

World Meteorological Organization

Working together in weather, climate and water

WMO Integrated Global Observing System (WIGOS)

--Progress report to CGMS-41

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Outline

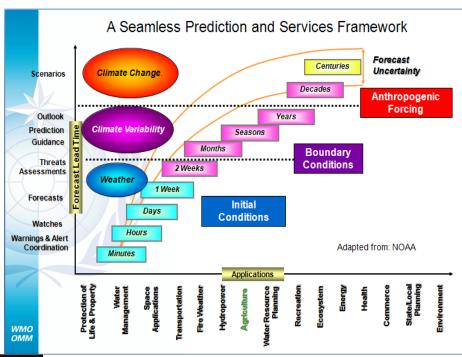
- WIGOS Key Activity Areas and Major Progress
- WIGOS needed contribution from CGMS and members
- Summary

■ WMO Cg-16 (2011) decisions to Implement

WMO INTEGRATED GLOBAL **OBSERVING SYSTEM (WIGOS)**

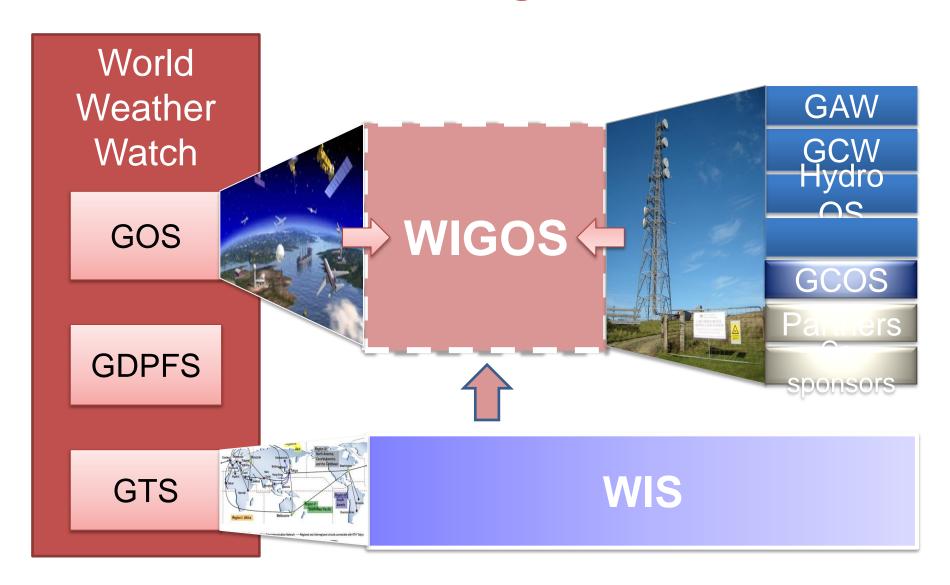
The key word is Integration:





Need an Integrated Global Observing System to meet all requirements in a cost – effective manner

WIGOS: A future observing framework for WMO



Four levels of bodies are contributing to WIGOS development

- 1. Inter-Commission Coordination Group on WIGOS (ICG-WIGOS): Overall WMO Coordination Mechanism engaged by all Technical Commissions, guided by EC focal points and EC & Congress sessions
- 2. Technical Commissions—Technical lead on WIGOS implementation (CBS & CIMO)
- 3. Regional Associations and Members: engagement at Regional and National levels.
- 4. Secretariat Team, coordinated under the WIGOS Oversight Board (SG, DSG, Directors)



ICG-WIGOS & Task Teams

• ICG-WIGOS & Task Teams:

- TT-WIGOS Implementation Plan (March 2012) ,
- TT-WIGOS Regulatory Material (Nov 2012; June & Nov 2013)
- TT-WIGOS Metadata (WMD) (March 12-15, 2013)

• ICG-WIGOS-2 (March 18-22, 2013):

- Updated WIP, and made new decisions to establish
 Task Team on Quality Management
- Reviewed Regional WIGOS Implementation Plans and progress

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1. Respond to WIGOS RRR process requirements

