



Pacific Islands Sea Level Rise Adaptation Science Dialogues Meeting #3: Researcher Focus Group Discussion

Improving Cooperation to Address Science Information Needs

Sea Level Rise Dialogues Synthesis

Thank you to all who took part in the Pacific Islands Sea Level Rise Adaptation Science Dialogues (SLR Dialogues) on September 27, 2021. This Dialogue was the third in a series focused on strengthening and improving cooperation among the community of practice for modeling sea level rise impacts in the Pacific Islands.

The June Dialogue focused on a discussion of recent, ongoing, and proposed research projects, as well as development of related informational products, science tools, and partnerships. At the July Dialogue, management and planning experts working throughout the Pacific Islands shared their perspectives on ongoing and anticipated science related needs to adapt to sea level rise. In the third Dialogue, researchers and boundary organization partners discussed key takeaways and priorities from previous meetings and identified next steps for building a sustained and expanded network to support SLR needs in the region.

Next Steps for the Pacific Islands Sea Level Rise Science-to-Action Network

Following the discussion in SLR Dialogue 3 and responses to the post-event survey we propose the following next steps for the Pacific Islands Sea Level Rise Science-to-Action Network (SLR STAN) to be coordinated by PI-CASC and Hawaii Sea Grant in collaboration with Network partners:

Short-term (2022):

- Produce a guiding principles document guiding the growth of the SLR STAN and summarizing the activities, findings, and recommendations
- Publish a feature or summary article describing the findings of the dialogues in a science publication such as *EOS - Science News by AGU*
- Develop an organizational structure among interested parties to establish and coordinate the SLR STAN, to possibly lead to memorandum or agreement
- Explore opportunities for new capacity to manage and coordinate the SLR STAN, such as through a temporary hire or postdoc
- Develop a SLR STAN website including a map-based tool for exploring research projects and management information needs in the region
- April 2022: Conduct a SLR Dialogues session (e.g., panel discussion) at the Center for Island Sustainability Conference in Guam
- Fall 2022: Host a one-day SLR STAN symposium and discussions at the 2022 Pacific Islands Climate Adaptation Science Summit

Longer-term (2023 and beyond)

- Hire one or more postdoctoral researchers to focus on regional, national, and international research synthesis and cooperation
- Expand the network with new regional partners and through national and international communication with similar organizations or relevant entities.
- Focused researcher-manager and researcher-policymaker dialogues
- Future sea level rise science-to-action symposia
- Establish a listserv and/or other two-way web-based communication to support SLR STAN efforts.
- Actively encourage inclusion of underserved communities and minorities to meet their science and management needs.

Sea Level Rise Dialogues Meetings #1 and #2 Overview

Sea Level Rise Dialogue Meeting #1 was the first of a series of three Dialogues focused on strengthening and improving cooperation among the community of practice for modeling sea level rise impacts in Hawai'i and the Pacific Islands. Researchers and science organizations working on sea level rise science in Hawai'i and the US Affiliated Pacific Islands (USAPI) provided presentations and written summaries on research, resources, science tools and products, capabilities, and outlook to meet the following goals:

1. Gain a shared understanding from research groups working in the region of recent, ongoing, and proposed research, products, science tools, and partnerships, and how the work is informing planning and adaptation efforts, related to sea level rise impacts
2. Initial discussion and identification of areas for improved cooperation and synergy among research groups and science boundary organizations (to be further developed through meetings #2 and #3)

The second SLR Dialogue focused on strengthening and improving cooperation among the community of practice for modeling sea level rise impacts in Hawai'i and the Pacific Islands. At that meeting, we expanded the group to learn more about ongoing and anticipated science needs from experts throughout the Pacific Islands working in management and planning related to sea level rise adaptation. The meeting began with panel presentations by resource managers, planners, and other science partners working on sea level rise adaptation efforts in Hawai'i and the US Affiliated Pacific Islands (USAPI). We hosted three unique sea level rise science partner panels organized by general island, urban/infrastructure, and atoll settings. Followed by a full group discussion on where this group would like to go and how boundary organizations can better meet regional needs. All presentations and discussions strived to meet the following goals:

1. Gain a shared understanding of current and potential application of sea level rise adaptation data and tools to inform management and policy.
2. Improve understanding of how science, tools, and guidance are informing or could inform resource management, community adaptation planning, and policy.
3. Improve understanding of barriers faced in adoption of science-based tools and solutions (e.g. costs, alternatives, politics, etc.) for management/policy decisions.

