



**National Weather Service's
Voluntary Observing Ship (VOS) Project
Supporting SOLAS and Science**

07 November, 2007

RVTEC

Monterey, CA

VOS - An International Program

A worldwide program under the World Meteorological Organization (WMO) to recruit ships to voluntarily observe and report marine meteorological and oceanographic conditions to ensure the safety of life at sea and reduce commercial loss





**Joint Commission for
Oceanography and
Marine Meteorology
(JCOMM)**

**Ship Observations
Team (SOT)**

**Ship Of Opportunity
Program (SOOP)**

**Voluntary Observing
Ship (VOS)**

**Automated Shipboard
Aerological Program
(ASAP)**

United States VOS

- ~200,000 observations per year
- ~900 ships actively participating
- ~200-250 ships report each day
- ~400-450 ships report weekly
- 16 Port Meteorological Officers
- \$180,000 annual operating budget

Port Meteorological Officers



Recruit, support and provide training for crewmembers of ships that participate in VOS program as part of the U.S. commitment to SOLAS

- ❖ Check and calibrate barometers
- ❖ Provide equipment to selected vessels on a case by case basis
- ❖ Perform Quality Control of observations

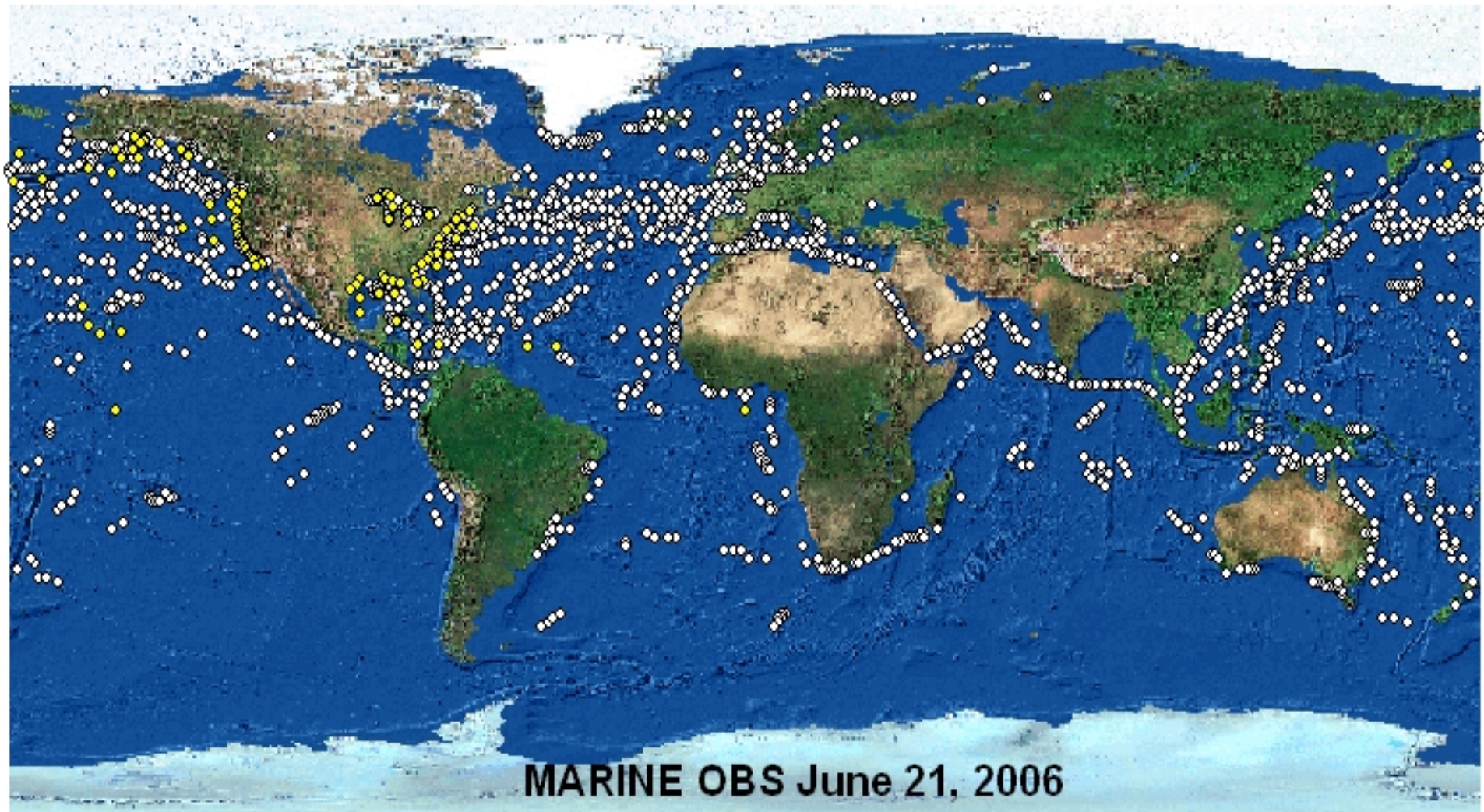
Port Meteorological Officers



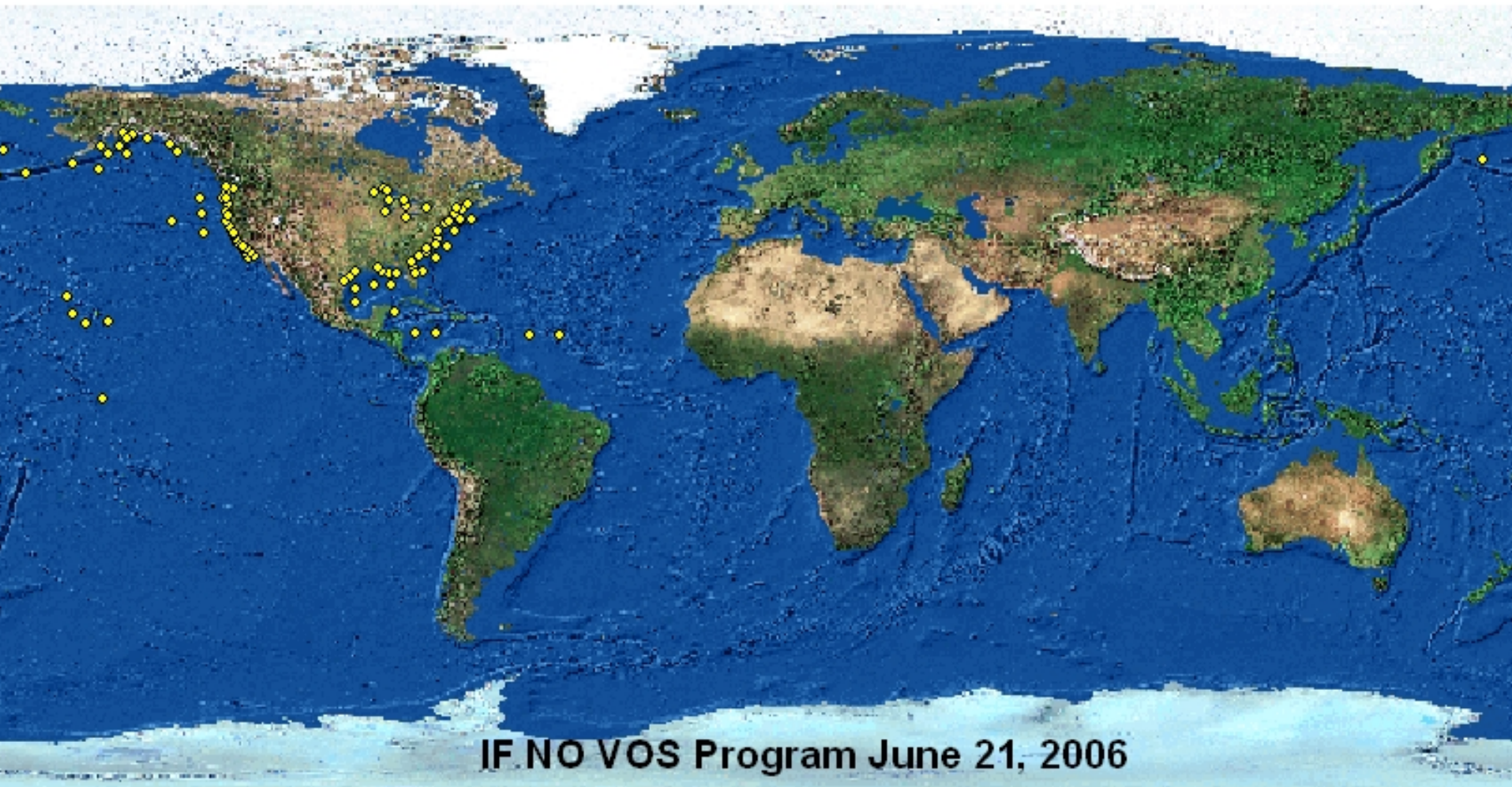
2006 U.S. VOS Observations



Typical Daily Observations (Worldwide VOS)



If No VOS Program



IF NO VOS Program June 21, 2006

Voluntary Observing Ship Climate (VOSClim) Project

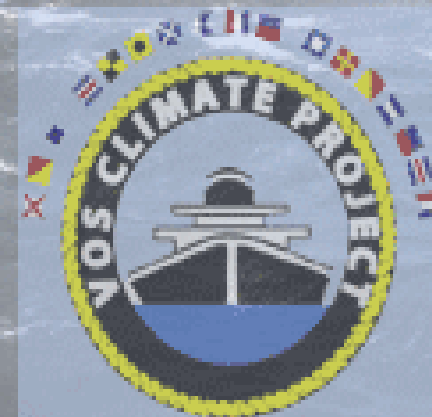
About
VOSClim

VOSClim
Brochure

VOSClim
Project Document

VOSClim Article -
The Way Ahead

Image courtesy of Seatrade Reefer Chartering



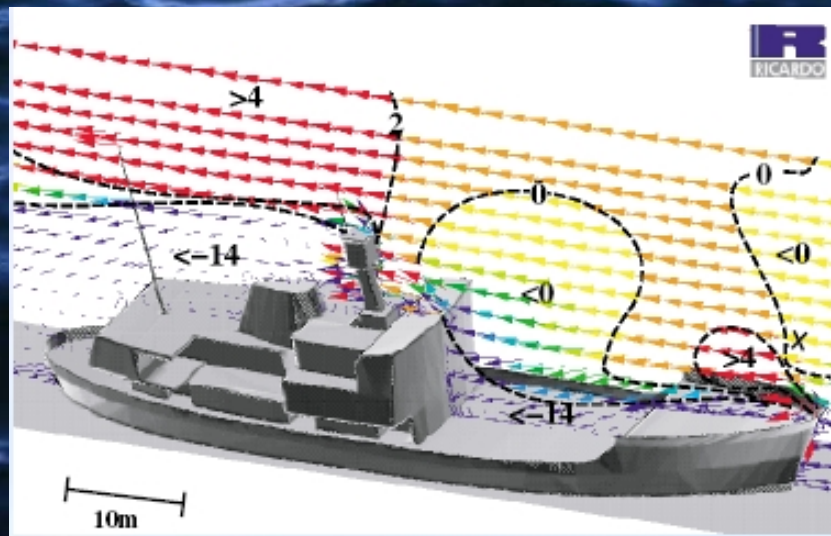
<http://www.ncdc.noaa.gov/oa/climate/vosclim/vosclim.html>

