

Agenda
Climate Information Products and Applications Virtual Review:
May 5 & 6, 2009
1 – 5:30 pm EDT
SSMC 3, 12836
Call in Number: 866-746-3284
Participant Passcode 1702950

Goal(s)/Purpose of the Review:

- An annual programmatic review conducted by the Climate Goal of their individual programs
- To review the existing capabilities and activities of the Climate Information Products and Applications program

Questions for each program to address in the review:

1. What existing goals and/or objectives guide the program or activity?
2. What strategies, if any, were developed and/or implemented to achieve these goals and objectives?
3. What were the program's or activity's accomplishments and outcomes?
4. How was performance monitored and evaluated?
5. Were goals and objectives met?
6. How this case study exemplifies the goals of the program

In attendance: Michelle Hawkins, Maria Honeycutt, Krisa Arzayus, Jen Faight, Li Jiang, Lauren Jones, Stephanie Herring, Amanda McCarty, Sarah Abdelrahim, Adrienne Antoine, Nancy Beller-Simms, Geoff Bonnin, David Goodrich, Hetal Jain, Sandy Lucas, Ken Mooney, Chet Ropelewski, Rick Rosen, Caitlin Simpson

On the phone: Bill Hooke, Tony Busalacchi, Eileen Shea, John Dutton, Margaret Davidson, Ahsha Tribble, Holly Hartman, Jerry Schubel, Jeanine Jones, David Robinson, Marshall Shepherd, Steve Running, Jean Brennan, Tony Janetos, Sharlene Leurig, Roberta Balstad, Leigh Welling, Tim Owen, Dan Walker, Brian Jackson, Jeff Napp, Phyllis Stabenow, Allen Macklin, Chester Koblinsky, Venkatachala Ramaswamy, John Jensen, Marjorie McGuirk, Chad McNutt, Roger Pulwarty, Phyllis Stabeno, Marina Timofeyeva

Day 1 – Tuesday, May 5

1:00 Executive Session: Climate Working Group and Review Team

Krisa (Climate Goal): Thank you for participating. Climate Goal consists of 3 programs and each year we review one of those 3 programs. This year we are doing things slightly different and having two parts. Today and tomorrow will be a retrospective analysis to learn about existing programs. In July, when we meet in person, it will be more forward looking with attempts to look at collaboration. This

is neither a review of the entire NCS, nor a review of all NOAA service activities. Everyone should have received a 2 pager on each activity that will be presented today. We need to keep on schedule, so Krisa will keep time. We will also have quick overviews of the CRM and COM programs and how they intersect with CSD activities now and in the future.

Tony Busalacchi (CWG): Thanks for participating and to Bill Hooke for chairing the review. 2 years ago, the Climate Working Group reviewed the COA program. Last year was the CRM program review. Last year's summer study was on the topic of climate services. Today we are focusing on climate information products and applications. The challenge has been to integrate the 3 climate programs, so this is something we hope to address through this process. Reviews provide opportunities to integrate and for the external community to weigh in.

Bill Hooke (Review Chair): Dr. Lubchenco has made climate services a big priority and the world is in great need of climate services. The need is complex and urgent, so it will be a big challenge. Bill will be looking for sustainability and continuity of services over the long run (i.e. the next century). There is a need to integrate within NOAA, across Federal agencies and with the public sector. We need to look at the adaptability of the programs, and their ability to be modified as the world changes. We need to look at goals and objectives, strategies for meeting goals, accomplishments, and the basis for evaluating accomplishments.

John Dutton (Review Team): We have 6 questions for each program to address. How will we keep track of this meeting?

Jen Faught (CPO): CPO is taking notes. Jen will send out notes to all participants and ask for necessary corrections.

Bill: A report will be generated at the end of this review as part of reviewer responsibilities. Bill is not going to write this report. Instead, the review team will be addressing different pieces of the report. The review team needs to give a good outside view that doesn't just reinforce existing thoughts and identify blind spots.

RISA: Caitlyn Simpson:

Begins with an overview and 2 minute history of RISA evolution. The original idea was to bring NOAA's climate science to the needs of decision makers and the regional to local level. This was in response to the fact that the IPCC and other large-scale efforts were not addressing needs at that scale. This effort started with the Pacific Northwest and has expanded since. It has been competed in the last few years, which has brought on new RISAs in new locations. It started where the ENSO signal was strong (i.e. in the Southwest) so it has its roots in climate variability, but has also been drawn in to the climate change issues the US is facing. One unique quality is that it does good regional impacts science with ongoing relationships with local stakeholders, including through workshops and social science studies. The program develops prototype tools, information and research that will expand as

NCS evolves. Recently, RISA has been pulled into climate change training, especially for other Federal agencies. This would include training on modeling, impacts, and more. In the near term, NOAA priorities for RISA are drought and coastal issues (needs to expand), as well as climate service development at regional and local scales.

Case Study 1: AgroClimate is a web-based system with tools, forecasts and assessments for climate and agriculture in SE. USDA has provided funding (3x NOAA contribution). This utilizes the existing agriculture extension community. It has been fully transitioned to the University level? It was developed for the Southeast, but is being transitioned to the Southwest and the Carolinas. This is an example of prototype service that can become more operational. It tends to focus on climate variability.

