

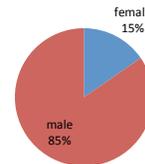
## Workshop Pre-Survey

- Goals
  - Help frame discussions for the next two days;
  - Give some insight into the other groups' needs and perceptions before the meeting;
  - Background information on the kind of climate information different resource managers use and need;
  - Recognize groups' differences
    - discussion on how to best address these differences via a common understanding

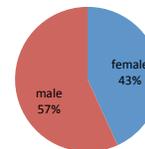
## Survey Details

- Targeted groups – statistical significance not tested
  - Anonymously coded responses
- Distributed to 4 groups independently
  - Climate Scientists/Modelers (n= 19, 76%)
  - Wildfire Managers (n= 12, 7% listserv distribution)
  - Ecosystems Managers (n=19, 42%)
  - Freshwater Managers (n=15, 53%)
- Managers only section
- Climate scientists only section
- Joint question section (everyone)
- Demographics section (everyone)

**Climate Scientists**



**Managers (all)**



## Demographics

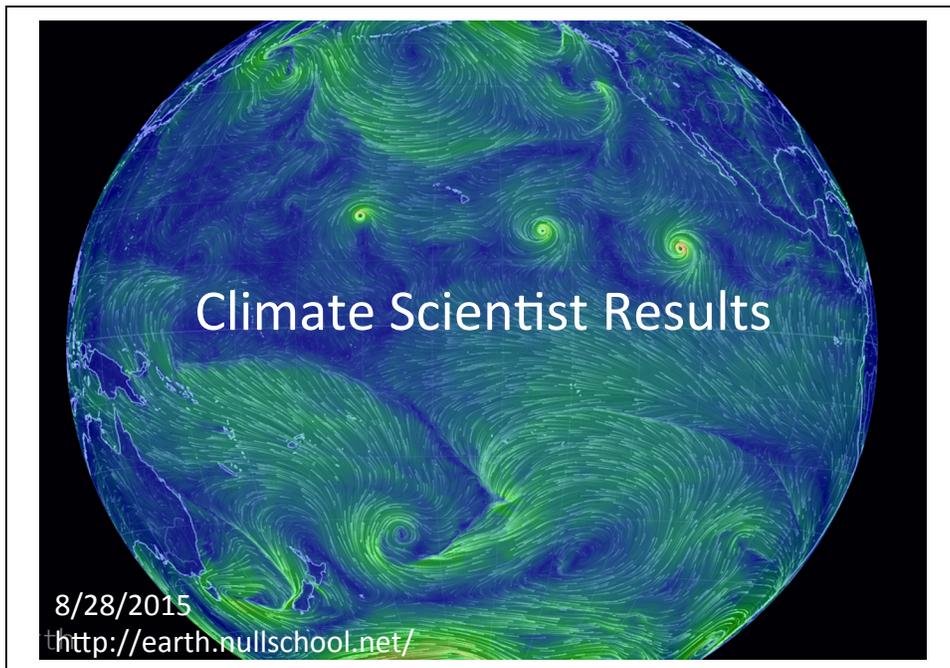
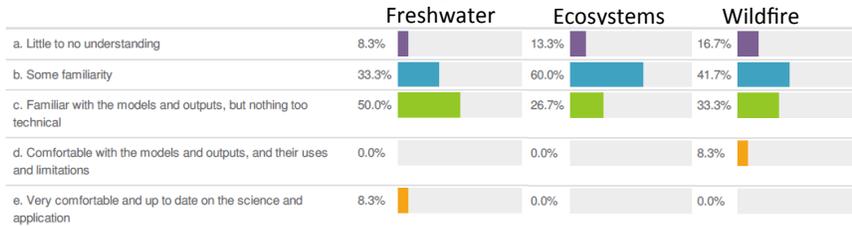
- 65 total respondents
- On average, extremely experienced (20-30 yrs) groups of managers and scientists
- Climate scientists mostly in academia
- Managers mostly in county, state, or federal agencies

## Each group reports a limited understanding of others' expertise

How would you assess your understanding of natural resource policies and planning processes in Hawaii?



How would you assess your understanding of modeling climate systems in Hawaii?

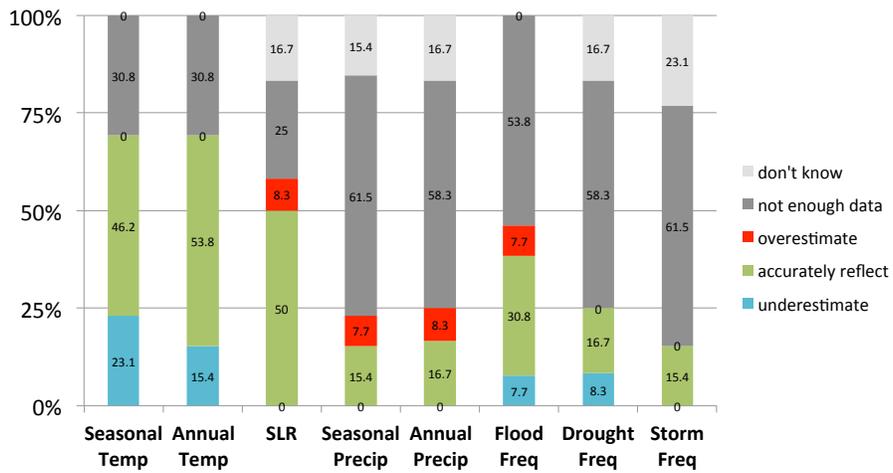


Approximately what percentage of your climate research activities are devoted to operational (vs. basic) research purposes?

