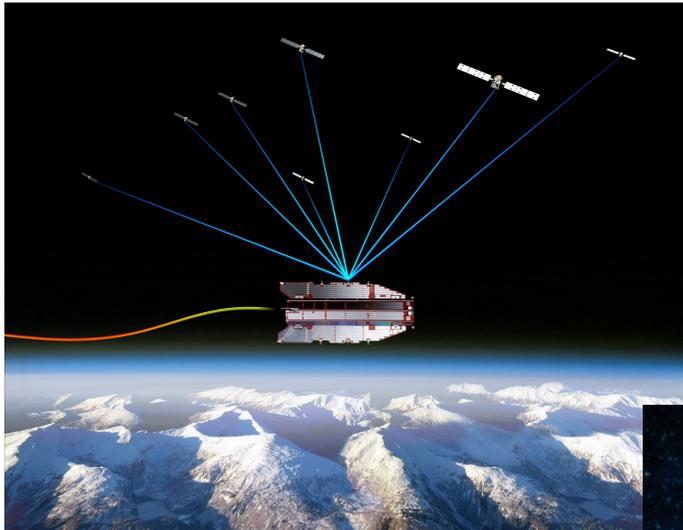
# Acknowledgment:

**Scientific Applications heavily rely on  
GNSS products provided by IGS**

GPS, GLONASS NRT, rapid & final ephemeris/clocks +  
atmospheric parameters



# LEO orbits



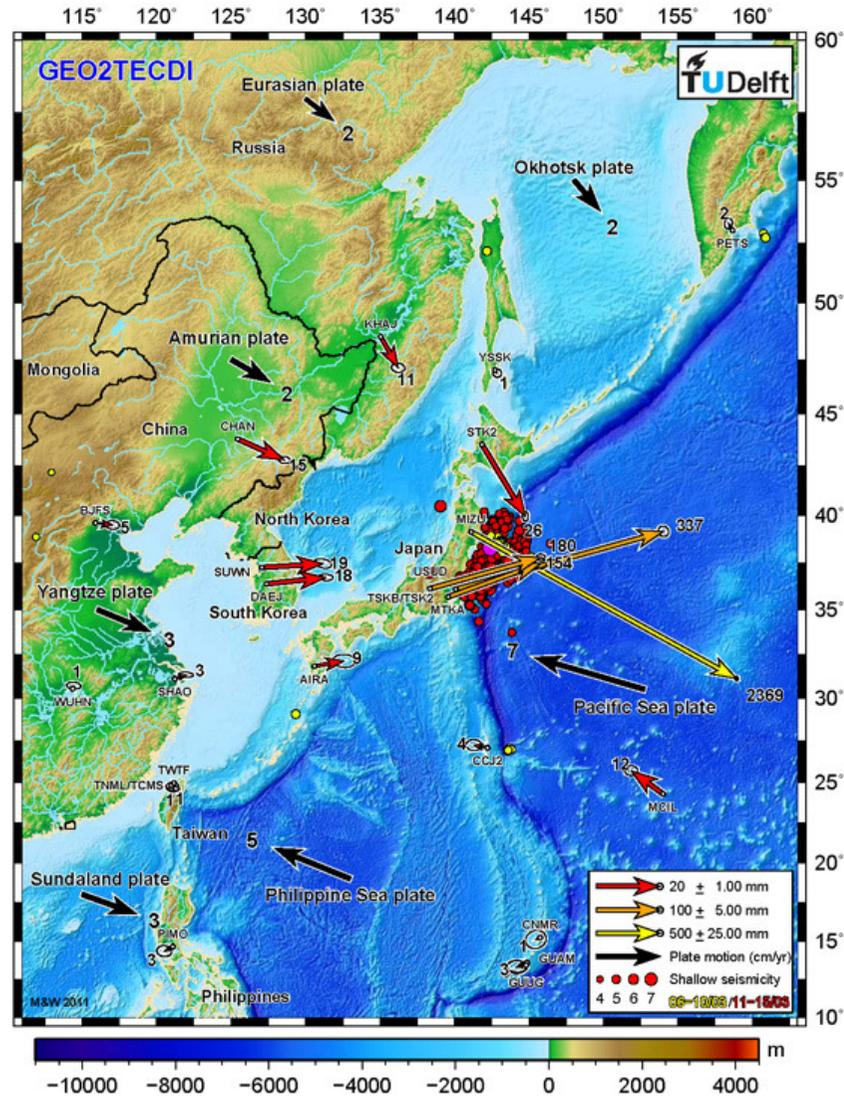
Outlook:  
growth of GNSS → enhanced precision, higher robustness,  
more applications (RT, NRT, ...)

# Geodynamics

Outlook:  
 growth of GNSS →  
 enhanced precision,  
 higher robustness,  
 more applications  
 (RT, NRT, ...)

## DEOS GPS Japan 2011 Mw 8.9

Co-seismic V1.1 / Sources: IGS, JPL, USGS, MORVEL, ETOPO, GMT



# Next COSPAR scientific assembly

## 39th COSPAR

Mysore, India

July 14-22, 2012

invites you!



# Thank you for your attention