4. Identify key lessons learned and challenges in successfully addressing information needs related to sea level rise adaptation science and discuss outstanding knowledge and capacity gaps.
5. Improve understanding of how boundary organizations can connect and support application of science in resource management, planning, and policy that is appropriate for local needs.

To dive deeper into the first two SLR Dialogues, please visit the following links:

[SLR Dialogues Meeting #1 Summary](#)
[SLR Dialogues Meeting #1 Research Summaries](#)
[SLR Dialogues Meeting #2 Summary](#)

Throughout these Dialogues, it has been important to recognize that certain sea level rise challenges are unique to the Pacific Island regions. Although our region faces complex and extremely variable threats of SLR, we do share many common challenges that we can adapt together against.

For example,

1. There are many local, regional, national, and international entities conducting research and funding work in the Pacific Islands. Communication and information sharing is poor across this global network, with some exceptions. Therefore, awareness of available science and representation in regional discussions are common needs.
2. The Pacific Islands include the most remote and at-risk areas in the world. Transporting equipment and people needed to conduct research is time consuming and expensive. Often research is conducted with no access to resources common elsewhere, such as internet service, electricity, or technology.
3. The majority of the Pacific Islands are lacking technical capacity and baseline data. The data required to develop requested/needed small scale, high resolution inundation forecasts at different time scales is basically non-existent in the majority of the Pacific Islands, especially atolls where they are needed most.
4. Many Pacific Islands do not have the resources, available staff, or expertise to gather baseline data (ground control points, digital elevation models) or to download, interact with, and understand the inundation models. There is great room for creative and place-based local capacity building both in-person and virtually. In areas with limited internet service, electricity, and technology, building these relationships are vital for respect and resiliency.

Sea Level Rise Dialogues Meeting #3 Summary

The meeting was composed of two discussions among researchers and other science partners working on sea level rise adaptation science in Hawai'i and the US Affiliated Pacific Islands (USAPI). The first discussion focused on the key takeaways from Dialogues #1 and #2 and SLR adaptation science. Following the Dialogues overview, there was a group Padlet activity (virtual notepad) to further discuss regional SLR research priorities and future network efforts. The second discussion gave participants an opportunity to envision a network for SLR adaptation science in the Pacific Islands. Finally, the group was engaged in a Jamboard activity (virtual whiteboard) to dive into potential missions, objectives, key questions, and next steps for us to build an effective network.

Building on information and outcomes from meetings #1 and #2, attendees discussed and prioritized:

- Key takeaways and priorities from meetings #1 and #2 including thematic and regional needs for sea level rise adaptation science
- Next steps for building a sustained and expanded SLR STAN

For more details on the discussion activities, please check out our [Jamboard here](#) or our Padlet activities here: [Research Prioritization Padlet](#) or [STAN Activity Padlet](#).

Workshop Format

Workshop attendees participated in an afternoon of interactive virtual dialogue due to Covid-related limitations but also to include participants from across the Pacific Islands and in the Continental U.S. Organizers facilitated information sharing through active dialogue, Zoom chat, Padlet (interactive notepad), and Google Jamboard (digital interactive whiteboard). The first portion of the meeting consisted of an overview of Meetings #1 and #2 followed by a full group activity on Padlet. All attendees were provided equal opportunity to contribute responses to our discussion activity questions on Padlet (see below). The second portion of the meeting began with a presentation on potential community of practice models and concluded with a Jamboard discussion activity. All attendees were provided equal opportunity to contribute responses to our discussion activity questions through verbal feedback and the chat function via Zoom and through the use of Padlet and Jamboard virtual noteboards (results are provided below).