Observational Requirements under WIGOS Framework

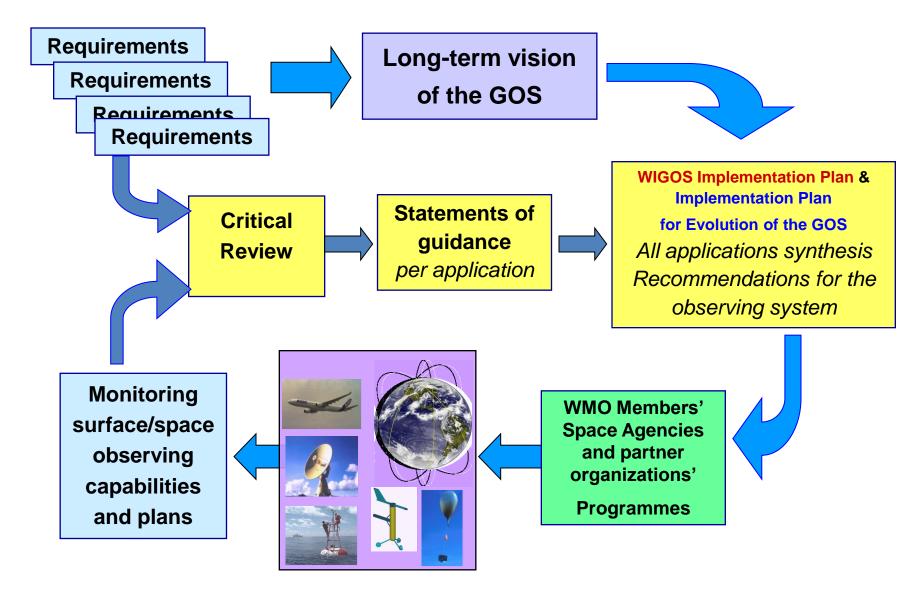
Inclusion requirements of

- Weather, DRR
- Climate (GFCS, GAW, Ocean.),
- Water(WHYCOS,..)
- Environment(GAW, Health)
- Research
- Cosponsored systems

WIGOS Space component

- From weather satellite to WIGOS space component
- CGMS new baseline with greatly enhanced global satellite constellations to meet WWW, GFCS, GAW, WHYCOS,GCW etc...
 Operational requirements.
- Challenges to enhance greatly space and ground capabilities

WMO Standard Practice: Rolling Review of Requirements



RRR process: for documenting and interpreting new user requirements

Service requirements:

Content, Presentation,
Delivery media,
Timeliness,
Continuity,
User support, Training, ...

Product requirements:

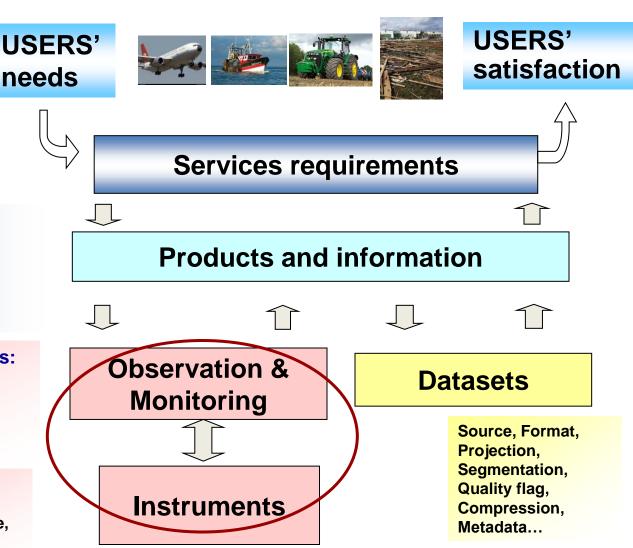
Type (numerical, graphical, binary, alert),
Algorithm,
Spatial/temporal resolution,
Quality control

Observational requirements:

Geophysical variable, Unit, Domain, Spatial resolution, Temporal resolution, Uncertainty ...

Specifications:

Instrument type,
Orbit, Scanning mode,
Spectral bands,
Channel width, SNR, ...





2. Contribute to new WMO Technical Regulation (WIGOS section) and WIGOS manual

Respond to WMO consultation process before Congress 17 (2015)

WG III

WMO Technical Regulations: Composition & generic concept



egulations Prescriptive

"Shall"
and "Should"
have specific
meaning

"Shall"

TRs

(Vol 1 - 4)

Manuals

(Annex 1 - 8)

- Basic SARPs (definitive)
- Mostly requirement-driven
- Approval by Congress (in principle)
- Relatively Conservative
- More detailed SARPs (procedures and specifications)
- Mostly technology-driven
- Approval delegated to EC
- Relatively Dynamic

