Communicating information about climate change impacts on fresh water resources in Guam:

How can we best support adaptation decision making?

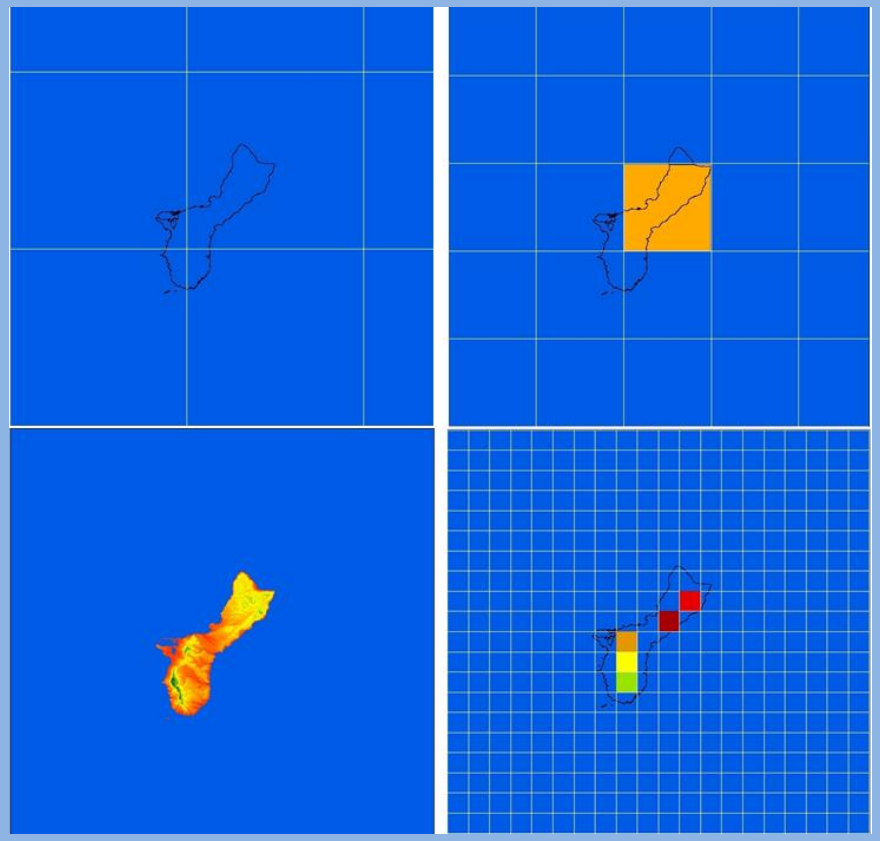
Melissa Finucane
Victoria Keener
February 24, 2014

SERDP
DOD • EPA • DOE

EAST-WEST CENTER
COLLABORATION • EXPERTISE • LEADERSHIP

Climate Variability in the Pacific

- Pacific Islands have difficulties in relation to regional climate modeling *("downscaling")*



- Small size
- Extreme topography
- Tradewind dynamics
- High natural regional climate variability

Clockwise from left: Guam as seen (or not seen) in two global models, a regional model and a downscaled climate model (Courtesy of Laura Brewington, East-West Center)

Our Role

How do we best make the technical scientific results useful and understandable for your planning and management decisions?

- How to:
  - Present the information so it is most usable and understandable?
  - Understand the realities associated with the decisions you have to make?

Sense of Responsibility vs. Control About Climate Impacts on Pacific Islands*

Sense of Responsibility	American Samoa	FSM	Guam	Hawai'i	RMI	NMI	Palau
To what extent do you feel personally responsible to act to address climate change on the island where you live?	52.7	62.9	31.8	44.0	55.6	43.8	64.3
To what extent do you feel personally responsible to act to address climate change on Pacific Islands generally?	21.1	54.3	22.7	36.0	33.3	43.8	35.7
Sense of Control	**American Samoa**	**FSM**	**Guam**	**Hawai'i**	**RM**	**NMI**	**Palau**
To what extent do you feel able to control the climate change impacts on the island where you live?	0.0	21.2	0.0	0.8	22.3	18.8	7.1
To what extent do you feel able to control the climate change impacts on Pacific Islands generally?	5.3	37.2	0.0	1.8	27.8	0.0	7.7

Pacific RISA

*(n=302), survey open first quarter of 2013

What this project is (and is *not*)

- We will show how different water management scenarios will affect future freshwater availability under a changing climate in Guam's northern and southern hydrological regimes.
- We are NOT predicting the future, but illustrating how different plausible freshwater management and adaptation decisions would affect Guam's water supply.
- From you, we need to know:
  - Who will use the information?
  - How will they use the information?
  - What form of information is most useful?

