# JCOMM Observations Programme Area (OPA)

**Candyce CLARK**

**OPA Coordinator**

**SOT-V, 19 May 2009, Geneva**

# The international plan

- A decade has passed since the OceanObs'99 symposium played a major role in consolidating the plans for a comprehensive ocean observing system.

- Now, for the first time in history, the world's oceans are being observed routinely and systematically.

- OceanObs'09: ensure sustainability and further development; extend present system.

**Status against initial targets: 61%**
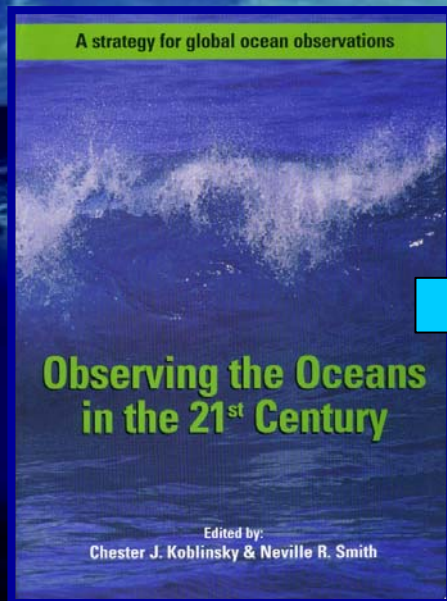


1999
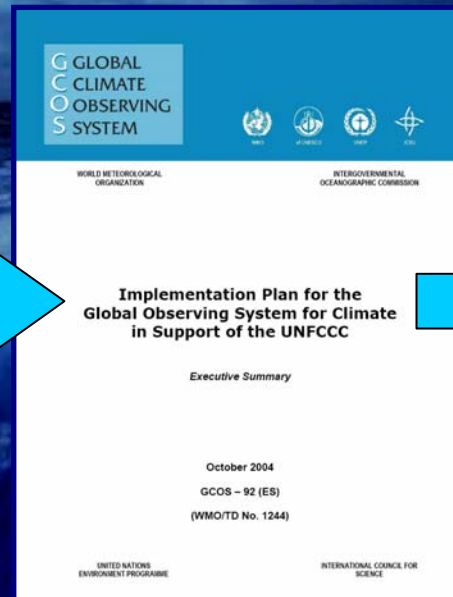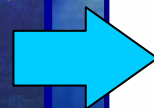
2004
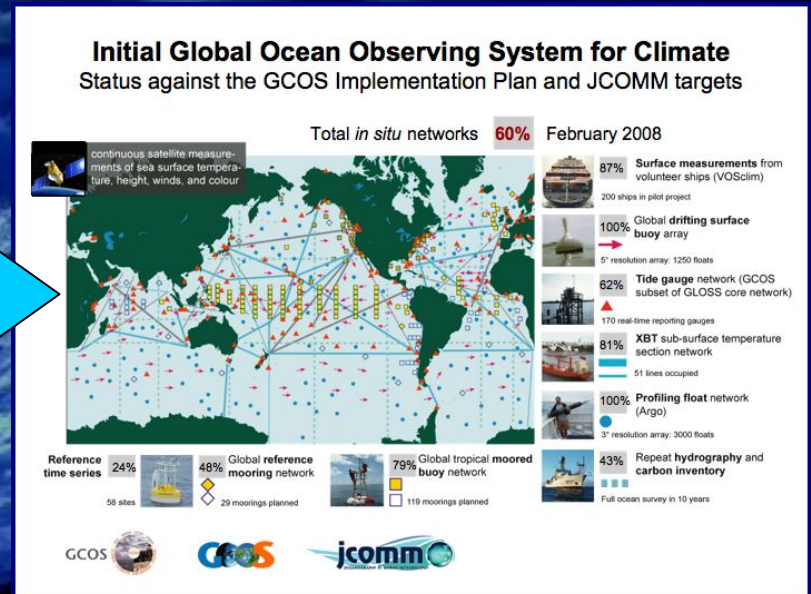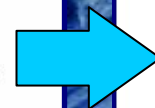
2008