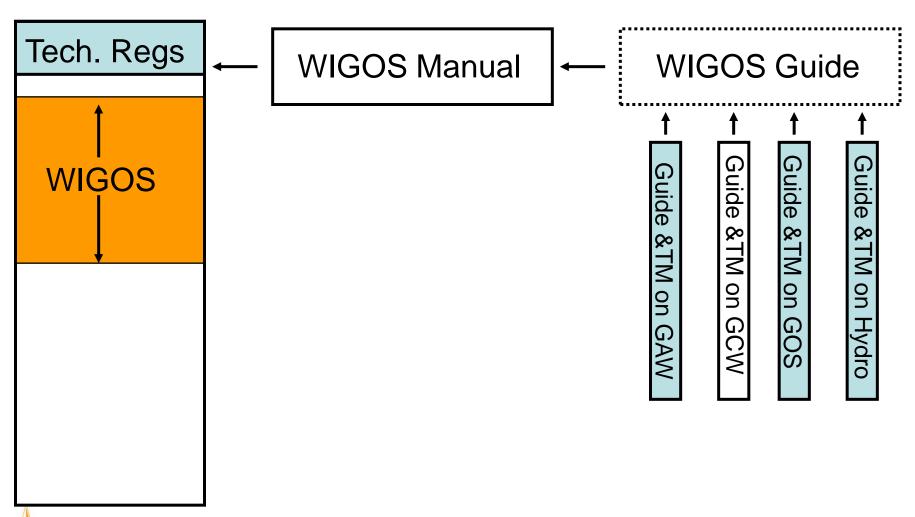
egulations Descriptive Guides

have ordinary other reference docs meaning (e.g., TR Manuals Vol II,

WMO-No.9, Guidelines, etc.)

- Procedures and practices
- Implementation guidance
- Explanations
- Examples, good practice
- Flexible updates

2. Outcome of ICG-WIGOS-2: WIGOS Regulatory material - new proposal





DRAFT STRUCTURE OF WIGOS SECTIONS IN WMO TR - OUTLINE

1. INTRODUCTION

- 1. Purpose of WIGOS
- 2. WIGOS component observing systems
 - 1. Global Observing System (GOS)
 - Global Atmosphere Watch (observing component of GAW)
 - 3. WMO Hydrological Observations
 - 4. Global Cryosphere Watch (observing component of GCW)
- 3. Collaboration with co-sponsored and non-WMO observing system
- 4. Governance and management

2. COMMON ATTRIBUTES OF COMPONENT SYSTEMS

- 1. Requirements
- 2. Design, planning and evolution
- 3. Instrumentation and Methods of Observation
- 4. Operations
- 5. Observational Metadata
- 6. Quality Management
- 7. Capacity Development
- 3. COMMON ATTRIBUTES SPECIFIC TO THE SURFACE-BASED SUB-SYSTEM OF WIGOS
- 4. <u>COMMON ATTRIBUTES SPECIFIC TO THE SPACE-BASED SUB-SYSTEM OF WIGOS</u>
- 5. OBSERVING COMPONENT OF THE GLOBAL ATMOSPHERE WATCH (GAW)
- 6. OBSERVING COMPONENT OF THE GLOBAL CRYOSPHERE WATCH (GCW)
- 7. GLOBAL OBSERVING SYSTEM (GOS) OF WWW
- 8. WMO HYDROLOGICAL OBSERVING SYSTEM

3. Contribute to the quality management, standardization and data management areas

- CGMS contribution to the development of:
 - WIGOS Quality Management guidance, mechanism, practices and procedures (WG I, II &IV)
 - WIGOS-Space Metadata and data representation (WG II & IV)
 - Satellite products standardization (WG II)
 - Review and revision of ICG-WIGOS documents on above items (all WGs)





Online resources maintained by WMO

Space Programme: http://www.wmo.int/sat

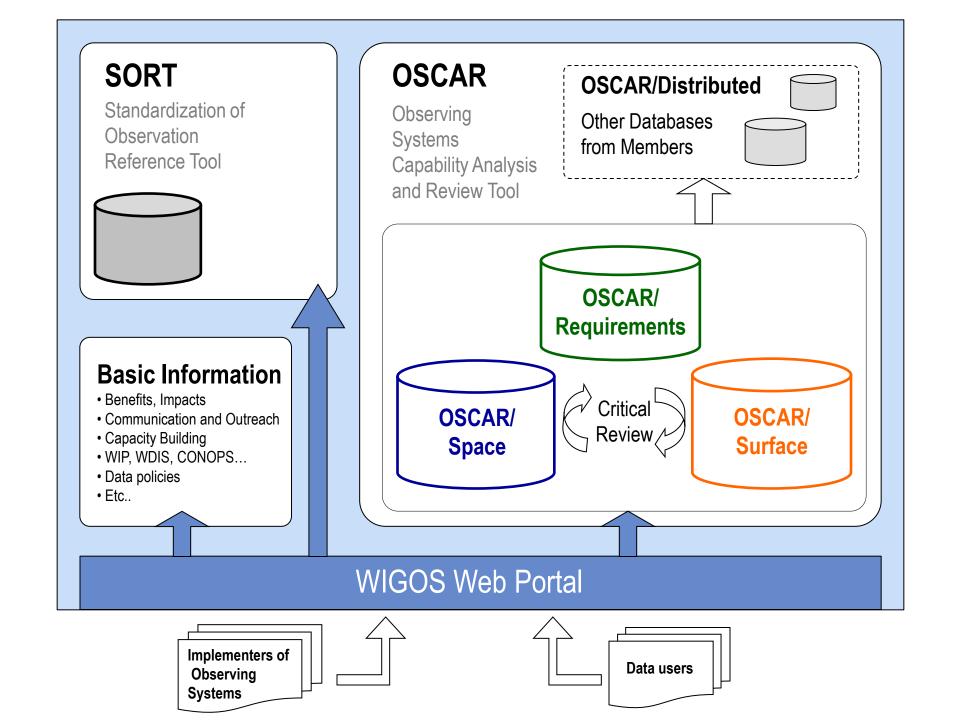
OSCAR
Satellite capabilities
wmo.int/oscar



