

Environmental Cooperative Science Center

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Director

BACKGROUND

- The Educational Partnership Program with Minority Serving Institutions (EPP/MSI) Program is a NOAA-wide initiative
- The EPP/MSI Program was initiated in FY 2001 with a \$15M budget appropriation. In FY 05 EPP received a \$14.4M program budget

EPP GOALS

- To increase programs and opportunities for students to pursue research and education in NOAA sciences.
- To develop collaborative programs with MSIs that provide education to serve the interests of NOAA **and the nation at large.**
- To increase linkages between MSIs, other research institutions, the private sector, the NGO community, and NOAA.

PROGRAM COMPONENTS

- **Cooperative Science Centers**
- Environmental Entrepreneurship Program
- Graduate Sciences Program
- Undergraduate Scholarship Program



Cooperative Science Centers



- Four Cooperative Science Centers were designated in October 2001 following a nation-wide competition
- Following a second competition in 2006, a total of five CSCs were designated
 - City College of the City University of New York, Remote Sensing;
 - Florida A&M University, Environmental Science;
 - Howard University, Atmospheric Sciences;
 - ***North Carolina A&T University, Interdisciplinary Scientific Environmental Technology;** and
 - University of Maryland, Eastern Shore, Living Marine Resources

**The “5th” Center*

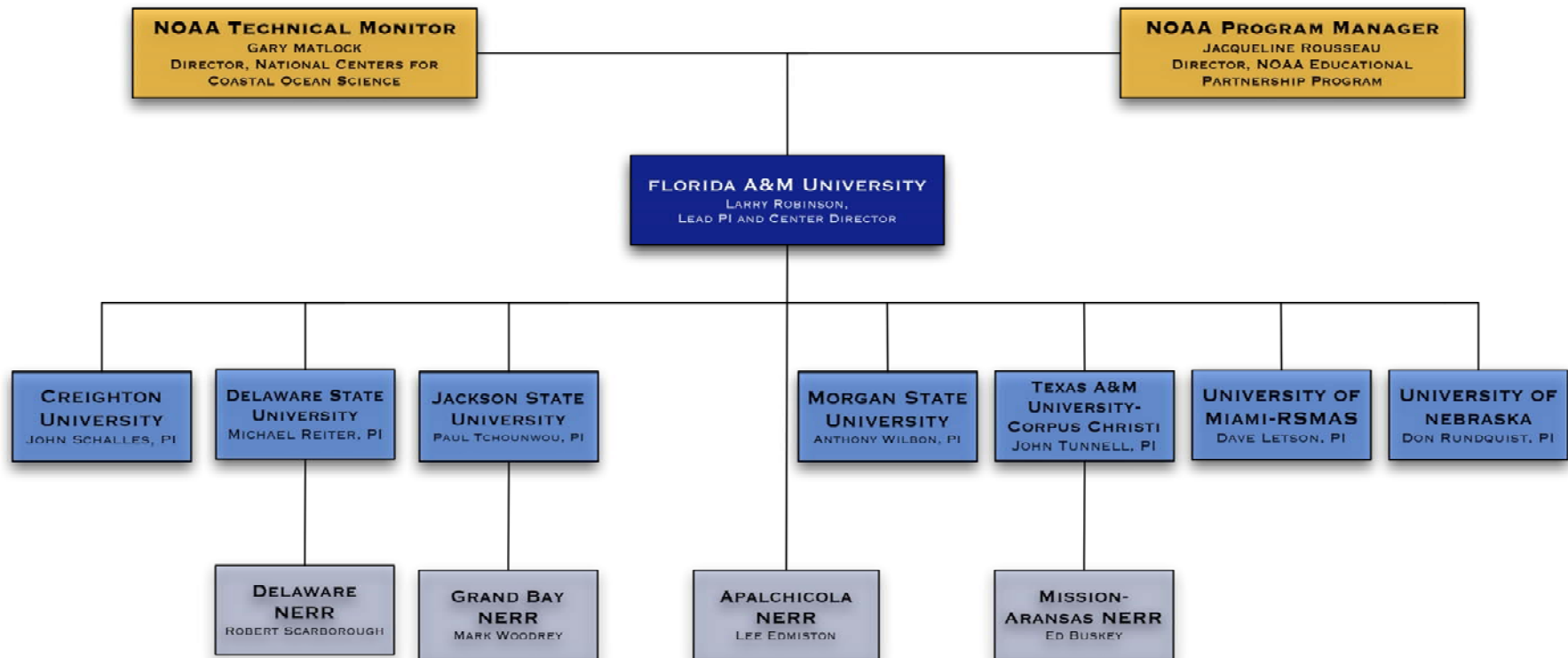
ECSC PRIMARY GOALS

- Increase the number of scientists, particularly from under-represented minority groups, in the environmental, coastal, and oceanic sciences by training students and expanding the capacity of faculty from ECSC member institutions to participate in NOAA-related research.
- Enhance the scientific understanding of human interactions with the coastal environment, including the development of tools, such as conceptual models and integrated assessments, to understand the response of coastal ecosystems and communities to human activities and stressors, and the development of metrics to characterize critical system attributes and evaluate ecosystem health.
- Improve the scientific bases for coastal resource management.
- Facilitate community education and outreach relating to the function and significance of coastal ecosystems.