photo courtesy of MeteoFrance

# The organizing framework is in place: JCOMM Observations Coordination Group

All six global *in situ* implementation programs are linked internationally through WMO/IOC JCOMM coordination. TOGETHER they are building a global ocean observing system
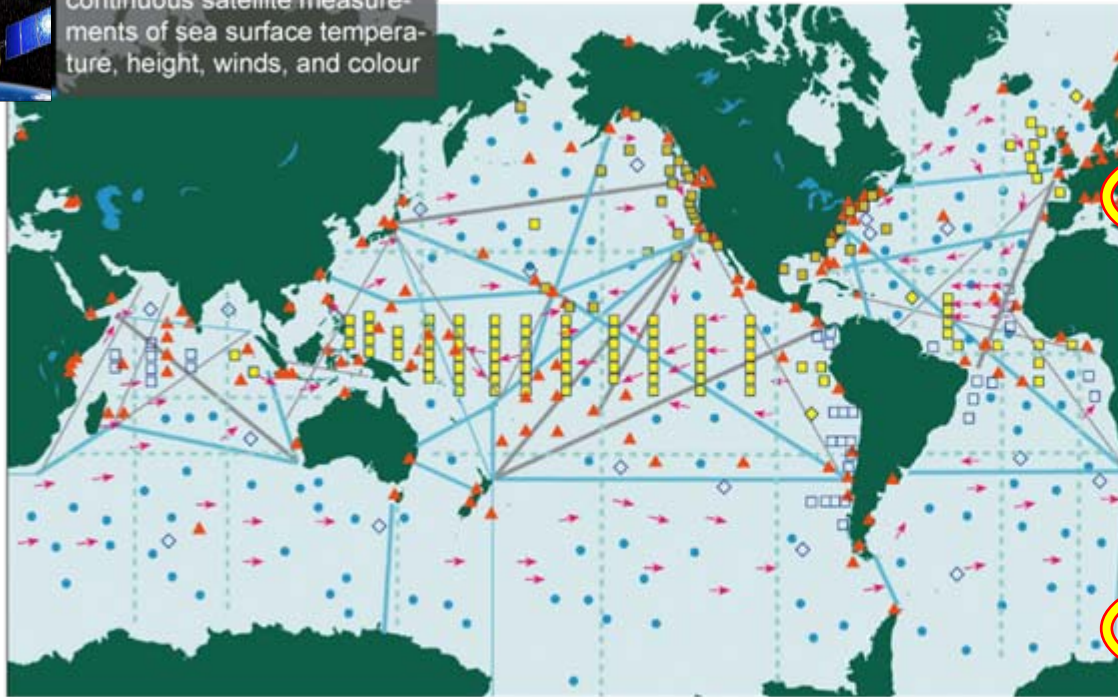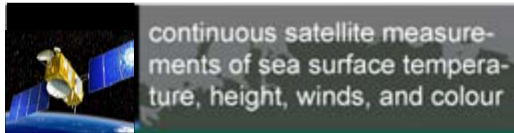
# Status of the System

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

Total *in situ* networks **61%** March 2009

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

**66%** **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

**59%** Repeat **hydrography** and carbon inventory

Full ocean

Reference time series **54%**

**48%** Global **reference mooring** network

58 sites

29 moorings planned

**79%** Global tropical **moored buoy** network

119 moorings planned

GCOS

GCOS

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

# Progress Toward Global Coverage (representative milestones)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Goal | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tide Gauges | 51 | 56 | 57 | 57 | 59 | 61 | 71 | 85 | 101 | 170 | Real-time Stations Initial GCOS Subset |
| Surface Drifting Buoys | 807 | 671 | 779 | 787 | 955 | 1250 | 1307 | 1235 | 1300 | 1250 | Number of buoys |
| Tropical Moored Buoys | 67 | 67 | 69 | 69 | 73 | 75 | 82 | 94 | 96 | 132 | Number of moorings |
| Ships of Opportunity | 23 | 24 | 26 | 26 | 27 | 39 | 39 | 41 | 41 | 51 | High resolution and frequently repeated lines occupied |
| Argo Floats | 20 | 31 | 544 | 923 | 1572 | 2240 | 2557 | 3055 | 3283 | 3000 | Number of floats |
| Reference Stations | 15 | 19 | 25 | 27 | 28 | 34 | 35 | 37 | 38 | 87 | Number of observatories, flux, and ocean transport stations |
| Arctic System | 19 | 19 | 20 | 20 | 17 | 16 | 32 | 55 | 69 | 73 | Ice buoys, drifting and Moored stations |
| Ocean Carbon Network | 0 | 0 | 1 | 5 | 9 | 15 | 17 | 20 | 23 | 37 | Repeat Sections Committed, One inventory per 10 years |

