



*DBCP Scientific & Technical Workshop  
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**Integration of marine meteorological and  
other appropriate oceanographic  
observations into the WMO Integrated  
Global Observing Systems  
(WIGOS Pilot Project for JCOMM)**

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# WMO Integrated Global Observing Systems (WIGOS)

Promoted by WMO Cg XV (2007)

- Comprehensive, multi-disciplinary, coordinated, and sustainable system of observing systems
- Contributes to GEOSS
- Serving all WMO Programmes and co-sponsored Programmes
- Ensuring interoperability between sub-systems and data availability
- Ensuring data quality standards
- Facilitate archiving and technological innovations

**WIGOS is Expected Result 4 of WMO strategic plan**

# Broad objectives of WIGOS

- Address following domains:
  - Atmospheric
  - Oceanic
  - Terrestrial, including hydrological
- Ensure broader governance frameworks
  - Inter-agency co-sponsorship of systems
- Address requirements through Rolling Review
- Increase interoperability between various systems
  - Standardization of data produced
  - Data discovery and exchange
  - Complementarity space-based & *in-situ* components
- Ownership of partner organizations respected

# Derived WIGOS benefits

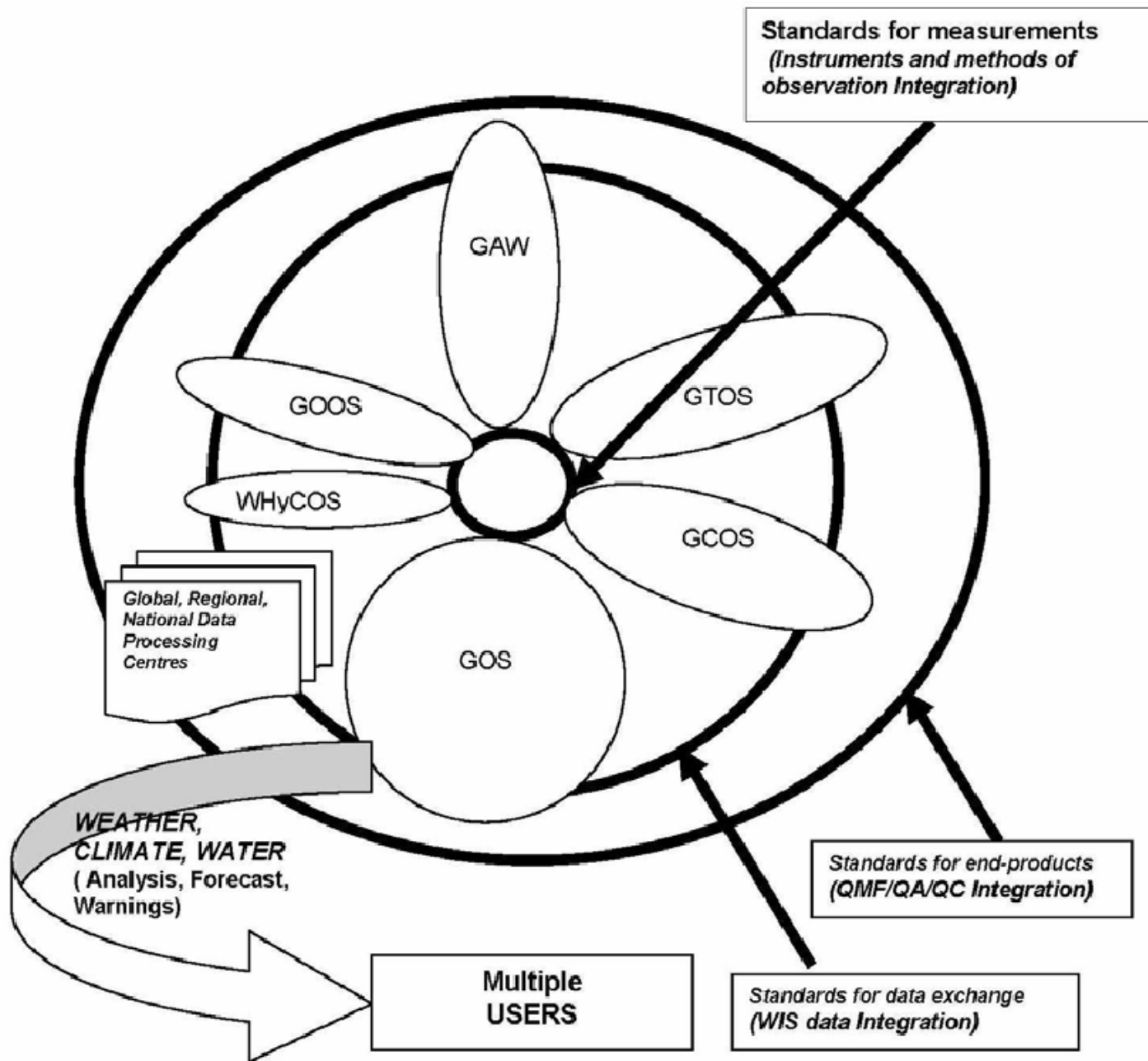
- Improved services
- Increased consistency/coherence
- Improved Quality
- Improved Access to observations
- More efficient use of resources
- Better preparedness to incorporate new observing systems and to interface with non-WMO systems