ECSC APPROACH

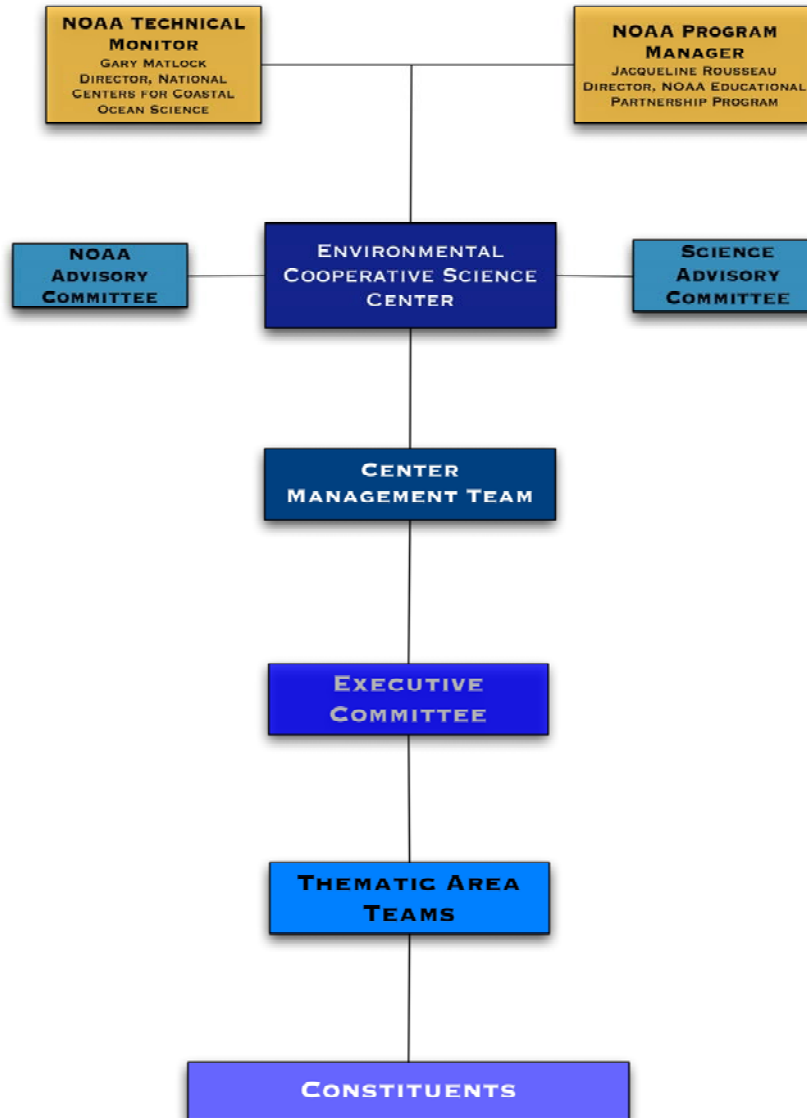
- **Conduct regional studies on partner NERR sites for sustainable management of coastal and marine habitats**
- **Develop conceptual models of the coupled ecological-human systems**
- **Conduct specific field, laboratory, and modeling studies in each site, including hyperspectral imaging and ground-truthing**
- **Investigate the economic and societal systems of coastal communities and their relationships to the natural systems.**
- **Implement an interdisciplinary approach to training future scientists, managers, and the communities they serve.**