**Initial Ocean Observing System Milestones**

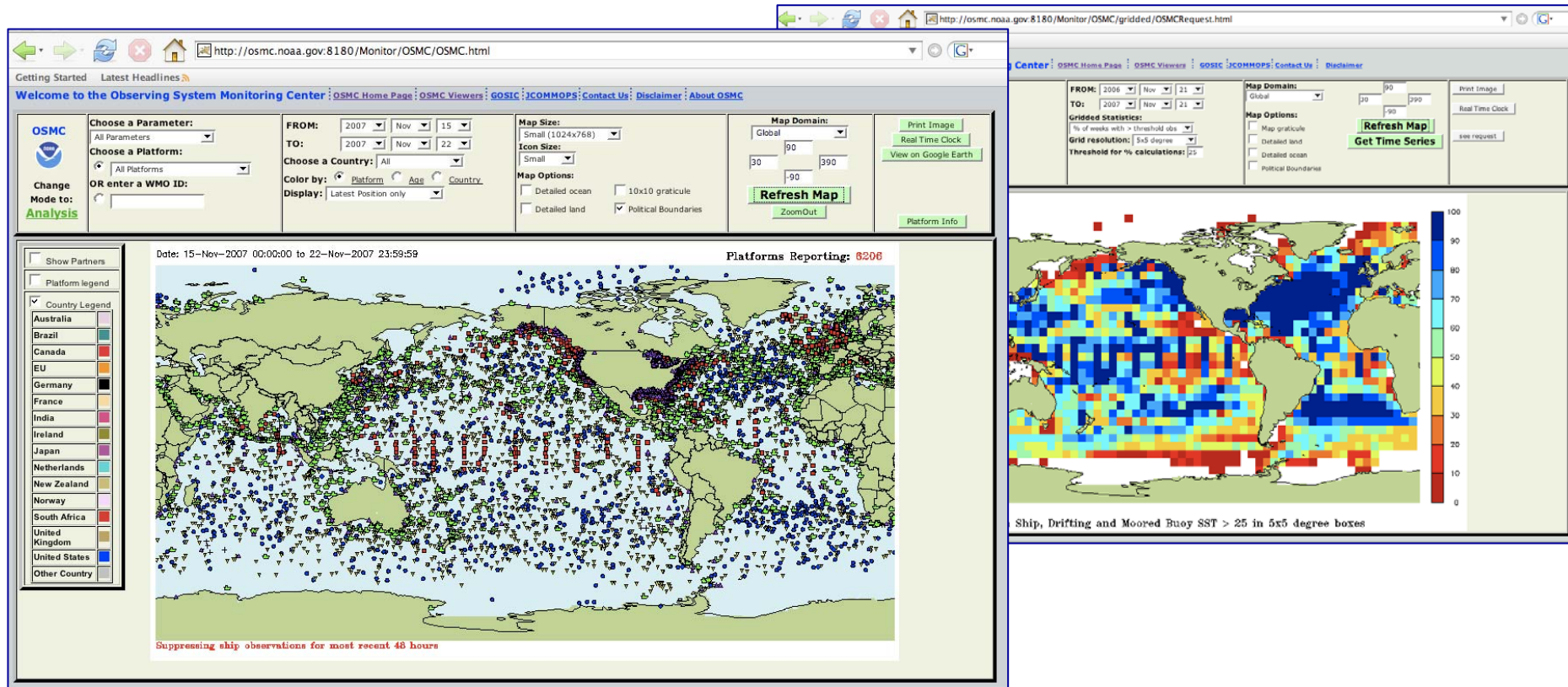| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Goal | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial Targets | 30 | 34 | 40 | 44 | 48 | 53 | 60 | 66 | 77 | | |
