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Note: Topic 3 and Topic 4 were discussed out of order from what was listed on the Agenda.

Session I: February 14, 2011

Participants:

In-Person

1. Eileen Shea
2. Margaret Davidson
3. Robert Weller
4. David Robinson
5. Holly Hartmann
6. John Dutton
7. Thomas Karl
8. Chester Koblinsky

9. Antonio Busalacchi
10. Mary Glackin
11. Raymond Ban
12. Heidi Cullen
13. Jeanine Jones
14. Ellen Mosley-Thompson
15. Leonard Pietrafesa
16. Marshall Shepherd
17. Eric Wood
18. Richard Rosen
19. Jennifer Faught
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Phone

22. Wayne Higgins
23. Lauren Jones
24. Neil Christerson
25. James Kinter

Introduction, Background, and Discussion of Agenda

Chet Koblinsky, Director, NOAA Climate Program Office and Transitional NOAA Climate Service Deputy Director

- AB: The major topic will be to receive NOAA's responses to the various CWG reviews stretching back almost four years. We will also get an update on the Climate Service and the President's Budget submission. Tomorrow we will discuss how best to assess the outcomes and discuss a possible new task for the CWG.
- CK: The CWG should expect to get general responses when reviewing strategy for the Climate Service. Mary Glackin will present NOAA's President's Budget submission at 2 pm when it will become public. We will address issues related to all reviews over the last four years and how we developed responses. It will cover essentially the same material we presented to SAB last year.
- AB: We are setting new ground since no rules exist as to how the response is responded to. We want to work towards closing out the review and don't want to keep dragging it on. We want to primarily concentrate on whether there are any factual errors or glaring non-responses.
- RB: The SAB agrees that it would be most effective to look at the agency responses as Tony said. If there are significant gaps they need to be raised. However the process will continue as the Climate Service unfolds.
- HH: Special circumstances may warrant a responsible discussion but we want to be effective and efficient in dealing with the responses.
- JD: I want to ensure that we not simply endorse words. We want to look at actions and whether things have happened.

- AB: I would like to hear from speakers about what has changed or remained the same as a result of the CWG review and why.
- RW: I don't want to close the discussion on Climate Observations & Review and have anyone reach the conclusion that program is healthy.
- AB: Another theme is to hear how research is expected to change within Climate Service as distinct from Climate Program.
- DRob: Has protocol been established to respond quickly to CWG reviews? It would have been better to receive immediate response with ability to look back instead of responses years after the review.
- RB: One of the aspects of working groups has been poor turnaround time. At the July SAB meeting, the reality of recommendations and response delay hit home. That was one of the motivations for thinking about streamlining the interaction of the SAB and its working groups w/ the agency. We don't have the luxury of a two year process anymore. We want to be smart about managing assets working forward.
- TK: How do we think about ourselves in the context of what's going on? We want to make sure as we go through the threads of the review that some of the impacts of those reviews on how NOAA operates aren't going to be found within those pieces. The biggest impact from reviews is that the way in which we operate must be interconnected. That is the key message in making CS work effectively. We will need continual attention and prodding. Are we seeing evidence that people who do models talk to others to identify priorities? Are we seeing connections between climate activities and weather activities? Connectivity has been a major weakness.
- CK: We wanted to use CWG to evaluate activities. These are divided into three major programs: Obs & Analysis, Research & Modeling, and Information Products & Applications. These are no longer the core objectives under the NOAA NGSP. However, these activities have not gone away and will be implemented as the three major organization structures of the Climate Service. Reviews are very appropriate for these types of activities. The history of the CWG involves similar issues. The big challenge is integration.
- CK: Reviews were asked to be non-advocate reviews. We weren't reviewing single labs, research and modeling programs, and information products, but were reviewing all activities across NOAA. The primary recommendation was to compare and contrast specific options for building the Climate Service. Three overarching recommendations seem to be repeated in reviews. The PPBES Process changed to the SEE process. We have gone through the SEE process for FY 2013 and aligned the Climate Service to NOAA's NGSP. Key objectives have changed from what was done in the past. We have tried to address the CWG's concerns in our recommendations. Better internal and external partnerships are being promoted. Quarterly tracking and execution year process is being evaluated.

Topic 1.A: Overview to NOAA Program Review responses and status of the Climate Service Reorganization

Mary Glackin, Deputy Under Secretary of Commerce for Oceans and Atmosphere
Thomas Karl, Transitional NOAA Climate Service Director
Chester Koblinsky, Director, NOAA Climate Program Office and Transitional NOAA Climate Service Deputy Director

- MG: There are pretty severe impacts on operating funds. We expect them to go back to FY 08 equivalent levels. Amendments will go out this week. The message this week is for FY 12. However, FY 11 is far from done. There may be a CR at beginning of March. I expect shades of 1996. I didn't bring an FY 12 budget brief. For NOAA, FY 12 looks similar to FY 11. We have taken efficiencies in administrative side of the house. The budget allows seeking modest increases in priority areas, including Climate. The largest issue for NOAA is the reorganization for the Climate Service. NOAA has not yet cleared all typical materials (bluebook, etc.). However, I hope to have more material in hand by Wednesday for a constituent outreach meeting. We are taking a significant step in a long series of steps beginning in 2007. This is the largest reorganization NOAA has done, but we believe there is a compelling, long-term need.
- MG: The NAPA report was a key point in the Climate Service development process. Our core capabilities changed after comments on the Vision and Strategic Framework document. A key change from the comments is the inclusion of Climate Prediction Center. We want to ensure strong linkages. The bottom line is that there is no perfect organization, but this provides a focus on climate that wasn't there before.
- MG: The proposed Climate Service has three major lines of business. The Climate Senior Scientist will ensure scientific integrity and provide advice on use of grants funds. We are creating the Observing Systems Division to manage CLASS. In accord with service development we want to create strong regional ties. We are asking for money for Regional Service Centers for the first time ever. The Grants Division is for administration & grant execution.
- AB: Where would research be done to advance ISI?
    - MG: The Grants Division holds resources for that. Competition for funds will be both internal and external.
    - TK: We want to look at how the grants program can work more collaboratively with labs & centers.
    - WH: We will be talking about implementing arrangements to ensure no break in chain between modeling and service delivery.
- RW: How does the new organization engage internationally?
    - MG: Three major staff offices under the Associate Administrator are international offices. Another speaks to interagency and enterprise engagement.
- JD: What is the budget for the Climate Service?
    - MG: $346M total. There are a few new dollars but most is not new.
- MG: We want to ensure we don't forget about OAR, which is going to shrink by half. OAR has done a lot of work to lay the foundation for the Climate Service. We are still looking to leveraging technology and looking for next-generation stock assessments. We need a more deliberate strategy. We remain a prime location for weather research, but need to have well-developed proposals for advanced weather forecasting. We will see some resources on renewable energy in FY 12 budget. Under the new OAR organization, the AA will serve as senior advisor to NOAA chief scientist and also as the Deputy Chief Scientist. Modeling is dispersed in NOAA needs to be better integrated. We need to express priorities for how small business "tax" dollars are spent. We will continue to provide support for the SAB and the NOAA research council.
- AB: Other than Sea Grant & CIs, how will OAR interact with academia?