Case Study 2: This is a cross-RISA activity. We started doing this several years ago to test our ability to transition activities from one region to another. The Colorado River project looks at river flow linking climate models with stream flow information. Stakeholders see a lot of uncertainty in forecast projections. The Bureau of Reclamation and The Natural Resources Conservation Service, and NOAA Regional Service are all partners. They have brought in local stakeholder groups as well. This is an ongoing dialogue with water management community. Next year will be year 3 and they will look at downscaling hydrology and climate models.

RISAs look at different topics depending on what the stakeholders in a given region need. These are experiments that help us determine the best ways to link information to stakeholder needs.

Questions:

Tony: Have any RISAs been discontinued?

Caitlin: Yes. The New England RISA was discontinued after it went through a competition and there were not any proposals during that competition that were worthy of being funded. We will have an open competition where some existing regions will be re-competed and there can be new RISAs as well.

Lee: How do you account for variability in quality of RISAs? They focus on different regional issues so that accounts for the variability, but how are you working to take what is working well and then distributing those products so there is more consistency?

Caitlin: Open competition with several regions competed all at once will hopefully even things out. Newer RISAs have had more guidance as to where to focus (e.g. climate and coasts). This will continue in the next RFP. We have tried to get new RISAs to model themselves after and interact with the more successful RISAs. Should there be specific topics that are higher priorities that we should require RISAs to focus on or do we want to have the existing fluidity? So far guidance has been on the framework and process rather than on the impacts they should focus on.

Eileen (CSD Program): To what extent are we thinking about where RISAs should go in relation to the larger group of climate service programs within the Climate Goal (e.g. SARP, TRACS)?

Caitlin: We have emphasized the link with Regional Climate Centers and state Climatologists, but have only recently thought about what the RISA framework would look like in relation to other regional assessment efforts. This framework will not show up for a year or two though.

Dan Walker: From a CPO Climate Assessment Service Division perspective, we are striving to provide a minimum level of support for all RISAs so that disparity will not be the result of variation in funding. Successful RISAs have benefitted from strong leadership over a long time period, so how do we take this into account during a re-competition? RISAs are designed to help us decide what the specific regional climate programs are, so there should be some variability in what the RISAs do in each region. We are trying to find a way to have RISA, SARP and TRACS work together better.

Bill: What is the current funding for the RISAs? Is the funding leveraged?

Caitlin: \$4M in base resources, \$2M in drought resources, \$1M additional this last year. Yes, there is some variability in funding. AK, CA and WA states all provide funding for state specific assessments. Also some of the RISAs get some local funding for local issues and from other agencies, including NSF, Bureau of Reclamation and USDA.

Bill: How much additional resources are needed for new requested services? What are the implications?

Caitlin: There are staffing issues. We need team coordinators for training. Other agencies are trying to come up with some resources for training. This is a very recent effort, though, so it is not certain what will happen.

John Dutton: We need quantitative information on where the funding is coming from.

Caitlin: The program as a whole is leveraged 3:1, but it varies by region.

Krisa: we can provide those numbers.

ACTION ITEM: Review team would like budget numbers for every program.

Jeanine: From the stakeholder perspective, RISA is one of the most valuable programs NOAA has. It is underfunded and needs 4-5 times more funding for this program. CA plans to work with 3 RISAs to be matched up with some academic PIs to get some NOAA grant funding.

Bill: Is goal of RISA to build a national need or to just be prototypes?

Caitlin: Originally it was just prototypes, but now there is an emerging need for national coverage.

This briefing ran out of time. Caitlin will respond by email to questions that are submitted through Go To Meeting.

Regional Climate Centers (RCC's): Marjorie McGuirk/Tim Owen

This is part of the National Partnership liaison at NCDC. It works with all three tiers national, regional, state. Part of the National Climate Services and Monitoring Division; Regional Climate Centers (RCCs), and National Association for State Climatologists **(need clarification here)**

The RCCs have operational functions and research functions. This is a paradox, because the operational functions are funded out of an earmark, but the research is funded out of base funds.

Budget for this year is \$3.9M (divided by 6 RCC's?); there is a ratio of 4:1 funding for every state climatologist and the RCC's sponsor the American Association of State Climatologists. There is a State climate Exchange program that is a mechanism to provide funds through state climatologists. We manage a contract with AASC and RCCs.

Tim: The Climate Services and Monitoring Division is at NCDC and the customer services activities there are matrixed with RCC activities.

Marjorie: RCCs and state climatologists apply to ever sector Cornell or LA state have theme areas and are funded to concentrate on that area for research and outreach and education.

The RCC's produce state of the climate monitoring products by region. The state climate offices provide to each regional climate center. In the future, we want to extend services to every county in the state.

We have created energy and climate adaptation handbook for planners, which will be the basis of a workshop with state climate and county extension offices in the next year or two to help counties adapt to climate change and try to reduce carbon footprint (ex. How you orient your house can reduce the carbon footprint and at the same time adapt to climate change)

Tim: It is valuable to take applied climatology products and work into NCDC products. Over time the regional expertise can be linked to national efforts.