# WIGOS activities

- Pilot Projects
  - I: Global Atmosphere Watch (GAW)
  - II: Hydrological observations
  - III: AMDAR (aircraft obs.)
  - IV: Instruments and Methods of Observation (cross-cutting)
  - **V: Marine Meteorological and other appropriate Oceanic Observations**
- Demonstration Projects in all six WMO Regions
  - Kenya and Namibia; Korea; Brazil; USA; Australia; Russian Federation, Morocco
- Working Group on WIGOS-WIS (established by EC LIX, 2007)

# WIGOS Pilot Project for JCOMM

- Integrating marine and other appropriate oceanographic observations into WIGOS
- 3 levels of integration:
  - Best practices (instrument level)
  - Interoperability with WIS (obs. data level)
  - Quality Management (products level)



# Scope

- Guidance from EC WG WIGOS-WIS, and Sub-Group
- Joint Steering Group
- Coordination with WMO programmes (MMOP, IMOP, WWW, WIS) and Technical Commissions (CBS, CIMO)
- Coordination within JCOMM
  - Observations Programme Area (OPA)
  - Data Management Programme Area (DMPA)
  - Services Programme Area (SPA)
- Coordination with IOC and IODE
  - **IOC has ownership**



# Approach

- **Cooperation with the ocean community is key**
  - Easier to exchange data via the WIS
  - Connection between Ocean Data Portal (ODP) and WIS for historical and recent data
  - Integrate new sources of data (Argo, OceanSITES, GHRSSST, XBT, Ocean carbon, sea level stations, satellite data...)
  - Specific data systems yet to be developed by the ocean community

# Deliverables

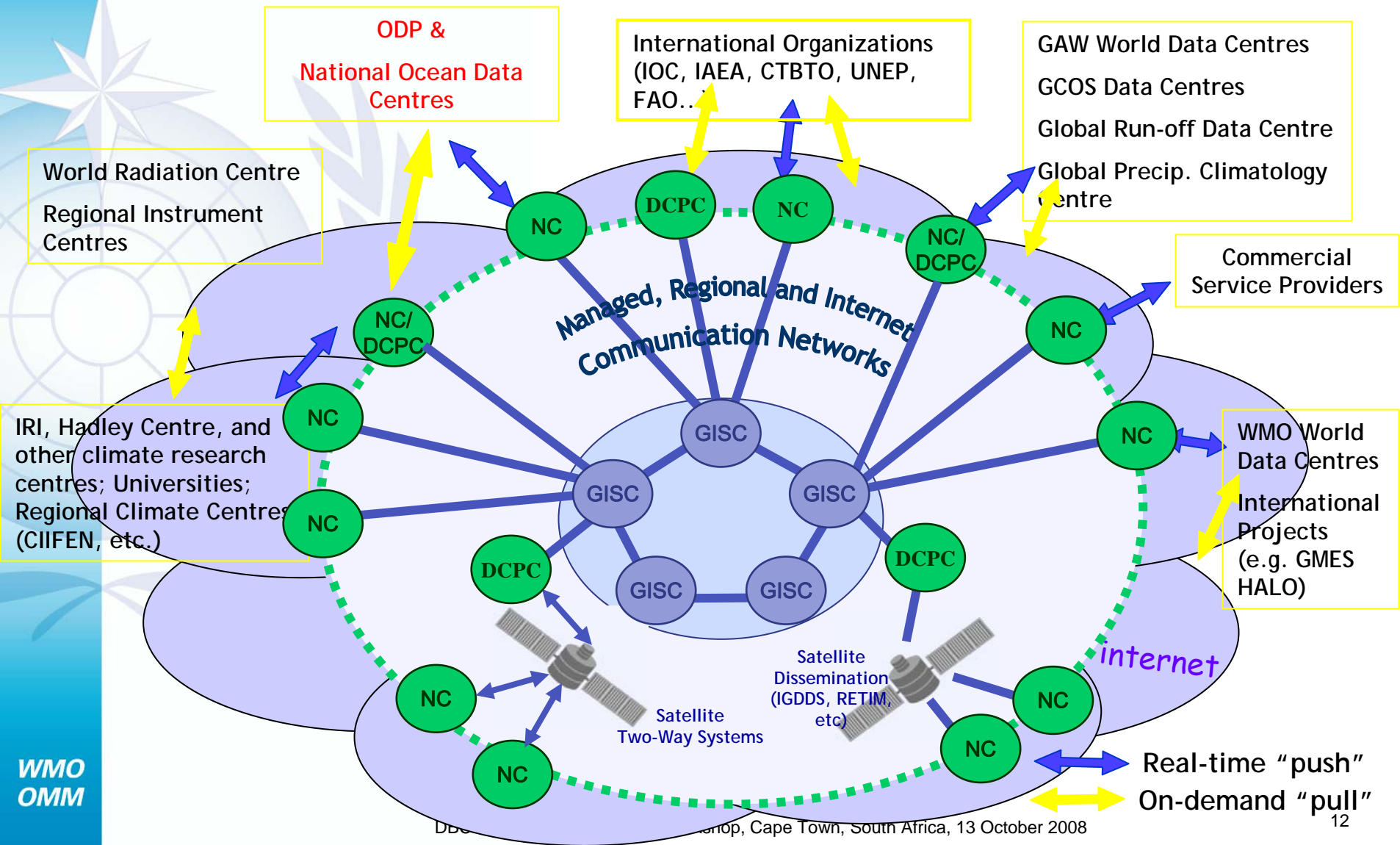
- Documenting & integrating **best practices** and standards
  - Consistent and better quality data in models
- **Interoperability** of marine data systems with WIS
  - Multi-disciplinary approach
  - Documented and standardized data
- **Quality Management**
  - Cost effective QMS for better, more timely data and products minimizing duplication (compliant with QMF)