    - MG: We are not sure but I believe there are units that do that.
- MG: NESS will be able to focus on acquisition, maintenance, and operation of satellites. For NOAA overall, two political positions aren't filled. PPI is no longer a line office because of its recognition as a headquarters function. It is renamed Strategic Planning and Evaluation.
- MS: How should NOAA address misinformation in the media?
    - MG: We should ensure the information flowing is as accurate as we can make it. We want to focus on information, not writing policy.
- JD: I'm concerned about removing "informing policy options" from the plan. It should be an important function to inform federal decisions.
    - MG: It is a role we have and an activity we do. However, we took it out because of negative feedback.
- DRob: The Climate Service may be in trouble because of perception of it as a climate change service.
    - MG: We are making it clear that it was being driven by an overwhelming demand for focus at an operational level. It was started under the Bush Administration. It is getting positive response from wide variety of users, including the US military. No new legislation is needed to enact this. It can be approved through the appropriations process.
- RW: Given the repetitive nature of IPCC, how is NOAA going to work together to sustain the observing enterprise?
    - MG: We are trying to keep the record going with fewer resources. Investments in the National Assessment should be facilitating generation and delivery of information. Regarding basic investments, we do see some reason to hope we do a better job agency-wise. I can see Cathy Sullivan playing a role with this.
- EW: What is the vision of how priorities will get set since new organization is different than NWS?
    - MG: The budget is there to fund federal structure plus grants. Overall budgets have been fairly flat while costs increase. We need to prioritize funding. Discussions need to address maintaining observations, connecting users to information, and participating in broader activities.
- EW: Development people don't sit in the Climate Service so it's easiest to eliminate are those which are administratively convenient.
    - MG: Within the climate goal, someone will have control over 90% of climate activities. I will have control over the rest so the decision will eventually come back to me.
- AB: What is the process by which priorities for climate research will be determined?
    - MG: We will develop budget guidance. The annual operating plans will reflect those priorities. Grants money will attract people for those priority areas.
- JD: Will there be an analog to CPO grant request?
    - MG: It will be put out in grants division.
- JD: How much money will be available in grants division?
    - CK: Truly competed money will be around $70M-ish.
    - TK: The organizational structure is there for convenience. The key piece in this activity is that the research is put with the service for connectivity. It will be incumbent upon the AA to respond to MG to take advantage of connectivity.

Topic 1.B: NOAA responses to the Climate Observations and Monitoring Program Review

Rick Rosen, Senior Advisor for Climate Research

- RR: We have consolidated response of all 4 responses and provided details in individual responses. Much of the presentation is taken from Slides 8-13 of what was presented Nov 30. and is structured along the same lines. I want to make the point that review team did acknowledge very strongly that there's a lot of good work going on in climate program office.
  CPO oversees nearly half of ocean in-situ operations. It's a major responsibility that's been handled very professionally and skillfully. While there are lots of good things going on the key question is how do all the different pieces work together?
- TR: A good part of what you're looking at 4 years ago was geared at figuring out what's going on with climate system. Now the question is how to transition this to climate service?
    - RR: There was an emphasis on the theme that the program seems to lack coherent or strategic plan. The review teams identified key issues (slide 3) and you'll note that the word "integrated" appears throughout all the points. The "integration" theme very much crystallized during this review. Formation of the line office is a means for dealing with this integration need. In fact, this added considerable momentum to getting to where we are today.
- AB: Will GHG operations be in that new office (2nd bullet of slide 4)?
    - RR: Yes.
- RR: SEE is likely a more sensible process. The "planning" process not as divorced from reality as before with PPBES, which used us considerable time and resources. Also, goals formulation is now owned by executing offices.
  The review panel was very cautious with suggesting how to move forward with attribution. It's still in research mode, yet demand for information is growing. A large role is played in ocean observations. For example, Earth Networks could be a private sector partner with CO2 monitoring stations.
- LP: Are integrated ocean observing system still run by NOS?
    - RR: Yes, because of its coastal orientation, linking coasts with blue water. IOOS will stay in NOS. This gets back to service level agreements, discussing how we're going to work across the lines.
- RR: We are working on focusing climate information toward societal challenges that have been identified. Identifying with users the kinds of information they need, and how it will be used, where it came from, how transmitted, etc. is key.
- RW: Who's working on this? Is anyone tasked and funded to do this?
    - RR: This is what we're figuring out. We're learning what the needs are.
    - TK: Climate portal is one example of this information system. Also the proposed Roundtable of Climate information services. Proposal to create this is recognition that it's a pretty heavy lift to make climate information workable. The transfer to climate service will require transparency and sharing of information on never before seen levels. The Academy is very

interested in this and will be talking with GCRP about how this is evolving for the whole community.

- HH: Are you affected by initiative to reduce # of data centers?
    - TK: I don't know. But a key point is that our data centers are more than simple data centers. We're not just a data bank, but provide services as well. We are working in ways that have great potential. We have monitoring activity that's been putting stuff in the state of climate report. We're now expanding to include lots of work going on in labs in Boulder and looking at attribution issue to understand why things are happening.
- RR: We are also developing approaches to help us prioritize various observing systems that people are responsible for including things like enhancing the climate data record. Kevin made a comment on this as well. Leadership within NESDIS and NASA are working more collaboratively now than before, with regular (monthly) meetings, with agency heads, filtering down to working level.
- AB: This Powerpoint is just re-stating the recommendations. The real issue is satellite data assimilation for climate problem vs. the weather problem. Are we getting ready for SMOSS, GRACE, etc.?
    - MS: I was at Goddard this morning; there is concern about how climate community foresees using weather data/capabilities.
    - TK: This is a very difficult issue. Assimilation systems are being discussed in various places, labs, and programs. We are still figuring out how to go about doing this one.
    - AB: In the reorganization of NESS, there was a research box there. That would seem to be the most appropriate place for this.
    - EW: There's a time scale issue here, between climate and weather, where data goes from useful to not very useful.
    - MS: You need long-term records to determine baselines.
    - AB: CBR records in much better shape now than 4 years ago. Getting sensors ready to be applied to NOAA side.
    - EW: One useful phrase that's not used much here, but is used in Europe, is benchmarking.
- MS: Are there OSSI applications?
    - TK: As we heard from Mary, there are enormous pressures on observing systems. What observing systems are most important? We need a connecting piece between observation and modeling.
    - RR: We have the expertise but haven't been able to focus the resources.
    - EW: But we also lack the interest. Central to this is decadal models at GFDL. But there is scant history of interaction with other labs to pull this off.
    - RR: OSSIs are expensive.
    - JD: If done well, it is your resource plan. It saves you money, and helps you know what to prioritize.
- RR: In the last 4 years, data centers are playing a much stronger role in CLASS activity. CDR role in NCDC has helped provide better oversight of data we have responsibility for managing.
- BW: Is CLASS sufficiently funded?
    - TK: Going forward, resources less than half what they were. In FY12, there is a movement to keep CLASS integrated with data centers, which is a good thing.