| Total System | 30 | 34 | 40 | 45 | 48 | 55 | 56 | 59 | 60 | 100 | System % Complete Index |
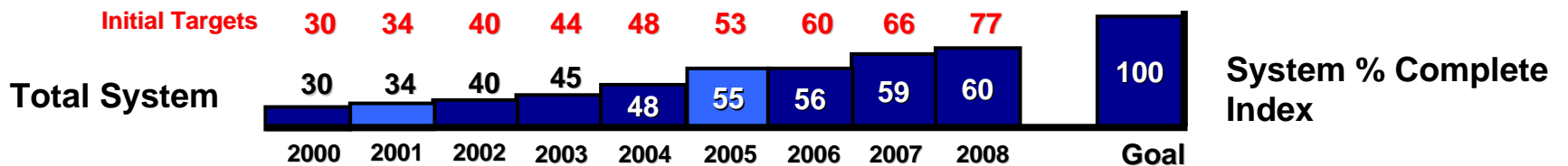
# Observing Program Monitoring, Support and Analysis
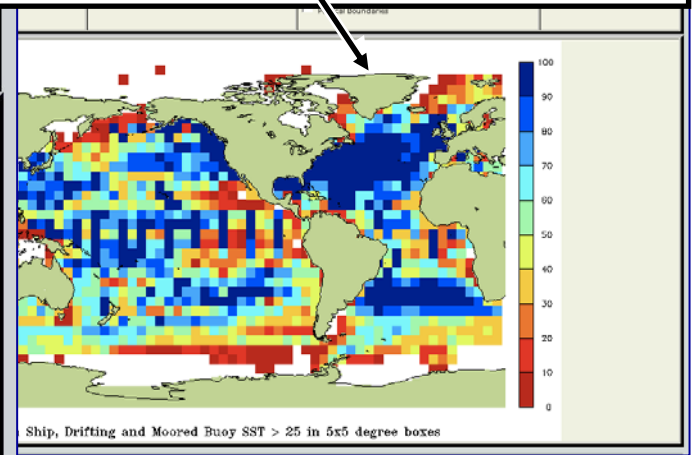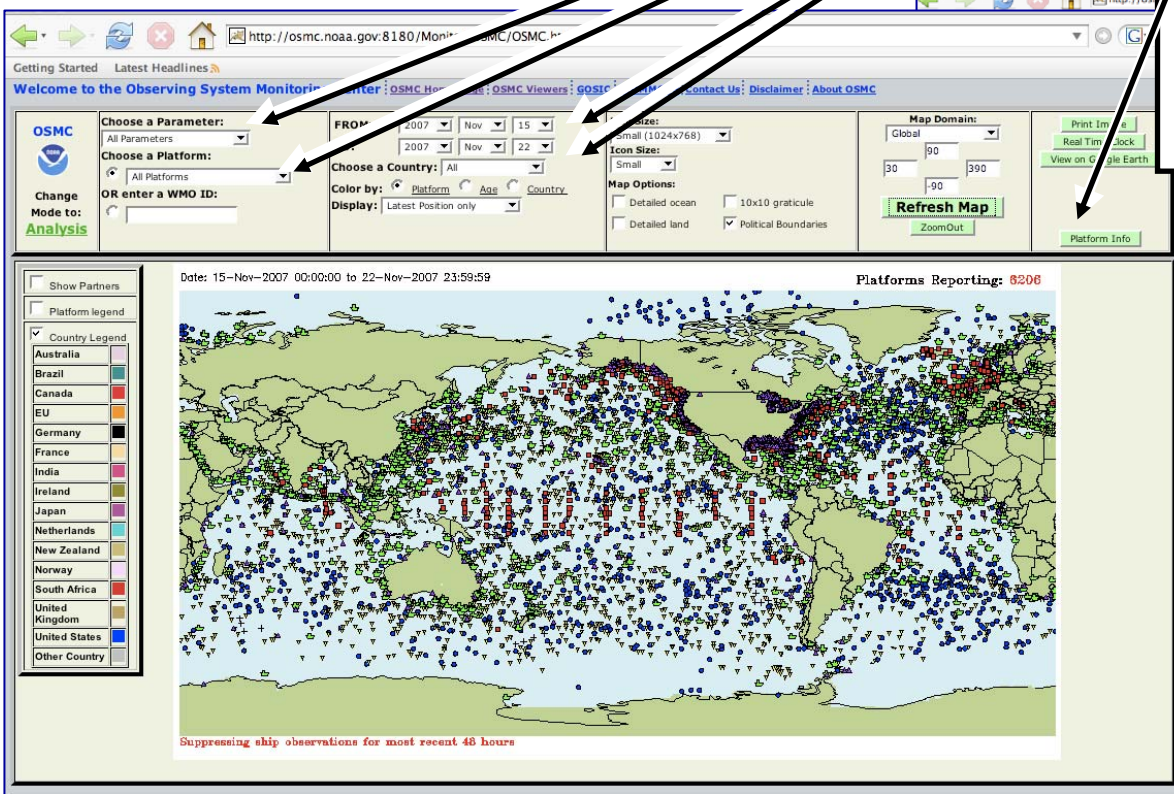
# Real-time system monitoring and analysis