# Present situation in terms of data distribution

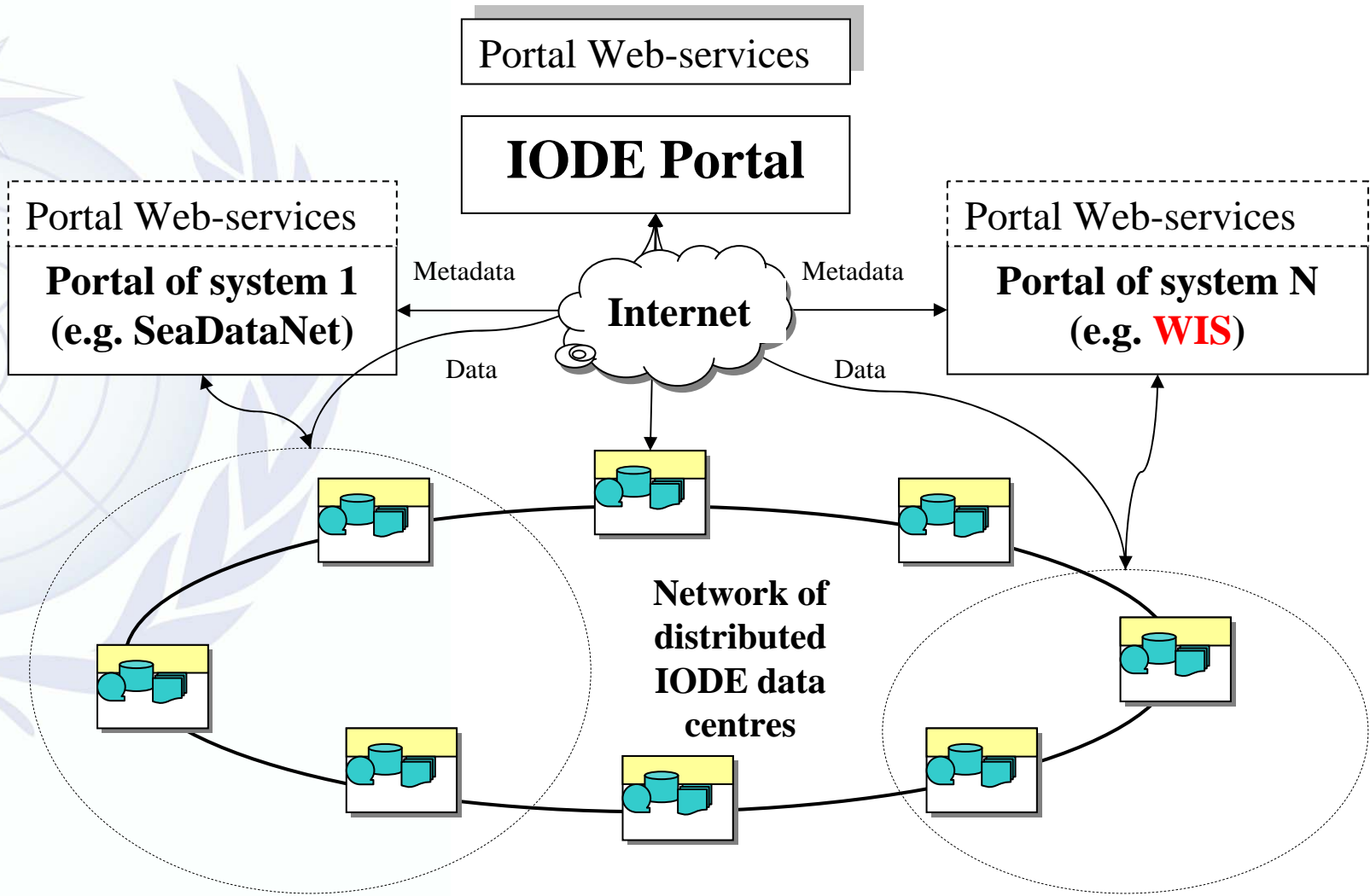
- IOC data policy and WMO Res. 40 to follow
  - Most of the data on GTS
  - Difficult for ocean centres to access GTS data
  - Some delayed mode data available
- Some parallel data distribution systems in place
  - e.g. Argo, Tropical moorings, GOSUD, OceanSITES, GHRSSST
  - These systems provide for better quality data
  - Ocean data collection often funded by research
- Ocean community developed E2E technology
  - NODC, Obninsk proposed as WIS DCPC
  - Ocean Data Portal being developed by IODE in 2008
- Other interoperability initiatives
  - e.g. SeaDataNET, DMAC
- WMO Information System (WIS)

