Florida Oceans and Coastal Resources Council Meeting November 15 and 16, 2006 FDEP, West Palm Beach, Florida

REPORT OF PROCEEDINGS

DAY ONE, November 15, 2006

5 OBSERVERS/REPRESENTIVES

Members present:

Voting Member	November 15, 2006	November 16, 2006
Jim Cato	X	X
Billy Causey	X	X
Jane Davis	X	X
Ernie Estevez	X	X
Grant Gilmore		
Karl Havens	X	X
Rob Kramer	X	
Jerry Lorenz	X	X
John Ogden	X	X
Shirley Pomponi	X	X
Lisa Robbins	X	X
Jerry Sansom		
Tony Sturges		
Jody Thomas	X	X
Tom Waite	X	X
Non Voting Member		
Secretary Colleen Castille	X	
Executive Director Ken Haddad		
Director Sherman Wilhelm	X	X
Director Stephanie Bailenson	X	X
(Castille alternate)		
Director Gil McRae (Haddad	X	X
alternate)		

WELCOME

The meeting began with a welcome by Co-Chair, FDEP Secretary Colleen Castille. Co-Chair, Ken Haddad was working on Manatee issues and was unable to attend; his alternate, Gil McCrae, sat in for Director Haddad. The Secretary announced that, due to other appointments, it would be necessary for her to leave the meeting at various times.

Secretary Castille announced that there was an agreement between the federal and state government regarding the Tortugas Ecological Reserve Video clips of this important event are available at http://www.dep.state.fl.us/secretary/news/2006/11/1114_02.htm

The Secretary then announced that her resignation as Secretary of the Department of Environmental Protection had been accepted effective at the end of Governor Bush's administration on January 2, 2007. She said she did not know what her next endeavor would be, but that she intended to take a sabbatical to hike, kayak and enjoy the environment. She expressed her feeling that the last eight years had been an extraordinary time for the environment in Florida and that she was proud to have been a part of the effort. Florida had acquired more public lands during that time than any other time in FDEP's history.

Gil McCrae delivered a "hello" message from the FWC Director, Co-Chair, Ken Haddad who was unable to attend the meeting. Mr. McCrae announced that there would be increased funding for red tide work from the federal government in addition to receiving substantial state funding over the next 5 years. There is still some uncertainty regarding the next administration's budget although there may be a supplemental budget request by DEP and FWC to fund some of the research components identified in the last Research Plan. However, no specifics are yet known.

There have been no announcements on who the new Secretary will be. We should see more announcements from the new Governor's office beginning next week (week of November 20, 2006).

Council member Billy Causey said he has worked under many FDEP Secretaries and Secretary Castille is the best he has known. She is really out there putting in the effort to make things work.

Secretary Castille then turned the meeting over to the Facilitator, Janice Fleischer.

AGENDA REVIEW AND GUIDELINES

The facilitator reviewed the meeting Agenda (Exhibit A), and the Meeting and Public Guidelines.

All Reports of Proceedings, Meeting Guidelines and Public Comment Guidelines can be found on the Council website at www.FloridaOceansCouncil.org.

PUBLIC COMMENT

Prior to beginning the substantive part of the meeting, public comment was invited.

For Public Comment Guidelines, see the Council website at www.FloridaOceansCouncil.org.

Three (3) members of the public addressed the Council:

Mitchell Roffer-Roffer's Ocean Fishing Forecasting Service Dr. Jyotika Virmani, Florida COOS Caucus Professor Christopher N.K. Mooers, RSMAS/University of Miami

AQUACULTURE PILOT PROJECT REPORT-OVERVIEW AND CONSENSUS

Council member Jane Davis presented the draft report of the Aquaculture Pilot Project (Exhibit B). This report is due to the Legislature on February 1, 2007. Ms. Davis chaired an outside panel of experts who generated the draft.