- JCOMMOPS -

- Observing System Monitoring Center (OSMC) -
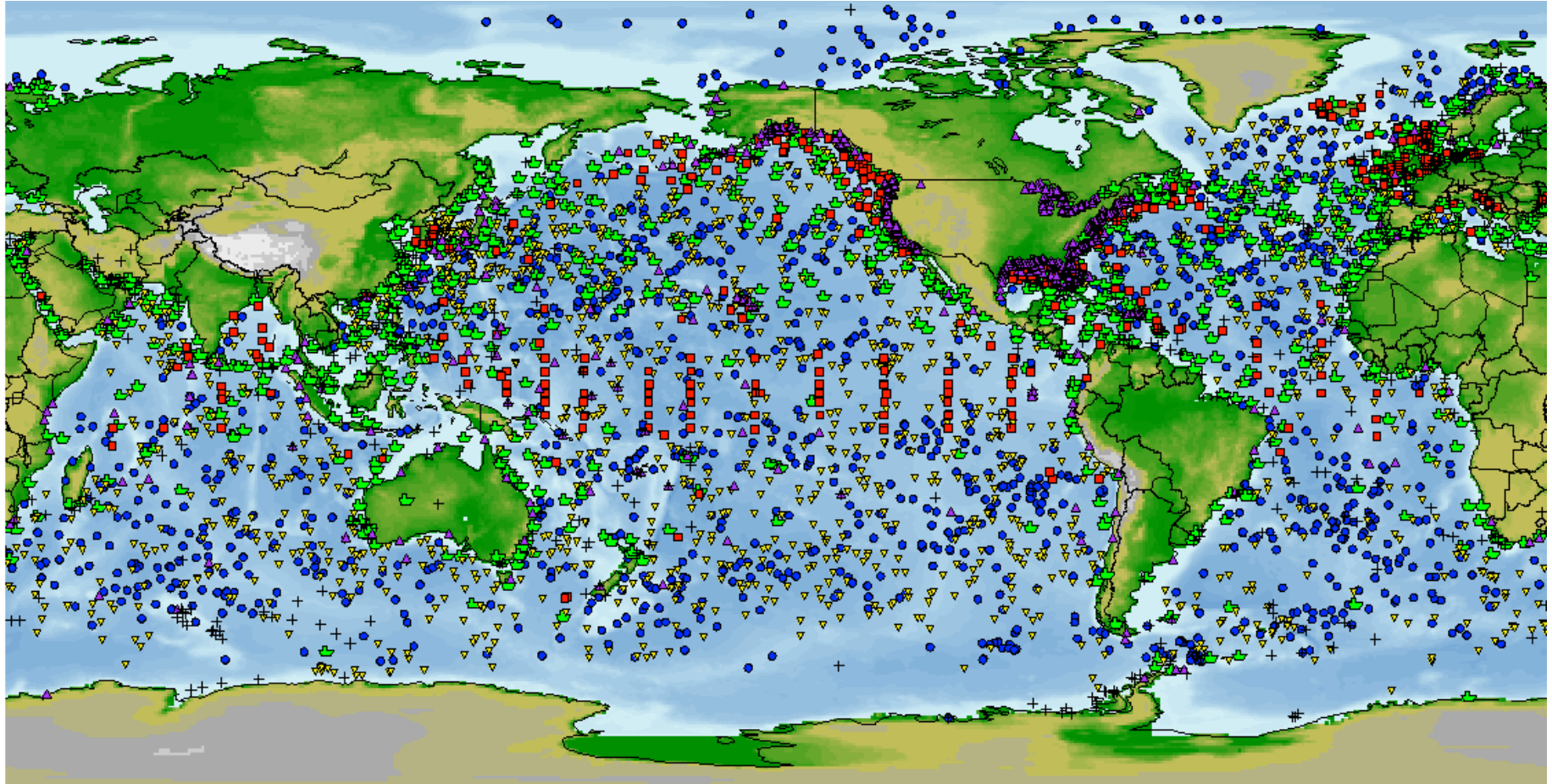
# Observing System Monitoring Center
Near-real-time tool for system statistics and data