NOAA ENVIRONMENTAL COOPERATIVE SCIENCE CENTER ORGANIZATIONAL STRUCTURE

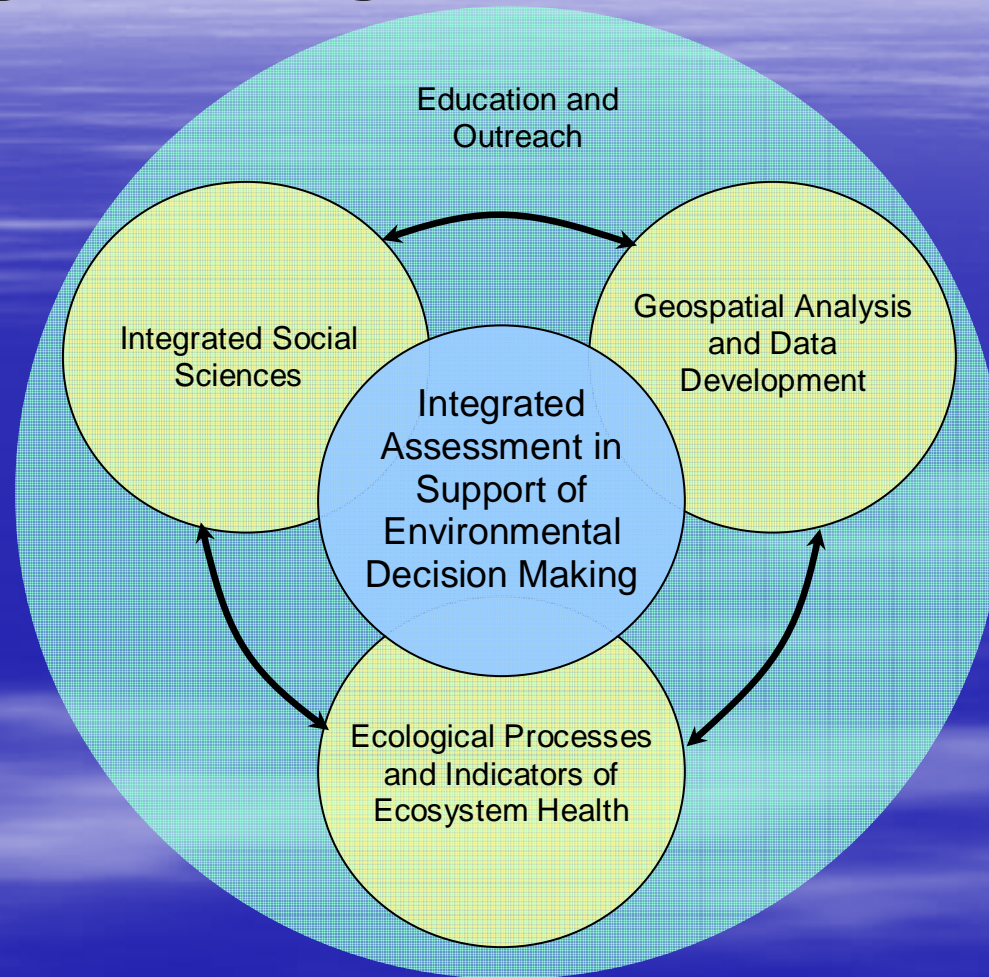


**NOAA ENVIRONMENTAL COOPERATIVE
SCIENCE CENTER**

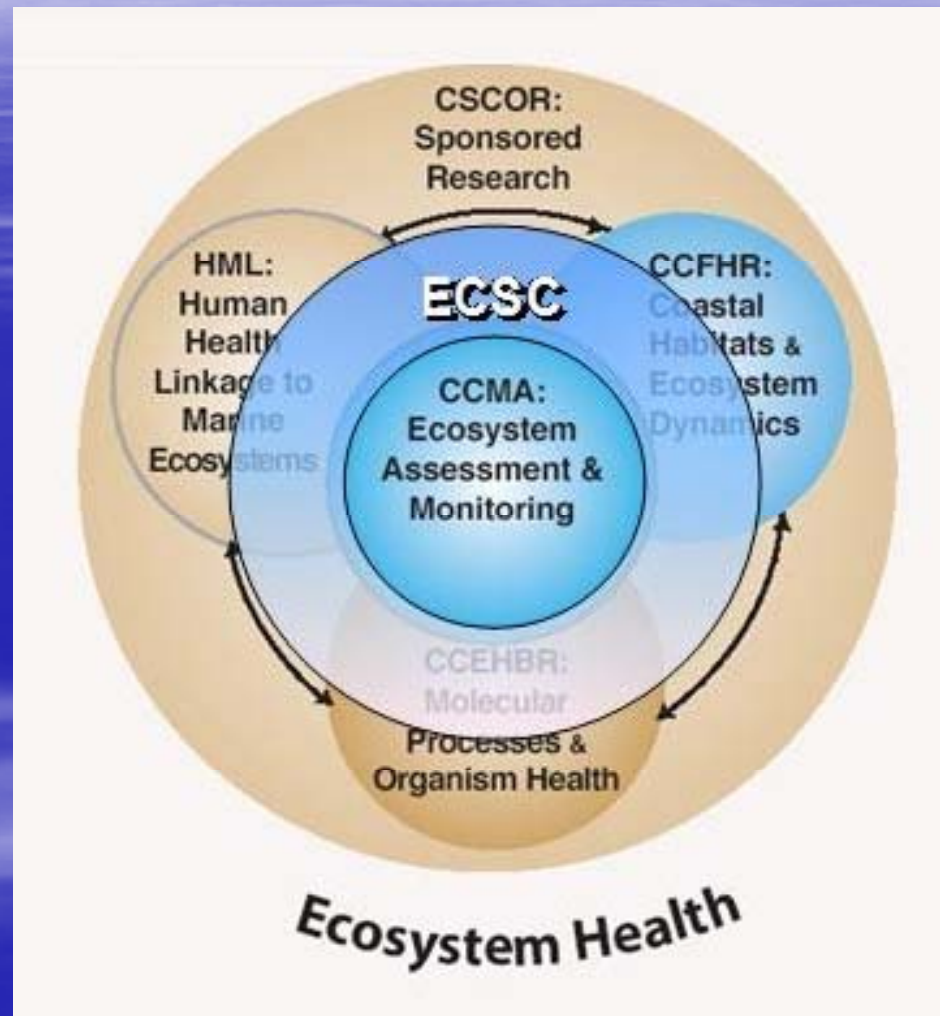
MANAGEMENT STRUCTURE



Linkages Among ECSC Thematic Areas



ECSC OVERLAY ONTO NCCOS CENTERS



Grand Bay NERR - Bay

Forest Management

Fire control
Harvesting timber
Etc.

Urbanization

Septic
Runoff
Etc.

Development

Runoff
Erosion
Chemical releases

Turbidity

Nutrients

Pathogens

Sedimentation

Mechanisms:
Light
availability

Mechanisms:
Enrichment
Competition

Mechanisms:
Human consumption
issues

Mechanisms:
Turbidity,
Light
D.O.
Etc.

Oyster Bars

Areal extent
Productivity,
Closures
Etc.