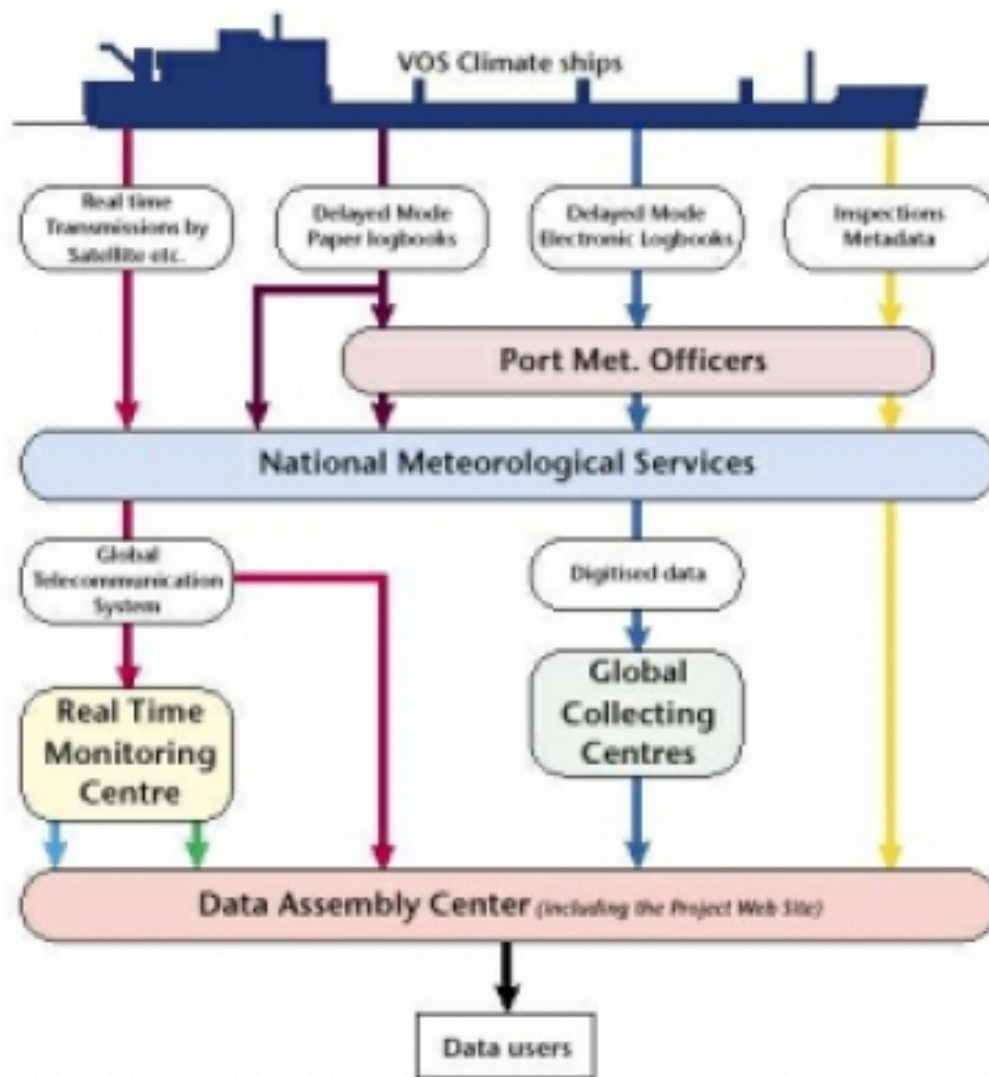
VOSCLim

- Ongoing project within JCOMM's VOS Scheme.
- High-quality subset of marine meteorological data
- Extensive associated metadata
- Available in both real-time and delayed mode to support global climate studies
- Follow-up to the earlier VOS Special Observing Project North Atlantic (VSOP-NA) World Climate Research Project (WCRP) (1988-1990)

VOSCLim Data

- Invaluable for climate change studies and research
 - Input directly into air-sea flux computations
 - part of coupled atmosphere-ocean climate models
 - Ground truth for satellite observations
 - High quality reference data set for possible re-calibration of observations from the entire VOS fleet.