Marjorie: This is a snapshot of the services provided regionally. It varies by month and region of the country and rolls up nationally.

So providing climate services on national, regional, state levels on a relatively small budget and as a part of emerging climate services, we are trying to get down to the county level.

Questions:

Products – story line/educational outreach materials – what is the strategy for distribution? How can we get copies?

Marjorie: They are web based. We hand carry copies to offices. There is a customer service ordering system at NCDC (required to be charged for some) - it's a multi-tiered

Tim: User engagement by sector – for 11 different sectors - we developed fact sheets to get information out to them specific to their needs.

Marjorie – Program does not receive funds from CPO (no RISA, SARP, TRACS)

This has been an earmark for 3 decades?

Proves Congress has memory on its priorities? Is there any effort to get this program into base resources?

Marjorie: Yes, was put in the budget for FY10. Do or die in FY10?

Eileen: We are thinking about this as we look at developing an NCS. Trying to work on getting this into an “on ramp” into the budget process.

How dependant is NCDC on RCCs?

NCDC – dependent on RCCS for data services/infrastructure. Money for state climatologists comes from RCCs, plus grants. If there is money, we have a mechanism to support all states.

What are the greatest accomplishments of this program?

Tim: Building infrastructure to provide ready access to information, not just historic info, but up to near real time.

Marjorie – We can measure the climatology of the US based on this infrastructure at national, regional, state levels.

NRC illustrates we need to have human dimensions – what efforts are being made to illustrate you have infrastructure and integrating that into the national structure?

Eileen – done because customers were demanding it. Practical result of being responsive to customers, but also have benefits to research (coupling of social

science research with studies of physical climate - wonderful fallout); Providing information is a real world practical demonstration of the need to do this in a more sustained way nationally and regionally.

Infrastructure & ability to provide data streams – transformation of data into information, is that correct?

Marjorie – Yes, absolutely.

How do you coordinate at spatial scales?

Coordination of different federal agencies (BLM, DOI, Parks service, etc. is important). States are the lowest common denominator for turning information into actionable information. States works with State climatologist and RCCs to define information that they need to make better decisions. Deal with state agencies/regulations and local/county level issues as well.

At national level – do you have an Archive?

Regional level – centers of data measured by agencies other than NOAA to better service states in that region (ex SNOTEL) – far more detail at spatial and temporal scale (more density at time/space to develop actionable state products)

Is there a friendly rivalry with RISAs?

We are collaborating well, just jealous of RISA funding in base. Dealing with same constituency learning process with RCCs and RISA with the very latest RISA on how research institute (RISA) can turn something from research to operations to a more operational institute (RCCs). One is funded at twice the level of another, but they are actually very similar institutions and camaraderie is strong and generally terrific.

In the PPT on RCC's, are they primarily funded via earmark? And will not be earmarked next year?

Yes, that's true.

Transition of Research Applications to Climate Services (TRACS) Program: Sarah Abdelrahim

Originated in 2003, renamed in 2005 to TRACS. TRACS is the transition piece of the Climate Applications and Service Division of Climate Program Office and supports transition from R&D to operations. Primarily tools it transitions come out of the RISA program; some with RISA or SARP funded components in them. It is set up as hybrid of research and operations, not looking at end-to-end research. Open ended/open to 4 different types of transition:

- NOAA to NOAA
- External to NOAA
- External to External
- NOAA to External

Building capacity to decision makers to use tools and create awareness of tools that are transitioned. For the long-term, we want to understand how to accomplish the transition process better. The FY07 and 08 projects from Coping with Drought (all drought related) from \$1M budget; \$50-100 per year with \$500K max. Typically funded for 2-3 years.

There are no performance measures (PM) other than tools transitioned. We are looking to develop PM in future. The program is still fairly new and we want to better address the impact of tools and/or how widely they are used (speaks to promoting educational/outreach aspect of this program) this component will become more important in the future.

Case Study 1: Transition of Drought Impact Reporter (funded through 2010)

Established in 2005 with NOAA seed money and transition process funded by TRACS; it is a tool that can be found on the Drought.gov portal; tried to expand awareness of the tool. Tutorials have been done with Western RISAs; furthering development of actual product.

Total number of drought impacts 11,550 in the database

Ongoing process of user feedback for this project

Plans to release drought 2.0 – more updated product with more user-friendly design and distinction between “reports” and “impacts”

In the future, we want to ID projects ready to be operationalized. This would shift TRACS to be more of an operational program (vs research/operations) needs to carefully select operational endpoints to ensure sustainable projects

Side note – Marjorie mentioned relationship between RISA and RCCs – that can be a way for TRACS to get involved

FY09 \$1M from Coping with Drought – probably non-competitive projects, because no announcement in FY09

In the past, there was a small \$300K base budget, but starting in FY08 the whole budget was \$1M

Questions

Can you explain the statement about switching from grants-based to contracts-based approach?

Sarah – no experience with contracts – will have a more targeted focus on projects ready to go. Can specify responsibilities for developer and operational end point and have everyone sign on the dotted line.