Prior to seeking consensus on adopting the document, members made the following comments:

- 1. Open the door in the future to flora; plants, algae and sea grasses as well
 - a. Should be included; habitat restoration includes this
- 2. This involves massive water treatment problems; this needs to be included more specifically in the document; more emphasis
- 3. Sea Oats and other coastal plants need to be considered
- 4. Contextual in tone; it presumes certain things, makes assumptions about how things will/will not develop
- 5. We don't know where to put this stuff yet; need to be sited very carefully due to impacts of them; offshore and on shore
- 6. Include the water quality impacts
- 7. Tiny suggestion re: restoration
- 8. Marine ornamental section: give a status of what exists today; nice to know current status; need to look at any type of aquaculture to see if it is really feasible
- 9. Hard Coral section: if we put out that we can restore coral reefs through aquaculture; developers think they can destroy the reefs since it can be restored in another way; FKNMS (?) is requiring the development of a Coral Health Certificate; Billy will help get language; just a couple of sentences, not major changes
- 10. This is a pilot and the Report doesn't have to be all things to all entities, etc.
- 11. If you look at the Legislature language it calls for a Pilot, but there was no budget, the Report will serve as the Pilot
- 12. Scope: what about sea food needs, how do we include ornamentals and sea oats, is that beyond the scope
 - a. No, including them is important because it all has impacts
- 13. This Pilot was never funded in the Legislature language
- 14. On page 1 there is a recommendation for a real Pilot Project; let's get some meat in this and make some recommendations; include the recommendations in this Report; include this language in the document
 - a. The group really did want to make recommendations; did not yet agree on 5 points
- 15. Change to: "Council recommends...." Page 1, lines 40-45.
- 16. Consider the disconnect between this project and the other RCs; if we come up what the recommendations are, you can put in years
- 17. The Legislature separated this Project out from the rest of the work of the Council; we should not put them in together
- 18. Could Jane tell us what recommendations are being considered?
 - a. Answer:
 - i. evaluate and develop sustainable recirculating technology for all phases of marine fish aquaculture to support marine stock enhancement and food production

- ii. continue efforts to develop low-cost, energy efficient production systems for marine fishes
- iii. evaluate the new species for marine stock enhancement
- iv. determine the economic value/impact associated with marine stock enhancement
- v. outreach aquaculture and stock enhancement technology
- 19. Off shore concern: Best Management Practices (BMPs) are mentioned, Paragraph 3 of page 3, line 14; I would like to really see the BMPs; we should not take what is cited as a given; only an item of concern; it assumes offshore aquaculture
- 20. We need to strike Page 3, line 14 references to offshore things; at some point this Council needs to take up offshore aquaculture but not in this document and not now; page 3, lines 14-25 referencing all offshore operations
- 21. Offshore aquaculture may have land based support
- 22. What did the sub Committee think?
 - a. Although offshore wasn't part of the Plan, it supports the land based initiative
- 23. We should not take out the entire paragraph.
- 24. Compromise, get rid of BMPs; it is not a given; and move it up front to set the stage that Council will face this issue at some point
- 25. Alternative: in Land Based Section, reference linkage to offshore, keeps the linkage and importance
- 26. Our RCs have two RCs that address this subject: that RC 34.1- ranked 27; RC 33.4-ranked 39

See stricken language on document (Exhibit B, Lines 25-29, page 3)

- 27. Are the economics of priority #43 (RC 33.1) and recommendations made? Economics of recirculating technology still needs to be evaluated.
- 28. Keep this whole document and project separate from the Research Plan itself and its RCs; it is a significant effort but should remain outside the RCs and any recommendations of where to go next should be separate as well
- 29. Maybe take the recommendations from subcommittee and try to bring them into focus; the current recommendations are rather general
- 30. Allow Jane to meet with subcommittee tonight to incorporate changes and bring back tomorrow
- 31. On page 1; would subgroup articulate or define a particular project
 - a. No, the sub group would not be ready to put specific pilot projects

1st ranking document as a whole allowing the subgroup to incorporate comments above and change to eliminate language per # 26 above.

5	4	3	2	1
0	4	3	3	1

No consensus

2nd Ranking: Allow subgroup to make suggested changes to text but bring back recommendations tomorrow

5	4	3	2	1
0	6	4	2	0

No consensus

3rd ranking: Allow Jane and group to re word and bring the document back for consideration in a publicly noticed meeting/video, etc. in the near future

5	4	3	2	1
6	5	1	0	0

Consensus achieved

Note: Language added by unanimous consent on Report, Page 2, Line 2- see Exhibit B.

At this point the Council took a short break.

RESOURCE ASSESSMENT DISCUSSION AND CONSENSUS

Council Liaison, Steve Wolfe, presented his draft of the description document for the introduction to the Resource Assessment (RA) (Exhibit C). Council members discussed this description of the Resource Assessment implementation and the GIS-based example to be submitted to the Legislature December 1, 2006.

