

# Technical Progress Report for NOAA Office of Global Programs April 2004

## Observations of Air-Sea Fluxes and the Surface of the Ocean Implementation of High-Density Line in the Tropical Atlantic

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### Work Statements

Voluntary Observing Ships (VOS) use IMET technology on long routes that span the ocean basins and are collecting high quality surface meteorological data and fluxes to get spatial variability in these fields and in the departures of these fields from other representations of the same fields (models, satellites). These observations are essential to:

- Identify errors in existing climatological flux fields.
- Provide motivation for improvements to algorithms.
- Provide data needed to correct existing climatologies.
- Validate new model codes and remote sensing methods.

Continue operation on the Horizon Enterprise and Columbus Florida with six-month turnarounds (Pacific ships). Install a new system on the SeaLand Express and continue six-month turnarounds (Atlantic Ship). Install a new system on a 4th ship early in 2005 and continue six-month turnarounds. Continue cooperation with Southampton Oceanography Centre on CFD (Computer Flow Dynamics) for data improvement. Note that 3 new AutoIMET systems were fabricated and the 3 ASIMET modules sets were converted to AutoIMET systems. These systems interface with the real time SEAS 2000 (Shipboard Environmental (Data) Acquisition System) for automated VOS reports. These 6 systems support the 4 VOS currently planned and permit repairs and recalibration on a 6 month cycle.

### Columbus Florida



This ship is normally serviced in Long Beach, CA and has an AutoIMET system with a.c. power for both the bow mast and the SST installation.



Bow mast with IMET modules

### SeaLand Express

This ship is normally serviced in Elizabeth NJ and/or Baltimore MD. In some cases it can also be serviced in Newport News, VA. It has an a.c. system for the bow mast and batteries for the SST/HullCom installation.



### Program Events

**June 2003.** ASIMET modules were turned around on the Horizon Enterprise in Oakland, CA.

**June 2003.** ASIMET modules were removed and an AutoIMET system installed on the Columbus Florida in Long Beach, CA. Two sets of ASIMET modules were converted to the AutoIMET configuration.

**December 2003.** ASIMET modules were removed and an AutoIMET system installed on the Horizon Enterprise in Oakland CA.

**December 2003.** The AutoIMET system was turned around on the Columbus Florida in Long Beach, CA. The system that was removed had sustained serious sea damage in that the wind sensor was re-arranged at the top of the bow mast and the HullCom (acoustic modem for SST) was flooded. The HullCom was repackaged in an o-ring sealed titanium housing for reinstallation. This packaging is the standard for use on ocean buoys using IMET. One set of ASIMET modules was converted to the AutoIMET configuration. Note that with the 3 new and 3 conversions all 6 systems are in the AutoIMET configuration to support 4 ships.

**January 2004.** The SeaLand Express was surveyed for installation of the new system in March in Newport News, VA.

**Feburary 2004.** Computer problem serviced in Hawaii on the Horizon Enterprise.

**March 2004.** Installation of AutoIMET on the SeaLand Express in Elizabeth NJ.

**March 2004.** The power system on the Columbus Florida was converted from batteries to an all a.c. system. Note that the power unit was located near the SST and the HullCom was removed. The ship officers were very supportive and provided bulkhead stuffing tubes and power interface.

**April 2004.** Annual Office of Climate Observation (OCO) Workshop and the 2nd High-Resolution Marine Meteorology (HRMM) Workshop in Silver Spring, MD.

(Planned) Turnaround of AutoIMET system on the Horizon Enterprise in Oakland, CA.

**May 2004.** (Planned) Turnaround of AutoIMET system on the Columbus Florida in Long Beach, CA.

### Horizon Enterprise



This ship is normally serviced in Oakland CA and has an AutoIMET system with a.c. power for the bow mast and local HullCom and battery power for the remote HullCom and SST.