Going to more of a push model versus a pull model?

Sarah: Yes, next step is to establish an operational end point. RCCs are likely to play a role.

It seems to narrow the pool of ideas –assumes NOAA knows what it needs versus getting input/infusion of new ideas

Sarah: contracts, need to have needs defined from the beginning; FY10 start with focusing on the drought sector

How does TRACS relate to any of the Climate Test Bed programs?

Sarah: CTB focused on transitioning research developments to NCEP. TRACS is more stakeholder driven. The products are intended to be used by stakeholders, while CTB transitions research to NCEP operations.

Chet R: The distinction between CTB vs TRACS – CTB – take research and test it on operational CFS and products being generated at NCEP and show that they work in the operational environment. TRACS will need to take the prototype and build the software/widget to make this thing operational

Comment on ocean color contract – there are lessons learned that don't need to be discussed here. Distinction between CTB and TRACS – making the transition?

Chet R: To make that final step to operational products may require skills that are not available at CPC. One way to do that is to contract to build that piece that is missing. For example: GIS formats

What sort of assessment are you relying on in becoming more specific about the transition pathways?

Sarah: Want to look at operational end points that have sustainable funding (may be an issue with RCCs) look at what stakeholders are using the various operational end points – because want to ensure the widest audience possible uses the tools and have the greatest impact possible. Some of the current end points don't have high visibility

Has TRACS considered extending its work to state level?

Sarah – Looking at all three tiers (national, regional, state). Ideally if transitioning to state level, want to be sure transitioning to other levels

Marjorie mentioned an example of tool that could be made more useful and wants to work together to make actionable tools more useful

Is the private sector doing anything like this? Private companies it seems like would be trying to do something like this?

Sarah – Haven't engaged much with private sector, but anticipate more engagement in the future, as private sector more familiar with contracts than grants.

It seems that we can build on lessons learned from NWS – what constitutes unfair advantage, what constitutes public/private goods – applies to all spoken this far

Ahsha – Consistently hear that the private sector wants data to develop what they believe customers need

Eileen – Offers that when thinking about July meeting – are those the questions you want to include in the discussion in July.

Bill – Definitely

Eileen – The more we move into adaptation – goes beyond the traditional meteorological and gets to business involved in advising cities, etc. We haven't scratched the surface

Is there a way to get a list of folks who could be contacted and invited to the July meeting?

Climatological Consulting Corporation rep – encourages other private sector types to be invited to July meeting

Bill – Would be helpful if the staff could generate a list. It would be good to explore this. If weather is an example, want to have an open discussion going along. The more dialog there is, bodes well for the future.

Helping clients deal with these issues and believes we need more interactions to understand how information is being used already.

We have some individual private consulting firms here, but what I'm thinking about are non-traditional users (energy companies, transportation), maybe they need to be at the table?

International Research Institute (IRI): Chet Ropelewski

Case Study 1: International Research Institute for Climate and Society

Respond to the user demands for climate. The international portion is focused on the developing world. Strategies and approaches consist of going from a climate science push place going to looking at solutions in the context of real issues “problem-focused approach” real world problems – look a how suite of climate tools might or might not work for that problem. Also does education and outreach.

There are many examples in the IRI to choose from for the case study today. WE decided to choose an example by listing a small subset of the work IRI is doing. Red dots on slide are where IRI has projects – mostly developing world but some in US and Europe.

Project 1: Climate variability and agriculture. In SE South America: an area where there is a strong ENSO signal impact. Worked to develop methods to work with agriculture in context of ENSO climate. This was primarily maize production.

Weather indexed insurance for farmers in Malawi, Tanzania, and Ethiopia; was quite successful. Worked with seed for farmers to share risk so neither reinsurance agencies nor farmers are hit hard.

Desert Locust Early Warning: Lessoned learned – we need to go to users and find critical needs. Can’t just give climate info. Need to overcome institutional/policy barriers.

Questions:

How does the IRI determine priorities with regard to regions and topics?

Organization is getting requests from a number of regions and sectors. IRI looks at sector and analyzed what can be done. Is there a climate signal? Are there mechanisms in place?

Is there coordination between IRI and USAID?

Yes, close collaborations early on. USAID uses information developed by IRI in their programs. Now, they are not as close as before.

Reasons for that?

Money is gone. Earmark ran out.

Do all people at IRI hold these beliefs? (conclusions/lessons learned/win-win scenarios:)

We would like to say that. But there are many different people working within IRI with differing approaches.

Are these beliefs held across IRI/RISA/other programs?

I can't speak for all the other programs but would hope.

Is there work with START in terms of capacity building to use IRI information?

Yes, but can't point to a specific example. The annual report will state that.

Level of effort for IRI?

Dollars - \$12M range. NOAA is around \$9M of that. Leveraging – IRI doesn't keep track as most is outside of the US. ½ PhD's are in climate, ½ of PhDs are in other areas.

Are there any examples within IRI of formal scenario planning approaches for working with decision makers in the context of scientific uncertainty?

Some work with farmers in upstate New York.

Why is that NOAA in funding an international "assistance program" at significantly higher lever than U.S. based ones (RISA,SARP,ETC)?