- RR: There is a climate goal specifying a need to carry out needs assessment within the user community and look at societal challenges to determine what kinds of information is really required by users.
- JD: There are six things here we're working on. Is there an individual identified for each point, whose annual performance review is tied to completion of each point?
    - RR: As Chet said, we've been holding these annual meetings, SES level folks responsible for various elements listed here.
    - CK: There is a mechanism for tying people's performance to these elements, getting them into people's plans.
    - JD: It took 4 years to consummate this process. Is this partly why?
    - CK: Yes, it's hard to hold people's feet to the fire. It's a management issue.
- RR: FY11 budget did include some support for ocean observing systems though not what was recommended.
- RW: Prioritization is more important than ever before, because of more diverse tasks in this resource constrained environment.
- RR: We could do a SWOT analysis but are waiting for new CS.
- AB: Why wait for new CS to be in place to do this?
    - RR: It makes more sense to do this (OSSIs would fit in here as well) in context of a CS, where you can then implement what you find so as to be more efficient and effective.
    - AB: My concern is that it may be years before we see CS, therefore more years before we see this kind of process. We realize not easy to do, but to say we can't do it doesn't seem accurate.
    - JD: In fact the SWOT would be motivating.
    - BW: You need to have this analysis, how are you going to make resource decisions, how to prioritize without it?
    - MT: There is some language we're writing now on doing a SWOT. NSF has this language.
    - TK: NOAA needs to be at that table.
    - MT: We will be.
- RR: (Last bullet, slide 6) This point has been around a long time. Still we haven't done this. It would have been easier before when we thought budgets would be growing.
    - CK: We do fund this, just without a fixed fraction.
- RR: It's clear within CPO that ocean has been main focus. When CS was first proposed, the thought was that contracting with NWS would help maintain quality of atmospheric observations.
    - CK: It's not for lack of trying. We've put forward proposals to tie these initiatives together. We have had better success with satellites and sensors.
- TK: Where's the strategy that says what the observing system is that we want to have and how far along are we? What are the criteria for prioritization? Is there a need for cost of life advisory group for other components of observing efforts?
    - RR: Kevin is correct. There will be need for external bodies to look at other observing systems.
    - CK: Carbon network has annual gathering that brings land-based observers together including commercial providers interested in using laser estimates of GHG concentrations.

- TK: That begs the question about the role of NOAA interacting with the private sector.
    - DRob: For FEMA, they have to prove that this was exceptional event and show the weather-climate link.
- RR: This touches on network of networks issue. If there was external advisory group it was inferior.
    - EW: The group had a number of recommendations, but they weren't liked, and thus never acted upon.
- RR: How do we deal with attribution while acknowledging the changing climate? Do we only say some events are attributed to a warmer/wetter world while others are not?
- TK: Attribution is important to us. We have to be careful not to over-promise. We need to define the key things we can do and focus on societal challenges.
- HC: "New Normals" is a great way to prioritize things.
- TK: Look at the opportunities associated with the American Botanical Garden Association. Lots of people are interested in plant hardiness.
- DRob: Education is the key to a new model structure.
- EW: NOAA should only take on goals it thinks it can accomplish. For example, do you think NIDIS has fulfilled its goals?
- ES: We asked federal agencies to work better together. Now that we have a better drought system we need to invest in regional/sub-regional detail.
- JD: We have to have some amount of money for people to do wild things that can create entirely new capabilities. This is critical!

Session II: February 15, 2011

In-Person

1. Eileen Shea
2. Margaret Davidson
3. Robert Weller
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19. Rick Rosen
20. David Randall
21. Wayne Higgins
22. Don Anderson
23. Neil Christerson
24. James Shambaugh
25. Delon Pinto
26. David Easterling
27. Cynthia Decker
28. Martin Hoerling

Phone

29. Tom Knutson
30. Marian Westley
31. V. Ramaswamy
32. Lauren Jones

Topic 1.C: NOAA response to Climate Research and Modeling Program Review

Wayne Higgins, Director, CPC, National Weather Service
Tom Knutson, Meteorologist, Climate Dynamics and Prediction Group, GFDL

- AB: In your presentation, highlight the areas where the CWG review caused a change in the program and where the CWG review was ignored.
- WH: The two overarching goals were finalized after 2008 CWG review, but the changes were minor. The key need was strategic planning. Now we must look at how we coordinate and facilitate cooperation among the components
- WH: VSF can be a roadmap forward for CRM as to how modeling and prediction activities can be organized. There is no strategic plan for CRM yet but we are approaching it in a functional way, looking at predictions and projections, the need to structure service level agreements, and how that translates to annual operating plans.
- WH: The emphasis has been on keeping the portfolio balanced. RISA has grown from 7/8 to 11. The regional program is taking off w/ hiring of RCS Directors.
- WH: There is an ongoing effort to understand the roles of greenhouse gases. We are just now implementing an upgrade of CFS with a new reanalysis and reforecast databases. We are holding a meeting in early March to assess user community needs. We have not yet developed good strategy across NOAA for ongoing analysis regarding the climate system in particular.
- WH: We are working on getting models and datasets to user community to allow them to work with customers to accelerate improvements back to NOAA. We now have MOUs with Interior and Energy. We are pursuing bilateral international activities with India and Australia, among others.