Simplified flow diagram showing the routing of VOSclim data



VOSclim Data

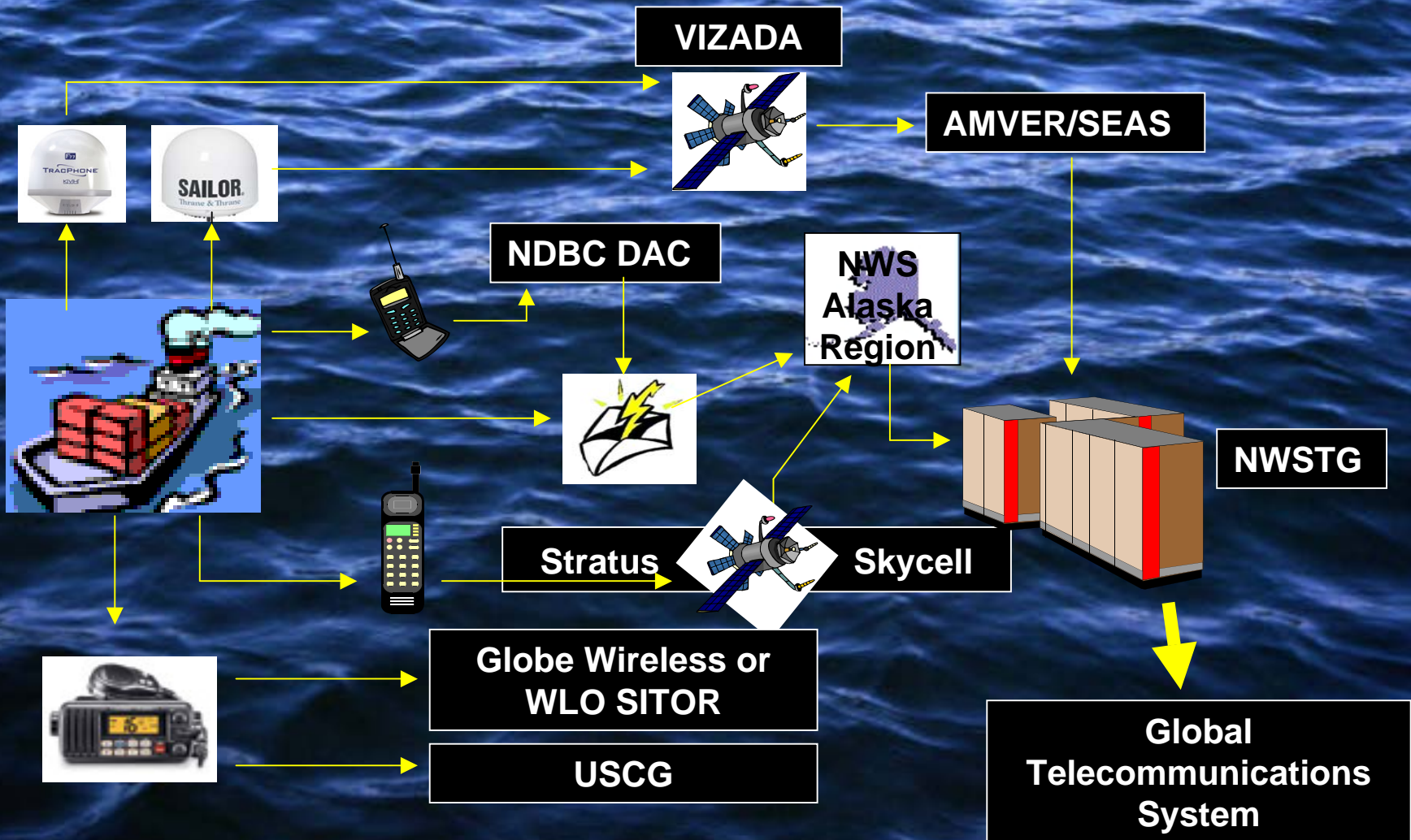


- ◆ 2001
- ◆ 2002
- ◆ 2003
- ◆ 2004
- ◆ 2005
- ◆ 2006
- ◆ 2007

Click the links to the left to access monthly text files of VOSclim data

For database access to the same data, as well as data from buoys and other ships, please go to the [marine data portal](#) of NCDC's 'Climate Data Online' store