RISA's are underfunded. International (historically) had biggest bang for the buck. Also areas of strong ENSO/climate signals. NOAA realized could make good progress. Developing world looks to US. Can't think of any other program in US that looks at this problem in this way. Ratio of IRI TO RISA may not be the only way to look at this. Ratio of IRI to all us climate programs would be a better way to look at this.

Funding – other programs need more?

Yes, all programs need more.

This may be a conversation for July.

Chet : international work reflects well on U.S.

Eileen: disasters – this can save US money in that post-disaster costs may be avoided.

Chet R: IRI has done work on predictions that are in areas that are unsupported by NWS.

NOTE for everyone for Tony B: the issue of leveraging resources outside of NOAA is important – critical to identify outside funding. All programs need to show that they can do the same

Is IRI doing anything to help developing countries and increased observation systems within the developing countries?

Yes, most observation systems are driven by either aviation or defense. IRI did a gap analysis. Reported on what exists now and what is the gap.

North Pacific Climate Regimes and Ecosystem Productivity (NPCREP): Jeff Napp/Phyllis Stabeno

This is a multi-disciplinary program that supports the Climate Goal Team and the Ecosystem Goal Team

Half of the fish catch by weight is in this program's region. Also due to high latitude, it is a region that has strong climate impact.

What extent of outreach work is done toward state and local entities?

Network that we work with at a variety of levels. There are international groups for managing halibut and salmon; state levels for crab and salmon; and we also work with the school system. We work with a number of observation systems - transitioned that entity. Area is currently under-sampled.

What is the level of effort?

The program spends \$1.5M within the Climate Goal Team. We leverage \$1.5M NOAA ship time; \$3 M in NSF funding; \$1.5-2 M outside funds plus \$2 M from the NOAA base. We have 30-40 people between NOAA employees and joint institute people.

Could you please describe how you interact with the fisheries councils?

- We deliver indices on the status of fisheries in order to regulate fisheries.
- We have direct contact with members who come to us with questions.
- Ecosystem committee of the council – we talk about the recent trends.
- We have 2 interactions of ESA – polar bear and ribbon seal and described climate for those cases.

- Pollock assessments – assessments showed recruitment currently low. We showed climate and prey (of juvenile Pollock) to argue for tighter control. Work showed future recruitment will also be low. Council cut quota to be proactive on issue based on our input.

The RCC's interested in knowing more about fisheries. Is it possible to work with your program to work with outreach for us?

We are a regional effort but would be happy to talk. Talk to Steve M. about a broader response to a national level.

If you are regional, is there a plan to have all regions do climate?

We are the only climate and ecosystem program.

Is this due to a climate signal in your region? Or is there another reason?

The original idea was to grow it to larger participation but there is a lack of funding to expand.

If the world were open to additional resources, do you see a readiness to develop a national level program? Or just low hanging fruit in a few regions?

Yes, we would want to move on a national need. There have been GLOBEC that looked at national climate but no more to enact due to funds. Several areas are doing work in a piece-meal way but long term funds are lacking.

Chet K: Climate and Ecosystem interest – regional and local levels – meetings to talk about strategies – technical report came out of that effort. Current highest priority is ocean acidification. NCR report, NSF studies. NOAA is looking at observations and ecosystem impacts – service type activities. Early warning on west coast as to when corrosive water might appear on the coast.

It sounds like you are moving resources to address the next big thing. Would it be better to address this for all issues? In July we need to focus on the size of the program and how we handle the issues.

Chet: I think that would be a great discussion to have.

Given the importance of fisheries interactions, do you find yourself working with private sector and economy?

The importance is the timing of the fisheries catch. Ice and weather play a role. We are trying to make mooring measurements to put into models for best timing for

catch. Work with private seafood company. Crab managed jointly by state; salmon – take our products to the plan team meetings. We work with NFC-a funding agency.

Overview of the COM Program Portfolio: John Jensen

Current Linkages between COM and CSD linkages:

- COM works closely with CSC on coastal climatologies, inundation, erosion
- OA
- Precip climatologies to PFE estimates
- NIDIS: soil moisture sensors;
- Planning into critical operations (e.g. RCCs/Arctic/Alaska)

Future Linkages between the COM and CSD programs (Cross Program Coordination):

- Regional collaboration teams
- Increased interaction with RISAs

Challenges:

- NCS; need data that drives models, etc
- Need to better coordination with users
- Need more interaction between program managers

Questions

What prevents interaction and strategic planning?

Time. People are too busy to spend thoughtful time discussing potential interactions.

MAD: We should make it a priority.

What fraction of the people that are important to this make it to the AMS meeting?

80%?

So if you extend it a day, you could accomplish this?

It depends on who is attending of the program managers, etc.

But you could extend the meeting to make it more useful

Would rather have a more focused DC meeting

If the meeting was in DC, how many people would need to travel?

Not sure.

Many questions about how you interact with others, especially with regards to international partners

Geoff Bonnin: Thank for mentioning PFE. Could look at from Nat'l or local perspective. E.g., PFE, measured in 100's in terms of NCDC database but local stations are numbered in the thousands and not in NCDC database and we are missing out on all that data.