Group discussion items in the Padlet activity in part one of the meeting:

1. **Research Prioritization Activity:** Please rank your top three research priorities by liking them with a heart and leave a comment with your current capacity to address those priorities. Additionally, if we are missing any key research priorities please add another sticky note to the Padlet with your idea(s). Feel free to leave any further comments or ideas below any sticky note. To see all of the research priority options, visit the [Padlet](#).
2. **SLR STAN Function Activity:** Please leave a heart by your top three priority functions for the SLR Science-to-Action Community and leave a comment with your current capacity to address those priorities. Additionally, if we are missing any key research priorities please add another sticky note to the Padlet with your idea(s). Feel free to leave any further comments or ideas below any sticky note. To see all of the priority function options, visit the [Padlet](#).

Group discussion items in the Jamboard activity in part two of the meeting:

MISSION [proposed]: *The Pacific Islands Sea Level Rise Science-to-Action Community (Pacific SLR STAN) aims to improve understanding of and inform adaptation to growing impacts from sea level rise in island settings by building stronger relationships among and between scientists and managers*

Questions: Ideas for a name or “I like it?” Anything missing here? Is this an open network or more targeted for scientists and resource managers?

OBJECTIVES [proposed]: (1) Connect researchers, science organizations, resource managers, planners, and decision makers, (2) Identify priority lines of research, informed by science users, (3) Promote, synthesize, and translate relevant science and management strategies, (4) Make data and planning tools more readily available, (5) Conduct collaborative and cross-disciplinary research and extension projects, (6) Help build next-generation capacity for sea level rise science and adaptation

Question: What's missing? or "I like it"

EVENTS, OUTREACH, COMMUNICATIONS: (1) Symposia, (2) Topical, focused researcher and research-manager dialogues, (3) Webinars, (4) Listserve or other two-way communication

Questions: What's missing? or "I like it." Recommendations for sustained group communication? Who's willing to help with which tasks?

NEXT STEPS & PRIORITIES TO GET THIS STARTED: (1) Reconvene or consult manager group to discuss mission and objectives and get their input and buy-in, (2) Website to be developed and hosted by PI-CASC and Sea Grant with partners, (3) Standardize and clean up research summaries, (4) Identify existing and new capacity through graduate assistant and postdoc, (5) Fund pilot projects, small grants for science co-production or technical workshops to get started, (6) Update research summaries 2x per year

Questions: What's missing? Or "I like it." Who's willing to help with which tasks?

Workshop Results Summary

Dialogue and discussion activity results are categorized below into high-level topics that stood out in the discussions. Each discussion activity has a results section followed by key takeaways from the discussions and any related suggestions noted by participants on the digital platforms. The results below include summaries, paraphrasing, and direct quotes pulled from meeting discussions and activities.

Results of Group Padlet Activity and Discussion #1: Priorities for regional SLR research

The first discussion activity got participants thinking about priorities for SLR adaptation research in our region. The Padlet activity was initially composed of 13 priority research categories that were pulled together from the last two Dialogues and participants were also allowed to add in any missing categories (see bolded entries). Participants were then asked to rank their top three research priorities and the results are below (number of votes in brackets).

1. Inform local SLR policy (e.g. decision-support tool, local data integration support, define products for day-to-day vs. future planning) [7]
2. Expand regional datasets (e.g. TBDEMs, wave run-up models, vertical land motion) [7]
3. Standardized SLR viewer tool [5]
4. Groundwater dynamics and inundation [4]
5. Develop integrated coastal monitoring program [4]
6. SLR science translation for education and outreach materials [4]
7. Evaluation of currently available SLR science, products, and resources [3]
8. Tech transfer to the USAPI [2]
9. Citizen science and community-based participatory research opportunities [2]

