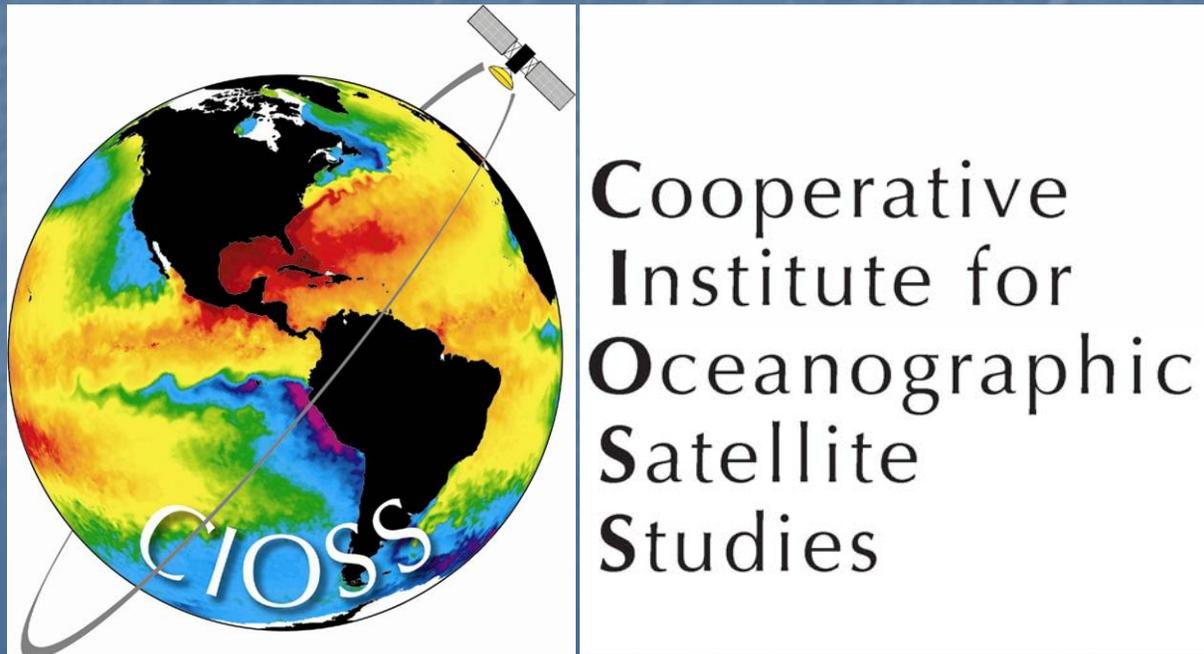


Part 1: Cooperative Institute for Oceanographic Satellite Studies CIOSS

- Established within COAS at OSU to make use of the extensive expertise of the COAS Faculty in satellite remote sensing, data analysis, modeling and data assimilation.

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CIOSS – Years 1-2

- Focus on large-scale continental margins, especially along the West coast of the US – the California Current System.
- In this focus region, many CIOSS/COAS Faculty are collaborating in national field programs, providing a wealth of field data with which to test remote sensing and model fields.
- A focus on the continental margins is also aligned with the national effort to create an Integrated Ocean Observing System (IOOS) for both the “open” and “coastal” ocean. CIOSS Fellows are active leaders and participants in forming the regional IOOS consortia in the Pacific Northwest (NANOOS & PACOOS).
- The approach in years 1-2 was to use the “core” research funds to hire post-docs and other early career researchers to address basic research problems in CIOSS Research Theme Areas.

CIOSS - Years 3+

- Reduce (don't eliminate) the emphasis on early career scientists for core research.
- Emphasize traditional research projects that address CIOSS Themes and NOAA/NESDIS "Missions" and responsibilities, with support for all levels of staff (students to PI's).
- Expand activities designed to evaluate present and future satellite sensors, algorithms and techniques (Theme 1).
- Expand activities to cover local to global regions.
- Increase outreach to include "informal" education (Theme 5).

CIOSS Research and Outreach Themes

Theme 1: Satellite Sensors and Techniques

Theme 2: Ocean-Atmosphere Fields and Fluxes

Theme 3: Ocean-Atmosphere Models and Data Assimilation

Theme 4: Ocean-Atmosphere Analyses

Theme 5: Outreach

- Formal Education
- Informal (Free Choice) Education
- Research on Methods of Data Access/Delivery

CIOSS Description of Tasks

Task I: CIOSS Core Office Administration and Outreach

- General Operation of CIOSS Office
- Proposal Submissions, Travel, Visitors, Reports, Publications...
- Outreach Supported by Core Funding
 - ❖ SMILE
 - ❖ Workshops
 - ❖ Informal Education – Science Museum Displays

Task II: CIOSS Research and Additional Outreach, Funded by NOAA/NESDIS

Task III: CIOSS Research and Outreach, Funded by Agencies other than NOAA/NESDIS

- Both Tasks II and III include projects and outreach funded through proposals and specific funding opportunities.