*Photo at left is bow mast of Horizon Enterprise.*

### Partnerships and International Contacts

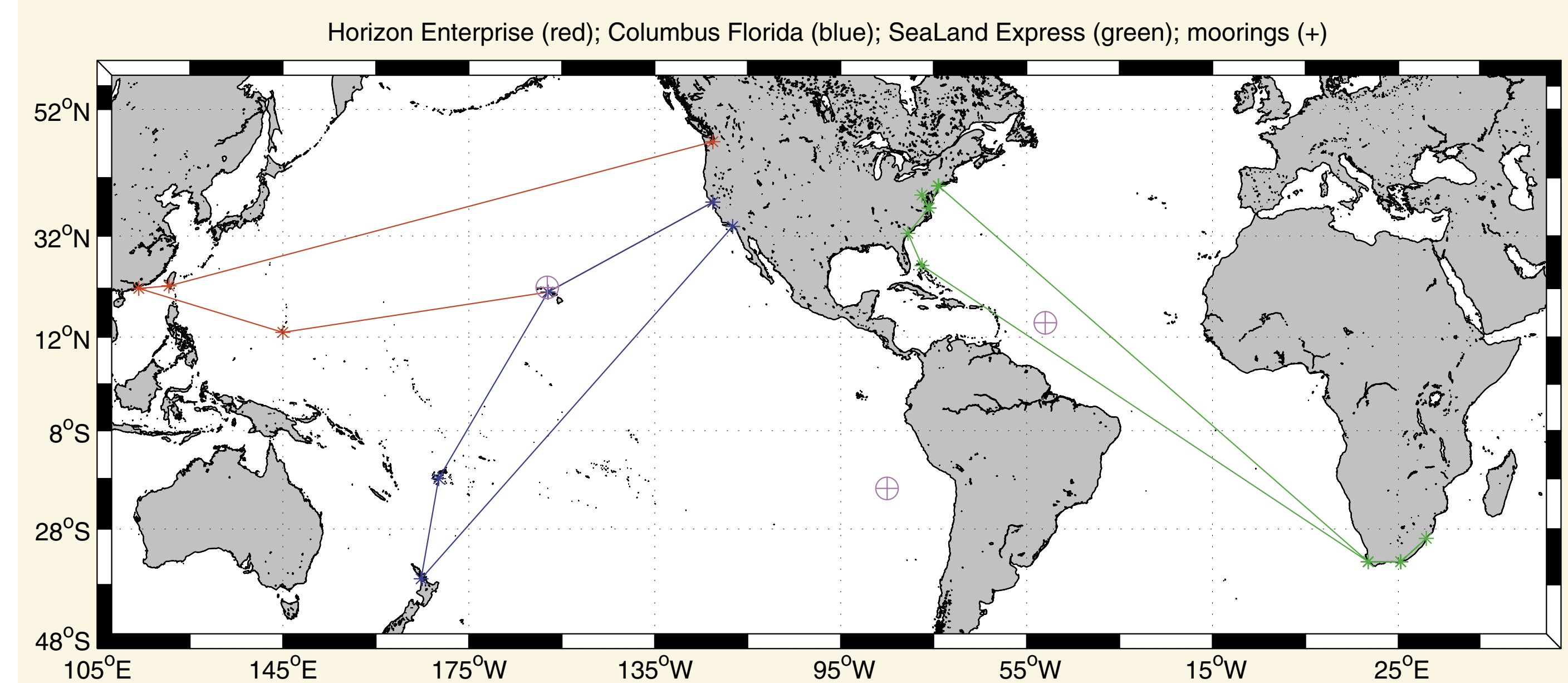
#### Partnerships:

- NOAA SEAS Office—Steve Cook, Janet Brockett/Roselli,
- SCRIPPS INSTITUTE OF OCEANOGRAPHY—Dean Roemich and Glenn Pezzoli.
- SOUTHERN CALIFORNIA MARINE INSTITUTE—Carrie Wolfe, VOS coordinator.

#### International Contacts:

- ATMOSPHERIC ENVIRONMENT SERVICE, CANADA—Rick Shukster (Ron Fordyce has just retired).
- INSTITUTE FÜR MEERESKUNDE—Lutz Hasse (designed the Dual Face Rain Gauge for ship precipitation measurement), and Karl Bumke.
- G.K.WALTER EIGENBRODT—Olaf Dahl, Andrea Dahl. They manufacture the (Hasse) DFR Gauge that is available in an IMET configuration. Recent improvements are for increased rain-rate in tropical areas using multiple drop counters.
- SOUTHAMPTON OCEANOGRAPHY CENTRE—Peter Taylor, Margaret Yelland, Elizabeth Kent, and Simon Josey. Known as “The Meteorology Group” and provide CFD (computer flow dynamics) evaluations for research and VOS ships.

### Route Map



### Web Site

Note that descriptions, technical information and data from the several VOS being serviced is posted on the site: <http://uop.whoi.edu/vos/> Data (plots) are available for all ship sets.

Data (numbers) are available via anonymous ftp for the last data set only: [ftp.whoi.edu/pub/users/fbahr/VOS](ftp://ftp.whoi.edu/pub/users/fbahr/VOS). If data from previous times are desired please contact Frank Bahr at: [fbahr@whoi.edu](mailto:fbahr@whoi.edu)

There is a link to the site: <http://frodo.whoi.edu> where there is detailed information on the AutoIMET and ASIMET modules. Instrument design questions can be addressed to Dave Hosom at: [dhosom@whoi.edu](mailto:dhosom@whoi.edu)

AutoIMET and ASIMET modules are available commercially from Star Engineering Inc of Foxboro, MA. (508) 543-9144 attn: Mr. Bill Jobsky.

WHOI UOP/DGE provides engineering support to Star Engineering.

WHOI UOP provides repair and calibration services either via Star Engineering or directly.