

Greater Everglades Notes

PIRs available on evergladesrestoration.gov.

Questions on BCWPA: Do you have the information you would need from RECOVER? We are working on integrating that.

Panel discussion: Synthesis and System-wide Science:

- Has total DOC changed for BCWPA?
 - Total suspended solids don't vary very much after the first pulse. The size changes, comes back up as larger pieces.
 - Biggest signature is seasonality for DOC, not sure we have the sensitivity to see the periphyton collapse.
- Comment on the how large scale experiments help our decision makers make tough decisions:
 - All the presentations were adaptive management, even the pump test is essentially adaptive management. They fit in with operations, the operators want to know if the water's in the right place, is it too low/high? Are we designing our restoration programs correctly? The projects/experiments help with this because they are providing some surprising results from what we originally thought would happen. What we're finding is that it's more complicated and when we do CEPP, we need the information from these studies to design it. The PIR is the scope, but the details of actually doing it, the information from these studies will be critical.
- LILA has been last 10 years. Is there any plan on how LILA information will be used for projects/restoration? A way to summarize the information and present it?
 - The work at LILA for tree islands is useful for the projects and will be used with water operations, etc. Used in weekly operational components between the Corps and SFWMD. There were things found on the tree islands at LILA that really influenced the planning of CEPP (as one example).
 - Reporting is already set
- The monitoring assessment and design has a good deal of coherence and learning from each other. While we work at a project level, we're attune to RECOVER's system-wide and ongoing work. This allows us to recognize efficiencies, cost savings, etc. Each project should not start with a novel design with ignoring others work.
 - We're developing monitoring to have a shared awareness and perspective where we can accept the system as it changes over time, and the path of restructuring as needed. This helps with dealing with sharing and awareness every day, rather than dealing with conflict every day.
- Systems operating manual. We're getting to the point in projects where we do need to start working together, so at what point do we use this systems operating manual?
 - Would need to start with SFWMD (non Fed sponsor) going to the Corps to get this going. In a few years, when HHD is complete, there will be a study for a new lake regulation schedule.
- Decomp physical model involved a great amount of teamwork. It was quite an accomplishment and we need to be aware that everything we've been doing for the last 15 years has been a team. RECOVER is a team. National Academy of Science just published an article saying they don't know how science teams would work, but they could ask RECOVER.

Panel Discussion: Using NSRSM and other metrics for hydrologic performance measure evaluation and verification.

- NSM predrainage conditions were similar. For NSRSM the existing stages were lower, when they would be expected to be higher. Making adjustments to this are difficult, but once we found out simple adjustments could be made to 2x2, NSM was fine. There was a recommendation for NSRSM for peer review a while ago. NSRSM doesn't work very well below Long Pine Key, but the everglades is a tough system to model, difficult to predict. Question of resources at this time as to how useful we can make NSRSM, but right now, it doesn't do the job it needs to now for salinity models.
- As we get better tools, when/how can we better incorporate climate change into them? With climate change, we're going to get higher highs and lower lows regardless.
 - Huge challenge because we don't know what it will be. We don't know what scenario to look at, at this point. We need to not look at the models as a single model of the future, what we should be doing is treating these models and tools for learning. When consider different evaluations, think about a range of uncertainties (drivers such as rainfall, etc.). This also needs to be communicated to the public as well.
 - By the time we get there, the AMO might change again.
 - One challenge is connecting the lay audience, uncertainties become a challenging dialogue to have.
- Martha's paper: concept of adaptive restoration planning. Rather than a preferred alternative based on one climate, think of possible climate that would have flexibility. Takes an enormously different way of thinking. It does address uncertainty though, with flexibility in structures and operations built into the project.
 - Sometime we confuse the issue of what's going to happen in the future with what do we think in the everglades that should persist. What would the Everglades characteristics have looked like, what is going to happen, and how can we get there. Sometimes we combine all the issues.
- Want to separate climate change from sea level rise. What is predicted to happen today, is predicted in 2030 for sea level rise.
 - FAU scenarios did have a sea level rise scenario, but it had a small impact on the NSRSM domain (perhaps they didn't use an aggressive enough SLR).
 - We've dusted off the EFDC model to try to get to this issue, we don't have a great understanding right now.
- In the 5 year plan, we are seeing that we need to focus on sea level rise.
- Everyone should read the Cline paper that talks about sea level rise.
- In south dade investigations, farmers are experiencing flooding, that they are attributing to water operations, but this could also be due to sea level rise. The capability of our models become very important to satisfy the public. Otherwise we will be forced to be conservative in the built environment between flooding and restoration of the Everglades.
 - There was a study in 1990 that showed fresh water levels would come up
- There are a number of groups in FL that have covered the different scenarios, we should tap into these. FAU workshop learned were sea level rise, but also rainfall. The impact assessments that go with the scenarios are difficult to interpret as well. RECOVER needs to tap into what's already been done than reinvent the wheel.
- In RECOVER we develop performance measures. With climate change, what does that mean? Do we need to adjust our expectations of what to expect.

