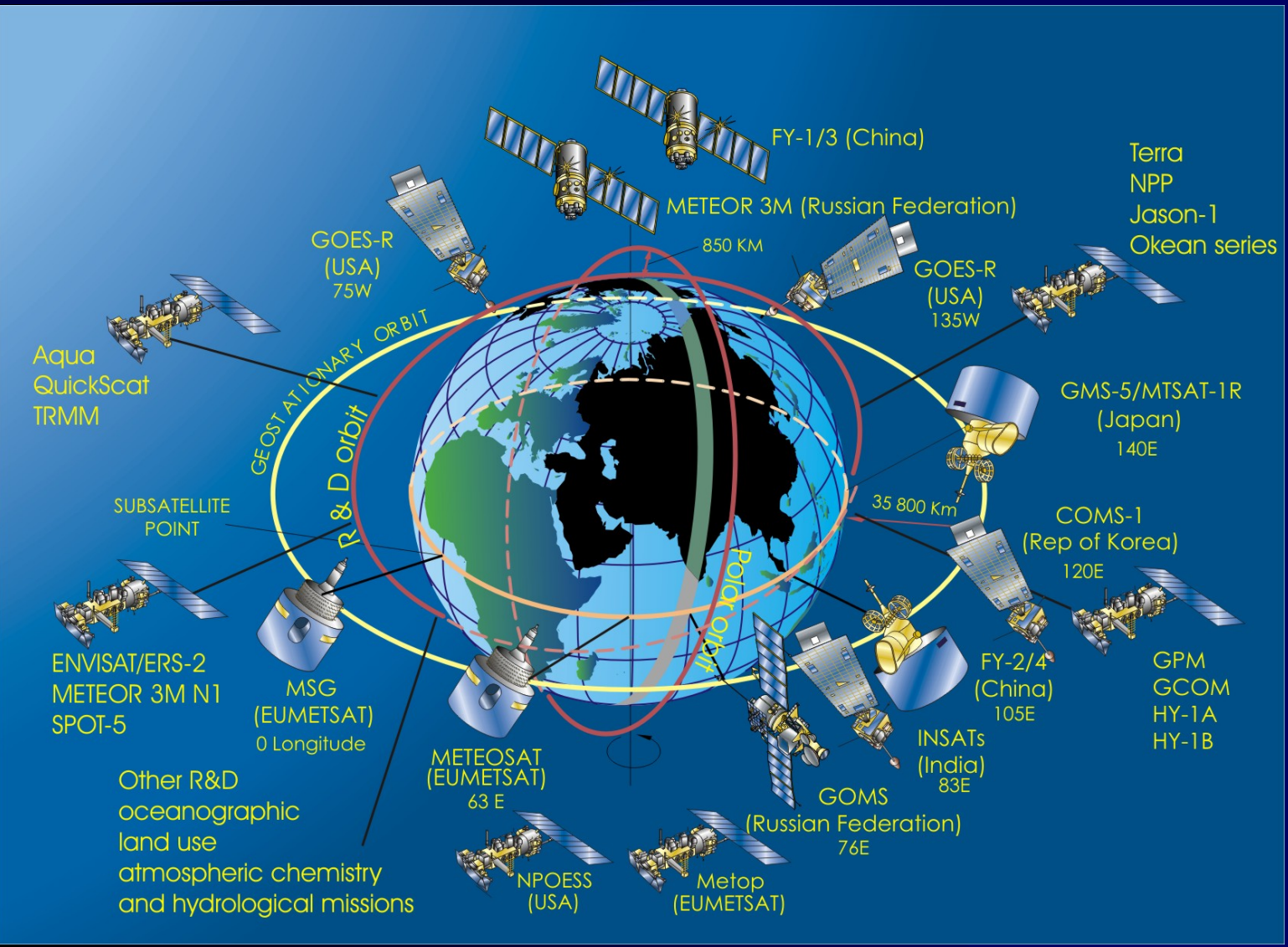
Status of WMO's IGeoLab implementation for the Highly Elliptical Orbit (HEO)

Dr Donald E. Hinsman
Director, Observing and Information Systems
Director, WMO Space Programme
World Meteorological Organization

STG, Frascati, Italy, 5-6 May 2008

WWW's space-based component of the Global Observing System (2008)



