Data Buoy Cooperation Panel XXVI

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# Proper Data Management Responsibilities to Meet the Global Ocean Observing System (GOOS) Requirements

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# NOAA and Climate/Ocean Observations

- There is an increasing demand for global climate change & ocean information, services and products – this includes observations from the GOOS and IOOS arrays.

- Partnerships enhance ocean observations in the region and also build the regional capacity to apply these observations to understand climate risk management, coastal resilience, ecosystems, MPAs, and other socio-economic benefits,

- NOAA is interested in advancing a strong, equitable and mutually beneficial collaboration with Regions for capacity building, socio-economic applications and ocean observations in the region, and

- Training & education is important for countries building the next generation ocean observatories. NOAA is pleased to be able to provide USA training & educational opportunities through Memorandums Of Understanding or Agreements.

# International Cooperation

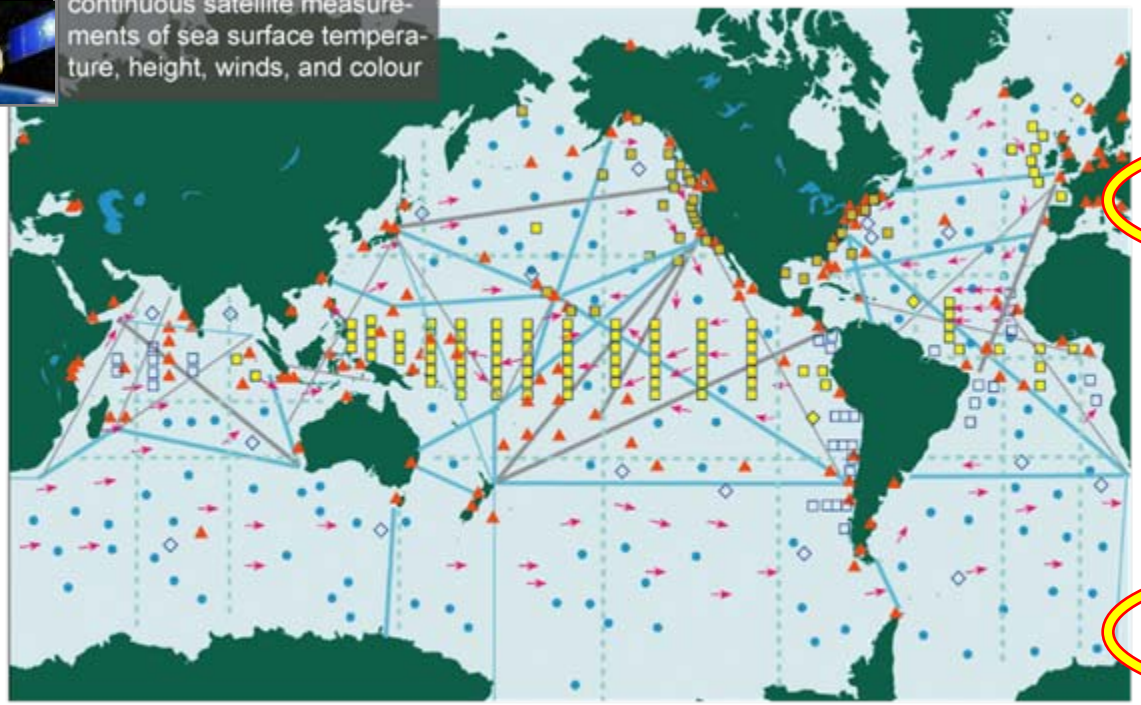

**Formal bilateral agreements between NOAA and agencies in:**

- **Indonesia--signed in 2007**
- **India--signed in 2008**
- **Japan--signed in 2008**
- **France--planned in 2009**
- **ASCLME (9 East African countries)**

# The Initial Global Ocean Observing System for Climate
# Status against the GCOS Implementation Plan and JCOMM targets

Total *in situ* networks **61%**

continuous satellite measurements of sea surface temperature, height, winds, and colour



87% **Surface measurements** from volunteer ships (VOSclim)

200 ships in pilot project

100% Global **drifting surface buoy** array

5° resolution array: 1250 floats

59% **Tide gauge** network (GCOS subset of GLOSS core network)

170 real-time reporting gauges

81% **XBT** sub-surface temperature section network

51 lines occupied

100% **Profiling float** network (Argo)