Administration Highlights

- Six post-docs hired: 4 currently working and 2 more to begin in summer 2005 (with years 1-2 funding)
- Two “COAST” Workshops – GOES-R3 for HES-CW
 - ❖ Establish requirements for research and operational applications for hyperspectral sensor on GOES-R (white paper, brochure, ongoing workshops and research)
- Vector Wind Workshop
 - ❖ Establish requirements for research and operational applications of satellite observations of ocean vector winds – active and passive microwave
 - ❖ Cal/Val of active and passive microwave
 - ❖ Get data in the hands of operational users (unfortunately WindSat failed before this could happen)
 - ❖ Provide recommendations to NASA & NOAA for future products and investigations
- Significant webpage development, periodic reports, etc.

Administration Highlights

- Council of Fellows Meetings: Discuss progress and review proposed CIOSS projects
- CIOSS Executive Board Meeting scheduled for Aug 2005
- Publications:
 - ❖ Final revision of 5 Year Plan
 - ❖ Annual Reports and Workshop Reports
 - ❖ HES-CW Brochure, White Paper
- Increased NOAA interactions, including short visits by NESDIS personnel and longer visits by Dick Reynolds and Laury Miller to OSU, visits of COAS Fellows to NESDIS, other CI's
- Annual and supplemental proposals to NESDIS (2 at present); GOES-R3 proposal to come
- Successful proposals to other branches of NOAA

Research Highlights

A. Current Postdocs

- **Choboter/Allen/Samelson – Analysis of fields from coastal ocean models.** Paul Choboter, working with John Allen and Roger Samelson, has analyzed the fields from John Kindle's (NRL, one of the CIOSS partners) model of the California Current, **looking at the relation between the poleward undercurrent and surface slope** (measurable by altimeter). He has also pursued theoretical investigations of upwelling systems. These projects provide metrics against which data assimilation models can be evaluated. Research theme of **Ocean-Atmosphere Models and Data Assimilation.**
- **MacCallum/Letelier – Phytoplankton physiology as determined from satellite and ship-board optical measurements.** Iain MacCallum, working with Ricardo Letelier, has assembled the **data sets necessary to compare satellite and ship-board optical measurements** (multi-spectral and hyper-spectral). Analyses of the combined data sets will be carried out within the COAST project. Research themes of **Satellite Sensors and Techniques and Ocean-Atmosphere Fields and Fluxes.**

Research Highlights

A. Current Postdocs

- **Guo/Coakley – Estimates of surface radiation from satellite fields.** Guang Guo, working with Jim Coakley, is assembling a data set of radiation data from research cruises, collocated with clear satellite imagery from the same times and locations. These data sets will be used to evaluate and improve methods of estimating surface radiation from satellite data. Research themes of **Satellite Sensors and Techniques** and **Ocean-Atmosphere Fields and Fluxes**.
- **Jiao/Freilich – Cal/Val for WindSat/Improved resolution in satellite wind fields.** Hai-Ying Jiao, working with Mike Freilich, is performing fieldwise validation of WindSat against QuikSCAT. This will be followed by exploring methods of increasing the resolution of surface wind fields, derived from combined satellite sensors. Research themes of **Satellite Sensors and Techniques** and **Ocean-Atmosphere Fields and Fluxes**.

Research Highlights

B. Postdocs starting Summer 2005

- **Saraceno/Strub/Kosro – Combining radar currents, ALT SSH, and SCAT winds.** Martin Saraceno will develop methods to combine coastal radar data with multiple satellite altimeter and scatterometer data sets, in order to quantify the mesoscale variability in surface circulation off Oregon. Research themes of **Satellite Sensors and Techniques, Ocean-Atmosphere Fields and Fluxes and Ocean-Atmosphere Analyses.**
- **Chois/Allen/Egbert/Samelson/Miller – Data Assimilation of satellite data.** Byong-Ju Chois will develop techniques to assimilate satellite altimeter and surface radar data into nested coastal circulation models. Research theme of **Ocean-Atmosphere Models and Data Assimilation.**