**>** Sort by:
- Platform type
- Variables being sampled
- Time frame
- Contributing Country

**>** Drill down for platform metadata and real-time data.
**>** Analysis of sampling effectiveness.



Ship, Drifting and Moored Buoy SST > 25 in 5x5 degree boxes

Date: 15-Nov-2007 00:00:00 to 22-Nov-2007 23:59:59     Platforms Reporting: 6206

Suppressing ship observations for most recent 48 hours
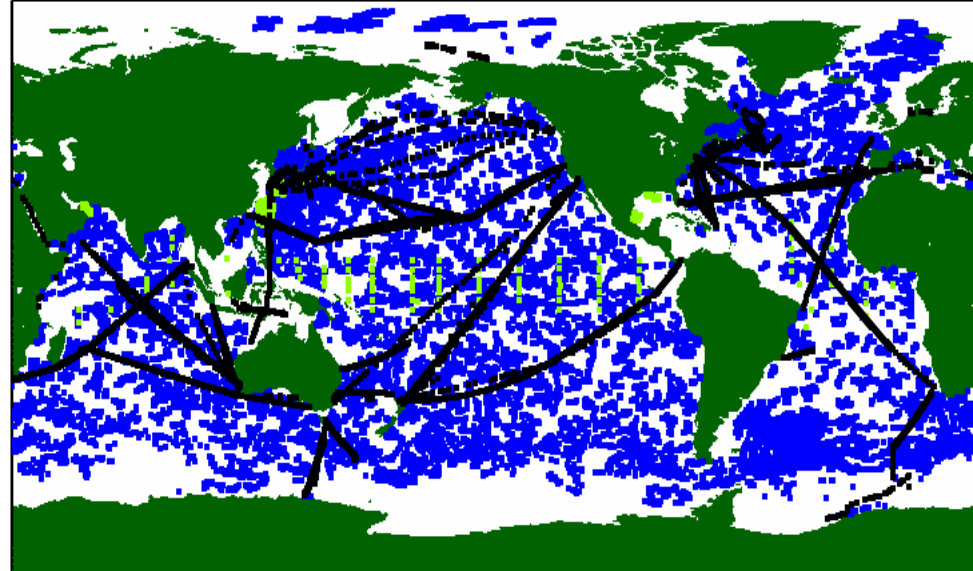
# Status of the System
# 8055 Platforms reporting in February



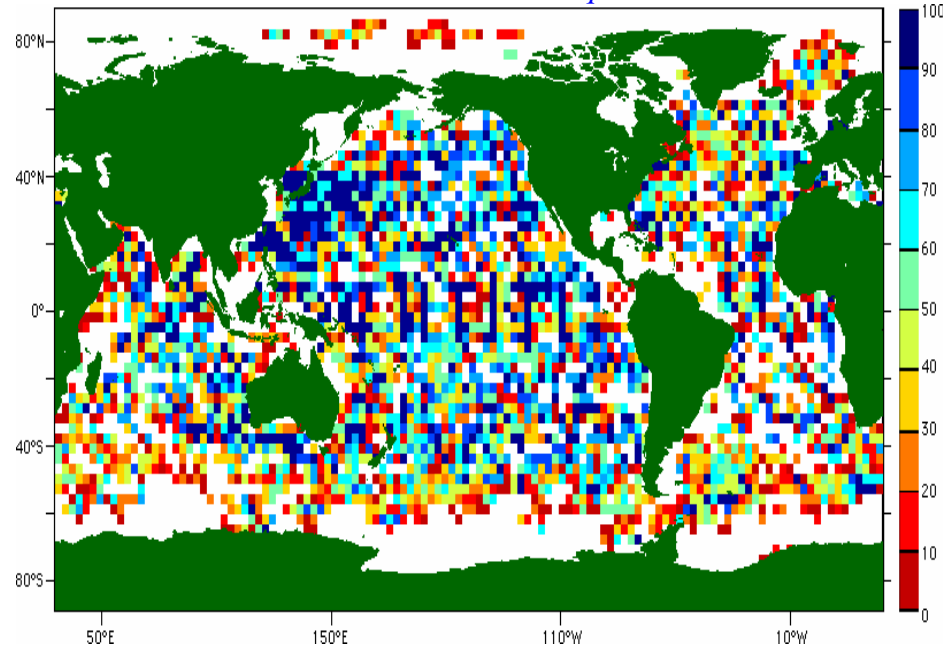Suppressing ship observations for most recent 48 hours