Comments on Resource Assessment description document:

- 1. Seems to suggest it is all comprehensive, needs wording that this is not a comprehensive compilation of data from everywhere
- 2. Two lists; one at top of page and one at bottom and they seem to overlap; they are not "sources of information";
 - a. This was explained
- 3. Resource Assessment and Research Review (RR) should ultimately be one project
- 4. Clear up any language that overlaps; Page 2, Lines 7-9, Paragraph 3, sentence that starts with "ultimately" omit:
 - a. This was accepted with no objections
- 5. Add: Resource assessment shall at Page 2, Line 28
 - a. This was accepted with no objections
- 6. Re: publishing in book form, seems archaic, be obsolete
- 7. Should be a website;
- 8. Take out reference to book; consider schools;
- 9. Look at hybrid; website that is constantly updated but still need some "thing" that could be used (book, CD, etc.)

- a. The reference was made that Legislators like to use some "hands-on" thing, coffee table type of item
- b. We could still produce something
- 10. Change the language to "could"
- 11. Eliminated all reference to producing a book;
 - a. Eliminated with no objections, Page 3, Lines 3-6

Ranking descriptive document as changed pursuant to above notes and attached Exhibit C

5	4	3	2	1
11	0	0	0	0

Consensus achieved; Document with noted changes above accepted, see Exhibit C for changes indicated.

Subsequent to the discussion on the descriptive document for the Resource Assessment (RA), Mr. Wolfe showed the Council a rough mock-up of a web-based demonstration of the RA. The example did not perform well due to what were later determined to be a slow internet connection. Council members made the following comments and observations:

- 1. Demo needs work
- 2. There are examples that agencies are using, some have strengths, others weaknesses, look at other possibilities; don't let the Legislature think this is the only way it could be done; need to let the Legislature know that there are other types of this system
- 3. Should we add a paragraph at the end of the description that says there are many possible ways to show this system?
- 4. What is the demo designed to show? The data and the way it can be displayed? You need a professional to prepare this demo
 - a. Answer: We would use the professionals from the state agencies
- 5. Concern that Legislature will think this would be enough and no further work needs to be done
- 6. Florida Keys National Marine Sanctuary and Southwest Florida system could be used to take the data and incorporate into this demo
- 7. Demo can by tailored for each Legislator
- 8. Demo needs to much "slicker"
- 9. Whatever is developed needs to be able to be run on average computer at someone's home
- 10. Show areas where there is and is not good data
- 11. Incorporate GAME (Geiospatial Assessment of Marine Ecosystems) Program data
- 12. We need an extension of time to get this done properly; the descriptive document could be presented with a request to show the demo after January 2007
- 13. We should not send them separately
- 14. Prepare a presentation on a CD or DVD that goes with the description; how much time is actually needed to do this?

- 15. Develop a working demo "movie" on a specific region of the state with specific data as an example: FWC could produce it by December 1, 2006 but not sure Council would see it before it went out
- 16. Whoever presents this to particular individuals must be ready to answer questions that may come up
- 17. Concern that we are too far beyond what was actually asked for by Legislature; we are getting into an advocacy position, they did not ask for interpretation
- 18. We need to really get down to a local level; even to a district; Legislators want to know "if we fund this, how will it help my district?"
- 19. Want just some kind of impersonal explanation of the intent of the tool is made clear
- 20. This idea of targeting each Legislative district needs to be part of our overall communication strategy.

1st ranking: Allow FWC to create a movie demo, narrated as per #14 above

5	4	3	2	1
11	1	0	0	0

Consensus achieved.

FY 2007-2008 ANNUAL SCIENCE RESEARCH PLAN - DISCUSSION AND CONSENSUS

Mr. Wolfe directed the Member's attention to Exhibit D, the 2007-2008 Annual Science Research Plan for their approval to text of the body of the Plan (excluding, at this point in the discussion, the research components). He noted that in response to his request for any comments on this document, none were received from Council members. He explained that consensus was only being sought on the body of the text of the document, not on the RCs at this time in the meeting. The remainder of the day and the next day would be spent discussing four main items:

- 1. Any changes members want to the text of the body of the Plan;
- 2. How to incorporate IDM and the Legislative Projects (RA and RR) into the Research list;
- 3. Any changes members may want to the wording of the RCs;
- 4. Potential re-prioritization of the RCs and the list of Research items in the Plan.