- WH: Regarding attribution, we could have done a better job of getting information out to help address Pakistan flooding. We are trying to understand what is causing extremes and getting information out to users to allow them to respond. We want to get subject matter experts involved in activities. Ideally, the CWG can do a quick review of products so NOAA can get products out to users quickly.
- LP: Define the process for Operations to Research.
    - WH: Going into each case, predictability is on the order of a week or two. We need to frame seasonal outlooks in a way that enables users to understand that there are wildcards that make predictions difficult.
    - WH: An important piece is strategic challenge of linking capabilities at shorter timescales with decadal timescales. NOAA is engaging in the first stages of needs assessments to users, but have a long way to go. If we are going to have real-time monitoring tied to a historical database, we need to further develop the Earth System Analysis capability.
    - TK: Enough uncertainty in future CO2 level needs clear resources. Some preliminary studies suggest uncertainty could be as large as a degree in global mean temperature.
- MS: How much are you linking with groups already doing work in terrestrial carbon cycle & biogeochemistry?
    - TK: I don't know of anything specific, but there are some efforts to link GFDL to Carbon Tracker (ESRL).
- EW: Is there any need to transfer understanding to NCEP's seasonal modeling or is it only relevant to long-term projections?
    - TK: The number 1 target was CO2 levels and how are cycles going to help determine that.
    - WH: There is an effort to bring NCEP and GFDL together on science priorities for modeling. The goal is to develop types of exchanges.
    - VR: There is a synergy with NCAR on how they're doing land/ocean/atmosphere interactions. Universities (UNH, etc.) have brought inputs into carbon involving soil and NASA has provided inputs. The biggest payoff will be from coupled model projects.
- DRan: The 2008 report was complimentary in general. We were primarily looking for movement/progress towards improved coordination. Overall impression is that maybe we are moving in the right direction but it is taking a long time.
        - VR: The written response is 6 to 8 months old. Some synergy is happening such as stratospheric air inclusion in troposphere and Carbon Tracker offering a check on GFDL.
        - WH: Climate process teams are a great example of how NOAA is working across centers and accelerating improvements on coupled models.
- AB: I didn't hear a specific outcome, activity, or change that was a result of the review. Was there any?
    - No response.
- JD: I am concerned with integration across NOAA of numerical modeling effort, is there any development of a more efficient suite of models?

    - WH: There are nascent efforts, but nothing formal.
    - JD: This could be further complicated because of expansion to greater suite of machines (i.e. Oak Ridge).
- RW: Is there anything about international coordination? Is there a downside to convergence to a single set of models? Where does the IPCC effort fit?
    - DRan: The danger of not enough models exists in principle, but we're far from that problem.
    - WH: I agree, but NOAA doesn't have a strategy for that.
    - DA: The models are being developed independently as are processes. We are committed to different configurations of the same model by exchange of elements.
    - AB: We would like to see documentation of this.
- MM: You mentioned DOE, ENCAR, NASA. Is there some kind of interagency diagram to see where the parts fit together or don't fit together?
    - RR: The interagency effort under USGCRP has a modeling component. Agencies are supporting NRC study on national strategy for climate modeling, and are addressing whether there are too many national models and how to better leverage models.
- EW: (Asked TK) Ask Ram when will there be a strat plan for CRM?
    - TK: It is not just top-down, such as GFDL developing a strategic plan for the lab.
- EW: How does that strat plan fit in with NGSP?
    - Ram – GFDL is composing a plan based on external review that will also fall into VSF. The CRM plan was overtaken by Climate Service development, and is now reflected in VSF.
    - RR – Version 9 of VSF, pages 8-10 to 8-20, contain the elements of what needs to be fleshed.
- JJ: How does user needs assessment integration play into this?
    - WH: Climate Service has identified four societal challenges and within context of modeling there is an activity to try to understand how users can use datasets. We have provided links to changes in extremes of weather and climate to understand community needs and how they would be using CFS. We are trying to tie modeling to needs that help to bridge weather/climate linkage.
- AB: What is the NOAA strategy for providing model based activity on regional scales?
    - WH: We are developing modeling techniques for regional climate, regional downscaling, improving land surface models. Important near-term activity is to develop types of agreements to do cross-lab/cross-center integration. We will identify roles and responsibilities for those challenges. This translates on an annual basis to annual operating plans.
    - TK: For example, we have developed a series of 50km/25km resolution models. They have been shown to do a good job of simulating Atlantic hurricane
- AB: Is there an organized effort to link to AR5 output?
    - TK: There is an assessment that is specifically focused on looking at regions and sectors.
    - ES: This sustained formal needs assessment process in context of societal challenges is a way to bridge program elements and the other half of RtoO is OtoR and can help point to where we need different models.

    - MM: It's about integrating with intermediaries, not really users.
- JD: 1,055 days has only achieved direction.
- BW: Is there a vision going forward of some coordination between observations and monitoring?
    - WH: Unequivocally yes, especially in context of the emerging climate service.
    - RW: Could we have report in a year to CWG?
- MW: I want to remind the CWG that CRM has written two operating plans, one 2011-15, one 2012-16 and these were responses to the 2008 CWG review.
- JJ: Were new RISA's an expansion of RISA money or a further split of the budget?
    - CK: The RISA budget was more than doubled, and are now connected into assessments and will be as long as the budget can be maintained.
- LP: Conducting retrospectives offers the opportunity to identify what observations are sub-optimal and what are essential, and this needs to be done to determine what is lacking and what is being oversampled.
    - WH: I couldn't agree more, but we haven't had the resources to do that.
- EW: Is the different funding processes a good model development strategy (competitive vs. baseline).
    - CK: Agreements are a necessity to ensure the proper resources are provided.
    - MD: Service level agreements articulate these expectations and what happens if they're not met.
- JD: What fraction of CRM work is done by contractors vs. feds?
    - WH: Can only speak to NCEP, and it is substantial.
- RM: We need to emphasize dependence on integrated earth system models. CWG sees the need for that support, though it need not necessarily come from NOAA.
    - RR: Development of strategy for USGCRP and modeling effort recognized that expertise rests outside NOAA.
    - TK: What is the collective wisdom about how NOAA can identify the right amount and how to invest in impact modeling? Weakest link in national assessment is what does this really mean in the end?
    - AB: That is why I keep stressing the strategy at the regional level.
    - RM: This is crucial if you're developing an earth system model.

Topic 1.D: NOAA responses to the Climate Information Products and Applications Program Review

Eileen Shea, Chief, Climate Services and Monitoring Division

- ES: (Slide 11) In Spring 2010 we discussed an integrated regional program and wanted to start with this so it explains where everything is. There are 6 Regional Climate Service Directors collocated in NWS regions to emphasize links between weather and climate and leverage existing resources. [Map shows locations of RCCs, RISAs, Data Centers, Coastal Service Centers, NIDIS Pilot Project (existing or planned), Sea Grant locations/partners, CIs, Research Labs , River

Forecast Centers, and WX Forecast Offices] Centers of gravity emerge when you look at all the locations on the map.