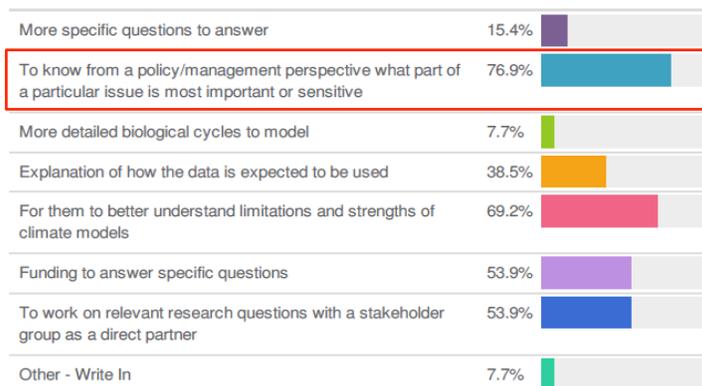
% Operational Research	Percentage of Researchers
0%	7.7%
1 - 25%	30.8%
26 - 50%	23.1%
51 - 75%	23.1%
76 - 99%	7.7%
100%	7.7%

### Researchers most confident with projections of avg annual temp, SLR, and seasonal temp.

"In your experience, future climate projections for Hawaii tend to [under/overestimate] average changes in:"



## What information from climate science users (managers, policy makers...) would help you?



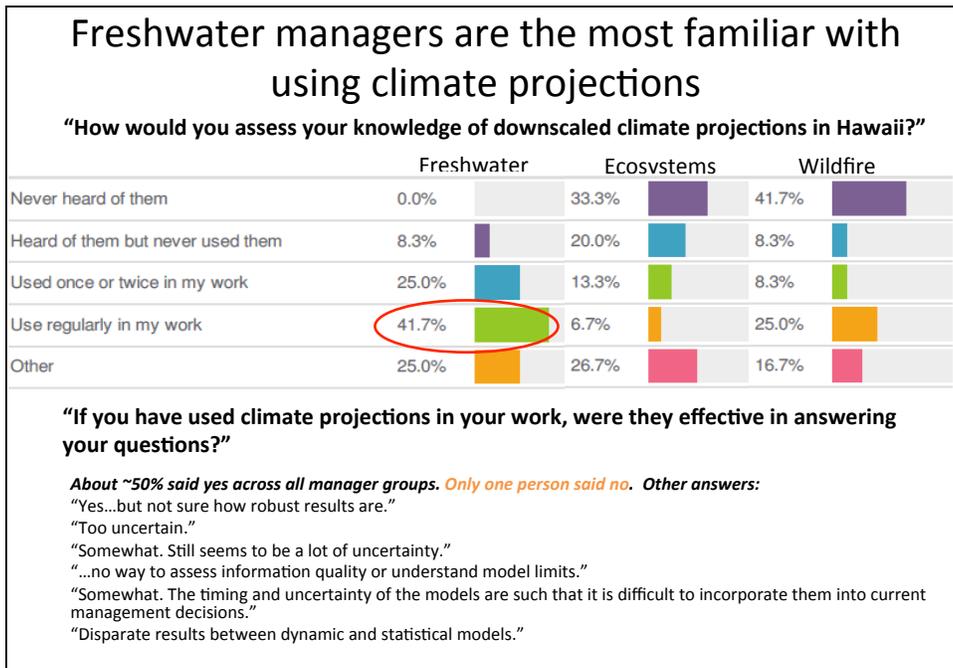
Other:

*“What decision, at what time frame?”*

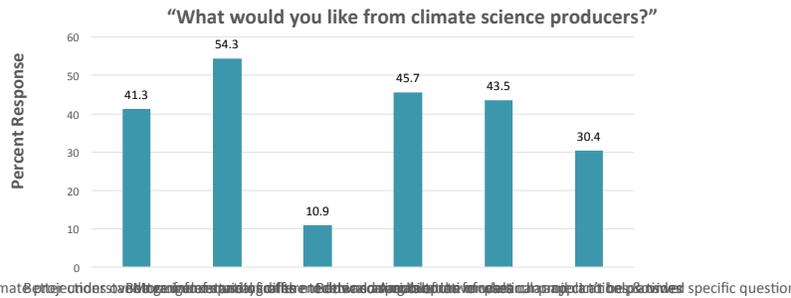
## “What future climate variables do you think natural resource managers in Hawaii are the most interested in?”

[ranked, 1 = most interested]

1. Changes in frequency of extreme events
2. Changes in intensity of extreme events
3. Average seasonal precipitation
4. Annual sea level rise near the state
5. Average annual precipitation
6. Average annual air temperature
7. Average annual evapotranspiration