On the first item, the text of the body of the Plan, Council members made the following comments and observations:

- 1. Why would we want to repeat last years' experience? Do we want to do this the same way? We must be very clear, be as simple to understand as possible
 - a. Here are the problems
 - b. Here is what we must do and why
- 2. Answer: this is the medium term plan; the long term plan will be different, this is just for 2007-2008
- 3. Strongly support the idea that we need a new strategy; we did not get message and urgency to Legislature last time;

- 4. Just put forward a small number of high priority items; what folks will recognize as being important
- 5. Our current list is just a hodgepodge
- 6. We must not bury the information from the Economics Report, it must be at the beginning
- 7. Focus on:
 - a. Integrated Data Management
 - b. Water Quality
 - c. Habitat Characterization
- 8. Add: Climate Change to the above three
 - a. You will see data from the remote sensing
- 9. Will a State Legislature think: "What can I do to assist with climate change?" isn't this overarching
- 10. Our RC#1 was such an enormous number in budget that it affected all the others; if we want to move forward we must address that issue; cost associated with these projects
- 11. For consideration: One page behind front cover of newspaper headlines (artistic comment) on sea level rise, red tide, other ocean crises
- 12. Most could be collapsed into one of these three/four areas
- 13. Our RC list was arbitrary based on our experience, but now we have the RR and gaps and needs so we should look at this again; in addition we have the feedback from the Legislature and Governor; we need a more focused Research Plan
- 14. It was not arbitrary, it may not have been perfect but it was based on the agency management needs as they articulated their priorities
- 15. Useful to think of this in regard to new administration;
 - a. current Florida coastal ocean growth;
 - b. captured what we had into 3 virtual paragraphs with bullets underneath;
 - c. budget for each; we must be better at this aspect
- 16. Do we want to lose all the current RCs? Or retain them for further information/advice; DO THIS IN ½ DOZ PAGES
- 17. Show what the urgent item is, the cost and the hoped for outcome in columns
- 18. Retracted suggestion regarding news headlines; it may be alarmist and incorrect information
- 19. The top 20 RCs still seem to be the same priority; the Council should embrace the top 20 and work on setting this to a format that could be funded by the Legislature
- 20. We need to be more general; make a short list and support it with the projects we think should be done
- 21. We must be very clear what it is that the budget is "buying"; what do they get for the money
- 22. I would like to "lose" this list; too little time to do it originally; we can be directed by it but not led by it
- 23. What is most important from each category and then recommend one thing from each and ask for funding
- 24. Restate and redraft the proposal
- 25. Funding will come through the Agencies (DACS, DEP, FWC) therefore our message must be consistent with their other requests, etc. We MUST work together as a team.

- 26. Do you need to recommend a budget?
 - a. The Agencies did it for you last year and would do that again
- 27. I like the idea of pushing the list aside; however, timing is a problem since we must have something by the end of this meeting; let's use the current list as part of the what is used for the supplemental budget
- 28. Each of the categories could really be reduced to one main thought to go to the Legislature
- 29. Our Research Plan must be consistent with agencies supplemental budget requests that are currently prepared; do not include budgets but keep the long list that we have already prepared to reference back from our shorter version we should prepare for this year
- 30. We need to see what the agencies have requested in Legislative Budget Requests (LBRs)
- 31. The current document is our overall Plan; then yearly we come up with priorities

The Council suggested that this year's version of the Research Plan for 2007-2008 be a shortened version using the three priorities previously approved by the Council-Water Quality, Integrated Data Management and Habitat Characterization

5	4	3	2	1
5	3	4	0	0

This concept was adopted by consensus

The Council then began to discuss exactly how this concept would be implemented. Council comments on developing the details:

- 1. Let's go through the RCs as they were developed and put them into the three headings and then prioritize
- 2. "Shortened version" means a shortened statement
- 3. Take some time to go through the first 51 RCs; and put them into the 3 categories; we need three or four punch lines for each
- 4. It would help us to get LBR list from FWC at least
- Get Ernie's beginning list
- 6. Need to give each area an introductory statement; economics needs to be included

This discussion was adjourned to allow for public comment.

PUBLIC COMMENT

Public Comment was invited.

Four people commented: Mitchell Roffer-Roffer's Ocean Fishing Forecasting Service

Dr. Jyotika Virmani, Florida COOS Caucus

Tom Gustafson, Private Consultant

Richard Dodge, Ph.D., Nova Southeastern University

For Public Comment Guidelines, see the Council website at www.FloridaOceansCouncil.org.

