CIOSS – Cooperative Institute for Oceanographic Satellite Studies

College of Oceanic and Atmospheric Sciences
Oregon State University
&
NOAA/ NESDIS/ Office of Research and Applications

- Research
- Product Evaluation and Improvement
- Education/Outreach
**CI OSS Objectives**

- **RESEARCH:** Conduct oceanographic and air-sea research using remotely sensed data, models and in situ data, focusing on the broad “coastal” margins.

- **PRODUCT EVALUATION AND IMPROVEMENT:** Evaluate and improve satellite-derived and model products, develop new multi-sensor products, models and data-assimilation techniques; advise NESDIS about these products and techniques;

- **OUTREACH:** Educate and train students (middle school – graduate students), researchers, policy makers and the public in the use of remotely sensed data and models for studies of the “coastal” ocean.
OUTREACH

- **Public Schools:** Through programs such as “SMILE,” which develops curriculum materials for grades 7-12 and “teaches the teachers” how to use the materials in interactive programs.

- **Community Outreach and Education:** Public displays of oceanographic research at regional “science museums” such as the Hatfield Marine Science Center, the Oregon Museum of Science and Industry, and other community centers.

- **Research and Training:** Traditional courses, summer workshops/short courses, internships, etc.

- **Career development and mentoring:** Both research and mentoring are accomplished by using “core” funding to bring post-docs and junior faculty to work with more experienced and senior faculty.
The SMILE Program

Science & Math, Investigative Learning Experiences
SMILE Communities

- Chiloquin
- Siletz/Toledo
- Dayton
- Willamina/Grand Ronde
- Woodburn
- Pendleton
- Ontario
- Nyssa
- Sisters
- Madras/Warm Spring
- Cave Junction
- Forest Grove
The Purpose of The SMILE Program

To increase the numbers of historically underrepresented and other educationally disadvantaged students who:

- Graduate from high school
- Pursue higher education to prepare for careers in
  - Mathematics
  - Science
  - Engineering
  - Health professions
  - Teaching
SMILE Enrollment by Gender and Ethnicity

- Male: 59%
- Female: 41%

Ethnicity Breakdown:
- Hispanic: 25%
- White: 2%
- Native American: 5%
- African American: 3%
- Asian: 1%
- Pacific Islander: 3%
- Other: 14%
SMILE Programs.....

Elementary Outdoor Science Adventure

Middle School Challenge

High School Challenge

OREGON STATE UNIVERSITY
THE SMILE PROGRAM
SMILE Programs.....

Family Math and Science Nights

Professional Development
SMILE Partners Include…
- OSU College of Engineering
- OSU College of Science
- OSU College of Agriculture
- OSU College of Forestry
- OSU College of Oceanic and Atmospheric Sciences
- OSU Environmental Health Sciences Center
- Eastern Oregon University
- Western Oregon University
- Oregon Health Sciences Center
- H.J. Andrews Research Forest
- Oregon Space Grant
- Howard Hughes Medical Institute
The SMILE Program

High School Graduation Rates

- Students with 2 years in SMILE: 84%
- All Oregon Students: 75%
- Hispanic & Native American Students: 58%
- Students with 4 or more years in SMILE: 95%

College Enrollment Rates

- All Oregon High School Seniors: 65%
- SMILE Seniors 1992 – 2001: 89%

Oregon student data from the Oregon Office of Educational Policy & Planning
SMILE Student data supplied by college registrars
SMILE Program Highlights

- 16 years of operation
- Service to over 4,000 SMILE students in the first 15 years
- 2003-2004 expected enrollment of 820 students
- Through SMILE teachers, over 11,000 students are impacted every year
- Partnerships with 12 school districts
- Supports 76 teachers in 41 schools
- Since 1993, SMILE has awarded over $222,000 in college scholarships
CIOSS and SMILE: A partnership for oceanography education

The SMILE Program
- Oceanographic/Remote Sensing curriculum development
- Teacher professional development workshops
- Ocean/Satellite-themed high school challenge events

CIOSS
- Contribute expertise to curriculum development
- Present research at teacher workshops.
- Participate as experts at high school challenge events
- Provide lab tours & career information to students

SMILE Teachers & Students
- Implement curriculum in SMILE clubs.
- Teachers participate in professional workshops
- Students participate in annual challenge events
A Proposed Time-Line for CIOSS/SMILE Outreach Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>‘03-’04</th>
<th>‘04-’05</th>
<th>‘05-06</th>
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</thead>
<tbody>
<tr>
<td>Develop oceanography-themed high school challenges</td>
<td>✓</td>
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<tr>
<td>Develop curriculum in support of challenge topics</td>
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<td>✓</td>
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<tr>
<td>Prepare teacher workshop sessions</td>
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<tr>
<td>Host teacher workshops</td>
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<td>✓</td>
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<tr>
<td>Implement oceanography activities in club meetings</td>
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<tr>
<td>Host students for challenge event</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Evaluate project and seek feedback</td>
<td>✓</td>
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The CIOSS/SMILE collaboration will result in:

- The development of hands-on curriculum to introduce SMILE students to oceanography and marine remote sensing
- An increase in the content knowledge of SMILE teachers about oceanographic research and remote sensing
- The development and implementation of SMILE High School Challenges built around a reality-based oceanographic problem
- An increased awareness by SMILE students of marine topics and career opportunities involving satellite remote sensing of the ocean
The CIOSS/SMILE collaboration