RECOVER Science Meeting

March 1, 2016

1:30-4:30

- We will be going back to look at the conceptual ecological models from 2005 that will give us the base to look at that question.
- This comes back to resiliency, as we develop performance measures, it's understanding how the extremes factor in and still have a sustainable ecosystem. Development of the metrics is going to be very important.
- One of the questions in the beginning was, are we going to have the Xerox reduction or bathtub reduction? Maybe not considering geographical boundaries, how can it migrate across the landscape and how would it look in the future. Being more open ended about where those things wind up.
 - This goes back to the functions and defining characteristics of what we're striving for. Are the defining characteristics under climate change different than what we've always thought?
 - Restoration isn't a fixed target. Where do we want to match back up, climate change just shifts the target drastically. 40% reduction in rainfall is a dramatic decrease. USGS spent \$1Million on climate change panel for CISREP this year.
 - Key issue is that often we start to discuss 2-3 issues that get jumbled up together. Human dimension of this is important, in small, medium, and large groups. How does this fit into communicating with general public. One issue with models is we simplified them.
 - Coordination between model developers in RECOVER has been good. Lack of quantity and available data has been a problem. Need to spend more time having discussions, but most of this is resource issues, usually we can get past the discipline barrier.
 - GE/SCS PMs need to mesh. Water comes from the greater everglades and they need to be synchronized. Maybe joint meetings?
 - We should do ensemble models for climate change.
 - Assessment should be model based. Maybe we could use the models for assessment as well.

Greater Everglades Summary:

- Uncertainty in sea level rise was a big topic of the day. Laura Brandt had good points, so many points get jumbled, let's simplify and think about the question (restoration targets).
- Bit discouraging to hear so much about uncertainty. Resilience, we need to have enough variability in the system.
- How we manage and test for variability is important in both space and time. Not sure we've ever taken what we know about that relationship in how we analyze the everglades.
- Team science: need a safe space to talk in your group. Google NYT article on team science.
- Encouraged by progress we've made so far, on the other hand, picked up a flyer restoration progress, there wasn't a single mention of what's in between the levees (decomp wasn't on there).
- Carlos hasn't seen many mangroves dying. Buttonwoods are dead. Coon, Clide Keys have defoliated red and black mangroves than Jerry's ever seen. Small discrete patches.
- Concerned that boundaries are going to change. Future will have a huge effect on algal blooms (sea level rise and climate change)
- Heard that there is a big difference between the Disney models and mad max scenario.
- Discouraging: lack of ability to still understand the coast and that it's still changing in light of sea level rise
- Encouraging: harness the knowledge gained from Picayune Strand

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Wrap up for Day:

- Drought in 2013-14, with 21,000 acres of seagrass dieoff. If we didn't have the information, we wouldn't know why it was collapsing now.
- Interaction between projects and science to inform restoration during different phases.
- Hydrologic barriers are important
- Monitoring is important for each stage of projects
- If we didn't have an ecological monitor on the ground for Picayune Strand, we would not have as much sheetflow restoration as we do now and in the future. Need active management.