FY 2007-2008 Annual Science Research Plan - Discussion and Consensus (Continued)

Discussion working on details of new Plan:

Council Member, Ernie Estevez, suggested the following format for the Overview document and this specific language for the Water Quality portion of that document:

	ter Quality: first paragraph in Research Category F
Wa	ater Quality Priorities
1.	Ocean Observing and Remote sensing systems, to provide real time statewide information that improves basic and applied research, navigation and hazard response, marine fisheries, and marine resource management. Recommended level of effort
2.	Monitoring programs that relate nutrients and living resources to human activities, to provide cost effective resource management programs improving oceans and human health. Recommended level of effort
3.	Harmful algal bloom research, to protect tourism, commercial and recreational fisheries and inform watershed management for ocean health. Recommended level of effort

ADJOURN

The meeting adjourned at 5:00 pm.

DAY TWO, November 16, 2006

4 OBSERVERS/REPRESENTATIVES

FY 2007-2008 ANNUAL SCIENCE RESEARCH PLAN - DISCUSSION AND CONSENSUS (CONTINUED)

On the second day of the meeting, members continued their development of the "Overview document" and the discussion regarding the format of the full 2007-2008 Research Plan. During discussions on the first day, the Council had begun to develop the "Overview document" (Exhibit E):

- 1. How far are they going with the 07-08 Report: will there be a windup portion
- 2. In our introduction, do we want to mention losses and costs related to issues raised?
 - a. i.e. red tide, etc.
- 3. Document may need a wrap up summary but the document should not be longer than 3-4 pages; we should not include the RCs
- 4. It should be short; needs a Conclusion, and mention Aquaculture and RA; but no more than one page concordance, lists RCs under them as a source of reference- allows people to burrow back into last year's plan for budgets, etc.
- 5. Each bulleted item should be done in a way that answers what will it cost and what it will do.
- 6. Secretary Castille suggested a budget be included.
- 7. Keep document short, punchy and hard hitting; like a blueprint for building something
- 8. We are targeting the "investors", the Legislators; reference the RCs that are tied to the bullets but otherwise keep the RCs out of main document
- Question of "what do we get for the investment"? Hard to answer this question in a Overview document
 - a. "Last year, the Oceans Council produced a Research Plan......"
- 10. Coastal and Ocean Observing System (COOS) is cross cutting; it should be mentioned as such
- 11. In deciding how long the document should be, we must look at who the targeted audience is; the larger areas (Habitat, Water Quality and IDM) are really for the agencies assistance
 - a. If it is too short, it doesn't help agencies, if too long may be too long for Legislature
- 12. We need to define the process that defines the priorities but we don't attach a price tag; we let the agencies put the budgets on
- 13. It needs some costs; the first thing Legislature will want to know is what it costs
- 14. Last year, if Legislature had appropriated funds, it would have turned it over to agencies; we could assist somewhat in assisting with budgets but not be involved in project level (COI), we could help in shaping the Requests For Proposals (RFPs); we need to put in order of magnitude of budget
- 15. Priorities need two things: what you do first and how big a budget it is
- 16. Look at this as a state investment to get the ball rolling; look at a more modest investment
- 17. Secretary Castille: the initial draft [of the Overview document] is a good document as a foundation; for a multi-year, multi-institute endeavor; the draft you started is a good start
 - a. Change it around a little: the three items are the conclusions

- b. Add "how this will leverage the money"; it leverages other dollars
- c. Reference other Reports and show that this is the next frontier
- d. Reference your last Plan; staff will read it but Legislature may not
- 18. Council member responses to Secretary's remarks:
 - a. We should reference that this is a multi-year, multi-institute and put a budget with it
 - b. Intro and sub heading that talks about funding
 - i. Foundation
 - ii. Development
 - iii. Investment
 - 1. leverage
 - c. refer back to the COP (U.S. Commission on Ocean Policy) and Gulf of Mexico Alliance
 - d. funding just to get the ball rolling; how we are going to take the state's money and leverage it
 - e. what about a 1-2 punch; produce a document and then let the staff know that Council members are available to assist in giving presentations on what could/would be done
 - f. get something out that we agree on; no more than 3-4 pages and then have a menu
 - g. see Jim Cato's diagram (below)
 - i. a marketing document is what we are crafting
 - ii. it can reference the detailed Plan from last year, but call it THIS year's Plan, don't call it LAST year's plan
 - h. We should prepare it as quickly as possible, but make sure it is something that is useful
 - i. Building of budget will be a little delayed this year due to new administration
 - j. Feb 1, 2007 is the due date: Legislature says MUST be delivered

