

# Network Analysis of Climate Change Professionals in Hawai'i and the U.S.-Affiliated Pacific Islands



EAST-WEST CENTER  
COLLABORATION • EXPERTISE • LEADERSHIP

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## Social Network Analysis

This project explores the collaborative network of climate change professionals (broadly defined) in Hawai'i and the U.S.-Affiliated Pacific Islands (USAPI). A survey was distributed to nearly 1,200 people who are from and/or work in climate change related fields in the region.

**Part One Survey** questions identified major professional contacts, including frequency (weekly, monthly, seasonally, yearly, at least once ever). This portion of the survey is not confidential. This survey created a preferential attachment network by listing major players in Hawai'i and the USAPI, and included open fields to capture the greater professional network. 340 climate change professionals identified 975 contacts. The graphs below represent only survey participants and the major players listed in the survey (n=372).

**Part Two Survey** questions explored climate change risk perceptions, Psychological Sense of Community (PSOC), sense of control over climate change impacts, sense of responsibility to act, policy beliefs and preferences regarding climate change actions, concern and optimism scales about specific impacts, and demographic information. This portion of the survey is confidential. 302 participants globally completed this portion of the survey. The results tables to the right represent only survey participants from Hawai'i and the USAPI.

**Future Analyses** will assign scores for participant degree centrality, betweenness centrality, and Eigenvector centrality from the Part One Survey. These scores will be analyzed against measures for PSOC, control, responsibility, risk perceptions, concern, optimism, and policy preferences from the Part Two Survey.

## Part One Graphs: (represented below)

- n=372
- American Samoa: 30
  - FSM: 42
  - Guam: 26
  - Hawai'i: 140
  - RMI: 27
  - NMI: 25
  - Palau: 22
  - US Mainland: 22
  - Other Pacific: 32
  - Australia/NZ: 3
  - Other Int'l: 3

## Part Two Survey:

- n=302
- Male: 201 (66.8%)  
Female: 100 (33.2%)
- American Samoa: 19 (6.3%)  
FSM: 36 (12.0%)  
Guam: 22 (7.3%)  
Hawai'i: 122 (40.5%)  
RMI: 18 (6.0%)  
NMI: 16 (5.3%)  
Palau: 15 (5.0%)
- High school or less: 3 (1.1%)  
Some college: 29 (10.4%)  
4-year college: 47 (16.8%)  
More than 4-year college: 201 (71.8%)

## Climate Change Risk Perception to communities and environment on the island where you live, and Pacific Islands generally:

| Question  | American Samoa | FSM  | Guam | Hawai'i | RMI  | NMI  | Palau |
|---|----------------|------|------|---------|------|------|-------|
| How serious a threat do you believe climate change is to the <b>communities on the island where you live?</b> | 89.5           | 88.5 | 36.4 | 59.8    | 88.9 | 37.6 | 78.6  |
| How serious a threat do you believe climate change is to the <b>communities on Pacific Islands generally?</b> | 94.7           | 91.4 | 59.1 | 78.5    | 77.8 | 81.3 | 92.8  |
| How serious a threat do you believe climate change is to the <b>environment on the island where you live?</b> | 94.7           | 94.3 | 47.6 | 64.7    | 88.3 | 50.0 | 85.7  |
| How serious a threat do you believe climate change is to the <b>environment on Pacific Islands generally?</b> | 94.4           | 88.6 | 57.1 | 76.1    | 77.8 | 81.3 | 92.8  |
| On Pacific Islands generally, many people's standard of living will decrease.                                 | 57.9           | 65.7 | 52.4 | 54.9    | 76.5 | 46.7 | 57.2  |
| On the island where you live, many people's standard of living will decrease.                                 | 36.9           | 65.7 | 38.1 | 29.3    | 88.2 | 6.7  | 42.8  |
| Your standard of living will decrease.  | 42.2           | 54.3 | 23.8 | 25.2    | 76.5 | 6.7  | 23.1  |

7 point Likert scale, with 1 "not at all" and 7 "extremely." Reported values are percentages who reported 6 and 7.

## Sense of Control versus Sense of Responsibility:

| Question   | American Samoa | FSM  | Guam | Hawai'i | RMI  | 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   |
| 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  |

7 point Likert scale, with 1 "not at all" and 7 "extremely." Reported values are percentages who reported 6 and 7.

## Assuming climate change will have an impact, how concerned are you for:

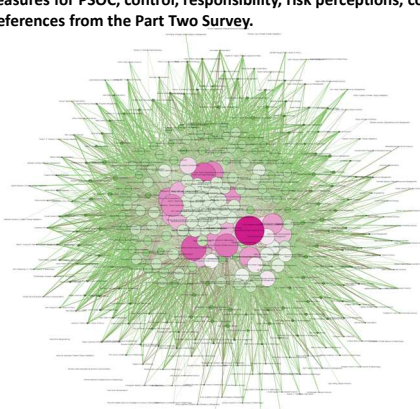
| Question                             | American Samoa | FSM   | Guam | Hawai'i | RMI   | NMI  | Palau |
|--------------------------------------|----------------|-------|------|---------|-------|------|-------|
| Native plant and animal species      | 84.2           | 94.3  | 81.5 | 75.9    | 88.2  | 80.0 | 92.9  |
| Future generations of people         | 94.8           | 100.0 | 61.9 | 81.5    | 94.1  | 80.0 | 85.7  |
| Pacific Island communities generally | 94.7           | 100.0 | 61.9 | 87.8    | 100.0 | 93.3 | 92.9  |
| Your community                       | 94.4           | 94.3  | 61.9 | 61.2    | 94.1  | 66.7 | 92.8  |
| You personally                       | 61.1           | 85.7  | 28.5 | 36.5    | 88.2  | 53.3 | 88.6  |
| Traditional resources and practices  | 68.4           | 97.2  | 66.7 | 66.3    | 94.1  | 80.0 | 92.9  |
| Agriculture                          | 73.6           | 97.0  | 52.4 | 74.8    | 82.3  | 66.7 | 92.9  |
| Industry                             | 57.9           | 73.6  | 23.8 | 44.2    | 70.6  | 60.0 | 78.6  |
| Fishing                              | 94.8           | 97.2  | 66.7 | 73.4    | 100.0 | 80.0 | 100.0 |