3° resolution array: 3000 floats

62% Repeat **hydrography** and **carbon inventor**

Full oce

**Reference time series** 48%

58 sites

34% Global **reference mooring** network

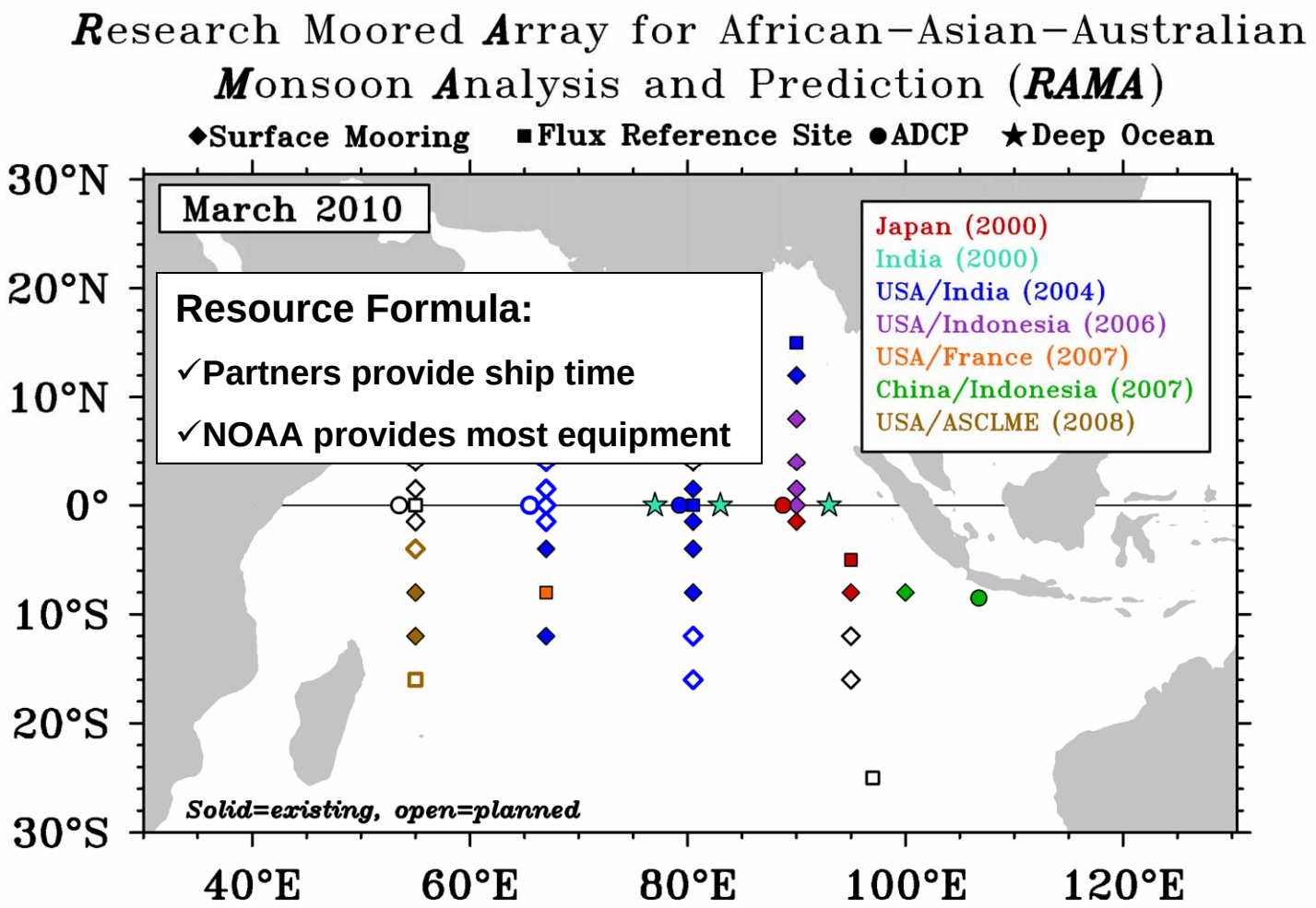
29 moorings planned

73% Global tropical **moored buoy** network

119 moorings planned

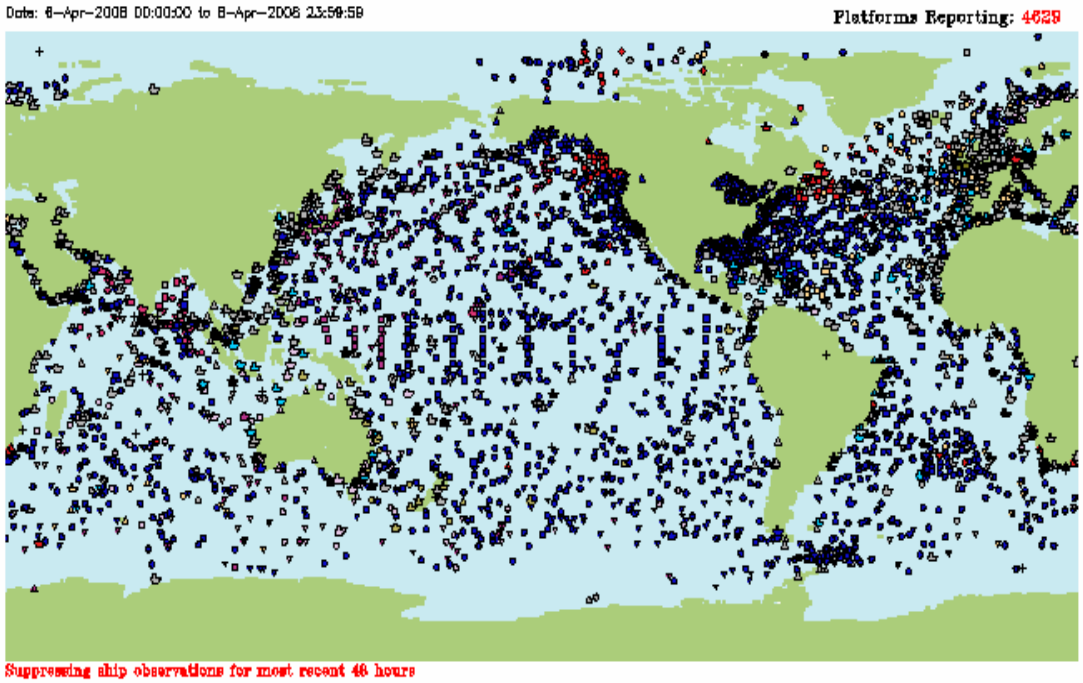
**Milestones**
**Drifters 2005**
**Argo 2007**