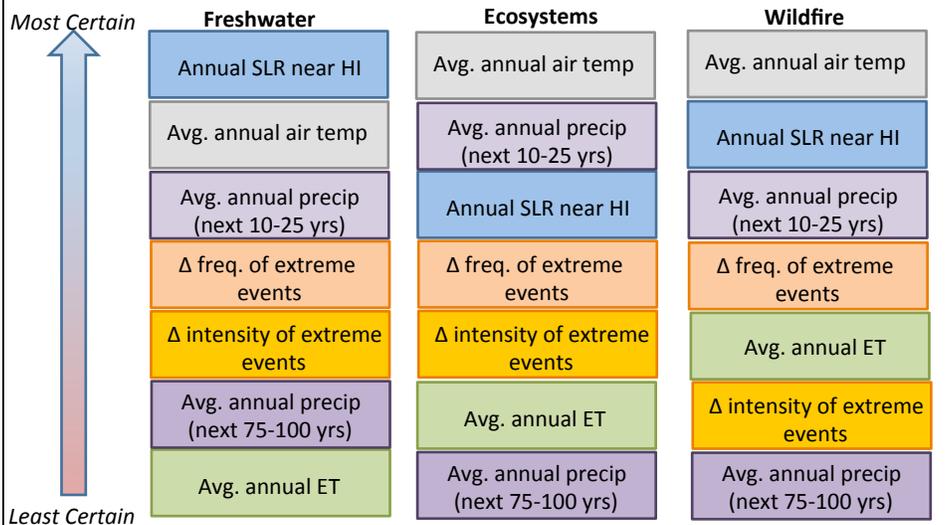
### Most managers do not want lectures about technical model details, but need information about uncertainty



**Other:**

“More public relations to highlight the findings & what can be done. In the simplest and most unequivocal terms possible.”  
 “Face time with staff who interact with the public so they can be more comfortable presenting info and answering questions.”

### “How certain do you think climate modelers are in making future projections of the following variables relative to each other in Hawaii?”

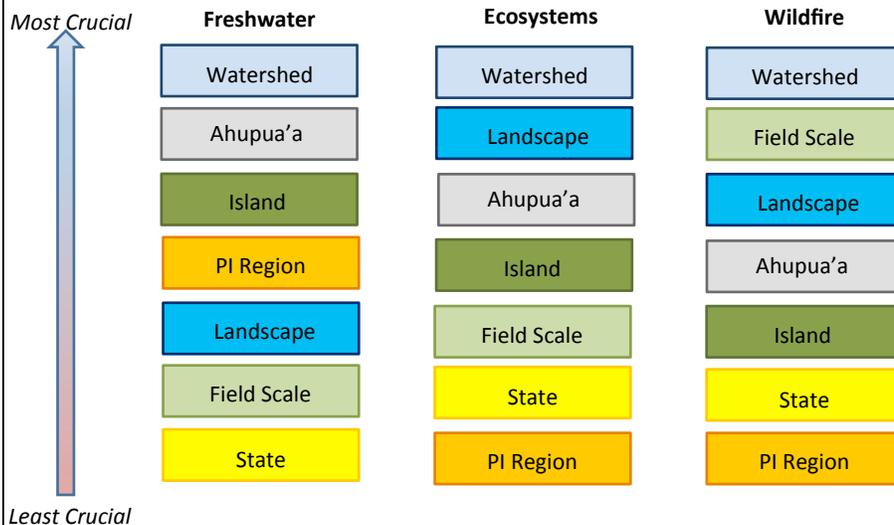


“What frequency of observations of current conditions is helpful in guiding your decision making?” (Top 3 choices)

	Freshwater	Ecosystems	Wildfire
<b>Precipitation</b>	Seasonal Monthly Daily	Monthly Seasonal Daily	Daily Annual Sub-Daily
<b>Temperature</b>	Daily Seasonal Monthly	Seasonal Daily Multi-Decadal	Weekly Sub-Daily Seasonal
<b>Streamflow</b>	Monthly Daily Sub-daily	Seasonal Multi-Decadal Don't use this	Daily
<b>ET</b>	Daily Monthly Seasonal	Seasonal Don't use this Annual	Weekly Don't use this
<b>ENSO signal</b>	Annual Monthly Not familiar with it	Not familiar with it Don't use this Annual	---

[Multi-Decadal, Decadal, Annual, Seasonal, Monthly, Weekly, Daily or sub-daily]

“What spatial scales are the most crucial to have climate projections for to manage your resource optimally?”





## Group Results

**All groups agree that scientific expertise should get priority. Ecosystem Managers differ from others in listing industry/commerce concerns last.**

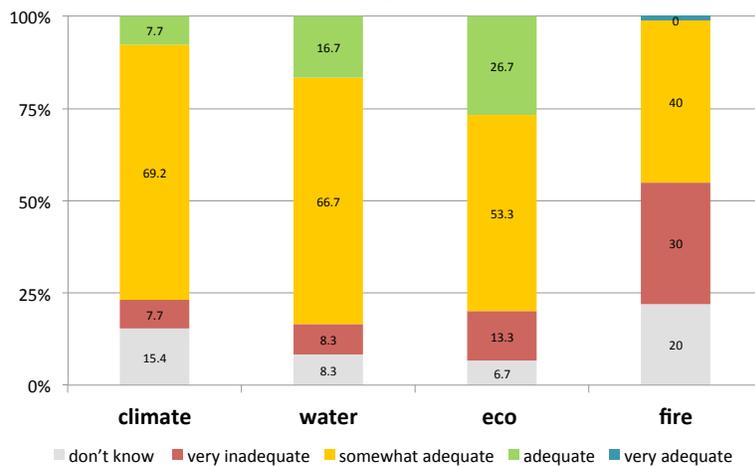
“In making climate change policies, priority should be given to” (rank 6 options):

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Climate Scientists,<br/>Freshwater Managers,:</li> </ul>                                   | <ul style="list-style-type: none"> <li>• Ecosystem Managers</li> </ul>   |
| <ol style="list-style-type: none"> <li>1. Scientific Expertise</li> <li>2. Industry/Commerce</li> <li>3. Public Opinions</li> </ol> | <ol style="list-style-type: none"> <li>1. Scientific Expertise</li> <li>2. Public Opinions</li> <li>3. Political Opinions</li> </ol> |
| <ul style="list-style-type: none"> <li>• Wildfire Managers</li> </ul>   | <p>(...6. Industry/Commerce)</p>   |
| <ol style="list-style-type: none"> <li>1. Scientific Expertise</li> <li>2. Public Opinions</li> <li>3. Industry/Commerce</li> </ol> |  |