Unparalleled international cooperation has been achieved in satellite activities

Origin of IGeoLab concept

- Need to build on partnership to stimulate demonstration missions on geostationary orbit
- Initially proposed at CGMS XXXII (May 2004)
- Strong support by CM-5 (January 2005)
- WMO Space Programme to act as catalyst to further the concept and its implementation

Key ideas (1)

- Need innovative instruments to improve observation performances and meet user requirements
- «Demonstration missions» = steps for transition from R&D to fully operational missions
  - Technology demonstration
  - Pre-operational demonstration or “Preparatory” mission
- Flight opportunities in geostationary orbit are limited (Orbital slot, Launch cost)
- There is high potential for common instruments aboard several GEO satellites

Key ideas (2)

- Demonstration missions through partnership
- Pre-operational missions are best performed through cooperation between R&D and OPS agencies
- Should seek international support on scientific aspects
- Should involve worldwide user community for evaluation, feed-back and preparing operational use
- Sharing cost/benefit of demonstration among partners

Expected benefits

- Speed up implementation through cost sharing and through combining development efforts
- Ensure best scientific relevance through international scientific involvement
- Speed up familiarization through broad user involvement and publicizing results and lessons learnt
- Facilitate transition to operational follow-on missions through R&D-OPS partnership

Outcome of CM-7 (Jan 2007)

- Reaffirmed value of IGeoLab concept to share resources and build partnership for demonstration of advanced payload

- Agreed to expand the IGeoLab concept to Highly Elliptical Orbits (HEO)
  - Consider partnership on mission in Molniya orbit for improved polar coverage in context of IPY legacy