4 point scale, with 1 "Not at all concerned," 2 "Somewhat concerned," 3 "Very concerned," and 4 "Extremely concerned." Reported values are the percentages who reported "Very concerned" and "Extremely concerned."

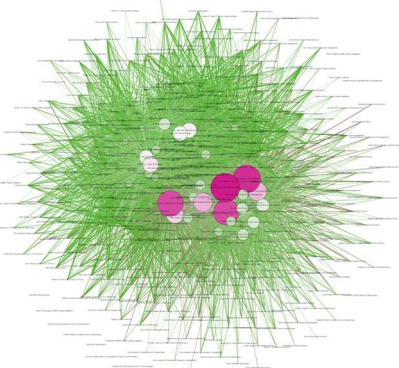
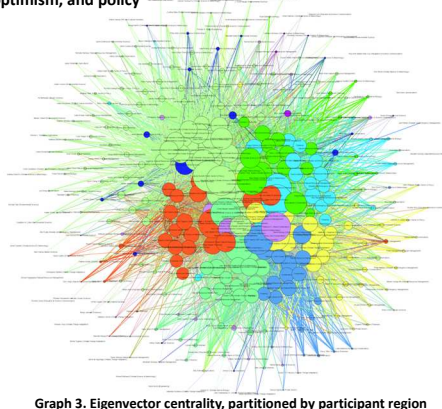
## Assuming climate change will have an impact, how optimistic are you about:

| Question   | American Samoa | FSM  | Guam | Hawai'i | RMI  | NMI  | Palau |
|--|----------------|------|------|---------|------|------|-------|
| Fisheries migrating to your area                             | 10.6           | 22.8 | 4.8  | 4.5     | 29.4 | 26.7 | 14.2  |
| Increased availability of land                               | 5.3            | 20.0 | 0.0  | 0.9     | 17.7 | 13.3 | 7.1   |
| Improved weather   | 5.3            | 22.9 | 9.5  | 0.0     | 23.5 | 13.3 | 7.1   |
| Increased agricultural productivity                          | 10.6           | 20.0 | 4.8  | 2.6     | 18.8 | 13.3 | 7.1   |
| Increased economic opportunities                             | 5.3            | 20.0 | 9.5  | 2.7     | 23.5 | 20.0 | 14.2  |
| Increased reliance on traditional ecological knowledge (TEK) | 15.8           | 34.3 | 15.3 | 22.2    | 23.5 | 13.3 | 7.7   |
| Increased access to resources for traditional practices      | 15.8           | 25.8 | 4.8  | 14.3    | 23.5 | 20.0 | 10.0  |

4 point scale, with 1 "Not at all optimistic," 2 "Somewhat optimistic," 3 "Very optimistic," and 4 "Extremely optimistic." Reported values are the percentages who reported "Very optimistic" and "Extremely optimistic."

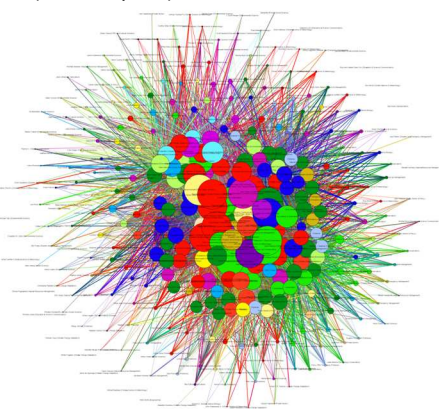


Graph 1. Network hubs according to degree centrality.



Graph 2. Network hubs according to betweenness centrality.

Graph 3. Eigenvector centrality, partitioned by participant region (island where you live).



Graph 4. Eigenvector centrality, partitioned by participant profession.

## Early Findings:

- Network contacts tend to cluster according to region
- Partitioning by professional sector reveals high cross-disciplinary collaboration in the network
- Participants show high overall perception of climate change risk to the island where they live, and to the Pacific Islands generally.
- Lowest perceptions of risk to community and environment are found in Guam, Hawai'i, and the Northern Mariana Islands.
- Risk perceptions largely follow standard trends (strong perception that others are at risk, but low perception of my own risk), except for participant from the Marshall Islands, an atoll nation projected to become uninhabitable in the next 50 to 100 years.
- Despite participants' low sense of control over climate change impacts, participants have a high sense of responsibility to act.
- Participant concern for climate change impacts was lowest for "Industry" and "You personally."
- The optimism scale showed very low levels of optimism. Only "Increased reliance on traditional ecological knowledge (TEK)" surpassed one-third of participants noting "very" or "extremely" optimistic, and only in the Federated States of Micronesia.