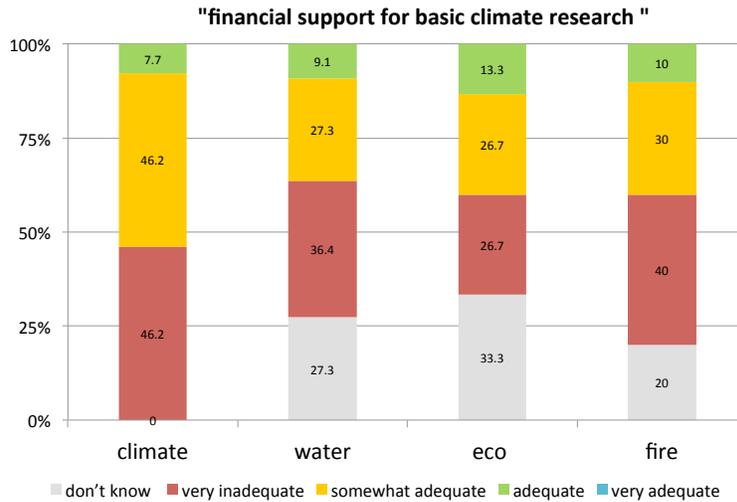
“To the best of your knowledge, please rate the adequacy of the following data and resources for Hawaii”

The majority of all groups believe there is “**somewhat adequate**” data availability

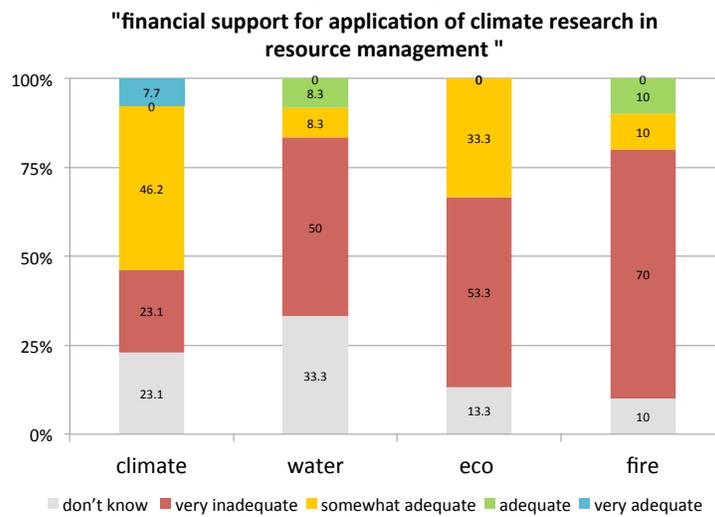
“data availability for climate change analysis and management”



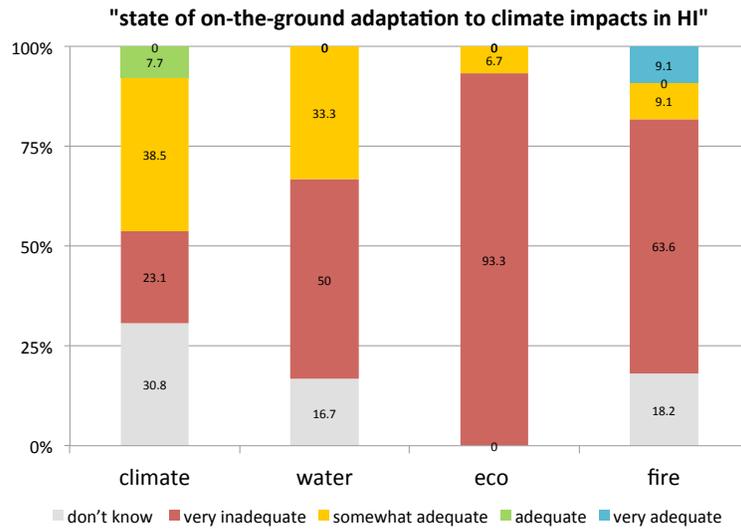
## All groups believe there is not enough financial support for **basic** climate research



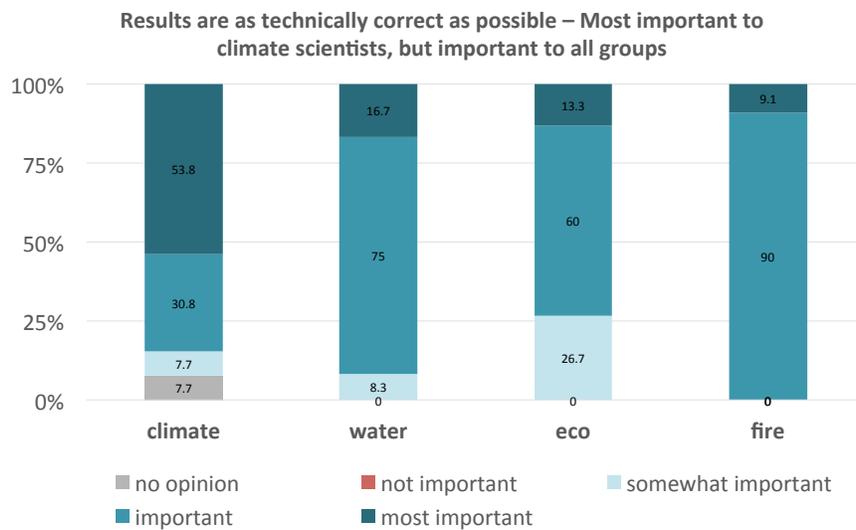
## The majority of resource managers believe that financial support to help them use climate information is **very inadequate**