**Submerged
Aquatic
Vegetation**

Abundance,
Distribution
Health

**Inter-Tidal
Habitats**

Areal extent
Mosaic, etc.

**Soft-bottom
Benthic
Communities**

Infauna
Epifauna, etc.

**Water Column
Productivity**

Spp. Composition,
Productivity, Etc..

**Beach/Dune
Habitats**

Turtles, birds,
other
species

Habitat mosaic

Distribution,
pattern
etc. of habitats

Apalachicola Bay Salt and Freshwater Marshes

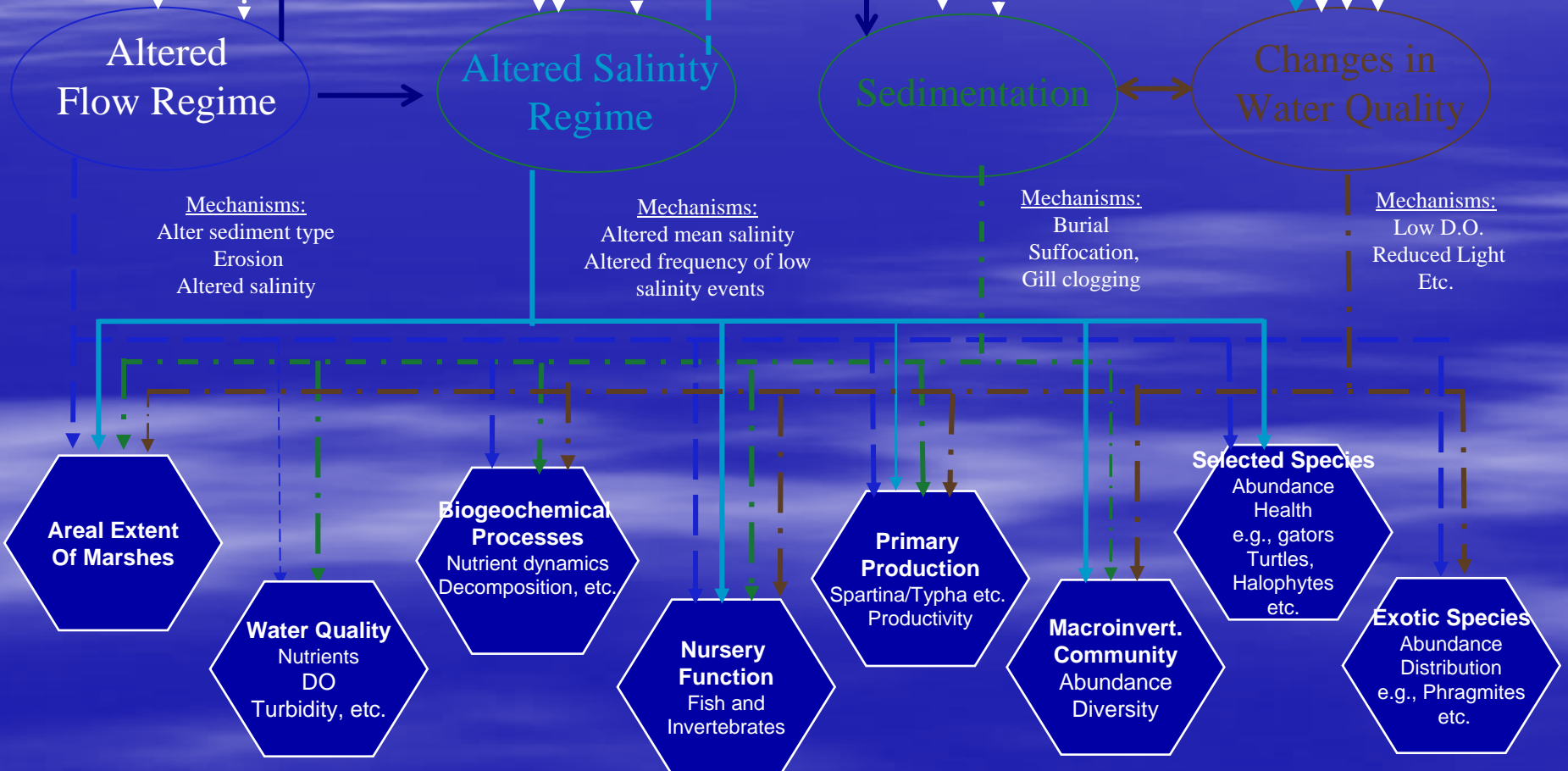
River Water Management

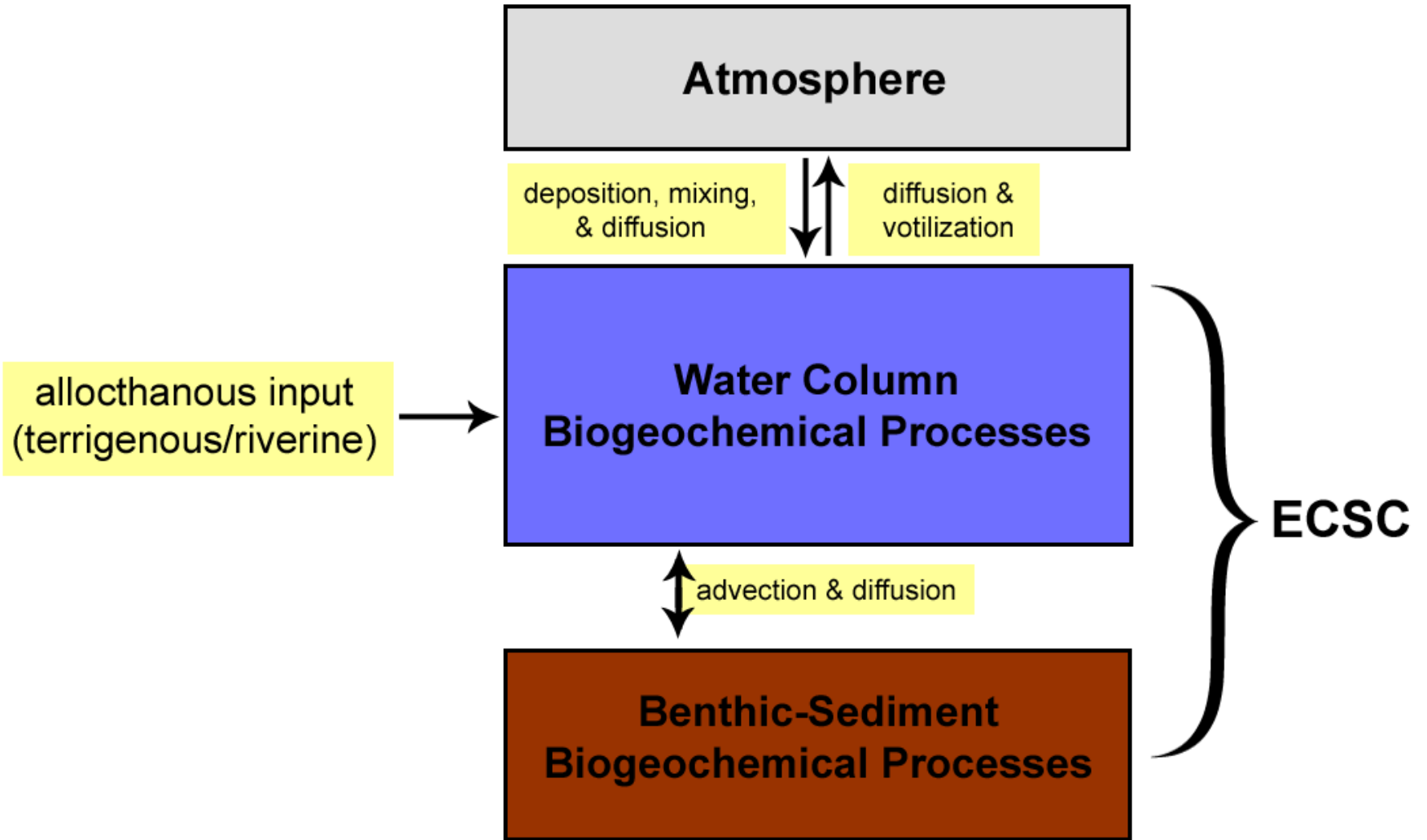
Sea-Level Rise

Development

Navigation
Water withdrawals

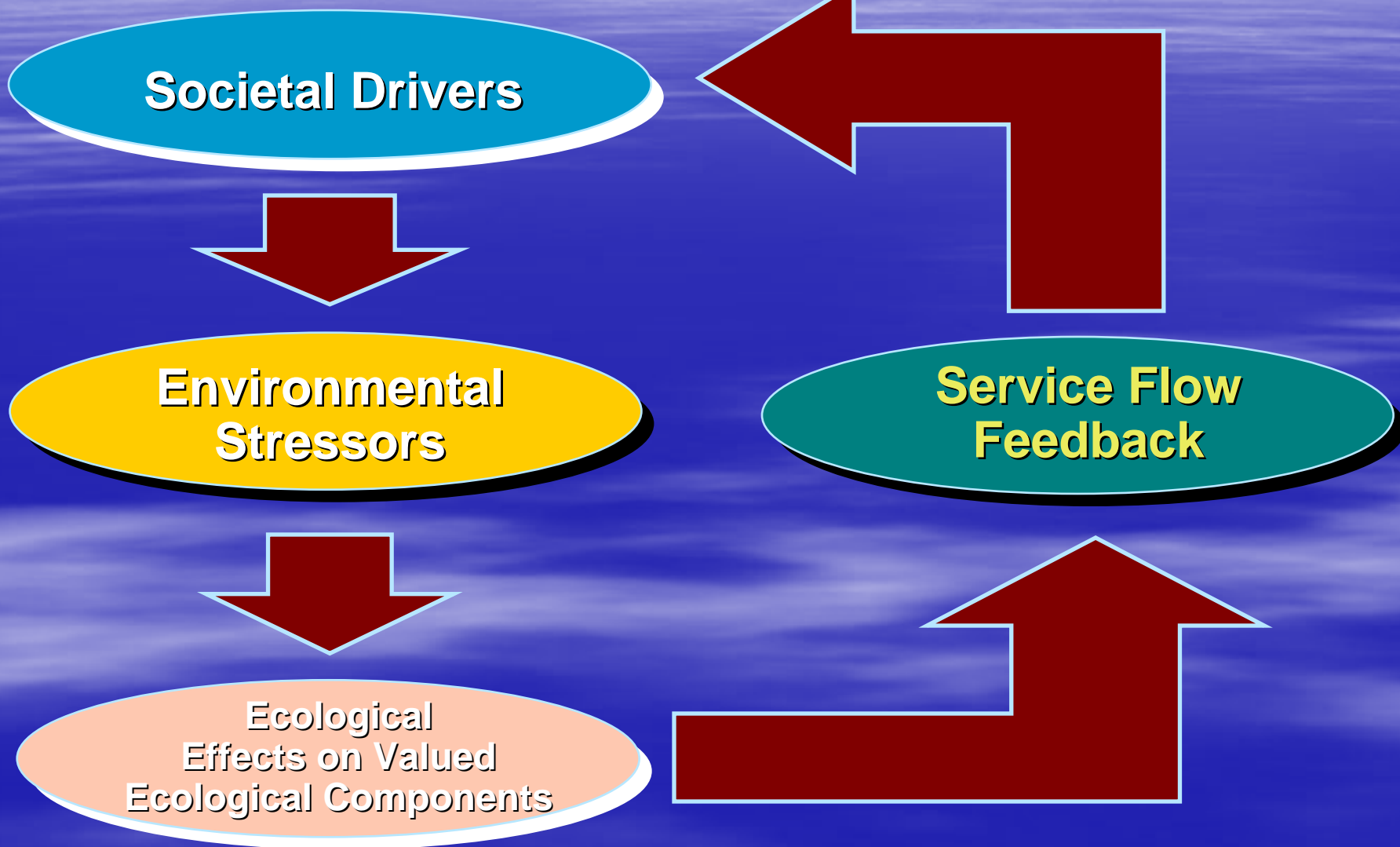
Runoff
Erosion
Chemical releases



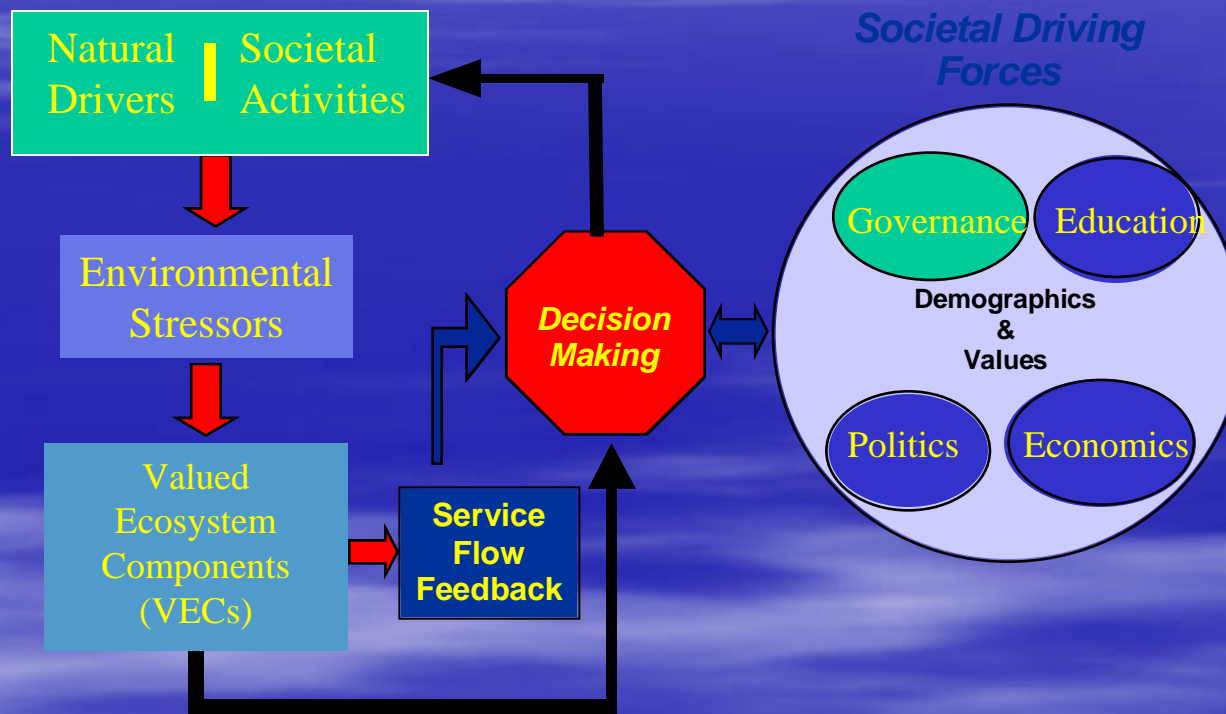


Linkages Between Societal Drivers, Stressors, and Effects

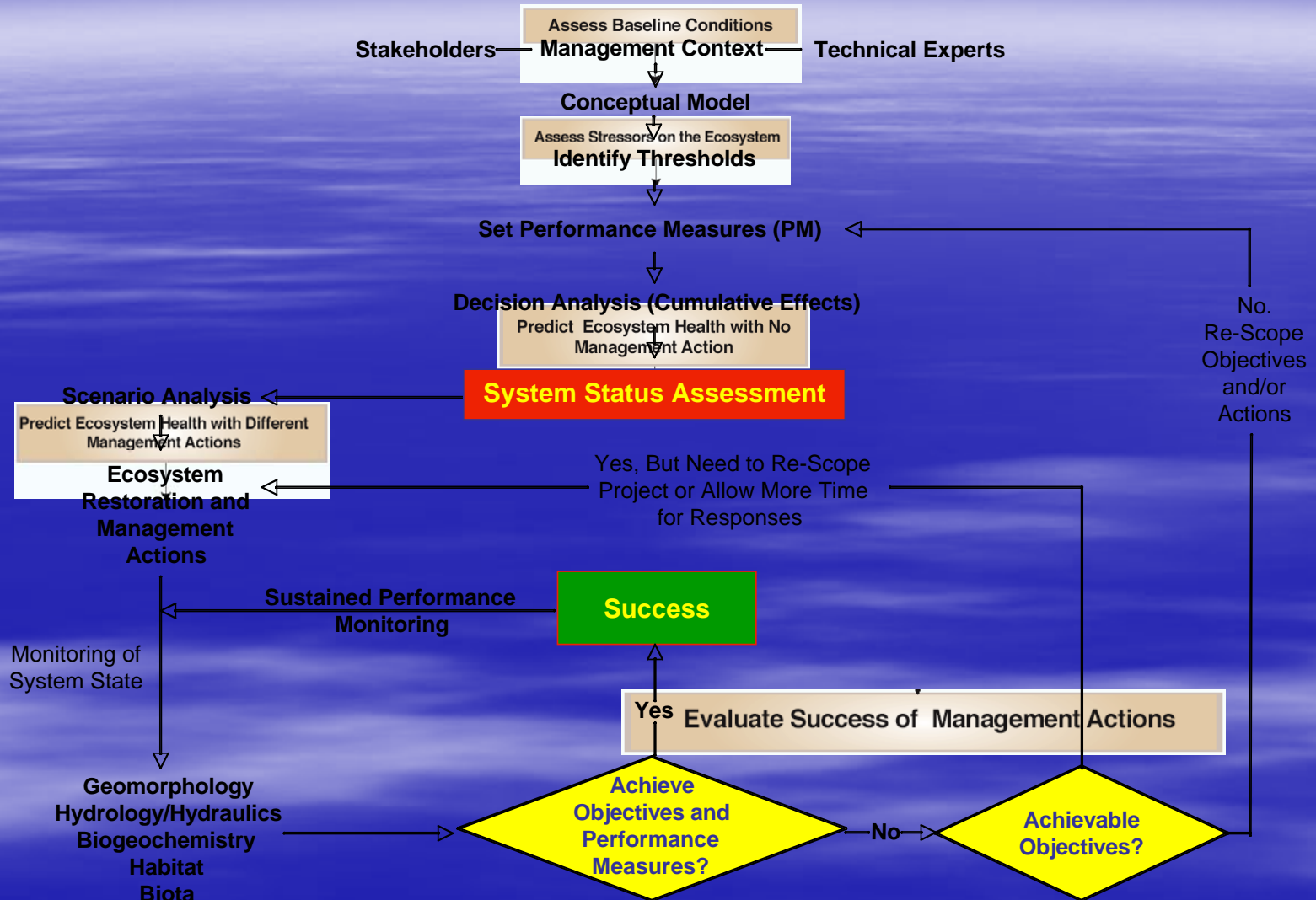
(modified from Gentile and Harwell 1996)