10. Improve scenario utility (e.g. risk tolerance, resolution, timing, more impacts considered) [2]
- 11. Economic-Architectural-Tourism Viability analysis of key flooded urban areas [2]**
- 12. Use of common terminology [2]**
13. Cross-sector models of coastal inundation impacts [1]
14. Fine resolution coastal modeling [1]
15. Create a risk tolerance exercise as part of the design process [1]
- 16. Decision maker and institutional needs assessment for SLR risk informed decision making [0]**

Discussion #1 Key Takeaways: Priorities for regional SLR research

Data and tools

- Expanding regional datasets is directly related to value of the standardized SLR tool, as success is dependent on the underlying data and modeling
 - Important for such tool to also be transferable to foster knowledge sharing between Small Island Developing States
 - Kelley Anderson Tagarino is working with Phil Thompson to develop a SLR Viewer for American Samoa with PI-CASC funding
- An evaluation on the currently available SLR science would be most useful to users of the information (e.g. resource managers and planners) as an inventory of science products along with information on when and how they can and should be used

Management and policy

- Pac RISA will be developing a framework to evaluate questions of managed retreat: policy, adaptation, and equity
- An integrated coastal monitoring program would be of value both in US islands and internationally to both model and export, but the program should be a part of a larger coastal risk management program
- To improve scenario utility, decision makers need the science to consider alternative outcomes and managing for different trajectories than just trying to save what was
- Cross-sector models of coastal inundation impacts are a high priority to support transformation from hazard to risk and to shift towards impact based forecasts
- To address SLR beyond these suggestions, our society may need to go through a paradigm shift

Information sharing

- There is a need to standardize risk data (e.g. exposure data) to promote country to country sharing of risk knowledge and adaptation solutions
- More adaptation needs should come directly from the local population, which ties back to the need for timely education in order for citizens to have the understanding and language to articulate their challenges and needs
- All researchers are encouraged to provide a non-technical summary of their reports and to translate their findings to local languages of the communities they are working with
- We should not only be thinking about technology transfer out to the USAPI, but also facilitating transfer amongst those in the USAPI
- Use of common terminology will become more critical as we communicate and coordinate more on these issues, please read [this article](#) for more on the difference between the terms flooding and inundation

- In American Samoa, the local college population knows climate change is real and are concerned, but have no real knowledge of the mechanisms behind it. Information is shared with no sense of empowerment and how to change it. More needs to be done to meet these critical curriculum gaps
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Results of Group Padlet Discussion Activity #2: Network function

The purpose of the second Padlet activity was to get participants thinking about potential functions and activities of a SLR Science-to-Action Network. The Padlet activity was composed of 13 network function options that were pulled together from the last two Dialogues and participants were also allowed to add in any missing categories (no additional entries for this activity). Participants were then asked to rank their top three network functions and the results are below (number of votes in brackets).

1. Improve data access and availability (e.g. data portal, clear language, maintenance) [11]
2. Synthesis on state of SLR science in the Pacific Islands [6]
3. Support and create SLR education, outreach, and science translation products [6]
4. Host an annual regional SLR science meeting [5]
5. Grow early career and student mentorship opportunities [5]
6. Virtual trainings and support on SLR science and tools [4]
7. Amplify SLR adaptation awareness and urgency for islands [1]
8. Host educational workshops on raw data sources, inundation risks, model assumptions and projections [1]
9. Establish technical support or extension networks for SLR modeling [1]
10. Develop a SLR science and products database [1]
11. Support more platforms to have discussions with partners and communities [0]
12. More regional SLR science coordination and networking events [0]
13. Build modeling and metadata capacity building [0]

Discussion #2 Key Takeaways: Network function

Data and tools

- PI-CASC funded a proposal from Chris Shuler to develop a climate data portal, which should support improved data access
- UHSLC and EWC have a nascent project aiming to provide trainings throughout the region on support for SLR science and tools