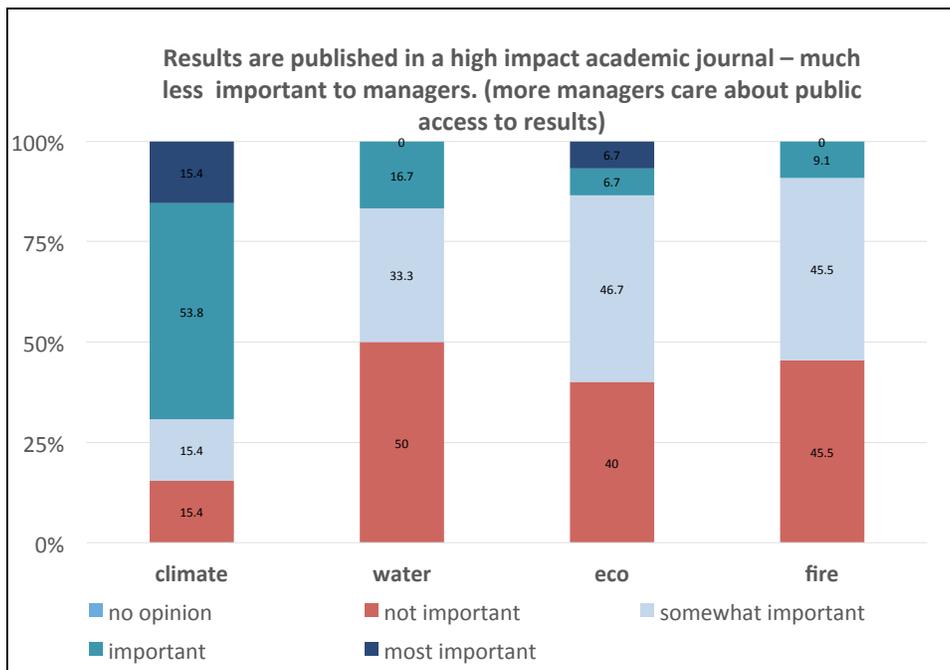
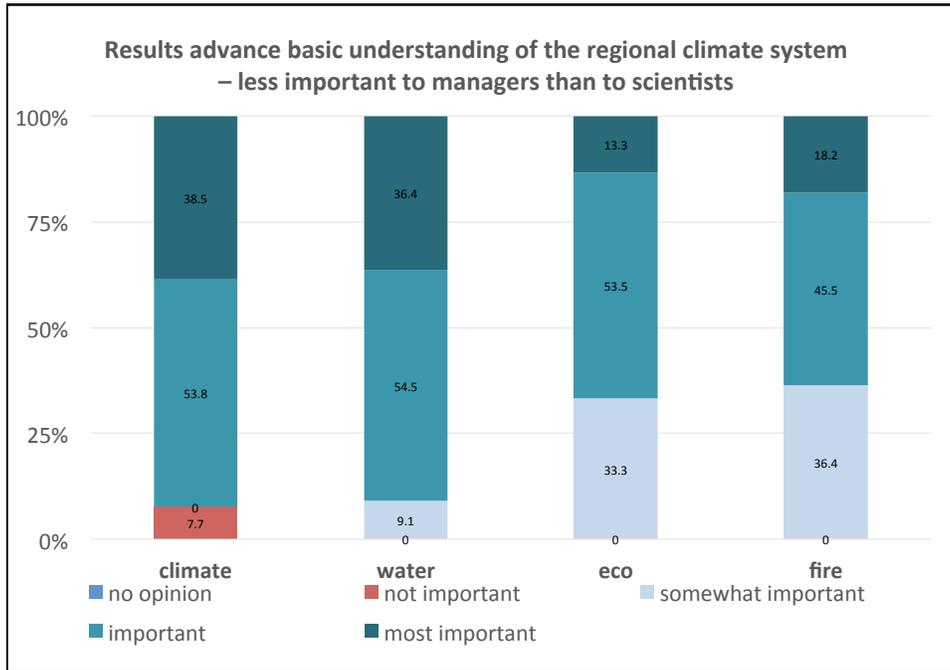