Overview of the CRM Program Portfolio: V. Ramaswamy

Inputs from CRM to CSD are in a basic, elementary, early state but potential is very strong. Strong science and understanding automatically leads to strong services. Policy relevant information feeds into assessments.

Future Linkages between CRM and CSD programs:

- ESMS

Service delivery of shorter-term products, regional, downscaling?

- Regional: Development of high-resolution models; global scale high resolution models that can then provide good regional information. E.g., one model was 2x2 degrees, now 10 and 5 km.
- Models are starting to come into better focus.
- Shorter time scale models are also starting to come into sharper focus; especially with regards to climate forecasts from intra-seasonal to inter-annual time scales
- There's a lot of disconnect now where the models can put the science in and where the services can take off from it
- With regards to IESA: We want to get to a broader earth system analysis
- Air quality comes in as far as in terms of how pollutants affect the climate response
- Attribution: We have a better handle on what we can attribute and this directly benefits climate services.

Challenges:

- Uncertainties remain unresolved, e.g., Cloud feedbacks

Questions

- We are getting some benefits from improved resolution
- Important to keep scientific robustness.

Need to serve people that are trying to make decisions

Cutting edge research has not been communicated or is not made accessible.

What we heard was, can we get more massaged information.

Private sector can make faster choices

Must be done on a sector-by-sector basis. We need to have useful information.

Executive Session: Climate Working Group and Review Team Preliminary Thoughts/Comments

Do people see some issues for July emerging?

- Collaboration w private sector
- How to grow programs so they're big enough for national needs
- More opportunity for strategic discussion and planning
- All programs must be part of larger coherent program
- Everyone must understand that all programs are critical
- NOAA is extremely insular especially with respect to congress outreach
- Integration and assessments. We need to find out how these programs are working

As NOAA plans more comprehensive climate services, what about lands and vegetation type services?

Yes

Would you include fauna as well as Flora?

Yes. Habitat and vegetation. This is a topic they can't leave behind anymore. NOAA can't go alone so they must partner. This must be an explicit determination so it does not fall through the cracks

MAD: There is an effort to improve collaboration to improve mapping, e.g., vegetative indices that has not been supported by NOAA except CSC.

Dave: NOAA should get list of participants and committee from today.

Krisa: will do. We have a website with UCAR.

Day 2 – Wednesday, May 6

- 1:00 NIDIS: Roger Pulwarty/Chad McNutt
10 minutes Presentation
20 minutes Q & A/discussion
- 1:30 SARP: Nancy Beller-Simms/Adrienne Antoine
10 minutes Presentation
20 minutes Q & A/discussion
- 2:00 NWS Climate Information Products and Applications: Ahsha Tribble/Michelle Hawkins
10 minutes Presentation
20 minutes Q & A/discussion
- 2:30 Comm/Ed: Frank Niepold/David Herring
10 minutes Presentation
20 minutes Q & A/discussion
- 3:00 Break
- 3:15 Executive Session: Plan for July meeting/steps forward (Climate Working Group)

Attending in person: Nancy Beller-Simms, Adrienne Antoine, Michelle Hawkins, Maria Honeycutt, Sarah Abdelrahim, Stephanie Herring, Krisa Arzayus, Jen Faught, Li Jiang, Lauren Jones, Amanda McCarty, Geoff Bonnin, David Goodrich, Sandy Lucas, Ken Mooney, Chet Ropelewski, Rick Rosen, Caitlin Simpson

On the Phone: Bill Hooke, Tony Busalacchi, Eileen Shea, John Dutton, Margaret Davidson, Ahsha Tribble, Holly Hartman, Jerry Schubel, Jeanine Jones, David Robinson, Marshall Shepherd, Steve Running, Jean Brennan, Tony Janetos, Sharlene Leurig, Roberta Balstad, Leigh Welling, Tim Owen, Dan Walker, Brian Jackson, Chester Koblinsky, Marjorie McGuirk, Chad McNutt, Roger Pulwarty, Marina Timofeyeva

National Integrated Drought Information System (NIDIS) Chad McNutt/Roger Pulwarty

An overview of the program: This is an interagency and interstate effort to build regional outlooks based on RISA, RCCs, AASC. This provides risk and drought management information as well as dynamic and accessible drought information system

NIDIS: Coping with Drought, climate testbed, and other funding – support RISAs, SARP, and TRACS and other research

NIDIS has 3 interacting components:

- NIDIS program office
- NIDIS implementation team
- NIDIS council

Some of the accomplishments of the program include: developed pilots such as the Upper Colorado River Basin, also CA and SE; developed Drought Portal as database and information tools; educate and inform those affected by drought including in the classroom

Some of the NIDIS Drivers are:

- NIDIS Act 2006
- Western Governors' Report
- NIDIS implementation Plan

Case Study 1: 2008 NIDIS pilot in Upper Colorado River Basin

This is an arid region that has multi-year droughts. Some activities and accomplishments include:

- Several planning workshops
- Reconciling projections of upper Colorado River stream flow as a first step

How NISID collaborates with the Climate Testbed:

- Integrate CFS into drought projections
- Collaborate with Bureau of Rec

Regional Needs and Priorities (work with Nolan Doeskin):

- Conduct assessment of drought indicators and triggers and engage with a wide range of stakeholders in the area at many levels
- Dedicate part of portal specific to upper Colorado data
- Gap analysis on UCRB under way
- Working with state to do this work

Outreach, Communication and Education Activities:

- Develop drought monitor for UCRB
- Evaluation Process
- How can we keep it up and running

Questions:

How does this pilot meet NIDIS goals?