# RAMA: Implementation Status

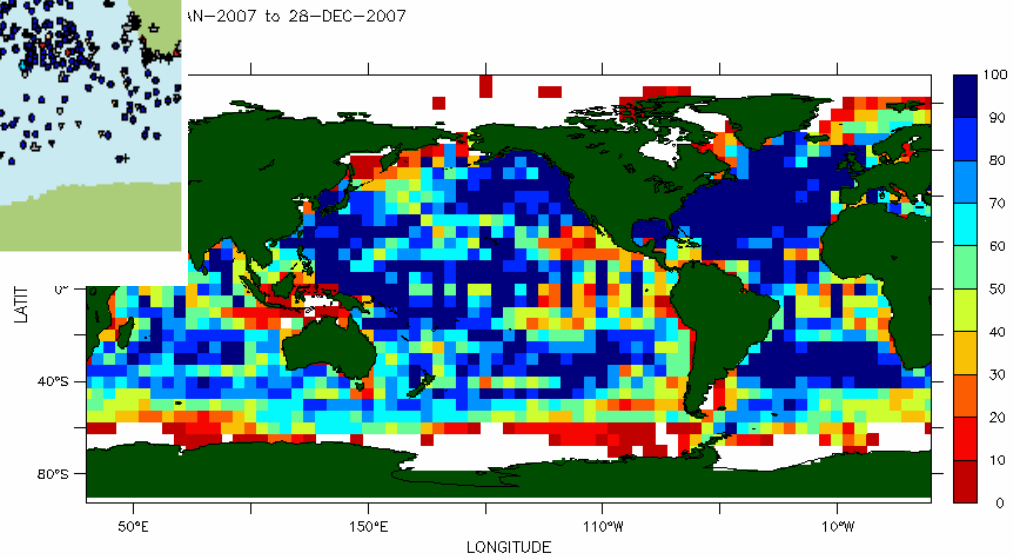



***57% of sites occupied by March 2010 (26 of 46)***

# Currents Status
# More global ocean observations

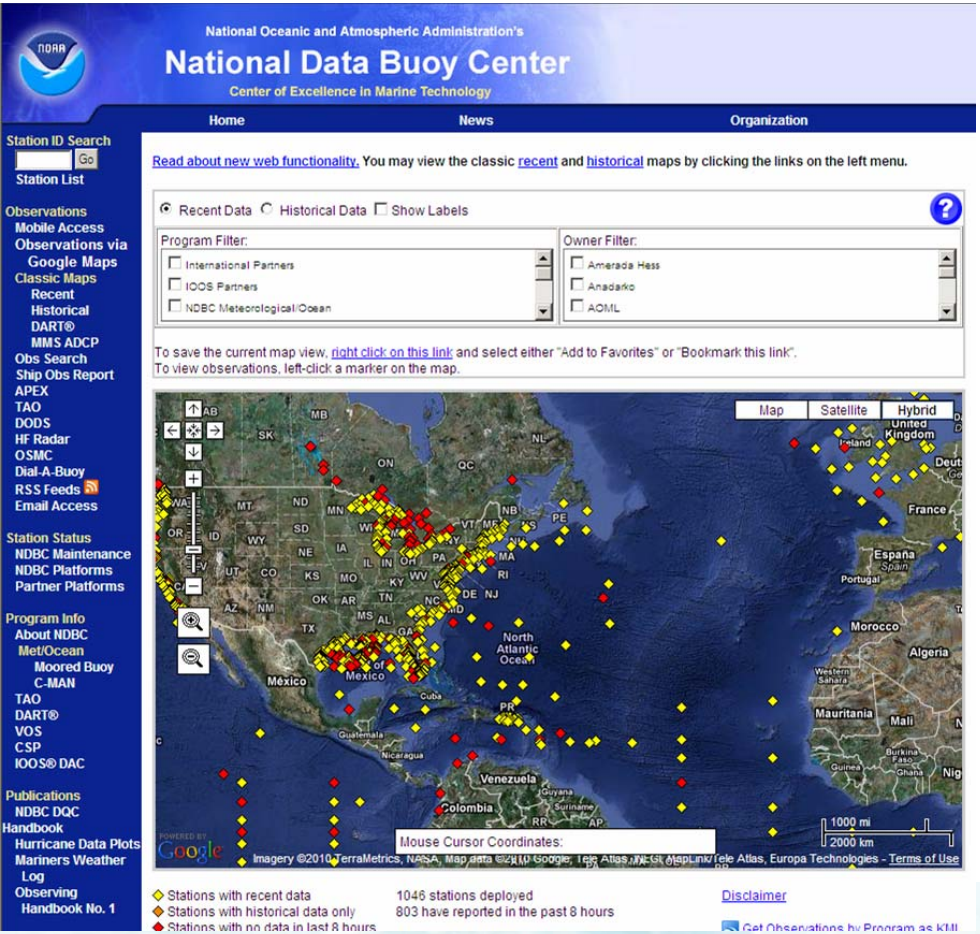


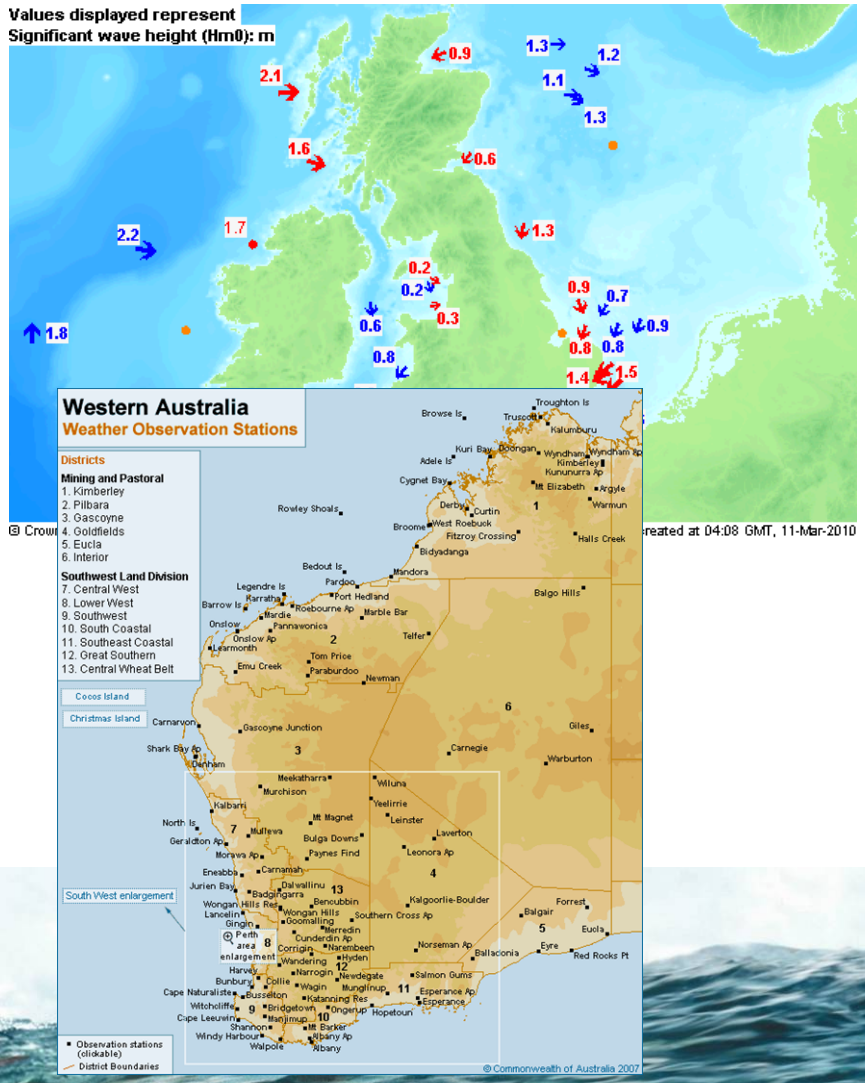

http://www.osmc.noaa.gov



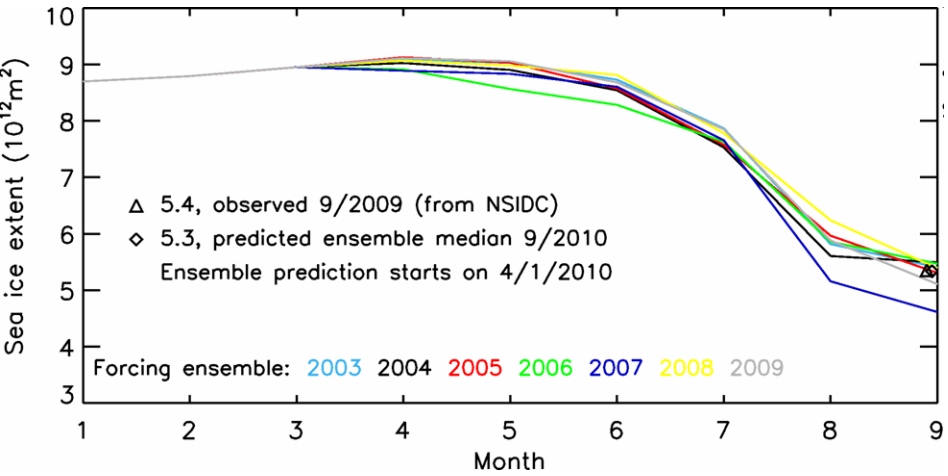

Percent of Weeks with 10 sst obs in 5x5 Box for 2007