- AB: What exists or does not exist today that could be traced back to recommendations from review?
    - ES: Nothing we can trace exclusively to CIPA review but the way we are approaching regional partnerships (the pearl) federated approach to develop deliver refine climate services came out of the Spring 2010 meeting, Vail, CIPA, and other advice. The structure of service development and delivery program "tombstone" does in fact reflect what we got from CWG during CIPA review.
- AB: Over what time frame would that be most useful for you?
    - ES: Within a year. This is the thread that can pull thru the labs and observations. And this would help with integration among organizational elements.
    - CK: Can we finish needs assessments first to help with this or at least an initial cut?
    - ES: Sooner rather than later so can structure into the CS the ways to pull and push back.
    - TK: If we don't have a climate service, it would be a different kind of review than what we have if we have a climate service.
    - ES: We still want to accomplish the same thing regardless of how we are organized.
    - AB: How would that be different from what started in Charleston and Seattle?
    - ES: AOP's and service level agreements. Then we pull back from the weeds to see what the forest looks like.
- ES: A new course for CIPA is ISSD as part of the CS. We are falling short of national need. International roundtable is an attempt to get at this. We need a CS strategic plan. We need to scale up resources to meet increasing needs, but just scaling what exists today isn't sufficient.
- ES: The Pacific region is further along because it started in 2006 and Alaska is also further along. Where there are RISAs, they will likely also be further along. Six regions are way too big. There are sub regions and we are bringing those partners to the table in a way that recognizes that sub regional texture
- ES: We were told to find a focus and be evolutionary. We cannot do everything so that is why we picked four societal issues with a climate role and resolution as an initial step. We can see how model, observations, data, prediction and projection work together to tackle a societal challenge. In some areas we are barely beginning. These societal issues will help us figure out what are doing well and where gaps are.
- ES: We have held a meeting last Friday with CPC-products that RCSD's are seeing as priorities in their regions and how can tie in to the climate test bed. Alaska and Pacific now want to take historical climatologists for coastal inundation and erosion to use test bed for a predictive capability.
- ES: We are talking about a MOU with USDA. They say we don't need new one because have existing one. We will have a meeting later this year to outline how to do that in CS.
- ES: Needs assessments are a sustained process. There are intermediaries that are already in the business so we need them at the table for the four elements across the table.
- ES: We are developing performance measures with annual deliverables. The regional component of regional development and delivery has a new GPRA. NOS put one together that

OMB likes. We are using that model to create one for CS in a regional context. We are halfway through that process and can talk about it again later.

- AB: Who is doing global SLR prediction within NOAA?
    - ES: GFDL/CPC. Our challenge is that there are also a multitude of locals. So how do we link locally. Wayne and Paul have it in their performance plans to develop a prediction system to meet that need.
- AB: Where is the research being done on the regional expression of the global SLR?
    - CK: The grant announcement went out this year. We have number of proposals and PI's will do.
- ES: This gets to the SARP coastal item was mentioning.
- ES: The private sector is already providing products and services at the regional level. Businesses that are customers for NOAA also need to be engaged in context of CS.
- ES: Climate.gov is the service development and delivery portal. RCSD's are supposed to be designing a regional portlet. Also doing what we can to leverage opportunities. However, the portal is underfunded.
- MS: Is the portal in a prototype phase?
    - ES: Yes, but this year it will transition to fully operational. How do we actually maintain operations of this activity in light of having limited resources?
- ES: Other education services we provide are co-op and SG extension and State Climate, RCCs, and RISAs. We ought to tackle education and literacy aspect within this. Assets and capabilities within regions being evaluated right now. We are looking at the pool of resources we have in FY 11 and will look at the pearl diagram to see and make sure we are not losing any critical partners.
- HC: How is the regional focus working together with the climate adaptation task force and national assessment?
    - ES: The task force report has a recommendation for regional adaptation consortia. We take 11 different agency approaches to regional and make it look like regional adaptation consortia by trying to find those centers of gravity around the country by an agency or agencies to demonstrate what a regional consortia is. Coming up with 11. ES and RP came up with Columbia, Colorado, Pacific and AK as good examples of why this is successful. The report will go to the task force. If there is buy-in, NOAA will be able to say "we need these assets" and this also forces us to talk to one another.
- ES: In the case of the national assessment, if those are centers of gravity, wouldn't that be a center of gravity for next national assessment? Comes back to the integrated regional assessment modeling and link to informing adaptation
- DRob: What's stopping these pieces from getting going? There is a total disconnect. The new RISA in my region has not been contacted.
    - ES: The real action is within the regions. DRob has not yet been contacted because EM has been on maternity leave. But I would hope that now that she is fully back and should be on your doorstep soon. The initial charge of 6 new people were told to go through the intermediaries first.

    - DRob: We are not looking for handouts. We have tremendous amount to provide and want back and forth without duplication.
- HH: You expect RCSD's to do a great deal. Are you expecting them to do all unstated items (ex: establish priorities, lessons to be learned, priorities such as standards and regulatory needs)? And regarding economic values, how do you distinguish between different services and where you will focus?
    - ES: It is built in to what we are supposed to do but gets to why should do the strategic plan exercise. The societal needs will help us define national level goals.
- HH: You have four areas but then you also have priorities. I don't see evidence of focusing your priorities.
    - ES: It is still a large list. Some of the items listed are already done. As we focus on the four societal challenges, we cannot forget that we have to hit all other areas as well. Once we have this underway how do we stop things we are doing that someone else is already doing and we can get out of that business?
- MS: Regarding the private partnerships slide, perhaps you could piggy-back on the state climatologists meetings in July?
- JJ: We need a standard of practice that includes climate change so that when we get sued we can go to court and say we incorporated XYZ and are not liable. Should we rally western governors for some support or legislation. There are significant research issues associated with this. So where do we push buttons? It goes beyond regional to national level and how that works through our process.
    - ES: RCSD's should know about and bring in their partners and NWS and river forecast centers and as we set up leads for each of societal challenges we will need to bring in those leads. Start with RCSD's and include some of the others of us that can take it up a notch. In water, we have focused on the supply side but beyond FY12 it may be better to look beyond drought.
- RM: We need to define Climate Adapation Task Force centers of gravity. It appears mostly with adaptation. In the longer term there are going to be issues related to carbon sequestration and beyond. Will you move towards roles and responsibilities of other agencies?
    - ES: It is really early in the adaptation side of this to answer that. A center of gravity has to already have discussion going on, for example where RISA's are collocated or partnered in with a science center. It is an opportunistic look at things to move out quickly versus a designed program. In CS, we can see that at regional level. From existing partners get what information needs are, what players are, and what they bring to the table. This has to happen in place in a region.
- RM: It's a loose capability at this point. Will that center of gravity be able to meet the needs of all the stakeholders?
    - ES: There could be a roundtable for interagency combined with what GCRP is doing. How do they at interagency level embrace or endorse this kind of role setting exercise?
- AB: There is a need for certain model based products or model needs in a region. How do you make that a priority in other parts of program?