# Observing System Status:
# 2008, Q4 Temperature Profiles

Sampling requirements:
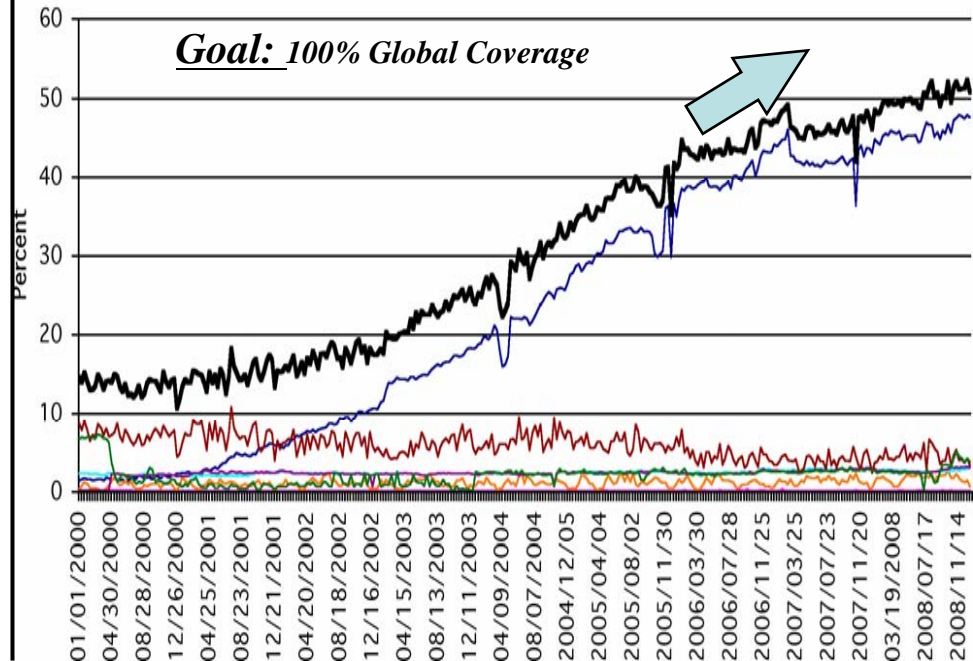1 profile
Every 10 days
In every 3 x 3 º



- ● BATHY (mostly XBTs)
- ● TRACKOB (surface underway data)
- ● TESAC (mostly Argo floats)
- ● BUOY (moored and drifting)

*Requirement: All boxes blue*



*Goal:* *100% Global Coverage*

# Observations Coordination Group – III
# 9-11 March 2009, Paris

# OCG – III

- **INTEGRATED SYSTEM - Greater than the sum of our parts**
- **Issues/actions towards a more system perspective**
- Implementation Goals – based on GCOS IP; non-climate requirements
- Metrics – working towards ECV-based reporting will allow optimization of networks (CWG to make recommendations)
- Coordination between satellites and *in situ*
- JCOMM data management and services
- JCOMMOPS, observing system technical support
- Fortuitous timing:  OceanObs'09
- Information about the OS to external community – thanks!