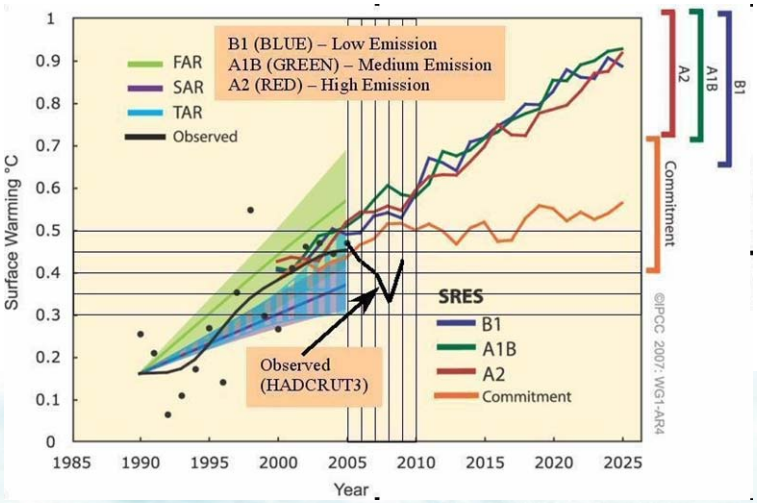
# Current Status
# Expansion in free data sets



# Current Status
# "Climate-gate"



# Proper Data Management

- More than just placing a meteorological, oceanographic or geophysical instrument in the water or on the land,
- More than just collecting an observation, and
- More than just disseminating the data via a data portal

# WMO Strategic Thrusts

1.Strategic Thrust –

**Improving Service Quality and Service Delivery**

2. Organization-Wide Expected Results –

Enhanced capabilities of Members to **deliver and improve access to high quality weather, climate and water** and related environmental predictions, information and services in response to user's needs and to enable their use in decision-making by all relevant societal sectors.