VOS Communications





Reads serial MET data

- **WHOI Auto Imet system**
- **NOAA SCS (Scientific Computing system)**

Can accept TSG and XBT data

Transmit via Inmarsat C or Iridium

WARNING! SIMULATION: Auto IMET



File Utilities Help

Auto IMET Status: 11/26 20:10 Good

Read IMET 6:58 mins

Auto IMET Data

Barometric Pressure 1019.34 mbar

Relative Humidity 27.174 %

Air Temp 21.234 degC

LWR Flux 111.1 W/m²

PRC Level 1.02 mm

Sea Temp -1.710 degC

SWR 4.2 w/m²

We 1.23 m/s

Wn 0.00 m/s

Wind Spd 2.39 knts

Wind Dir 270.00 degs

Transceiver Data

Time last good transceiver update

11/26/2004 20:13:41

Lat 00 02.03 N

Lon 000 02.03 E

Ship Speed 12.0 knts

Ship Dir 45.0 degs

Calculated Values

Barometric 1021.02

True Wind Speed 12.24 knts

True Wind Dir 236.00 degs

Board Output

```
2002/03/06 01:45 1019.34 27.174 21.234 111.1 1.02  
-1.710 4.2 1.23 0.00
```

Current Research Vessels in VOS

vessel_name	call_sign	VOS	VOS CLIM	2005 Obs	2006 Obs	2007 Obs as of 10/30/07	
ATLANTIC EXPLORER	WDC9417	I		0	0	0	*Equip
ATLANTIS	KAQP	A		35	5	0	8/31/06 22z *Equip
CAPE HATTERAS	KNC3233			0	0	0	
ENDEAVOR	WCE5063	A		57	61	15	10/03/07 18z
HEALY	NEPP	A		666	549	772	9/22/07 21Z
HUGH R. SHARP	WDC6908			0	0	0	
KILO MOANA	WDA7827	A		280	210	304	10/27/07 12Z *Equip
KNORR	KCEJ	A		218	72	0	4/28/06 12Z
LAWRENCE M. GOULD	WCX7445	A	Y	0	0	2766	10/30/2007 12Z
MARCUS G. LANGSETH	WDC6698			0	0	0	
MELVILLE	WECB	A		546	335	419	10/30/07 12z *Equip
NATHANIEL PALMER	WBP3210	A	Y	0	0	239	10/30/07 12z *Equip
NEW HORIZON	WKWB	A		252	20	67	10/17/07 06z *Equip
OCEANUS	WXAQ			0	0	0	
PELICAN	WSK3051	I		0	0	0	
POINT SUR	WSC2276			0	0	0	
POLAR SEA	NRUO	A		0	197	198	*Equip
POLAR STAR	NBTM	A		306	399	0	*Equip
ROBERT G. SPROUL	WSQ2674			0	0	0	
ROGER REVELLE	KAOU	A		647	487	441	10/30/07 06Z *Equip
SEWARD JOHNSON	WST9756	I		0	0	0	12/31/99 00Z *Equip
THOMAS G. THOMPSON	KTDQ	A		335	338	147	10/18/07 12Z *Equip
WECOMA	WSD7079	A		676	299	177	08/22/07 12Z *Equip

Bravo Zulu – Kevin Pedido Raytheon Polar Services

NWS

Voluntary Observing Ship (VOS)

Project



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