    - ES: CS and senior scientist in grants program. SS isn't going to do that alone but will work with lab and center directors and Margaret and Eileen's job to bring regional priority setting into those meetings and put priority setting into our performance plans.
- BW: The regional association of IOOS did a needs assessment and picked products that were needed locally. Were any lessons learned?
    - ES: There was a very clear understanding of customers in that IOOS region beyond just one customer. There is leadership that is willing to embrace shared credit for the common good and provide sustained resources for the regional association.
- HH: The Devils Lake approach happened outside all other processes of engagement with stakeholders. Is there anything there that is reflected in the Vision and Framework document or other places?
    - ES: We do identify three types of assessments. There is a needs assessments. There are problem-focused assessments, which is what Devils Lake is about. How do you design integrated attribution program on events especially events that catch you by surprise? We need to do a post mortem in about 6 months to determine success or failure.
- JJ: Can you look at the hydrometric test bed and other successes, which are spinning up research questions and bring it as input to CS to unload the research function? Can you offload the education function, for example RISA's producing newsletters.
    - ES: That is a good point as to why we should do integrated program and things getting handed off. The home for these things in the organization chart would be region specific. Data centers themselves are also integrators. You have a recognizable group of people who are about customer support.
- AB: Other than NIDIS/WGA, are there examples for consortia of states advocating?
    - ES: Yes, such as SE port authority interests and Gulf structural questions. They didn't self generate. It is a little more diverse for some of the other regions.
- DRob: Once get products going-how are people going to know what is out there and where they can find it?
    - ES: The Climate Portal is a part of that. Google and Microsoft also have parts of it. We are looking to make an investment internally as well.
- AB: Were not very pleased what we saw at CIPA review but excited to see what is taking place since then. It is an interesting contrast to what we saw in the other two reviews.

Lunch Topic: The 2010 – 2011 Seasonal Forecast for the U.S.

Wayne Higgins, Director, CPC, National Weather Service

- WH: We are working with external experts on evaluating performance outcomes for seasonal outlook. We will use this winter's outlook and make comparisons with last winter's. Seasonal forecasts, unlike weather forecasts, are probabilistic. We will benefit from the improved understanding of ENSO. Seasonal prediction is dependent on ENSO. Trends are secondary. Temperature and precipitation will be the focus of today's discussion.

- WH: We have no ability to predict AO beyond a week or two. The persistent NAO has impacted the weather more than the expected La Nina going into the fall. Can models capture these types of signals? Is it predictable?
- WH: We have an issue with verification and don't have good performance measures. We need to communicate wildcards more effectively. How can we show how Climate Service is meeting needs of users? We are good at showing progress, but the challenge is in bringing in the users and showing how our products are being used for decisions.
- AB: In Nov. the WCRP had a workshop on polar predictability and sees that becoming a major focus. Northwestern business school will meet in May w/ a number of CEOs regarding the needs of industry and what they can/can't use regarding climate info
- TK: Another challenge is to actually demonstrate what difference this makes in outcomes. What is the economic or other benefit?
- JD: Can we compute the return on investment instead of high key score? You need to put the info in terms of the customer's interest. Don't just talk about the weather.

Topic 2: Task on performance outcomes for a Climate Service

Introductory Presentations:
NMFS Performance Evaluation – David Detlor, Deputy Director, Office of Science and Technology, NMFS
NWS Performance Evaluation – David Caldwell, Director, Office of Climate, Water and Weather Services
Discussion – Tony Busalacchi, Chair, Climate Working Group

NMFS Performance Evaluation

- DD: NMFS handles the regulatory and science issues regarding fisheries. The stock assessment measures whether each stock is overfished or is exposed to overfishing. FSSI is the index that measures the health of the nation's fisheries as a whole. It is based on 230 most important (economically and politically) stocks out of the 530 total stocks.
- AB: How was index developed and which councils were involved?
    - DD: It was an evolution. It started with absolute numbers such as what's state of knowledge for species XYZ. A problem is the number of species in stocks are shifting constantly because of migrations, reproduction rates, speciation, etc. Changing denominators are problematic. Therefore, the fixed 230 number was arrived at as a universe of stocks that were considered representative.
- CK: Your customers are high level - Congress, fish councils, Secretary. Is what they're looking for communicated? How do you measure whether this is influencing the decision-making process. Dave's spectrum of users much broader.
    - DD: From a managerial perspective we are more cautionary which is bad for fisherman. We are too strident. If we get too lenient, environmentalists get angry. There is a high-level focus, but the more we know about stocks, the better.
- EW: How do you deal with measurement uncertainty in models in the index?
    - DD: We sweep it under the rug. Nowhere does the measure allow us to amend models if we're wrong. The model doesn't reflect this. Don't have measures to assess validity of index.

- TK: How did you actually get to agreement that these are the right points? Agreement on the criteria? How did you get consensus from fish councils, etc.?
    - DD: Typically NOAA review. We asked different offices and scientists to weigh in.
- AB: Was the index developed in-house or with input?
    - DD: With input.
- MD: We don't actually understand why we have a herring bust in 3 to 5 seasons, then they're back. There is an element of chaos. How do you go about setting criteria given this?
    - DD: As conservatively as we can.
- DD: FSSI has made progress since 2005. We measure ~2% of fish stocks with adequate population assessments and forecasts. There is a lot of room for improvement.
- BW: how do you take climate into account?
    - DD: With sardines, for example, we look at temperature thresholds, and then over time, we can predict climate impacts on certain species.
- RW: In New England?
    - DD: No.
- DD: Univ of Miami performs an independent peer review of the assessment process for both both indices.
- AB: Who uses the sustainability index?
    - DD: NOAA, Fisheries, OMB, all players.
- AB: Is there some part of the process, where they verify these are appropriate metrics, not just metrics that you can achieve?
    - DD: Yes, at OMB, NOAA, and Commerce. This occurs especially when budget goes through review, and whether figures impact constituencies.
- AB: Why these two indices? Why not something else?
    - DD: There are others as well.
- RR: Who verifies the number outside of fisheries service?
    - DD: Nobody.
- RR: So you're not asking University of Miami or equivalent to check these numbers?
    - DD: No.
- DD: From 2003-2010 we reached for the low hanging fruit. Now, as the more difficult stocks are targeted, we are struggling more in improving our performance metrics.
- ES: This is a target of opportunity for discussion on hill. Lower performance could be great argument for increasing budgets for fleets and infrastructure needed to generate these figures.
- TK: How can I explain a "10 pt increase in the FSSI" to my grandmother? We had increase of 10 pts in FSSI, therefore X$$. What about a more tangible measure?
    - DD: You can bring in socio-economic data as much as possible. Days at sea are going down but FSSI not affected yet. However, if we don't have days at sea, we can't conduct assessment, and that directly affects ACLs that we have to provide. If there is a greater measurement uncertainty, we have to be more cautious and lower catch levels so there will be less income for fishing community.
- RW: You could choose different species. What were guiding principles? What did you gain in choosing the runs you chose?

