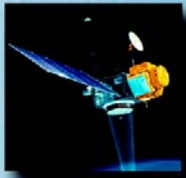


Building a Sustained Ocean Observing System for Climate



Altimeter and Scatterometer



3°x3° Argo Float Array



Research Ships



Moored Arrays



Research Ships



5° x 5° Drifting Buoy Array



Moored Arrays

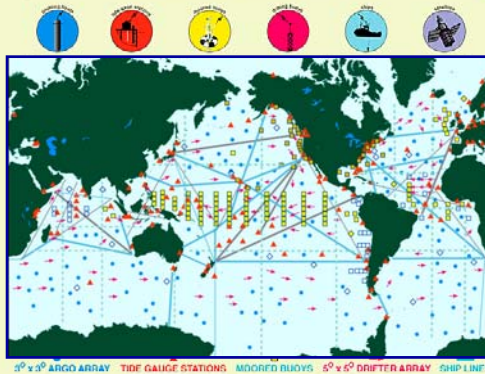


Tide Gauge Stations

NOAA's Climate Observation Program The Ocean Component

Mission: Build and sustain a global climate observing system that will respond to the long-term observational requirements of the *operational forecast centers, international research programs, and major scientific assessments.*

Global Ocean Observing System for Climate and Marine Resources



Phased Implementation Plan, Including International Contributions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Tide Gauges	40	40	45	45	55	80	86	86	86	86	86	Operational GPS/DORIS Stations
Surface Drifting Buoys	807	671	810	810	1050	1250	1250	1250	1250	1250	1250	Number of buoys
Tropical Moored Buoys	77	77	79	79	83	87	90	90	90	90	90	Number of moorings
Ships of Opportunity	25	24	26	26	29	32	36	41	41	41	41	High resolution and frequently repeated lines occupied
Argo Floats	200	310	1100	2000	3000	3000	3000	3000	3000	3000	3000	Number of floats
Reference Stations	1	2	3	4	6	14	16	20	29	29	29	Number of flux moorings
Coastal Moorings	0	0	0	0	15	40	80	120	150	150	150	Moorings with climate sensors
Ocean Carbon Network	0	2	4	4	12	20	30	38	40	40	40	Number of flux sites/lines, One inventory per 10 years
Dedicated Ship Time	250	250	250	250	430	670	700	700	820	820	820	Days at sea
Satellite Altimeter	0	0	0	0	0	25	50	75	100	100	100	Percent transition to Sustained operations
Initial Ocean Observing System Milestones												
Total System	30	34	40	44	56	78	89	94	99	100	100	System % Complete



A light blue world map is centered in the background of the slide. The map shows the outlines of continents and oceans in a slightly darker shade of blue.

NOAA Office of Global Programs Strategic Objectives

- **Development of Earth System Model for climate change projections at GFDL**
- **Improvement of NWS operational seasonal to interannual climate forecasts**
- **Development of the *in situ* ocean component of the global climate observing system**
- **Development of decision support tools**

A collage of several Earth globes and a large, glowing sun-like sphere. The globes are arranged in a semi-circle, with some showing different climate models or satellite imagery. The background is a dark, textured space with a greenish glow.

The Ocean's Role in Climate

The ocean is the memory of the climate system and is second only to the sun in effecting variability in the seasons and long-term climate change.

- It is estimated that the ocean stores 1000 times more heat than the atmosphere and 50 times more carbon.
- Eighty percent of the precipitation that waters our earth comes directly from the ocean.
- Sea level change is one of the most immediate consequences of climate change.
- The key to abrupt climate change may lie in deep ocean circulation.

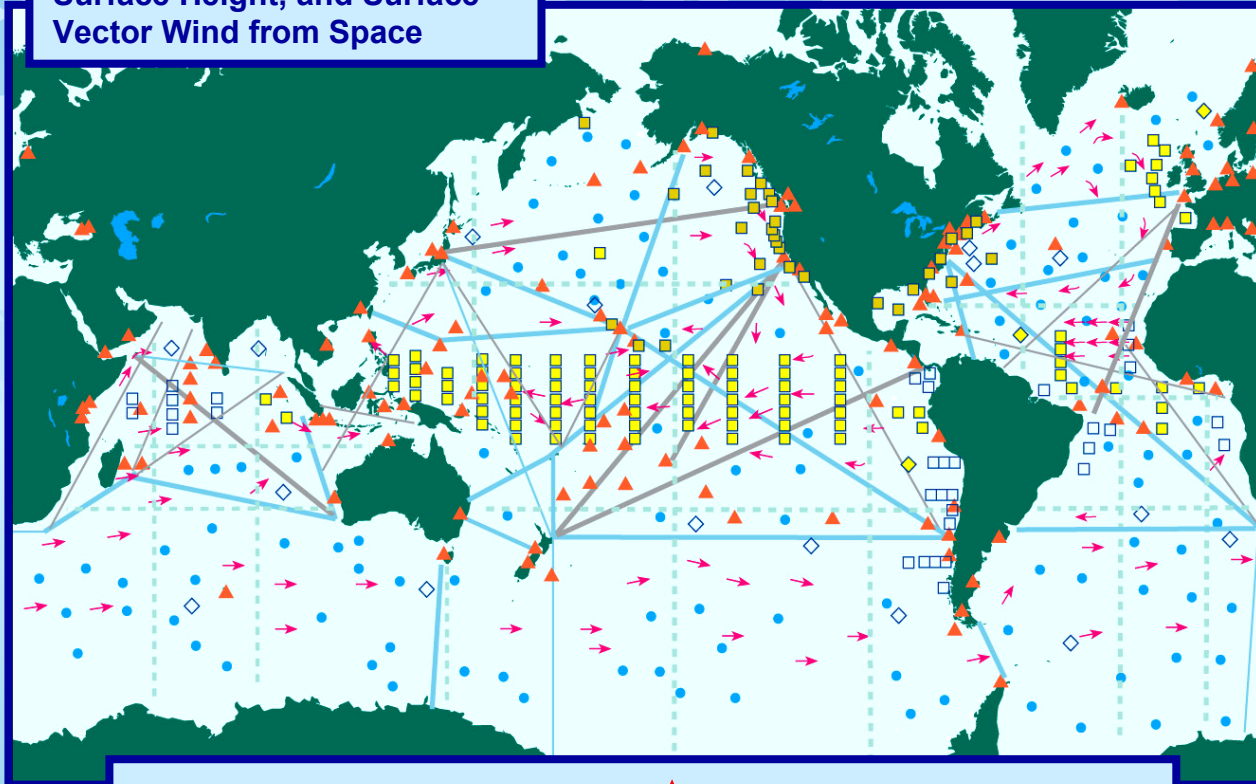


The Ocean Component Program Objectives

- **Document long term trends in sea level change.**
- **Document ocean carbon sources and sinks.**
- **Document heat uptake, transport, and release by the ocean.**
- **Document the air-sea exchange of water and the ocean's overturning circulation.**

Initial System Design. It will Evolve. Now 40% complete.

Sea Surface Temperature, Sea Surface Height, and Surface Vector Wind from Space



Tide Gauge Network	▲ 45 % complete
3°x3° Argo Profiling Float Array	● 25% complete
5°x5° Surface Drifting Buoy Array	➔ 35% complete
Moored Buoy	■ Existing □ Planned
Ocean Reference Station	◆ Existing ◇ Planned
High Resolution XBT and Flux Line	■ Existing □ Planned
Frequently Repeated XBT Line	■ Existing □ Planned
Carbon Inventory & Deep Ocean Line	■ Existing □ Planned
	■ Survey 1.5 lines/year, 50 % funded



Figure 1