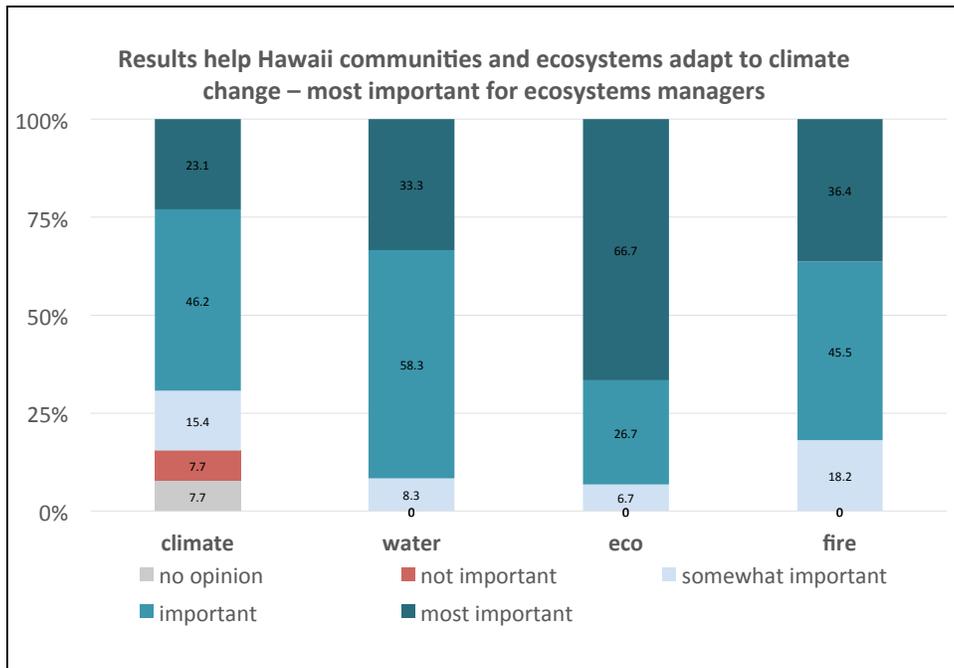
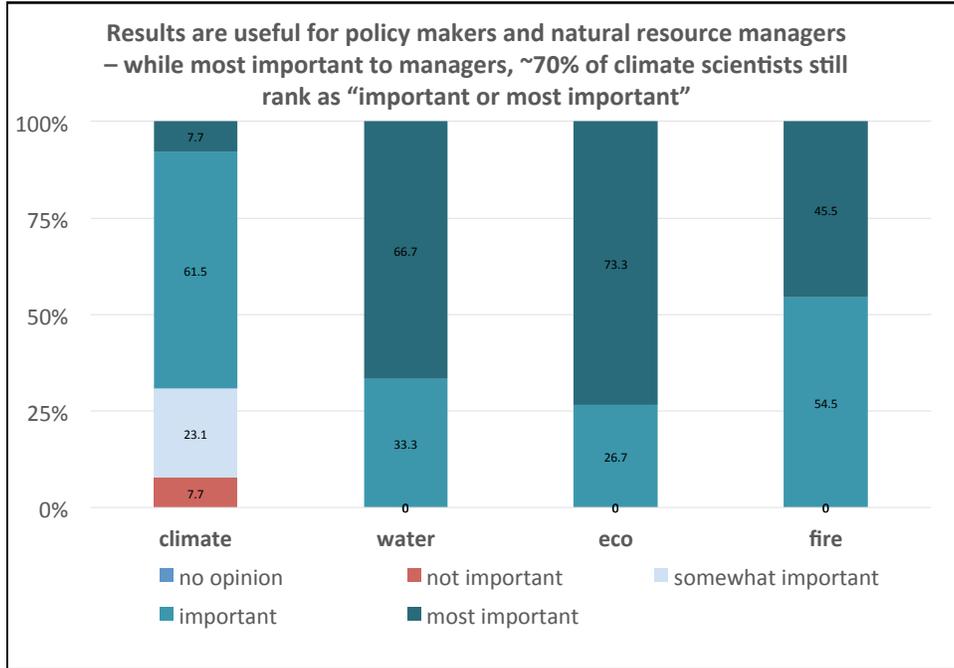
### Ecosystems managers are the most likely to feel like HI adaptation efforts are **very inadequate**

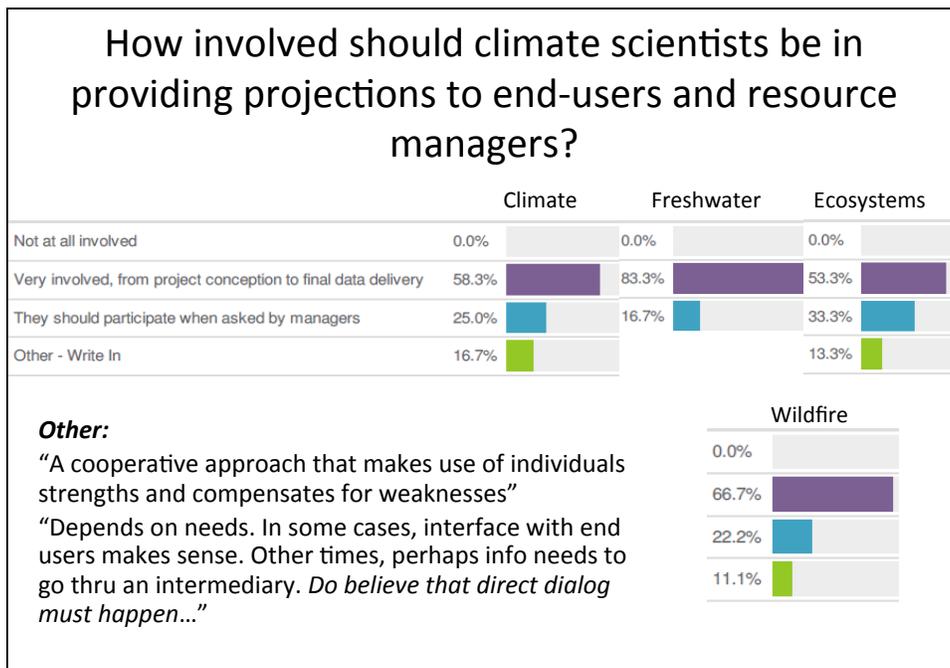
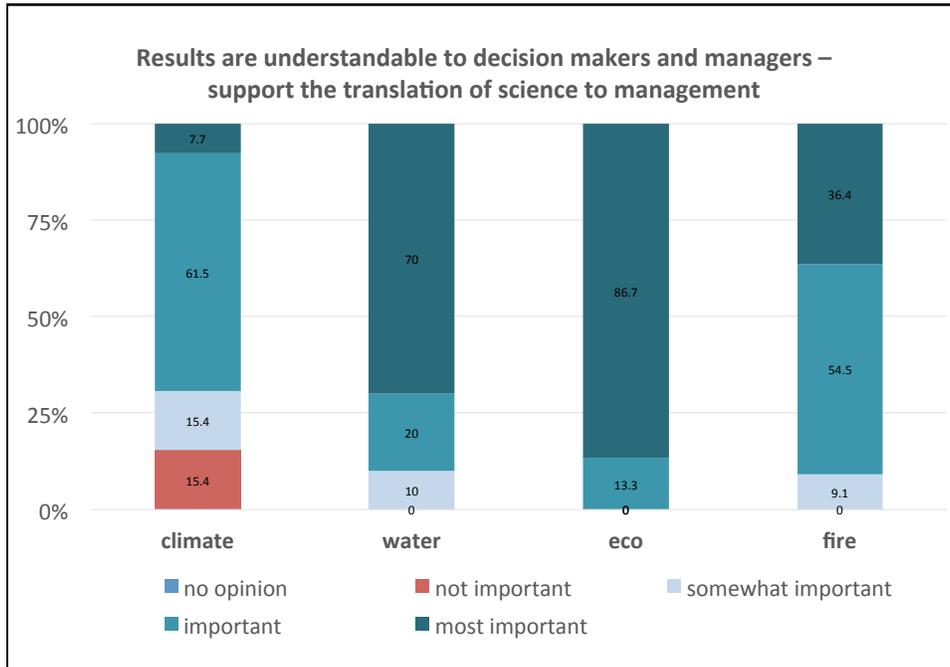