    - DD: These were vetted by the councils.
- RW: Who sits on the councils?
    - DD: The councils are appointed by state governors, commerce, various entities, commercial/recreational fishing interest, environmental groups, etc. The councils don't generally dig into indices. They're more concerned about models and catch levels.
- MS: Has fisheries done assessment of whether or how indices are climate-sensitive?
    - DD: There's not much sensitivity in the FSSI.
- TK: How many people in fisheries have dedicated substantial amount of time to this activity?
    - DD: Hundreds of people contribute to the underlying data. But, only a handful actually develop indices – OST with representatives from state fisheries offices and they coordinate with Fishery Councils. For incorporating socio-economic information, we had in-house resource economists, but this is a huge need.

NWS Performance Evaluation

- DC: We have 15 GPRA measures. Last year we met 12 (80%).
- CK: Are you fully resourced to achieve your measures? With us, we're not fully resourced to do that. Our goals are aspirational.
    - DC: Yes, we are fully sourced.
- AB: What was newest measure on the list?
    - DC: These all have been there since we started.
- AB: You haven't added anything?
    - DC: No tsunami measure, no space weather measure.
- DC: Tornado warnings have increased accuracy corresponded with modernization.
- AB: Any pushback when your numbers dipped?
    - DC: No. During years of fewer events, you generally get lower scores.
    - TK: Or a year with lots of F1s and F0s.
    - JD: A miss reflects where a warning was issued, but no tornado occurred.
    - DC: We are now doing polygon based warnings so area is a factor
- DC: With flash flood warnings we're crushing the goal so we need to find more realistic goals.
- DC: We re-baselined hurricane track errors.
- ES: Who did you consult with when re-defining baselines?
    - DC: We did it internally.
    - CK: But you didn't do any independent verification?
    - DC: No, but we'd be happy to do it. We're meticulous in our books.
- DC: We're 8 people. There are others who look at our NOSS data.
- CK: Do you ever get sued for incorrect forecasts?
    - DC: Yes, we do, such as the Arkansas flooding or buoy outings.
- AB: In contrast to fisheries measures, are your metrics used to inform regulations?
    - DC: no.
- DC: When major events occur, like floods, hurricanes, etc., we do analysis of how we perform. We get service improvements, new requirements, and best practices. During the Tennessee

floods, we were highly critical of weather service. We are moving towards impact-based climate, water, and weather measures.

- DC: In the wake of Commutaggedon, they interviewed local and state government officials, the Director of OPM, and others. The OPM Director said he should have asked different questions. There was a wet heavy snow forecast at a high rate, which caused the icy conditions more quickly than anticipated. We need to go another level by "completing the forecast" and clearly communicating what the weather will mean.
- DC: With aviation weather delays, it is often a single major airport that is delaying the entire country, such as JFK, O'Hare, or Atlanta. Reduced weather-related flight delays mean a huge cost savings.
- AB: So this is reflection of reduced air traffic delays?
- DC: Yes. By becoming more involved in process, we believe FAA is making better decisions. We know that the cost is $62 per minute of delay so we calculated total cost of delays.
- TK: There is enormous variability from year to year. Do we know whether other factors were in play?
    - DC: Years selected were normalized for weather.
- ES: Did FAA feel they were doing better job due to this data?
    - DC: Yes. Dedicated forecasting for aviation means they are now taking more pride in their work. The improvement is explained by involvement in process. If you develop set of questions, and have high-end customers, you can work with them to identify quality of services, and make sure services are meeting needs. You can also set priorities. We have done customer satisfaction surveys since 2009.
- DC: GPRA measures have served us well in working with OMB. We were early adopters. They haven't challenged us and cite us for producing good metrics. Impact based decision support is what people are looking for. That's what we want to do, and where we're headed.
- AB: How you then make big leap to assessment measures that would be valuable for Secretary of Commerce?
    - DC: Our plan is to work with various agencies where sector linkages exist (water, health, etc). Our logic is that, if USGS is making decisions and saving money, we're going to tag onto that success. Climate, weather, and water linkages provide an opportunity for sharing the workload and finding cost savings.
- AB: Cost savings might be more difficult to realize in other areas.
    - DC: Cost savings could be realized in multiple circumstances.
- RR: NWS mantra, we save lives and property!
- RR: Not just accuracy of forecasts, but also how that warning is communicated.
    - DC: I don't think we'll be able to do that. What we'll hope is get information to local communities, and hope people take shelter. Mike Schmidt has graph going back 90 years, showing lower death rates, decreasing over time. Much of that cannot be attributed to our improved forecasting.
- HH: You could game the whole system by focusing on high-end users first or by focusing on big-ticket players and the most vulnerable. How do you balance out between different groups?

    - DC: We work to safeguard American lives. High-end users are governments. With them, we're free to tailor information and forecasts to meet our needs.
    - HH: Even within governments, you have different tiers/audiences.
    - DC: We look for the highest return audiences.
- RB: Has there been any thought given to role that products and services play in economic growth? The downside of mitigation equals the upside of opportunity? Have growth opportunities resulted from the work of the weather service? Given the economic realities, I wonder if our community needs to start balancing the protection mission with a growth mission? We dimensionalize the perceptions that the community has. The climate-weather-water linkage has to be exploited.
- AB: Where is the Climate Service on developing such measures?
    - TK: It's very clear that we're very behind where we want to be here. This is not what you do on Friday afternoon for Monday morning. We have to better communicate the economic advantages. In trying to develop this exercise for Climate service at NOAA, we need to develop roadmap for how different parts of NOAA contribute, and how they work together to achieve collective outcomes.
    - CK: Should the CWG get involved in this? Should there be some leader or chair in group that might convene a working group to give us advice, external group, to tell us what we might measure in terms of performance?
    - AB: We would be interested to get input from RISAs on this question. We'd be interested in hearing about your meeting in next couple of days and also about RISAs' input.
    - RR: There's definitely a role for measures that are internally focused and how well you're developing measures and tools for measuring internally as well as externally. There is pressure for impact based metrics, but we need to be balance between internal and external.

Topic 4: EISWG/CWG task on private sector communication

Heidi Cullen, SAB Liaison to the Climate Working Group
Ed Johnson, Director, Strategic Planning and Policy Office

- HC: How do we communicate about whether the Climate Service creates new jobs and stimulates the economy? How does CS work with private sector? How can the private sector help inform and develop the CS? Engagement with the private sector will be key to the success of CS.
- AB: This is a way to jump start this process since no one has this expertise. EISWG has identified a member. CWG needs to nominate co-chairs and members.
- RW: Does the private provider community include NDBC buoys?
- RB: We should probably exclude NDBC.
- JD: I will chair.
- MM: I will co-chair.
- MS: I suggest John Jones and Frank Nutter.