Data Access,
Preprocessing Software,
Analysis Tools

Product Access Guide (under development)





Outline

- WIGOS Key Activity Areas and Major Progress
- WIGOS needed contribution from CGIMS and members
- Summary

WIGOS is a partnership process for enhancing overall observing capability in the most cost-effective approach by strengthening integrations & synergies

Management of WIGOS Implementation

Collaboration with cosponsors and partners

To oversee, guide and coordinate WIGOS

Data discovery, delivery & archival

Observing system operation & maintenance

To ensure supply of and access to WIGOS observations

Polar-orbiting meteorological satellite satell

To plan, implement and evolve WIGOS component systems

Design, planning and optimised evolution

Capacity
Development

To facilitate and support the operation of WIGOS

Communications and outreach

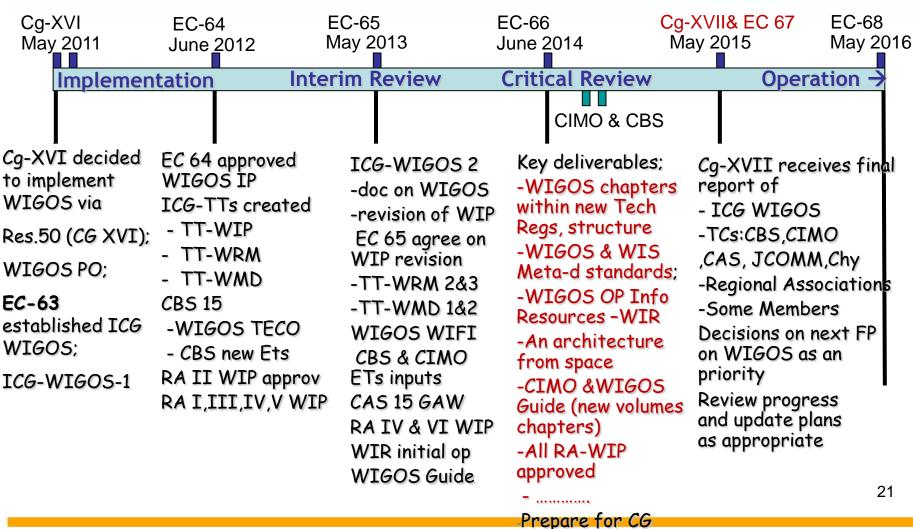
Operational Information Resource

Standardization, interoperability & compatibility

Quality Management



WIGOS Roadmap



XVII

Thank You

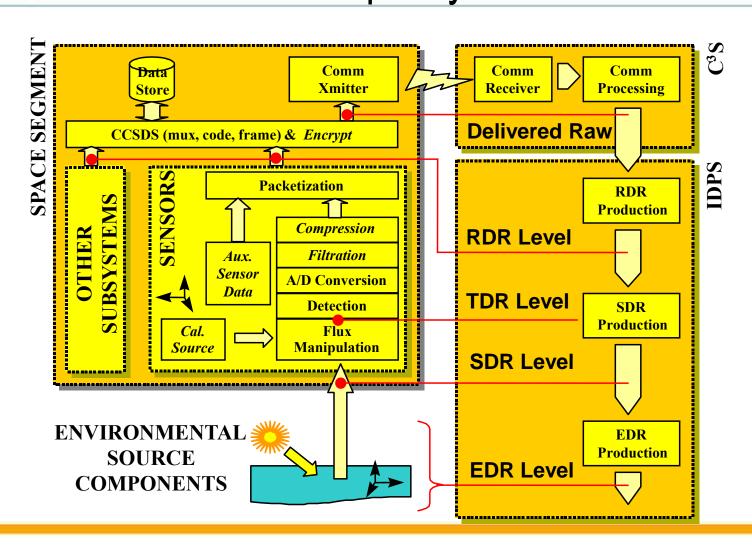




Backup slides for Q&A



Satellite products delivered at multiple levels all with quality indicators



WIGOS Information Resource Components

- Portal:
 - General WIGOS information
 - Basic documents
- SORT: Standardization of Observation Reference Tool
 - WIGOS relevant Standards and best practices need contribution from all relevant organizations and programmes
- OSCAR: Observing Systems Capabilities Analysis and Review Tool
 - Network design and planning
 - Tool for Rolling Requirements Review Process
 - Sub-components
 - o OSCAR/Requirements: Observational user requirements
 - OSCAR/Space: Space-based observing systems capabilities
 - o OSCAR/Surface: Surface-based obs. systems capabilities
 - OSCAR/Distributed: Relevant distributed information systems



CBS-XV: Inter-Programme Expert Team on WIGOS Framework Implementation Matters (IPET-WIFI)

- Address integration aspects of WIGOS (WIP);
- Provide technical advice, guidance, practices, etc. for WIGOS Framework Implementation