### "How important are these aspects of climate model research to you personally?"



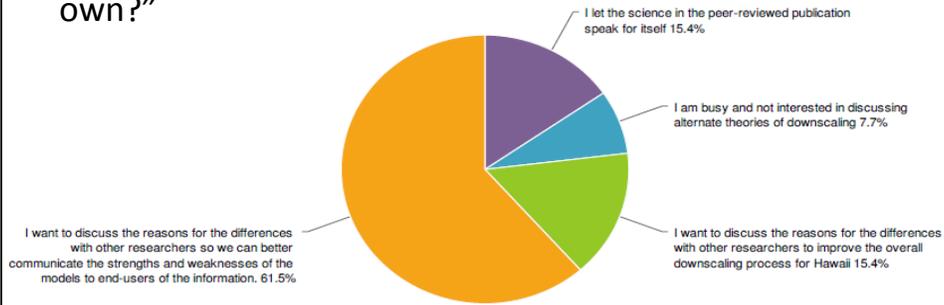






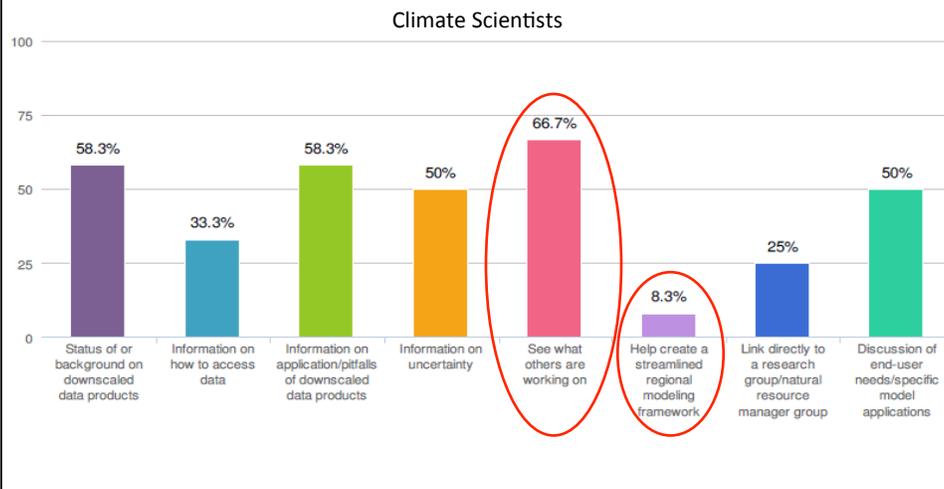
## Goals for the meeting...