Human-Ecosystem Coupling Conceptual Model



Integrated Assessment Strategy for Coastal Ecosystem Management



New Opportunities

- The Environmental Cooperative Science Center, Environmental Sciences Institute, at Florida A & M University is seeking a post-doctoral research associate with expertise in marine biogeochemistry, bioindicators, and ecosystem modeling. The successful applicant will be responsible for coordinating research activities at the ECSC and will instruct students both in the field and laboratory.
- The Environmental Sciences Institute at Florida A&M University and the NOAA-sponsored Environmental Cooperative Science Center (ECSC) offer a postdoctoral position to support our efforts to develop and implement integrated assessment protocols for use in coastal resource management, protection, and restoration. The successful applicant will be required to assist Center scientists in research and student training on the use of integrated conceptual and numerical modeling in support of resource management issues, and will be responsible for conducting research on the interactions of ecological, social, and economic factors on the sustainability of coastal resources and communities.

New Opportunities

- The Environmental Cooperative Science Center (ECSC), a consortium of eight universities, invites applications for the tenured position of NOAA-ECSC Distinguished Professor. ECSC has been renewed with a new 5-year cooperative agreement with NOAA to educate a new generation of environmental scientists, particularly from the under-represented minority communities, and to advance the science of coastal ecosystem management. We seek a senior scientist with demonstrated success in coastal marine science research and education, and expertise in ecological processes, integrated risk assessment, and/or ecosystem management. The primary responsibility of the NOAA-ECSC Distinguished Professor is to develop a significant research program that contributes to one or more of the Center's thematic research areas

- *...To date, the program has more than doubled the number of African American PhDs produced nationally in atmospheric and environmental science. In 2001 through 2004, an average of 1 PhD in atmospheric science was produced each year nationwide. In 2006, NOAA/EPP funding resulted in 3 additional PhDs. The statistics are similar for environmental sciences. In 2001 through 2004 an average of 3 PhDs in environmental science were produced each year nationwide. In 2006, NOAA/EPP funding resulted in 5 additional PhDs.*