CATO DIAGRAM:

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The Separate Piece: (Overview document)
Pretty, color, pictures
Detailed Plan
Legislative Budget Requests (LBRs)
Community Partners
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Format outline:

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Introduction
Investing in the Future
Leveraging
Multi-year
Multi-institute
Greatest Needs
WQ
IDM
```

HC

Summary

Added: Council members prepare presentations to demonstrate Last Year's Plan becomes this Year's Plan some changes for this year

Accepting Cato diagram

5	4	3	2	1
5	4	0	0	0

Accepted by consensus

The Council took a short break

After the break, the Council asked Stephanie Bailenson, _____ FDEP, to have the Overview document placed on the web in .pdf format when finalized. Additionally, Ms. Bailenson made the commitment that FDEP would be able to print out 500 copies of the Overview document for use by the Council members. It was decided that it would be good to have the completed document available for Ocean's Day 2007. Council members commented that if some items were duplicated in the Overview document that are also stated in the full Plan, it would not be redundant since the Overview document will be used separately as well as being part of the full Plan.

Consensus decision: The Overview document being created (Exhibit E) is to be incorporated into the 2007-2008 Research Plan prior (in place) to the Executive Summary, and is to be used to create a public awareness brochure (submitted to FDEP for formatting)

5	4	3	2	1
6	2	1	0	0

Adopted by consensus

How to proceed with the 2007-2008 Research Plan:

- 1. Take out "research" from the "research priorities" wording and just say "priorities"
- 2. Think of OOS (ocean observing systems) and IDM as "sales tax" with every project you put forward;
- 3. IDM is very important to impacting everything else
- 4. Change Section IV of the Plan to "Council's Priority of Funding"

- 5. Ernie Estevey offered the following Strawman for priorities order for 2007-2008 Plan:
 - a. Council administration, Research Review, Resource Assessment (Recommended level of effort \$480K)
 - b. IDM (\$600K)
 - c. Research Priority #1 (RC 3.2) gets up to \$1.5
 - d. Remaining Research Priorities get up to \$9M

Ranking for using this list of priorities for funding in the 2007-2008 Plan and mentioning this list in the overview document

5	4	3	2	1
8	0	0	0	0

Adopted by consensus

The Council further agreed that the above priority list goes into the "Conclusion" portion of the Overview document, and in the Executive Summary and funding portions of the Research Plan.

At this point in the meeting, several members had to leave and a quorum was lost. Prior to adjourning the meeting, the following final decision was made by Council members.

Empower staff to incorporate all the changes noted in this Report, finalize the Overview document and adjust the budget, conclusion statement and Research Plan text to be consistent and transmit the Plan to the Legislature.

5	4	3	2	1
8	0	0	0	0

Adopted by Consensus

NEXT STEPS/EVALUATIONS

It was decided that a short meeting would be calendared so the Council could have the opportunity to adopt the final version of the Aquaculture Report, review and finalize the wording of the Research Components and finalize their priority order for the 2007-2008 FY Research Plan. This meeting would be convened either by video or teleconference in early to mid December, 2006.

Council members were asked to complete their meeting Evaluations before adjourning.

ADJOURN

The meeting was adjourned at approximately 2:30pm.

OBSERVER COMMENT CARDS RECEIVED AT MEETING

"The U.S. Integrated Ocean Observing System (IOOS) is composed of a global ocean system and 11 regions; Florida is in two: SEACOOS (Southeast Atlantic Coastal Ocean Observing System) and GCOOS (Gulf Coastal Ocean Observing System). It is important for Florida state agencies to coordinate

with them for 1)observing subsystems, 2) modeling subsystems and 3) data management subsystems. Florida needs to engage with SEACOOS and GCOOS in sustaining present capability while national IOOS is developing. IOOS has come to appreciate that modeling and analysis, as well as data management is essential to producing an "Integrated" Ocean Observing System (IOOS).

Professor Christopher N.K. Mooers RSMAS/University of Miami cmooers@rsmas.miami.edu