# WMO Information System (WIS)

- Multi disciplinary
- Real time and delayed mode
- Push & Pull (DAR)



# IODE Ocean Data Portal



# JCOMM Pilot Project for WIGOS

- JCOMM/IODE Standards forum, Ostend, January 2008
  - Defined & Proposed a Standards process  
<http://www.oceandatastandards.org/>
- Planning meeting for the WIGOS PP for JCOMM, Ostend, 29 March 2008
- Joint Steering Group for the IODE Ocean Data Portal and the WIGOS Pilot Project for JCOMM, Geneva, Switzerland, 18-19 September 2008

# Joint Steering Group (membership)

- **CIMO expert (co-Chair):** **Rainer Dombrowsky**
- **IODE expert (co-Chair):** **Greg Reed**
- JCOMM OCG Chair: Candyce Clark
- JCOMM DMCG Chair: Bob Keeley
- ETDMP Chair: Nick Mikhailov
- IOOS, DMAC (USA): Jack Harlan
- NODC (USA): Ken Casey
- WIS expert(s): Eliot Christian
- MCSS & GCCs: Nicola Scott

# Joint Steering Group for the IODE Ocean Data Portal and the WIGOS PP for JCOMM

- Produced:
  - Project Plan
  - Implementation Plan
- Recommended:
  - Developing Business Plan
  - Enhancing cooperation with CIMO & HMEI
  - Updating WMO Guide No. 8
  - Establishing regional marine instrument centres
  - Integrated approach for instrument intercomparisons
- Identified 13 key data-sets to be connected to WIS
- Proposed approach to Quality Management



# Potential Partners/Participants

- World Ocean Atlas
- World Ocean Database
- SeaDataNET
- Argo Data System
- Surface currents from HF radars
- Sea level data
- VOS Delayed mode data (GCCs)
- Marine Climatology, ICOADS
- XBT Data
- GHRSSST
- Virtual Constellation of SVW
- Instrument/Platform Metadata (e.g. META-T, ODAS)
- **RNODC for Drifting Buoys**

# Resources

- Implementation costs met by Members
- Project management:
  - 3/4 meetings of the Steering Team until 2011
  - Experts visiting data centres (making the case, explaining requirements, assisting in implementation)
  - Consultancy

# WIGOS and the DBCP

- Instrument Best Practices
  - Integrate existing DBCP Best Practices
    - WMO No. 8
    - JCOMM Catalogue of Best Practices
  - Develop
    - Calibration procedures
    - Deployment instructions
  - Rationalize Instrument Intercomparisons
  - NDBC offered to implement regional marine instrument centre
  - Develop links with HMEI
    - Association of Hydro-Meteorological Equipment Industry
- Interoperability with WIS
  - Data disseminated on GTS feed into WIS
  - RNODC/DB investigating providing interoperability
- Quality Management
  - Need to document procedures

# Benefits

- For data users
  - Better access to multi-disciplinary data (ocean, climate, hydrology)
  - Access to more, and better data of known quality obtained through consistent, coherent, and traceable instrumentation meeting agreed upon standards
  - Contribution to enhancing the development of operational oceanography nationally or worldwide (e.g. ocean mesoscale forecasting)
- For NMHSs
  - Better access to ocean data for operational and research applications
  - Access to quality information from buoys
  - Building a truly multi-disciplinary WIS
- For All
  - Better products and services that serve the end users better (weather forecasts, marine services, marine climatology, climate monitoring and prediction)
  - Enhanced cooperation between meteorological and oceanographic communities



Thank you!