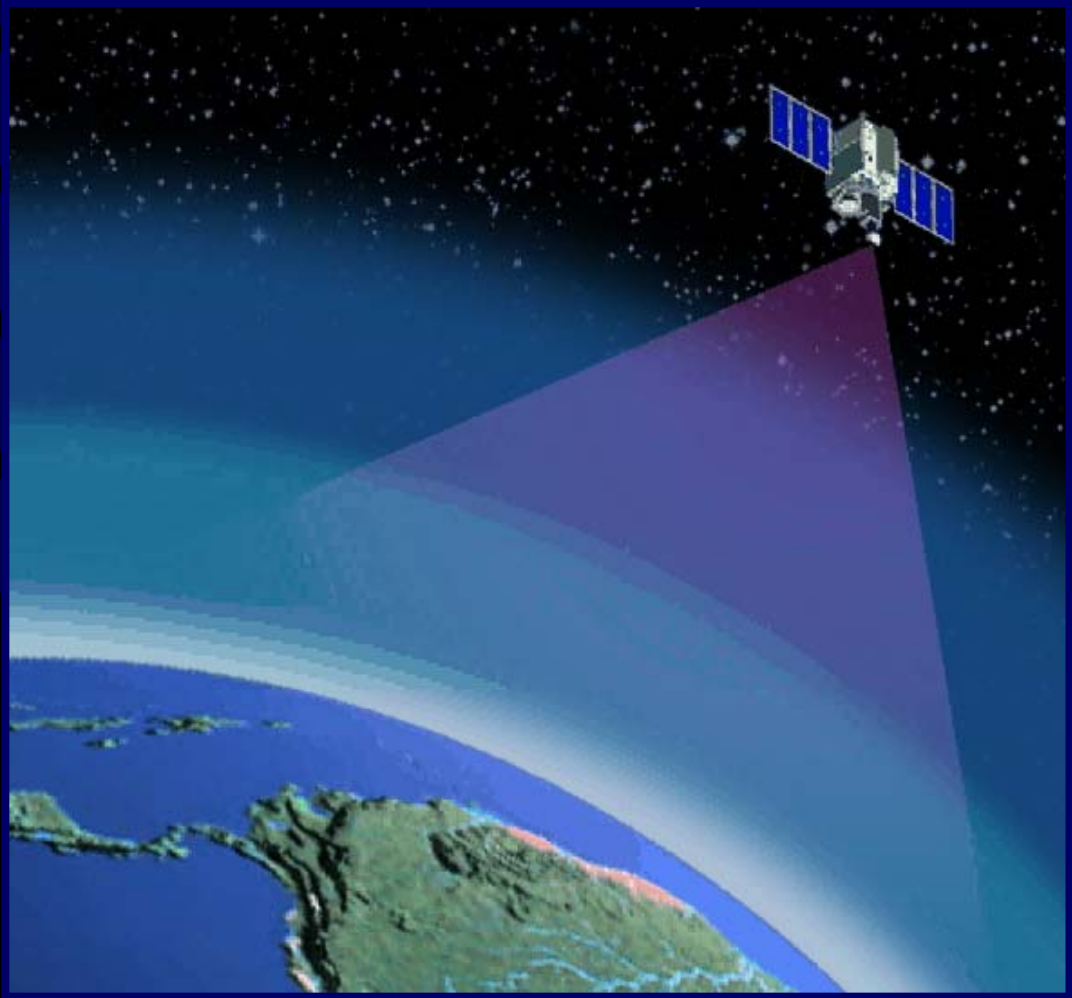
IGeoLab

- Goal is international partnering on instrument, S/C, launch, and test / evaluation for possible future Geo orbit capabilities
- Three test proposals to demonstrate the benefits and viability of the concept:

  (1) demonstration of the GIFTS instrument at several geographical locations
  (2) development and exploitation of a sub-mm sounding instrument in geo orbit
  (3) Highly-Elliptical Orbit

- IGeoLab Focus Group Teams (work in progress)

GIFTS Sampling Characteristics



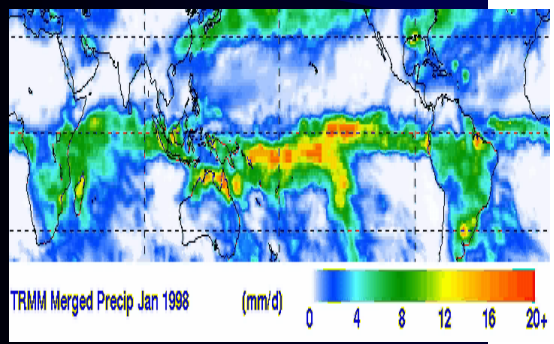
- Two 128x128 Infrared focal plane detector arrays with 4 km footprint size
- One 512x512 Visible focal plane detector array with 1 km footprint size
- Field of Regard 512 km x 512 km at satellite sub-point
- Ten second full spectral resolution integration time per Field of Regard

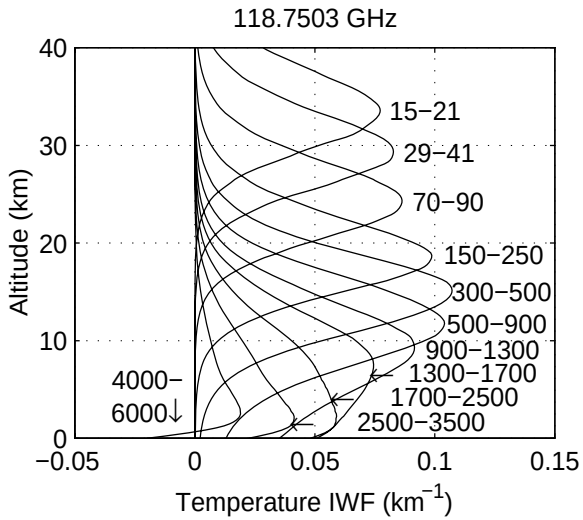
G O M A S

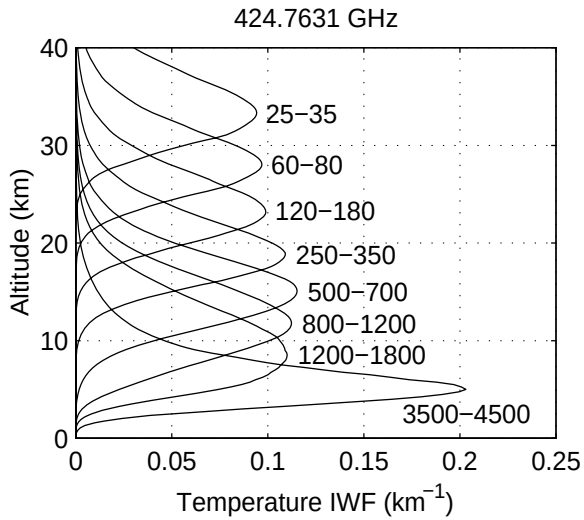
Geostationary Observatory for Microwave Atmospheric Sounding