Education

- Kelley Anderson Tagarino would be happy to work with universities to help past American Samoa Community College (ASCC) students successfully matriculate to a 4 year university. Many students from small islands need a fair amount of additional assistance to adapt to a more "mainland" lifestyle and school setting as there are many barriers between islanders and universities that we need to overcome for them to grow local capacity.
- To amplify SLR awareness and urgency for the islands, we need to start engaging with elementary school ages

Information sharing

- The PIRCA reports, done in collaboration with PI-CASC, summarize SLR trends, model projections, and sectoral SLR impacts for a broad user group. PacRISA is working on reports for RMI and FSM and they are always looking for more partners. These summaries could be foundational for a Pacific Islands regional SLR science synthesis.
 - PI-CASC would be willing to support an annual regional SLR science meeting, which should include both researchers and science users
 - This network should not be restricted to technical officers, but extended to decision makers to ensure that their needs and requirements are adequately addressed and that they optimise the use of SLR related information products
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Group Jamboard Discussion Activity: Mission, objectives, key questions and next steps

***MISSION [proposed]:** The Pacific Islands Sea Level Rise Science-to-Action Community (Pacific SLR STAN) aims to improve understanding of and inform adaptation to growing impacts from sea level rise in island settings by building stronger relationships among and between scientists and managers*

Participants generally liked the mission and community name. However, the term network seemed to be more fitting with the group in order to avoid confusion with all of the other communities on the ground. The term Science-to-Action was also well-liked as it explicitly includes researchers and managers in the conversation. However, there is still room to improve the mission

Considerations for improvements to the proposed mission:

- Will this network only tackle SLR? Let's expand it to inundation and flooding as well.
- What does success look like (i.e. five-year metric or decadal metric)? Establishing relationships as a goal can be hard to quantify.
- Add in something about improving access to information
- Do we need to explicitly include Traditional Knowledge?
- This point is missing: To come from a science-based, shared understanding of tradeoffs in the face of SLR and SLR response

Is this an open network or more targeted for scientists and resource managers?

- What about relationships between scientists and communities? We need to better utilize a grassroots framework without making too much additional unpaid work for communities and organizations that are already overtapped and under-resourced.
- We could create exchange opportunities for researchers and managers, and open this network widely through seminars and listservs.
- We should work to include policy makers, educators, and on-the-ground workers in network events to prevent continued gaps in science-to-action.
- Support a funded liaison position on each island.
- Be inclusive and respectful of traditional resource stewards (e.g. farmers, fishermen, etc.) as resource managers too
- We should develop very tangible topical themes that are lay readable and direct to what we're doing on both sides as planners and scientists to accomplish goals

When discussing the idea of creating a regional SLR network, participants brought up the need for long-term sustainability. The established network would need to be able to withstand changing political regimes and potentially inconsistent funding. This is where strong federal partnerships can be critical to provide stability to this regional network. Although it may take time to develop an established entity, this network is at a good place to begin building its federal relationships through PI CASC, Hawai'i Sea Grant, and others. However, the network should remain open to other organizational structures (e.g., grassroots or university-led) as the example of PICCC shows that federal does not always mean long-term.

Science and existing tools can bring creative pathways to the table to support successful implementation and increase the bottom line. To facilitate this type of collaboration, participants noted the need for more discussion platforms with managers and businesses who are facing the active or projected impacts of SLR. Additionally, these discussions could provide the necessary time to collect key information, updates, and data from the network of science users and producers. One example of this is in-person brainstorming sessions for manager partners to work through project issues and ask questions about the science with researchers.

Finally, participants wrapped up this discussion with a careful examination of the time frame context we are working in for SLR planning. Some noted that there needs to be a more conservative and credible approach to SLR, but researchers and managers first need a better sense of the impacts and their timing before deeper engagement can occur. For example, 15-20 cm of SLR over the next 20 years may not raise enough risk for a crisis in some areas. So, it may be better to work in a 50 year timeframe. However, it's important to remember that current SLR projections don't include the interacting layers of extreme weather and phenomenon with climate change, which could bring severe SLR impacts closer in the timeline. With both private and public sector science users using a range of time horizons it can be hard to reach decisions, but we may be able to work in the short and medium-term to get science users and producers locked in to assessing risk at targeted time horizons.