-Under Secretary VADM Conrad C. Lautenbacher,
September 28, 2006

ECSC OUTCOMES SINCE 2001

- 128 students trained in NOAA-related sciences
- 53 students graduated in NOAA core science areas. (12 Ph.Ds. !)
- 42 peer reviewed publications in NOAA-related sciences by faculty and students
- Developed a **peer-reviewed** post-secondary Ocean Science Concept-driven Interactive (OSCI) teaching model available on-line.
- Acquired **\$33,667,478.00** in funds leveraged with NOAA EPP funds

- **ECSC Management Tools**
 - Grand Bay NERR conceptual model is being used to assist manager and research coordinator to develop a site plan and research plan
 - Delaware NERR conceptual model is being used to introduce members of the St. Jones Watershed Tributary Action Team (forming in response to a Clean Water Act judgment involving the State of Delaware) to major environmental issues found within the watershed
 - Apalachicola NERR conceptual model is being used to plan research projects and serve as the basis for a comprehensive ecological risk assessment of the site

**National Science Foundation Survey of Earned Doctorates
Combined African American and Hispanic American Conferred Doctorates in Environmental Science**

Year	Academic Institution	Conferred Doctorates	
		African Americans	Hispanic Americans
2001	Indiana University at Bloomington		1
	University of North Carolina at Chapel Hill	1	1
	University of Texas Hlth Sci Ctr Houston	1	
	Washington State University		1
	Total	2	3
2002	Unvierstiy of California Berkley		1
	University of North Carolina at Chapel Hill		1
	Total		2
2003	Jackson State University	3	
	University of California-Irvine		1
	University of Illinois at Urbana-Champaign		1
	University of Nevada-Las Vegas	1	
	Total	4	2
2004	Drexel University	1	1
	Jackson State University	4	
	Rutgers the State University of NJ New Brunswick		1
	University of California-Los Angeles	1	
	Total	6	2

* Source: National Science Foundation Survey of Earned Doctorates, 2004.

National Oceanic and Atmospheric Administration Educational Partnership Program Graduated Students

	B.S.	M.A.	M.S.	JD	Ph.D	TOTAL
Cooperative Remote Sensing Science and Technology Center	43		24		3	70
Environmental Cooperative Science Center	28		20	1	10	59
Living Marine Resources Cooperative Science Center	57	1	11		2	71
NOAA Center for Atmospheric Sciences	23		19		7	49
TOTAL STUDENTS	151	1	74	1	22	249
TOTAL MINORITY STUDENTS	91		40	1	21	153

Source: National Oceanic and Atmospheric Administration Educational Partnership Program Student Tracker Database

Program Outcomes - 2

National Oceanic and Atmospheric Administration Educational Partnership Program Student Pipeline

	B.S.	M.A.	M.S.	Ed.D	Ph.D	TOTAL
Cooperative Remote Sensing Science and Technology Center	66		36		38	140
Environmental Cooperative Science Center	30	1	18	1	12	62
Living Marine Resources Cooperative Science Center	53		18		9	80
NOAA Center for Atmospheric Sciences	63		12		15	90
TOTAL STUDENTS	212	1	84	1	74	372
TOTAL MINORITY STUDENTS	186		65		58	309

Source: National Oceanic and Atmospheric Administration Educational Partnership Program Student Tracker Database

Program Outcomes - 3

- According to NSF, between fiscal years 2001 and 2004, a total of 9 Ph.D. degrees in Atmospheric Sciences were awarded nationally to African Americans. In May 2006, Howard University, the NCAS lead institution, made an unprecedented impact on national statistics by awarding 3 Ph.D. degrees in Atmospheric Science to African Americans. An additional 12 African American Atmospheric Scientists are in the pipeline with graduation dates expected within the next two years.
- A total of 22 Ph.D. degrees in Environmental Sciences were awarded to African and Hispanic Americans between fiscal years 2000 and 2004 according to NSF. An ECSC partner institution, Jackson State University (JSU), awarded a minimum of 3 Ph.D. degrees in Environmental Science in 2003 and 2004. Between fiscal years 2005 and 2006, ECSC graduated 8 minority students with Ph.D. degrees in Environmental Sciences: 1 by Jackson State University and 7 by the ECSC lead institution, Florida A&M University (FAMU).

Impacts on NOAA Workforce - 1

Fiscal Year	Total Employees Hired into NOAA Professions	Total Minorities Hired into NOAA Professions	% of Minorities Hired into NOAA Professional Occupations	Minority GSPs Hired into NOAA Professions	% Minority GSPs Hired into NOAA Professions
2001	201	9	4.5%	6	66.7%
2002	373	22	5.9%	5	22.7%
2003	316	13	4.1%	3	23.1%
2004	212	18	8.5%	5	27.8%
2005	239	22	9.2%	2	9.1%

Impacts on NOAA Workforce - 2

Fiscal Year	Total Employees Hired into NOAA Professions	Total Minorities Hired into NOAA S & T Professions	% of Minorities Hired into NOAA S & T Occupations	Minority GSPs Hired into NOAA S & T Professions	% Minority GSPs Hired into NOAA S & T Professions
2001	201	5	2.5%	5	100.0%
2002	373	14	3.8%	5	35.7%
2003	316	11	3.5%	3	27.3%
2004	212	13	6.1%	5	38.5%
2005	239	17	7.1%	2	11.8%