The prototype will provide lessons back to governing structures about early warning systems

How is the Drought Tools Index linked to Carolina RISA? And are you applying what is done by Carolina RISA, but not one size fits all?

They will be different codes for tools to customize to area and meeting needs

Jeanine: Roger and Chad do not give themselves enough credit. The Western Water Council WestFAST and NIDIS are active in supporting NOAA's role to carry out Western Governor priorities. There is a 4 agency Climate Change and Western Water Interagency Group with the Army Corp of Engineers, USGS, NOAA and Bureau of Rec. The Western States Water Council were the ones that authorized lobbying for funding to the Secretary of Agriculture and Interior for the Drought Interagency Task Force and for taking the Drought Portal as vehicle for communication team. They make an explicit effort to build on data from RISAs, RCCs, and other agencies and not discrete efforts.

Level of Effort:

Spending is \$600K on average

Is UCRB unique? Or will this be replicated in other agencies?

This is a prototype to coordinate different activities across agencies
40 people were selected for this as the first one. The second is in the SE. We will learn something from pilots as to how they pull together their teams, what are the triggers, and then use those lessons in other areas. It will also enable us to answer questions about consultation with users as this is driven by users on the ground

Private Sector ever say we can do this?

We worked with the private sector on the portal contract; many were engaged in the display of information

Can you speak to the challenge of other agencies being involved?

Agencies want to play in developing the pilots in areas such as examining triggers. There are also specific people tasked to and funded to working on NIDIS from both USGS and Bureau of Rec. The questions being asked have to be of interest to all the agency players in the basin, which has engendered the support. This is getting high-level support. We don't fund development of monitoring but identify the gaps. The DC Council then has to work the issues out. We have done DAA level briefings at USGS, ACE, BoR, EPA, etc after we can demonstrate some success.

Geoff Bonnin: RFC is responsible for stream flow forecasts, and is also working on improving ensemble forecast. NCEP also provides some of the funding. Advancements include highly accurate soil moisture forecasts, probabilistic forecasts, post processing, and high-resolution modeling. This is the link between

NCEP, RFC, and NIDIS; support of facilitation of NCEP funding will be done through TRACS.

It is importance also to link RFCs to other agencies.

Action Item: Questions for NIDIS that we did not have time for:

- 1. Collaboration with private sectors? Users?**
- 2. Is the idea that this would be replicated in other basins? How many?**
- 3. Level of effort?**
- 4. Dollars per year?**
- 5. Number of people?**
- 6. UCRB unique or is the idea that this would be replicated in other basins? How many?**

Sectoral Applications Research Program (SARP): Nancy Beller-Simms/Adrienne Antoine

The overall strategy for this program is that it is an interdisciplinary grants program that covers physical and social science as well as decision makers and is exploratory in approach. RISA is regionally focused, whereas SARP is sector focused usually with 6-24 month grants whereas RISA are longer term, and place-based grants. These are flexible in focus area and in mechanism. This program changed direction 3 years ago to focus more on certain sectors. The office is involved in with coping with drought – NIDIS, RISA, and TRACS. The program also works across NOAA and at the interagency level.

The overall budget is ~\$2.7M to fund 8-10 projects with \$2.1M spent on drought. There is also some money for workshops. Funds are leveraged – travel money, in-kind time from other agencies, money from states and universities, etc. The program is evolving and the new goal is to improve insight into stakeholders both inside and outside of NOAA.

There are 2 sectors to the SARP Program: Coastal and Water. They are currently re-assessing the program and how it fits/compliments the other efforts in NOAA. The program is also interested in providing more focus on water and the coastal sector and is investigating new sectors relevant to NOAA. This is an ongoing effort including developing criteria to select and define sectors. In addition, they are identifying the readiness and requirements of different sectors; to lay out the strategy for SARP and a vision document.

Activities and accomplishments:

- publish peer reviewed articles as part of GPRA measure
- Workshops – Climate, water and urban in Arizona
- 2 other workshops in technical memo – coastal and Living Marine Resources
- work with NWS on communicating outlooks
- research, use of social science research, decision support,

- community engagement for SARP PIs to come together and share lessons learned

Case Study 1: Examples of Coast Project and Water Project. This concentrates on one issue but tackles it from many sides

SARP Water: Joel Smith, the private sector, academia, and user groups are all involved

- Plan for long term water supply,
- came up with 400 year record and project out
- Transferable to other locations if interested

Questions

How much of what you do is education vs. technical support?

Some things are specific education related; graduate students are used

Are you working with them to develop decision trees and decision support?

