



World Meteorological Organization

Working together in weather, climate and water

WMO's Contributions to Climate Monitoring and the Need for an End-to-End System

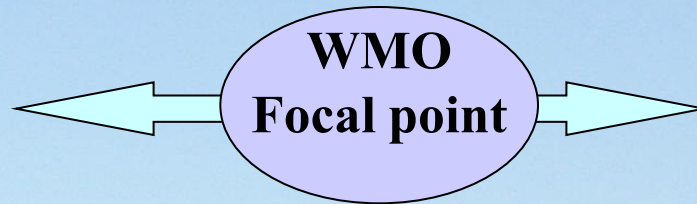
Barbara J. Ryan
WMO Space Programme
Geneva, Switzerland

2nd Asia/Oceania Meteorological
Satellite Conference
Tokyo, Japan



WMO Space Programme Components

*Satellite
operators
CGMS & CEOS*



*Users: all WMO
& co-sponsored
programmes*

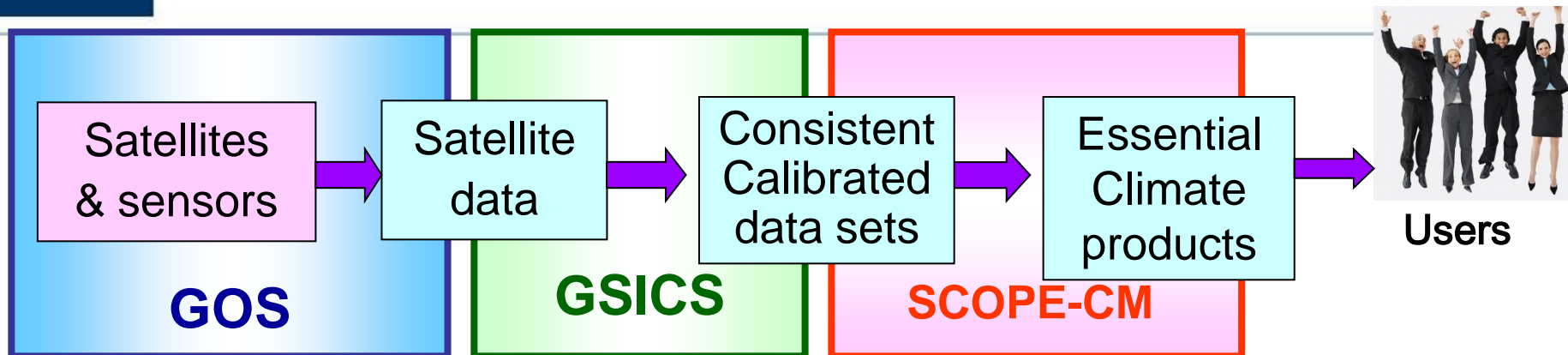
**Integrated Space-based
Observing systems**