Future climate and management scenarios can help water managers plan better

- Scenarios help us to:
  - **think** about plausible futures
  - **rehearse** what we might do under a small set of future conditions
  - **identify** conditions which, taken together, can be valuable in setting strategy and policy for an uncertain future
- Scenarios do not predict the future

What are scenarios good for?

- Highlighting **differences** across scenarios
  - Amount of lead time needed to build support for specific management actions
  - Amount of monitoring needed
  - Willingness of partners to engage
- Highlighting **common themes** across scenarios
  - Need for infrastructure maintenance
- Identify most **important implications** and actions

We need your input to identify:
Who might use this information?

- Government agencies
- Non-government organizations
- Disciplinary backgrounds (water resource management, planning, engineering, hydrology, politics, agriculture, etc)
- Climate literacy

We need your help to identify:
How will the information be used?

- Relevant legal/policy frameworks or constraints
- Time pressure
- Identifying options for adaptation strategies
- Exploring impacts of alternative strategies
- Identifying robust options
- Identifying gaps in information
- Educating colleagues
- Justifying decisions already made

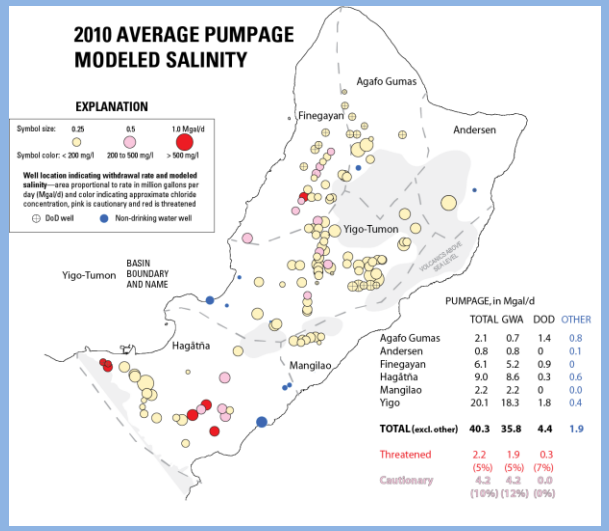
We need your input to identify: FEASIBLE adaptation options?

- Identify the **most** feasible options (i.e., dredging the reservoir, increasing dam height…) believed to be most relevant to defining a diverse range of future freshwater management conditions
- Include climate, water, and management information
- Build a small number of adaptation scenarios that ultimately help you plan **robust strategies** for future conditions
- Consider contrasting values key to addressing management issues

We need your input to identify:

Helpful ways to present the information

- Maps or tables identifying vulnerable areas under different management options?
- Targeted 1-page information sheets for specific sectors (community, water managers, military, etc.)
- Making all the climate data for the whole state easily available for those interested
- Spatial scale?
- Other?



Discussion Questions

- What are your general thoughts about the proposed project methods and outputs, or potential use of the information that could be generated?
- Who might use this information?
- Which variables or factors in the future climate scenarios are the most interesting or relevant to you and your organization?
- What type of information format would be the most helpful? (i.e. maps, reports, tables..)

Next Steps

- Individual and small group discussions
- Iterative assessment of users, uses, needs
- Testing of alternative types of information
- Please contact us to participate this week or in the future:
  - Melissa (Finucane@rand.org);
  - Victoria (KeenerV@eastwestcenter.org)

Questions?

Dr. Victoria Keener
KeenerV@EastWestCenter.org
Fellow, East-West Center

Dr. Melissa Finucane
Finucane@rand.org
Senior Fellow, East-West Center
Senior Scientist, RAND Corporation

EAST-WEST CENTER
COLLABORATION • EXPERTISE • LEADERSHIP

Photo: Diana Kim, 2012