Research Highlights

C. Other Research

- **Peter Strutton – Oceans and Human Health Grant.** Use of satellite and in situ data in addressing problems involving Harmful Algal Blooms (HAB's). This is a new (but natural) topic of research for CIOSS/COAS and a major component of the COAST effort for HES-CW on GOES-R. Research themes of **Satellite Sensors and Techniques** and **Ocean-Atmosphere Fields and Fluxes**.
- **Chris Goldfinger – GIS Ocean Bottom Mapping (finished).** Creation and use of a comprehensive, helpful and easily accessible, multi-layer GIS database of the geologic and geophysical data for the ocean bottom over the shelf for the Oregon continental margin. Research themes of **Ocean-Atmosphere Analyses** and **Outreach (Formal Education, Informal Education and Data Access)**.

Research Highlights

C. Other Research

- **Dawn Wright – Marine GIS and Satellite Remote Sensing for Ocean and Coastal Resource Management (finished).** Compilation of oceanographic satellite data appropriate for covering specific areas, time periods of interest and coastal management questions for the Oregon coastal zone and territorial sea, and the successful incorporation of 40 of these satellite data layers into the Oregon Coastal Atlas (OCA, <http://www.coastalatlantlas.net>), an interactive map, data and metadata portal for coastal managers and scientists. Research themes of **Ocean-Atmosphere Analyses and Outreach (Informal Education and Data Access).**

Proposed Year 3 Projects

- **Annual: 7 Core Research/Outreach Projects**
 - **Barth/Mavor: Analysis of GOES SST fronts**
 - **Samelson: Coupled ocean-atmosphere coastal models**
 - **Freilich: WindSat Validation with QuickSCAT**
 - **Egbert: “Pilot” coastal ocean forecast model**
 - **Letelier: Hyperspectral satellite data analysis**
 - **Chelton: SST effects on the middle troposphere**
 - **SMILE: High school outreach program**
- **Annual: 1 Research-to-Operations (R2O) Project: Milliff**
- **Annual: 4 GLOBEC Projects (NOS): coastal modeling, basin-scale to coastal connections, and data analysis (satellite, radar, in situ).**

Proposed Year 3 Projects

- **Supplement 1: 3 R2O Projects**
 - **Freilich/Chang: Improving operational scatterometer coastal wind fields (12.5 km)**
 - **Davis/Clark: Evaluation of efforts to redesign MOBY**
 - **Letelier: Workshops to develop specifications for creating ocean color CDRs**
- **Supplement 2: 1 GOES-R Procurement**
 - **Davis: Continued evaluation of HES-CW design specs**
- **GOES-R3 (FY-06): A suite of research projects that will contribute to the identification of risk areas for HES-CW and suggest solutions to those problems**

Proposed Year 3 Project Budgets

- Annual + R2O + GLOBEC: \$1,310K
- Supplement 1 (R2O): \$310K
- Supplement 2 (Davis): \$130K
- GOES-R3: \$1,500K
- COAST: \$300K
- [OHH (Strutton): \$200K]

- **TOTAL Yr 3:** **\$3.6M**

- **TOTAL Yr 2:** **\$0.9M** (Annual+COAST+SMILE)

- **TOTAL Yr 1:** **\$0.9M** (Annual+GIS)

Summary

- In years 1-2, CIOSS took on greater roles in research meeting its Theme 1: Evaluation of present and future satellite sensors and techniques. This contributes to the NOAA goals in the GOES-R3 and R2O.
- CIOSS also began to propose successfully to other branches of NOAA (primarily in the OHH program).
- It did this while retaining its emphasis on basic research, presently emphasizing research that will be useful in future IOOS coastal observing/modeling systems, in which CIOSS Fellows are leaders and participants.
- These activities have “primed the pump” for a major increase in activity in year 3.
- But the most fun has been....

Outreach in Formal and Informal Education

- First, note that the workshops are classified as “Formal Education”, but what I’m really talking about is:
- **SMILE:** Held the second year of activities based on oceanography, mapping [and remote sensing].
- **SMILE:** Held the first High School Challenge based on this material – a resounding success involving NOS/HazMat.
- **Informal Ed:** Is moving from discussions to support for the design and evaluation of public interactive displays of CIOSS/NOAA science at HMSC, in collaboration with CoastWatch, NOAA/OAR/PMEL, HMSC and a new PhD program in Informal Ed at OSU.
- HMSC will serve as a laboratory to test and evaluate new technologies for delivering NOAA products to the public.

This presentation is Part 1 of a 3 part series. Please continue with Part 2: CIOSS & SMILE, A Partnership for Ocean Sciences Education