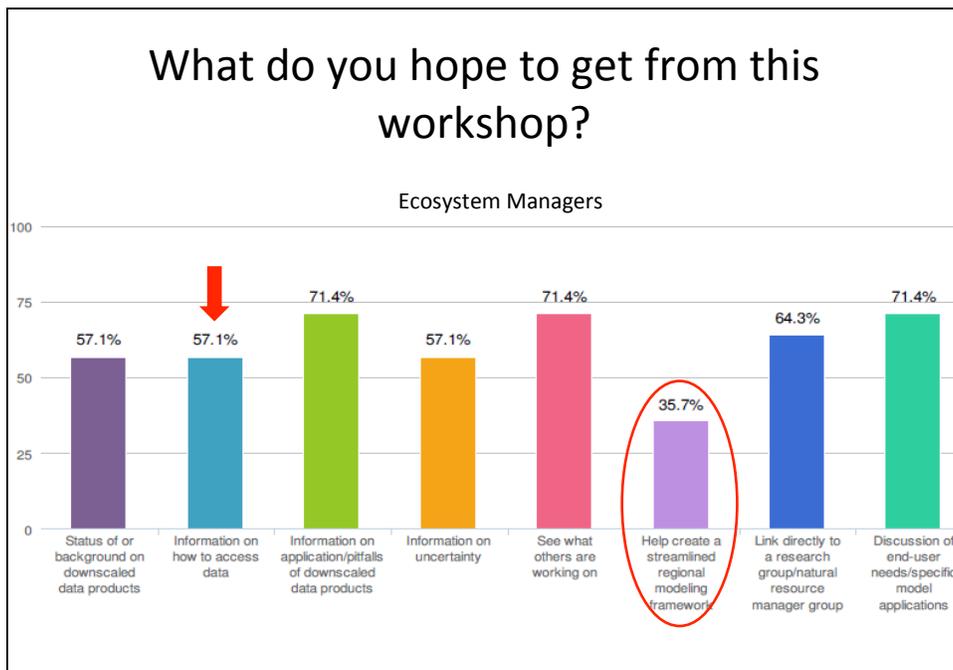
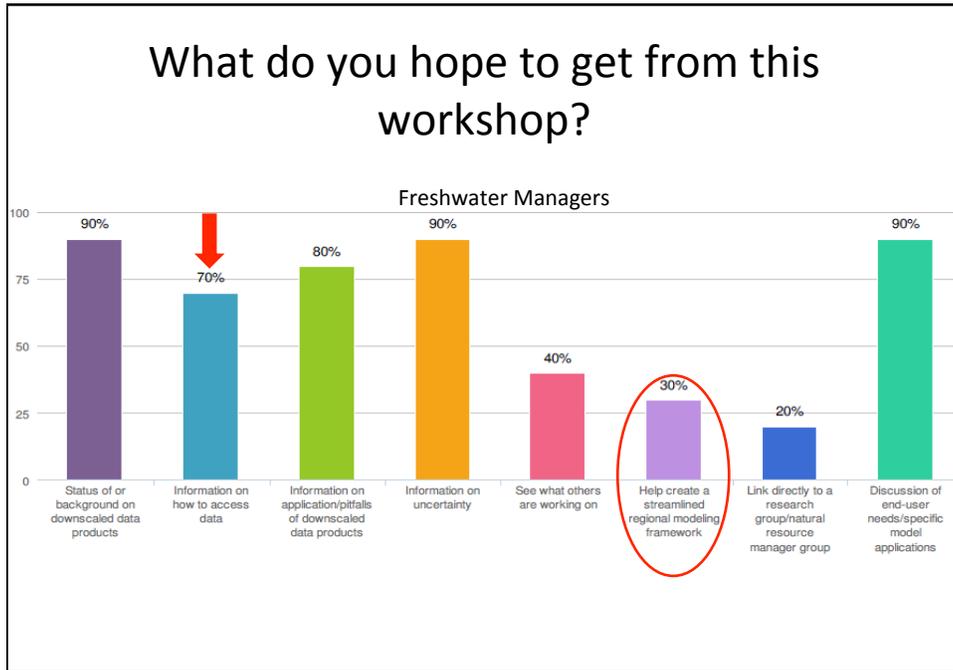
Climate Scientists: “How tolerant do you think you are of theories of climate modeling that differ from your own?”

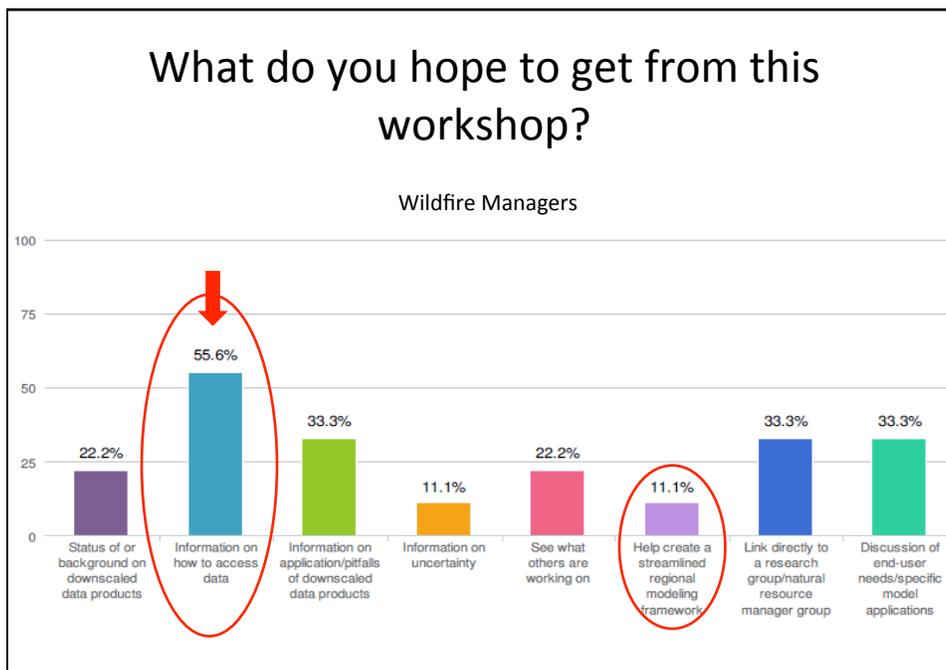


**A majority of climate scientists want to engage with each other and with resource managers to understand differences and better communicate results**

## What do you hope to get from this workshop?







## Final Thoughts

- Groups have their differences, but also think similarly about many issues
  - Differences b/w managers and climate scientists, but also b/w **types** of resource managers
- The majority of those surveyed and in this room want to work together