**Information
and training**

**Availability and use of
satellite data & products**

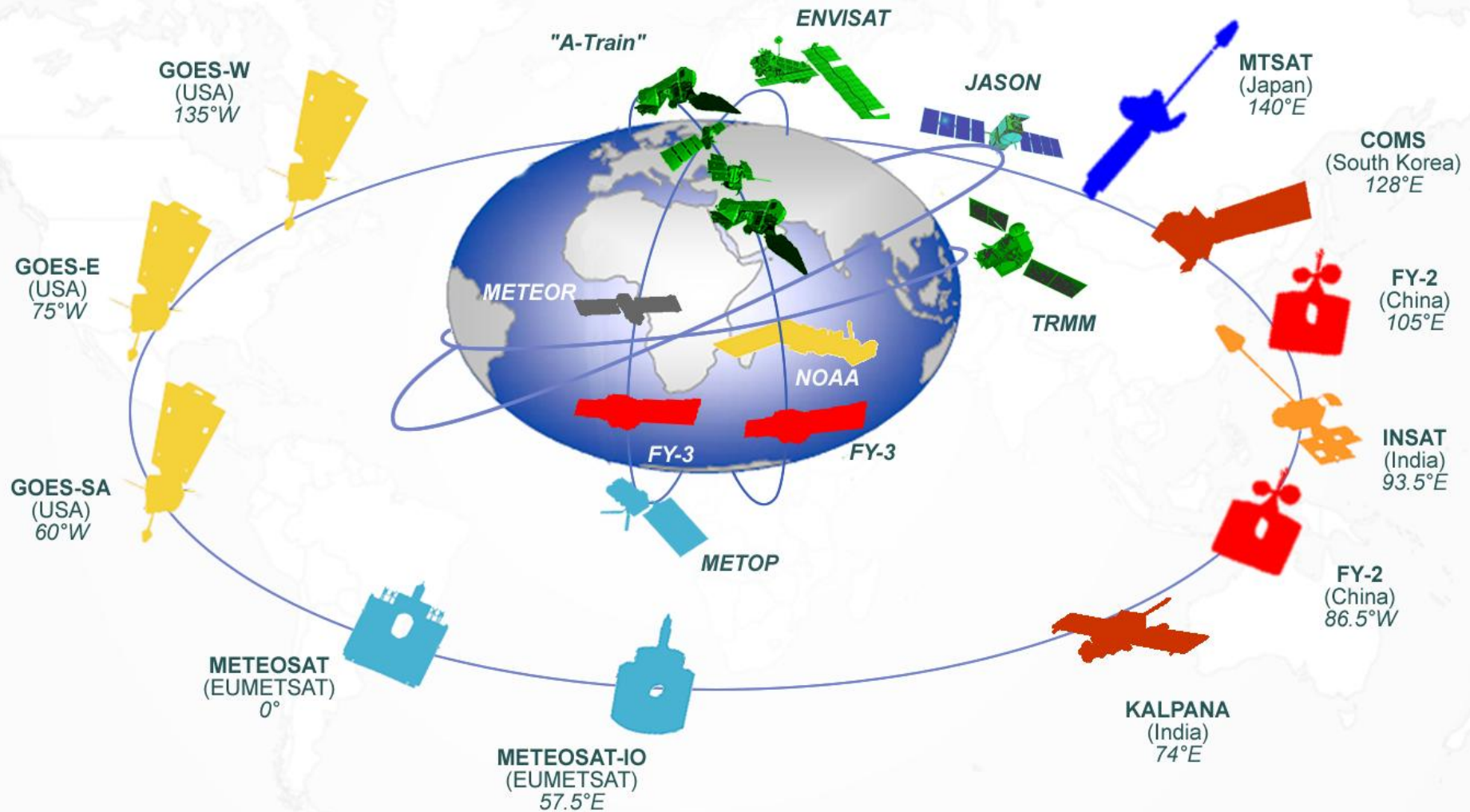
Space Weather Coordination

Activity Value Chain



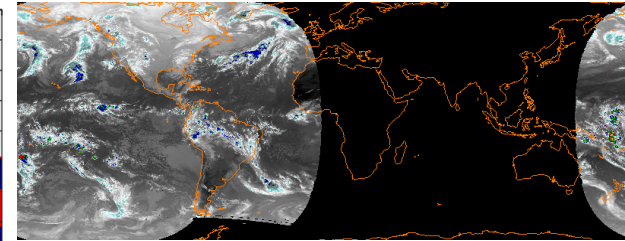
- Requirements Gathering and Articulation – RRR Process
- System Capabilities and Gaps – WMO Dossier, CEOS MIM
- Vision of the Global Observing System (GOS) in 2025
- CGMS Contingency Planning and Commitments
- Global Space-based Inter-calibration System (GSICS)
- Sustained Co-Ordinated Processing of Environmental satellite data for Climate Monitoring (SCOPE-CM)
- Users – Vlab Education and Training

Space-based Global Observing System Schematic





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Slide Courtesy NOAA

SCOPE-CM Phases



2008

2009

2010

2011

2012

2013

2014

- establish initial network and structure
 - agreement on principles and standards
 - first pilot projects on selected subjects
 - assessment of current capabilities
 - establishment of feedback mechanisms
- establishment of structures for sustainable generation of FCDRs and TCDRs
 - generation of first SCOPE-CM products
 - increased coverage of products in terms of ECVs, time and spatial dimension
 - fostering extension of the network
- full deployment of the sustained system of product generation
 - product review and quality control
 - continuous product improvement

User Training: The VLab network in 2011

12 Centres of Excellence and 8 satellite operators

- New CoE in Republic of Korea
- More than 1300 participants in international training courses
- Technical Support Officer (TSO) funded by EUMETSAT and NOAA in 2010-2011
- Voluntary funding needed for TSO in 2012 and beyond





Motivation for a Climate Architecture

- Policy framework in place (UNFCCC, IPCC) and expectations are high
 - Emerging national and international efforts for climate services will bring additional demands
 - Space-agency investments have been considerable, and need to be leveraged
 - There are still observational gaps and risks of gaps
 - Greater coordination is needed in a resource-constrained environment
 - While contingency measures exist for weather observations, they are still relatively lacking for climate observations
 - Long-term and sustained provision of observations will require additional resources and messages need to be clearer
-

Funding Estimates

Additional costs estimated
in GCOS IP-10 for enhancements
to observations and infrastructure
for climate
US\$ 2.5 Billion per year

Costs estimated for existing
observations and infrastructure
contributing to the GCOS,
mainly for weather and
environmental services
US\$ 5–7 Billion per year



Additional costs for satellite missions, datasets and products, for the benefit of all countries	US\$ 1000 Million per year
Additional costs for open ocean in-situ observations, for the benefit of all countries	US\$ 400 Million per year
Additional costs for enhancements in national territories (in developed countries)	US\$ 500 Million per year
Additional costs for enhancements in national territories (in developing countries)	US\$ 600 Million per year



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WMO Space Programme



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WMO Space Programme

The Space Programme's objective is to promote availability and utilization of satellite data and products for weather, climate and hydrological applications to WMO Members.

It coordinates and activities and services and an

- Qu
- Obs
- Satellite
- Working Docu
- GOS Dossier
- Virtual Laboratory

www.wmo.int/sat

Programme Overview

- Home
- Activities and objectives
- Structure and Governance
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→ Space-based GOS

→ Data access & use

→ Training

→ Space Weather

Regional Activities

Documentation

Databases and Links

CGMS

WIGOS

WIS

The WMO Space Programme has 4 main components:

The space-based Observing System



Access to Satellite Data and Products



Awareness and Training



Space Weather Coordination