# OCG charges to SOT (1/2)

- Implementation Goals and Metrics
- Community-based plans for way forward (OceanObs'09 CWPs)
- BUFR templates, Meta-T, Pub 47
- Best practices (JCOMM Catalogue as contribution to WIGOS)
- Cookbook for getting data on the GTS
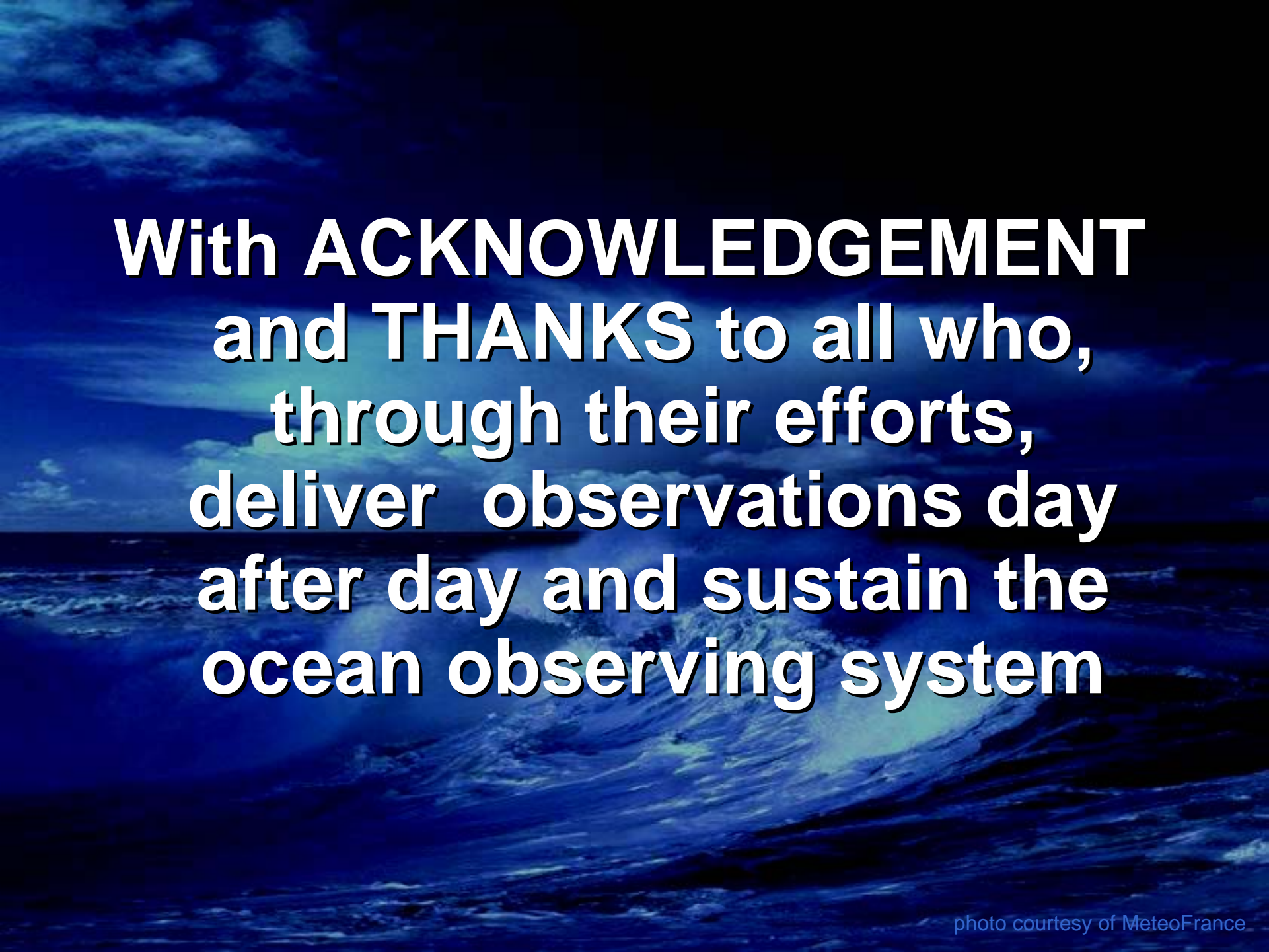- JCOMMOPS

# OCG charges to SOT (2/2)

- **VOS**
  - Best practices for homogeneity and accuracy
  - Outreach to make case for climate VOS obs
- **SOOP**
  - Data transmitted near R-T, stricter QC
  - Facilitate deployment opportunities
  - SOT / IOCCP pamphlet for carbon community on PMO network
  - Plan to optimize measurements from SOOP ships
  - Continue working on XBT fall-rate!

# International Partnerships are Central

*A global system by definition crosses international boundaries.*



NOAA's contributions are managed in cooperation with the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) -- presently 72 nations.

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With ACKNOWLEDGEMENT and THANKS to all who, through their efforts, deliver observations day after day and sustain the ocean observing system

photo courtesy of MeteoFrance