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Group feedback on what's missing from the proposed objectives:

- Promoting implementation supported by science and social equity
- Add "in a locally relevant & equitable context" for all these objectives. SLR impacts and accessible adaptation options are highly variable between islands (and even within), therefore implementation has to be grounded in local realities.
- Connecting with landowners or land users in the private sector
- Promoting brainstorming solutions at multiple levels from primary education, collegiate, private interest, commercial, and others.

- Fine tuning SLR viewer tools to smaller scales, so people can engage in more near-term planning
 - More engagement with traditional ecological knowledge
 - More explicit links to economic impacts (e.g., including avoided costs and non-monetary valuation)
 - Creating connections between people who would not otherwise be talking
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EVENTS, OUTREACH, COMMUNICATIONS: (1) *Symposia*, (2) *Topical, focused researcher and research-manager dialogues*, (3) *Webinars*, (4) *Listserve or other two-way communication*

Group feedback on what's missing from events, outreach, and communications

- StoryMaps - let's develop a visual product that can highlight this issue and include links to digital resources, as well as text for local resource managers to connect with
- Expand research-manager networks to include relevant private sectors (e.g., insurance industry, and to a lesser extent the banks via mortgages)
- Conversation pieces between researchers and managers as a type of communication tool - maybe as part of a webinar
- Good idea to have separate researcher and researcher-manager dialogues (webinars, symposia, etc.), as one size won't fit all

Recommendations for sustained network communications

- The RISA, RISCC, and PICASC have worked together on various researcher/manager surveys that have provided great results. A survey to assess initial needs could be useful for setting the stage.
 - Set up sub-groups that can be more regularly engaged than annual meetings or leadership calls.
 - Invest time and money into social media videos to build up community outreach and general fun for the network. You can pay for ads on Facebook/Instagram or have TikTok competitions.
 - Develop an online tool that partners can easily share information to and set-up a mechanism to post those updates to a shared network platform.
 - More community outreach and pulling in local policy makers and managers would provide an added layer of stability to the network - Kelley could help with this in AS
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NEXT STEPS & PRIORITIES TO GET THIS STARTED: (1) *Reconvene or consult manager group to discuss mission and objectives and get their input and buy-in*, (2) *Website to be developed and hosted by PI-CASC and Sea Grant with partners*, (3) *Standardize and clean up research summaries*, (4) *Identify existing and new capacity through graduate assistant and postdoc*, (5) *Fund pilot projects, small grants for science co-production or technical workshops to get started*, (6) *Update research summaries 2x per year*

Group feedback on what's missing from next steps & priorities

- There needs to be more opportunities to create capacity in earlier education, to include K-12, as there are sadly very few Pacific Islanders in graduate level programs, especially those whose home islands are not in Hawai'i. Research efforts should include

undergraduates at both UH (or other HI colleges) and island community colleges whenever possible.

- The research summaries should have a spatial (location) tag so we could create a map that points to specific studies/science products for specific Pacific locations.
- There should be an initial survey of stakeholders, decision makers, and researchers to inform focus topics, priorities, and timescales - similar to the RISSC survey
- Meetings with local science user groups to make data easy to understand and useable

Potential contributions (These were voluntary suggestions in the Jamboard exercise. Further contributions welcome)

- PI CASC: Consider collaborative pilot projects to meet priorities, address knowledge gaps, and build regional capacity.
- RISA: Incorporate sectoral needs and research findings into PIRCA summaries as they emerge, PIRCA can also leverage the existing network of regional stakeholders to focus on SLR if desired
- Researchers: Could produce some kind of article for AGU Bulletin, EAS, Star Advertiser, Honolulu Civil Beat, or some kind of economist/planning publication or newsletter