In the last few years, we have started to recommend that decision makers be on board and be a co-PI in the future so idea is that whatever is produced

Your projects are at specific scale, how do you scale that up to support whole sectors?

We are starting to address this in a strategic way but the workshops are a start

At NASA: Teresa Fryberger has implemented requirement of decision maker being a co-PI, and talked to them in Applied Sciences to see why with mixed results.

Steve Running: The NOAA culture is different than NASA. The program was not a good fit for NASA so that may not apply. From the decision-maker perspective, NASA is out in the milky way. NOAA is in the atmosphere but not on same planet, and USGS is on the ground.

This is a struggle for decision-makers, as the decision makers often do not interact with Academics who apply for the grants

Tony Janetos: I agree that we need a different mechanism to involve decision-makers.

Roberta Balstad: having one decision-maker may bias the outcome and you need to be cautious as that applies broadly

How much is natural science and how much is social science?

It depends on the project and the location. For example, Roberta worked with decision makers in New York City who are card-carrying social scientists. This is often a mix of both.

Jeanine: I am struck by the fact that there are many layers of stakeholders ex: Water quality people don't talk to water suppliers, and we don't make the concerted effort to understand who all the stakeholders are. This can help you to understand who your intermediaries are.

NWS Climate Information Products and Applications: Ahsha Tribble/Michelle Hawkins

This program involves climate prediction and became part of the Climate Information Products and Applications program in FY01. The program is operational in both the Climate Goal and Weather and Water Goal. There are six regions in which the program supervises activities. This includes the 122 forecast offices, which participate in regular conference calls.

Partnerships include the Regional Climate Centers (RCCs) and the RISAs. The program works to make sure the relationship between RISA and NWS is happening. The program also works with the State Climatologists and NIDIS.

New Education and Training

- Sea grant extension: delivery of climate information
- USACE
- USGS

Local Impact Assessment:

- International responsibility for meteorological organization
- Develop virtual course (climate variability)
- Deliver climate information (weather and climate offices communicate on a regular basis)

RISA:

- What climate activity they are focusing on is based on user requests
- Weather and climate services /products including CPC

2 case studies:

- Local 3 month temperature outlook
- Local climate user directory (database) with information on what kind of user request we have. These are based on customer satisfaction surveys
- Climate prediction application constituents together
- How CPD and local weather service office interact with users

- Operational products: identify gaps of climate prediction and data uses
- Enhance user feedback that NOAA operational products have

Precipitation frequency estimates

- Produced by NCDC
- Produce probability maximum
- NOAA produces their own resources

In 2000: the semi-arid southeast, Puerto Rico, Hawaii, Alaska, Pacific Islands
 Budget \$500,000 per year; \$1.5M for Alaska update and involved the Alaska DOT, U
 of A , LA, Arkansas; Based on Reservoir data

Questions:

What connections do you have with other programs?

- NW Risa
- SE Climate Consortium in FL
- Oklahoma
- NWS provides education training
- Seasonal and inter-annual as well as Climate scales
- Climate impacts at local and regional levels

Communications and Education: David Herring/Frank Niepold

Goal of the program is to help inform, engage, educate and employ several audiences

The Climate Services Portal (at least an early mark up) will be available in
 September of 2009.

Two sections:

- Climate education
- Climate science progress

Which include program, product and partnerships information, awareness raising,
 dialog, and standard-based learning

The Climate Portal is considered the front door for various users

- NOAA's roles in observations and modeling
- Authoritative, trustworthy climate information

Climate literacy

- Web-based education is critical
- The goal of this document is to define climate literacy
- UNFCCC: defines climate literacy (e.g. India)
- In the K-12 arena, with standard-based literacy, climate is not there
- Outcomes: educators understand climate

- 18 federal agencies are involved in the document
- Standard reviews are underway
- The real impacts are to textbooks, and museum
- Beneficial long-term outcomes
- Credible science information
- Reliable access trustworthy information
- Integration of users

Questions

In your power point, how do you define what is a decision managers?

- Resource managers and/or Application-oriented professionals
- whereas decision makers are policy leaders, local/state governments

Audience identification needs more work

- Segmentation is necessary (Frank)
- There are different users for different needs
- Refinement is ongoing

How many people i.e. what is the number and size of people engaging in Climate communication?

- Personnel across Line offices
- Activities go beyond CPO
- Partnership within NOAA and outside NOAA

How does CPO Communication Office interface with NOAA's Office of Education?

- A portion of CPO Communication Office budget comes from a NOAA Education grant
- The CPO communications office works in close collaboration with the Office of Education

What are your collaboration with natural and social scientists (e.g. climate portal)?

- Teams of experts/media and feedback mechanisms
- An idea is complexity transparent to users

What are expected to be measurable impacts on climate literacy?

- National Assessment of educational progress
- Bring evaluators to evaluate performance measures

Action Item: Questions that we did not have time for with Comm/Education:

1. Have you considered defining climate literacy for audiences other than K-12 e.g. how would you define a climate literate resource manager or other user

- of climate information/ This should be a short term goal for informing decision support activities and services
2. Where does the money come from and how is climate education supported?