- AB: I suggest Lee Branscome
- TK: I suggest Dan Walker, Dave Jones, Bill Gale, Karl Hiding, and Bart Nicin.
- JD: 60 days for report delivery is unrealistic.
- AB: We can get something to the SAB by July of 2011. One face-to-face meeting is needed, then at least a Powerpoint briefing of the findings of the group by July.
- RB: This group is meant to be a SWAT team. 90% is close enough. The output of this group may not have relevance in two years so can't drag it out. Let's do the best we can in 6 months.
- AB: There are no funds yet available for the meeting.
- JD: We need to make a list of industries that need to be represented.
- HC: I will set up a call next week.
- JD: Will the list be compiled and discussed at the call next week?
- HC: Yes.

Topic 3: Task to review future climate problem-focused assessments

Introductory Presentations:
Background – Tom Karl, Transitional NOAA Climate Service Director
Example of a problem-focused assessment – Marty Hoerling, Meteorologist, Physical Sciences Division
Global Temperature Product – David Easterling, Chief, Scientific Services Division
Discussion – Tony Busalacchi, Chair, Climate Working Group

- DE: The GAO audit of USHCN made us start thinking about the US climate record. We were surprised the global climate record does not have more interest compared to global temperatures, which has a fairly spatially complete map. We want to engage the CWG in a peer review. We will prepare a paper based on NASA's Algorithm Theoretical Basis Document describing the global surface temp complete process. Want to engage the CWG in a peer review.
- AB: Has there been interpolation/extrapolation over the pole?
    - DE: The Hadley meeting didn't really get in to that. We are writing a paper on that now.
- JD: Has an inter-comparison been done of data?
    - DE: Yes. NASA uses our data. We have done some comparisons and there are enough differences that there should be one central databank but differences don't make a huge difference in final product.
- JD: Comparing products gives you verification.
    - David: There is a new group at Berkeley with private money looking at global numbers and they're getting essentially the same answers. Same basic curve.
- TK: Why do we feel we need this? This process is putting it all together. It would be good to have an external group look at this. Senator Vitter just asked for all the algorithms we have ever used. It's an extreme request but a request nonetheless. We are vulnerable in a highly visible area and we should have peer review. In the example of Devil's Lake, the question was asked who is going to review this. Who at interagency level? Who inside NOAA can review? Numerous people were invited to review. The reviews need to be timely and authoritative so how do you fit that in to your process?
- JD: NRC is the best review in town. Best certification.

- AB: Why isn't this going to the CRC?
    - TK: No decision has been made on the review. We are looking for CWG input.
    - DE: We'll select broad set of reviewers.
- TK: One of the ISAs is the State of the Climate report and this is in the SOCR.
    - AB: This is a national product. If it went to OOPC there would be sniping.
    - EW: Given the political sensitivity it should go to NRC.
    - TK: That would cost around $300k.
    - AB: We could do the review and then send it to NRC to expedite it. CWG or NRC could select reviewers then we respond. We want the international engagement of reviewers.
    - JJ: Scientific validity could be looked at. There is a lot of junk spun out by university funding and NOAA funding. There is a teachable moment here. Make a point of the fact that we are making special effort to give this solid review.
    - MM: The process would be useful to other agencies.
- TK: Marty will review his work with Devil's Lake. John Dutton has also been working on Devil's Lake. The value is that they were brought to us from stakeholder communities.
- MH: Community brought capital Assessments and lower-case assessment to NOAA. Projections are based on modeling. We assembled an expert team and worked with USGS from a paleo perspective. We looked at the historical context of known data, going back a 100 years or so.
- MH: The report timeline was set by the interagency group. The review cycle was done in a fairly ad hoc manner and was fairly quick.
- AB: What was wrong with review process?
    - MH: It was ad hoc. We didn't have the oversight of working the review process, revising the draft, and integrating comments.
- AB: Can this be compared to SAPs?
    - TK: No. SAPs had rigorous reviews.
- AB: Is this an example where only the lead agency reviewed it?
    - TK. No. There is a level of discomfort with potentially inadequate reviews because of the sensitivity of climate issues.
- AB: The CWG could spin up a review process.
- TK: Could the CWG select reviewers?
    - CD: WGs under FACA are tricky but the CWG answers to the SAB so, yes, under FACA.
- AB: Are there attribution reports lined up?
    - TK: Yes.
- MH. With the Russian heat wave experience, Western Russia has not shown a warming trend so the heat wave was surprising. It showed all the things that are good and bad in the public discourse. When the event was developing there were questions about causes and questions of how portable are analyses from one region to another. Another problem was attribution by association. When doing attribution they need to be really careful about what is the science behind. Then, what is the early warning capability? Based on NOAA CSI attribution group that became an issue, criticized by others. The 6 month lag time was too long in this instance.
- AB: How long does it take to do a timely attribution or attribution on the fly?

    - TK: No one is asking us to provide attribution two weeks after event but we do need to communicate what we know and what we don't know. In a CS we have a little more luxury of time compared to NWS.
- CK: Does the CWG want to get involved in Attributions by managing the review process or merely recommending the review process?
    - MM: Operating at arms length sounds workable.
    - AB: We would like to take on the review of one attribution review to cut our teeth on one review to help inform our decisions on future reviews.
- CK: At what capacity would the CWG do the review?
    - AB: I haven't thought it through yet.
    - JD: We could do a similar process to the NRC. I think it's worth trying.
    - AB: We can kick the tires on this.
- MH: I like the idea of someone who can monitor who can sit between who is reviewing and who is receiving the review.

Topic 5: Wrap-Up Discussion

Tony Busalacchi, Chair, Climate Working Group

- TK: We could use the CWG to evaluate the way NOAA does grants and cooperative research and their role in CS examination of grants and external partners. The grants program is successful. But, what transition has that research taken once it's successful and who is transitioning it? It is a big portfolio and is about half of the resources of $350M.
- DRob: RCSD's can be on top of this. They know RISA's, RCC, State Climate offices, and could identify where some of these products could be placed for continuation and where they are focused towards a region. They'd be the ones in the know but are not there yet
- CK: Let's look at this over a couple of days. What is the work that gets down with external and internal community? What's the full portfolio? We've done the reviews. We have heard that the labs need to work better together
- RW: CI's at marine institutes were getting reduced overhead rates for example.
- DRob: I chaired the NRC committee on NOAA environmental data records. And, they're not there to sustain those as well if one person is not there to support it. This has always been the case with some of these ARC things. Who would take them on?
- CK: Developing inner capability on innovation and for the long haul may be interesting.
- AB: What is the role of research in envisioned CS and what is the process by which research priorities will be determined and assigned?
- HH: Add a piece that focuses on transition of the research, too.
- RW: I like the idea. Under PPBES, CI's were frustrated and it was hard to determine what role they would play under SEE.
- JM: We could also expand to how this relates to the USGCRP.
- AB: Let's make progress on this particular process and then we can tackle the next step
- CK: How would this be different from the program reviews?
- DRob: What if there isn't a CS?

- AB: We will have to be adaptive and achieve vision/mission of a CS even if it doesn't exist. On Feb 28 we will grab your input to the letter.