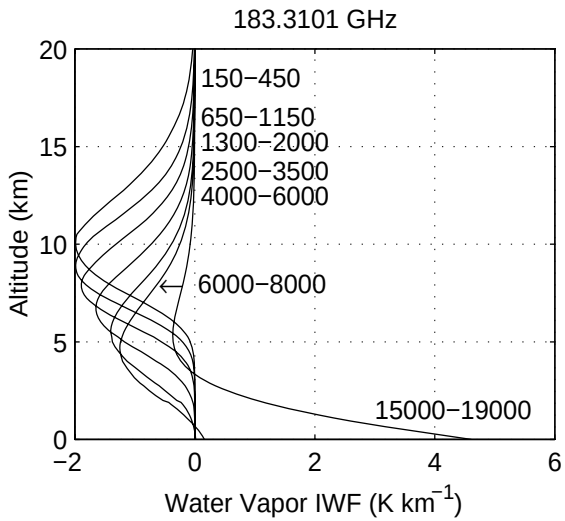
precipitation measurements and all weather soundi

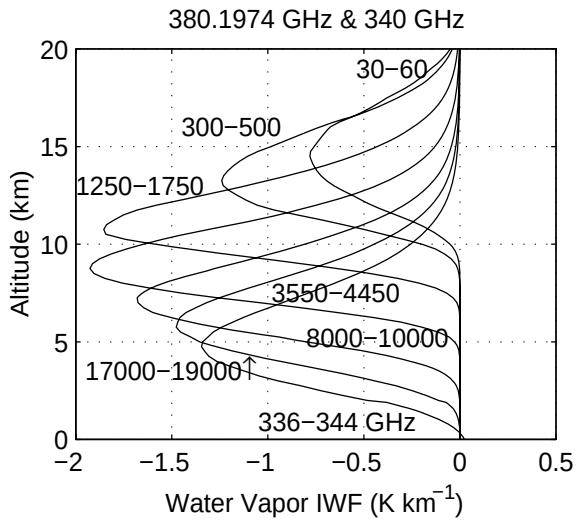
Complement to Global Precipitation Missi