# GCOS Climate Monitoring Principles

1. Assess impact of new systems or changes to existing systems prior to implementation.
2. Ensure a suitable period of overlap for new and old observing systems.
3. The details and history of local conditions, instruments, operating procedures, data processing algorithms and other factors pertinent to interpreting data **(i.e., metadata)** should be documented and treated with the same care as the data themselves.
4. **Regularly assess quality and homogeneity of data as a part of routine operations.**
5. Integrate into national, regional and global observing priorities the needs for environmental and climate-monitoring products and assessments, such as IPCC assessments.
6. Maintain operation of historically-uninterrupted stations and observing systems.
7. Focus on data-poor regions, poorly observed parameters, regions sensitive to change, and key measurements with inadequate temporal resolution as high priorities for additional observations.
8. Specify to network designers, operators and instrument engineers at the outset of system design and implementation the long-term requirements, including appropriate sampling frequencies.
9. Promote the conversion of research observing systems to long-term operations in a carefully-planned manner.
10. **Data management systems that facilitate access, use and interpretation of data and products should be included as essential elements of climate monitoring systems.**

# Seven Data Management Laws

1. A quality descriptor will accompany every real-time observation distributed to the ocean community.
2. Subject all observations to some level of automated real-time quality test.
3. Sufficiently describe the quality flags and quality test descriptions in the accompanying metadata.
4. Observers should independently verify or calibrate a sensor before deployment.
5. Observers should describe their method / calibration in the real-time metadata.
6. Observers should quantify the level of calibration accuracy and the associated expected error bounds.
7. Manual checks on the automated procedures, the real-time data collected and the status of the observing system must be provided by the observer on a time-scale appropriate to ensure the integrity of the observing system.

