

Session 5: Increasing relevance and use of climate science from the user perspective



Florida Water and Climate Alliance
March 30, 2016

Overview



- ❧ **Presentation** - Communicating scientific information and its relevance to management situations
- ❧ **Discussion** - reshaping programs and activities to reflect participants' current or projected interests/issues
 - Current activities- workshops, website, webinars, outreach
 - Generating new ideas and pinpointing new opportunities



“The single biggest problem in communication is the illusion that it has taken place.”

-- George Bernard Shaw

Notes from FloridaWCA steering committee meeting



- ☞ Recognizing and addressing Modeling Complexity at the interface/interaction of climate science and hydrology and economic impacts. We need to understand the models, the conclusions that are drawn, and recognized that the interaction of the models is very complex ... pulling one thing out might not be best use...
- ☞ Be able to ask Utilities, do the tools help? and will they help you do what you need to do better--- Science tools are needed to address SLR, Salt water intrusion, and managing reservoirs.....
- ☞ Need to be able to stay up to date on what everyone is doing, what they are using as models, what scenarios, what boundaries, how translating results, what are the policy implications and how this can translate to projects.
- ☞ Water Management Districts are important stakeholders in FloridaWCA dialogue. We need to understand what they are specifically interested in and why they may not be at the table in terms of funding and continued support. Important that each of the Districts participate and put funds forward.

Elements of Climate Science Communication



Element 1. Objective and Accurate

Focus of communication relies on **completely non-biased presentation** of the message, or letting the science speak for itself. In this stage, the audience is tasked with interpreting the relevance of scientific information to real-world risk management situations.

Element 2. Relevant and Important

Focus of communication relies on presenting information in way in which it is relevant and important to a selected audience. In many cases, the science is presented in manner which **frames the most important or necessary components for the audience to consider in their own circumstances.**

Element 3. Engaged and Trusted

Communication at this component recognizes the importance of social capital in the transfer of scientific information. For instance, scientists take extra measures to ensure that they are perceived as a trusted source for information. Furthermore, **scientists actively engage the audience in participatory activities** to obtain precise and locally-specific information.

Communicating scientific information and its relevance to water resource managers/utility operations



- ❧ Water managers are now able to **articulate the specific kinds of climate information, outlooks, and projections they need** in order to better use the quantitative results from these climate products in their annual operations and long term decision models.
- ❧ Climate professionals are developing an **increased interest in the factors affecting management of water systems and the types of climate information that may be useful** in supporting water manager decision-making.
- ❧ **Collaboration** among water providers on water supply planning and climate show **water managers have also informed climate scientists on needs for additional research**

Climate communication literature



- Previous studies have shown that 1 or 3 mo seasonal climate outlooks issued by the NOAA Climate Prediction Center (CPC) **are hard to locate on the web, are hard to understand, do not address relevant climate variables, and do not represent sufficient skill or lead times** (Callahan et al. 1999, Pagano et al. 2001, 2002, Hartmann et al. 2002, Carter & Morehouse 2003, Gamble et al. 2003, Rayner et al. 2005, Steinemann 2006).
- These studies suggested that water managers would be more likely to incorporate that information into their operational models **if forecasters produced evaluations of seasonal climate outlooks that water managers could understand, and combined climate outlooks with streamflow forecasts that intersected with the existing knowledge base of water managers** (Pagano et al. 2001, 2002, Hartmann et al. 2002, Huppert et al. 2002, Carter & Morehouse 2003, Gamble et al. 2003, Rayner et al. 2005, Steinemann 2006).

Climate communication literature



- ❧ Studies suggested that increased communication between forecasters and water managers was necessary for water managers to appreciate the utility of climate outlooks and for climate scientists to recognize the uses and needs of forecasts by water managers (Callahan et al. 1999, O'Conner et al. 1999, Pagano et al. 2001, 2002, Hartmann et al. 2002, Huppert et al. 2002, Carter & Morehouse 2003, Gamble et al. 2003).

What Water managers want from the climate science community:



(1) Improved availability and utility of climate information and natural variability

- Effect of climate patterns (e.g. ENSO) on regional weather.
- Regional trends in temperature, precipitation, and streamflows; compare anomalous years to natural variability.
- Reoccurrence interval of single- and multi-year droughts and other extremes.
- Regional variability in historic streamflows among river basins (exceedance probabilities); reliability of current or future water rights.

(2) Improved communication of climate forecast methodology and skill

- Underlying assumptions and uncertainties of forecast models
- Sources of forecast and data error
- Verification methods, including hindcasting
- Types of verification (resolution/sharpness vs. reliability)
- Skill versus accuracy
- Regional patterns of skill

Discussion



- ❧ **Discussion** – How could we reshape programs and activities to reflect participants' current or projected interests/issues
- Current activities- workshops, website, webinars, outreach
 - Generating new ideas and pinpointing new opportunities

Discussion



- ❧ How to better target evaluations of forecasts?
- ❧ Probability climate forecasts will inform user of extreme events?
- ❧ Framing/ presentation
 - ❧ Quantitative visualization
 - ❧ Comparison to recent conditions
 - ❧ Comparison to historical record
 - ❧ Conveying uncertainty

Next steps



Activities

- Workshops
- Website
- Webinars,
- Outreach and Communication
- Proposals/Research
- Sustainability