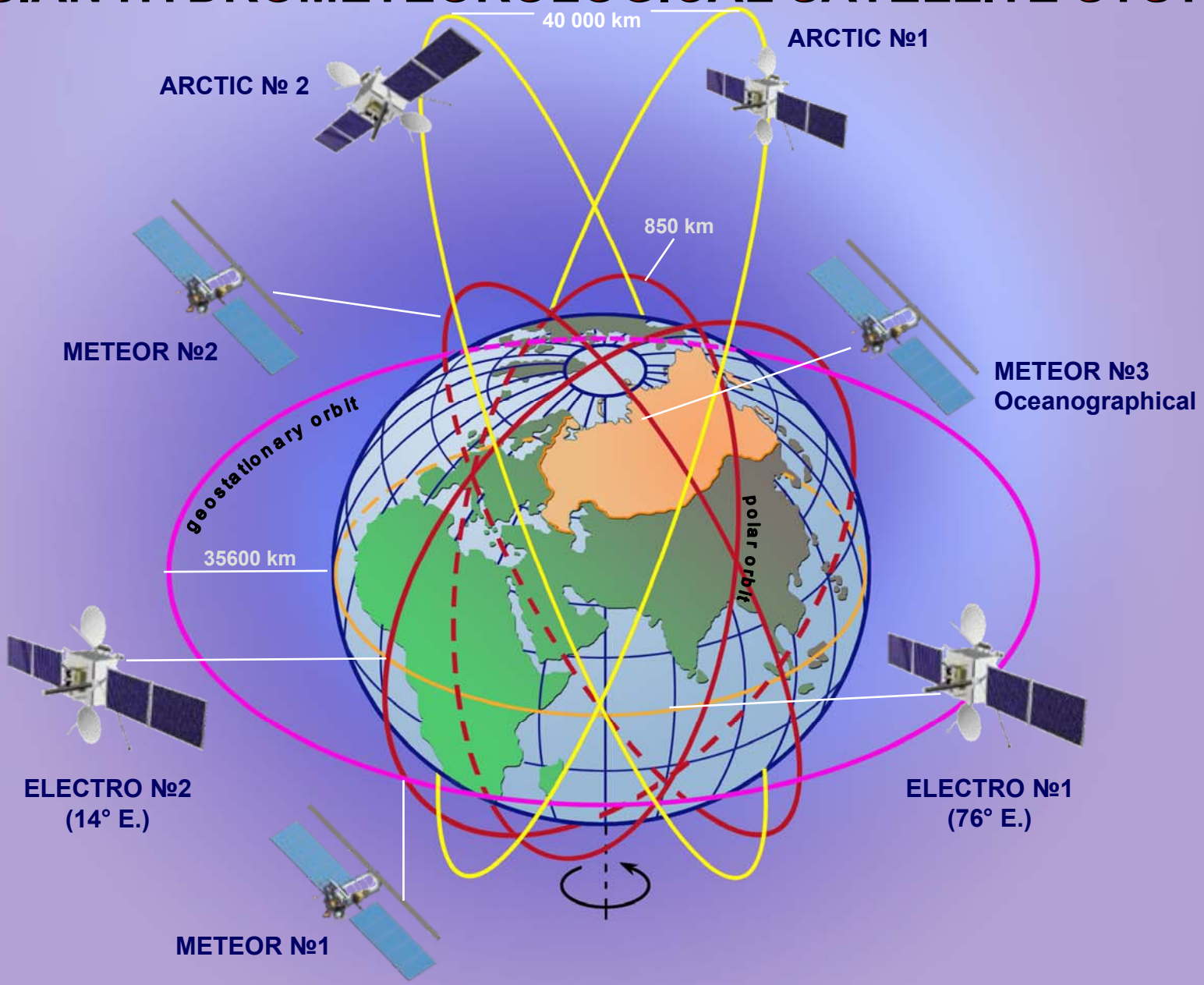




IGEOLAB HEO Focus Group-1

- Hosted by Roskosmos and Roshydromet in Moscow, 24 April 2007
- Reviewed Arctika Project
- Agreed IGEOLAB HEO would support NWP and IPY
- Preliminary proposal from Finland to be evaluated
- Protocol agreed
- Requested WMO to host FG-2

RUSSIAN HYDROMETEOROLOGICAL SATELLITE SYSTEM



IGEOLAB HEO Focus Group-2

- Chairmen, Drs Polischuk and Asmus (ROSCOSMOS and ROSHYDROMET)
- WMO hosted in October 2007
- Reviewed status reports (NOAA, RF, Canada, Finland
- Reviewed
  - User requirements (WMO)
  - Science teams for the instruments
    - Evaluation mechanism
  - Participation in the User and Ground segments

IGEOLAB HEO Focus Group-2

- Agreed to the importance of “Arctika” Project and CSA’s PCW missions
- Reviewed Roshydromet and Roscosmos proposal to use “Arctika” Project with a reserve available for other instruments up to 500 kg, 5 year to launch proposal
- Russian Federation analyzing Finnish proposal for a UVAuroral Imager as well as to use Finnish ground station
- CSA’s project in Phase 0 to be completed in mid 2008 and to move into Phase A by the end of 2008
- Strong willingness on the parts of the Russian Space Agency and the Canadian Space Agency to consider higher-level cooperation in HEO missions

IGEOLAB HEO Focus Group-2

- Focus Group members agreed:
  - To hold a third IGEOLAB HEO FG session (tentatively scheduled during CGMS-36, 2008)
  - That Canada and the Russian Federation should started bilateral technical meetings
  - To take advantage of WMO's considerable expertise to facilitate international science teams for spacecraft instruments, ground processing algorithms and validation mechanisms, and involvement in the user and ground segments

IGEOLAB HEO FG-3

- Originally planned for May 2008
- ROSCOSMOS and ROSHYDROMET informed WMO “Arctika” Project approved by Russian Federation government with funding
- Additional coordination and planning required before FG-3
- At FG Co Chairs request, now planned for CGMS-36, 2008 (tentatively Maspolomas)

Thank you