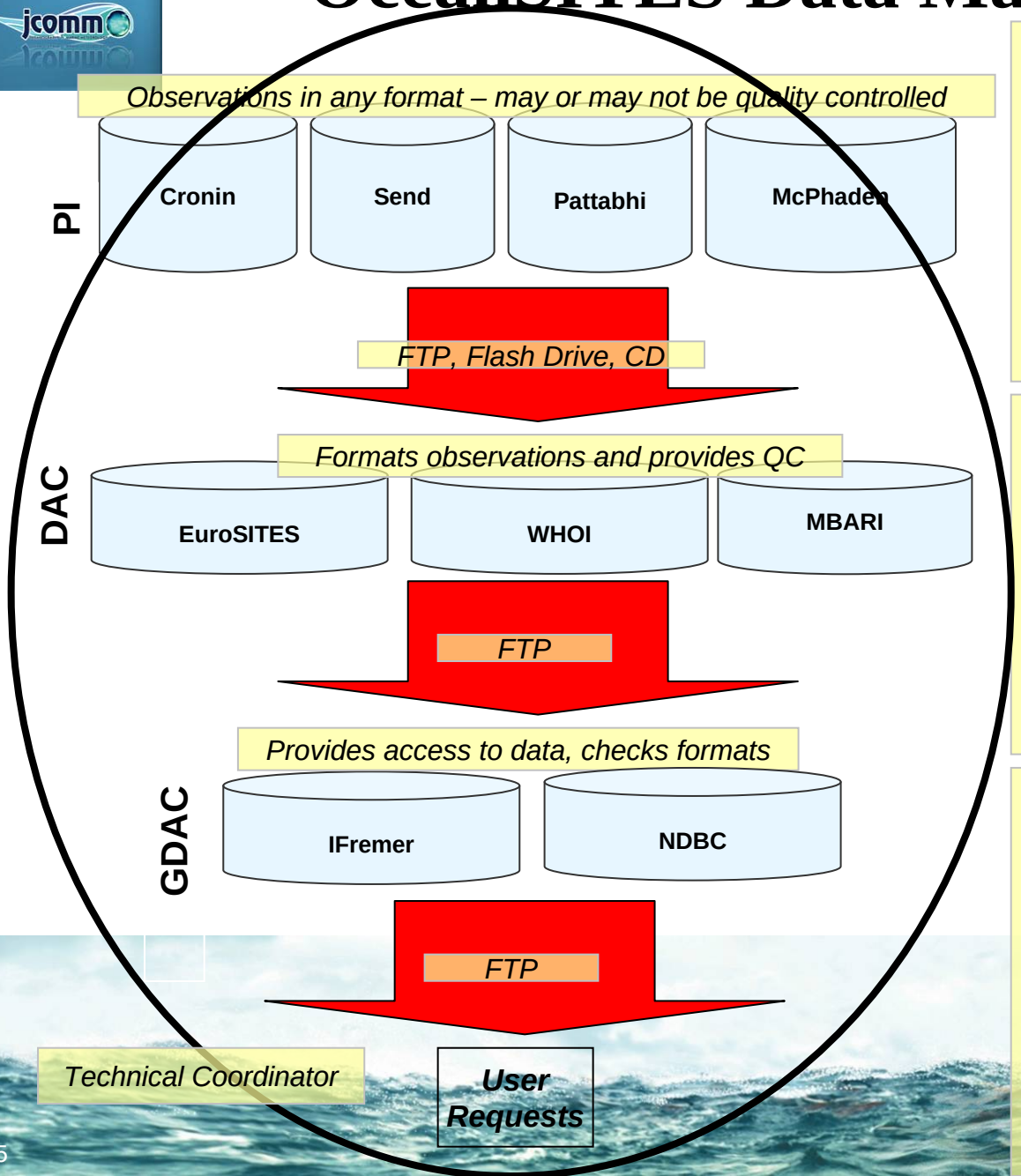
# Recommendation

JCOMM should begin to implement proper data quality techniques into their newly developed marine observation platforms - now – before the instruments are placed in the water.

# WIGOS
# Regional Marine Instrument Center

**Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) Regional Marine Instrument Center (RMIC) Training Workshop on April 13-15, 2010 for WMO Regional Association IV (RA-IV) at NDBC. Representatives from ten countries participated in this first Workshop. Countries represented were: Bahamas, Costa Rica, NL Antilles, Guatemala, Belize, Canada, France, Barbados, Morocco, and China.**

# OceanSITES Data Management

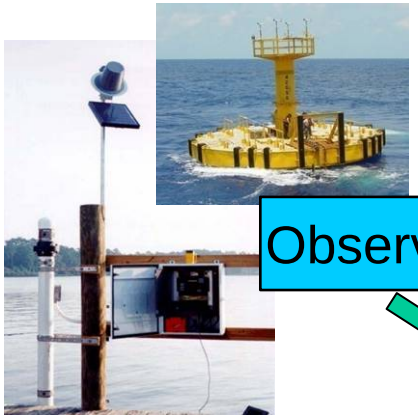



- *Maintains specific OceanSITES platforms,*
- *Determines what observations are released to GTS,*
- *Assures that the platform is available and provides reliable information,*
- *Provides the DAC with the observations in any format the DAC is willing to take, and the metadata necessary to serve as an OceanSITES platform, and*
- *QC post-recovery data according to OceanSITES agreed procedures.*

- *Sets up the OceanSITES server according to the approved specifications,*
- *Guarantees data availability from the PI,*
- *Translates the data to the OceanSITES format,*
- *Quality Controls real-time data according to the minimum OceanSITES agreed procedures,*
- *Provides the observations via the GTS (if requested by the PI),*
- *Provides the data on a FTP server for access by the GDACs*

- *Provides centralized access to the DAC data*
- *Ensures no data are excluded at the GDAC level, and full high-frequency data sets are available,*
- *Keeps only the best version of the data. Additional products like interpolated data are separate optional sets,*
- *Check all files daily using the "File Checker" software,*
- *Maintains the OceanSITES catalogue, and*
- *Synchronizes the catalogues with the second GDAC periodically ( at least daily).*

# "WIS-Data Discovery, Access and Retrieval (DAR)" Overview



Observations

Quality Control

Metadata

Data Provider

**SOS (Sensor Observation Service)**

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Data Values

Metadata

# Conclusion

Any and all atmospheric, oceanographic and geophysical observations will be considered as a “climate” observation – and should be treated as such.