- Priority:
 - WIGOS Regulatory Material;
 - WIGOS metadata;
 - WIGOS Quality Management Framework;
 - WIGOS Operational Information Resource;
 - WIGOS standards and best practices;

WIGOS Framework Implementation Plan

CONTENTS

- Introduction and Background
- 2. Key Activity Areas for WIGOS Implementation
- 3. Project Management
- 4. Implementation
- 5. Resources
- 6. Risk Management
- 7. Outlook

Annexes

KEY ACTIVITY AREAS

- 1) Management of WIGOS implementation
- 2) Collaboration with the WMO and co-sponsored observing systems
- 3) <u>Design, planning and optimized</u> <u>evolution of WIGOS</u>
- 4) Observing System operation and maintenance
- 5) Quality Management
- 6) Standardization, system interoperability and data compatibility
- 7) The WIGOS Operational Information Resource
- 8) Data discovery, delivery and archival
- 9) Capacity development
- 10) Communications and outreach



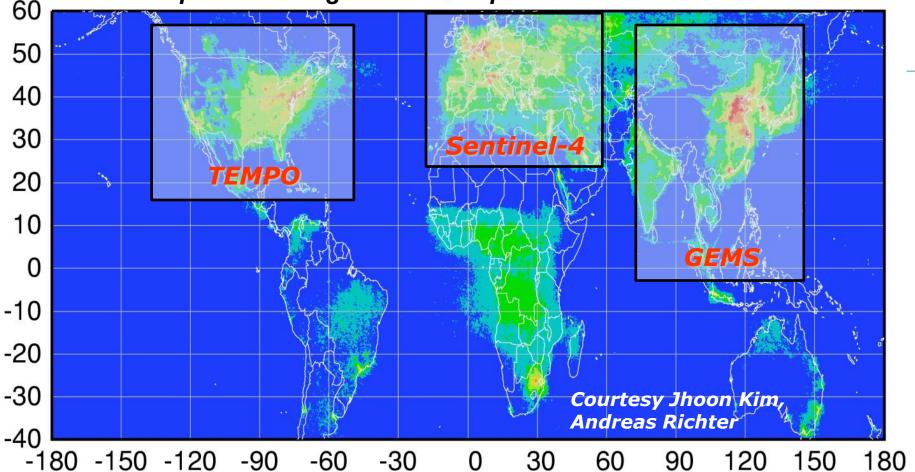
Ex: From Space-based GOS to space-based WIGOS-document and meet GAW requirements

Cg 16--3.2.3 Regarding satellite measurements of atmospheric chemical constituents and related physical parameters, Congress recommended for GAW to set up an ad-hoc Task Team to review the needs for GAW regarding satellite measurements.

Congress further recommended for this work to be done in coordination with the CBS Expert Team on Satellite Systems (ET-SAT) and the Expert Team on Evolution of the Global Observing Systems (ET-EGOS), the Committee on Earth Observation Satellites (CEOS) and the Coordination Group for Meteorological Satellites (CGMS) and also taking into consideration GCOS requirements and the vision for the GOS in 2025

Geostationary pollution monitoring





Policy-relevant science and environmental services enabled by common observations

- Improved emissions, at common confidence levels, over industrialized Northern Hemisphere
- Improved air quality forecasts and assimilation systems
- Improved assessment, e.g., observations to support United Nations Convention on Long Range Transboundary Air Pollution