



## *Story 3: Mark Stege*

Years ago, Mark Stege (pronounced STAY-gee) grappled with the painful truth that the world was not taking the necessary measures to prevent certain climate impacts from becoming irreversible, including forced-relocation due to sea level rise. “I have had time to process my own sense of fear, anger, loss,” he shares.

Now, Mark strives to foster healing, agency, and leadership among others through involving Marshall Islanders in his research on climate change. “It is important for me as an Indigenous scientist,” he shares, that “the community and the scientist is equally expected to address the priorities and needs of the community.” Prioritizing self-determination for communities, Mark bridges together Indigenous and Western methodologies; promotes Indigenous-led responses to climate change; and advances self-determination for Marshall Islanders facing sea level rise, severe flooding, and other impacts. “Much of my activism is focused on the climate research agenda, and how it is essential that the Western’s climate research agenda grow in indigeneity,” he explains.

UUSC first started collaborating with Mark in 2017 through a project he was working on with the Marshall Islands Conservation Society (MICS) to develop flood risk maps in his home atoll of Maloelap. Through the project, Mark interviewed his elders about past flooding events and natural ocean dynamics that may have contributed to them, and

collaborated with his peers to build models to project future flooding scenarios given sea level rise. With support from various partners including UUSC, Mark, MICS and community members in Majuro, Mejit, Wotho, and Maloelap Atolls successfully developed flood risk maps for these four of 24 municipalities in the Marshall Islands. The project helped Mark and MICS develop the tools that bridge together Indigenous and Western flood risk science methodologies, helping equip community members with information about future flood frequency and timing, while also supporting them in deciding for themselves the level of flood risk they were comfortable with.

Mark is also developing a similar climate research agenda at Jo-Jikum, a non-profit organization focused on involving youth in climate change activism in the Marshall Islands. With UUSC's support, Mark is leading a groundwater quality monitoring project with Jo-Jikum in Laura Village, a town located in Majuro Atoll. Laura's 5,000-person population is supported entirely by the "Laura lens" – a layer of underground freshwater replenished by rainwater that rests upon denser seawater. Recently, increasingly frequent droughts have placed severe pressure on coastal groundwater systems like the Laura lens. "We've been very mindful of droughts as a climate impact," Mark explains. Through his project with Jo-Jikum, Mark is working collaboratively with community members and youth in the



*Mark is pictured above with Chloe Bulles, one of his community elders. He shares, "She was 96 years old when she passed away recently, making her voice that much more important to have captured when we did a couple years ago as part of investigations into the community's experiences with past flooding events." Hoping to continue with this kind of research about habitability thresholds, Mark intends to pursue a doctorate program sometime in the near future.*



Laura Lens Committee to collect data on groundwater quality and rainfall quantities, and engage in citizen science.

Mark's community-led research with MICS and Jo-Jikum represents a departure from the norm. Most often, data collection and analyses are conducted by outside agencies without taking into consideration community priorities and knowledge. In contrast, Mark's work with MICS and Jo-Jikum not only involves communities in data collection but also helps shift decision making and climate relocation planning from a top-down to a bottom-up approach. "Having more local people doing the work can also help avoid perpetuating some systematic biases and historic injustices," Mark explains.

The data collected through Mark and Jo-Jikum's participatory research is used to inform local advocacy to ensure that communities have the adaptation tools they need to stay in their homes for as long as possible. Like many other communities facing severe climate impacts, Marshallese overwhelmingly want to build protection in place.

At the same time, Mark recognizes that forced-relocation is forthcoming for many Marshallese, either from rural communities like Maloelap to urban ones like Majuro, or complete displacement out of country, and is advocating for impacted communities to be prioritized in the response. "We need to make forthcoming long-term adaptation decisions more inclusive," Mark explains, "and integrating more Indigenous methodologies in the underlying climate science knowledge base is a good place to start."

## *Links to Learn More*

- [Video interview with Mark](#)
- ["When It Hits Home..." article by Mark in HuffPost](#)
- [One Story: A Report of the First Peoples Convening on Climate-Forced Displacement](#)





## *Interview with Mark Stege*

*What motivates you to do the work you do? / Why is the work important to you on a personal level?*

The world over must come to terms with the climate crisis by mitigating global warming to 1.5 C and developing adaptation plans for irreversible impacts including, sadly, relocation due to sea level rise. The likelihood of missing the 1.5 C target is deeply troubling. To borrow from the late Tony deBrum, it is “tantamount to asking us to eliminate a society from the face of the earth.” I started to realize this inconvenient truth a decade ago, and I have had time to process my own sense of fear, anger, loss. Now I see coastal cities with populations much larger than the Marshall Islands are coming to this realization at the same time that many of my fellow Marshallese are as well. Collaboration is key to handle complexity, and so I’ve been motivated to develop the tools for collaboration by sharing and adapting both western and indigenous knowledge to promote innovation and identity.

*What is the importance of having indigenous communities and youth, inform and participate in climate research?*

Indigenous communities and especially its youth are well positioned to innovate and offer solutions, not only to future climate challenges but existing ones too. One example comes to mind from when I was on my first climate research assignment and trying to overcome the lack of decent elevation data to create flood maps. Fortunately an older cousin unearthed a stack of printed mylar sheets containing photogrammetry-derived spot elevations from a 1983 aerial survey, and after picking up on some GIS skills and large scanning equipment, I digitized the spot elevations and identified likely flood zones during a king tide plus 2 feet of sea level rise. The shock of our findings delayed release of the resulting flood map, which eventually came out in 2018. By then, I had realized the importance of participating not only in climate research, but also in the development of the climate research agenda.

*What do you wish more people knew about your community and your work?*

The U.S. GAO recently recommended that “Congress should consider establishing a pilot program with clear federal leadership to identify and provide assistance to communities that express affirmative interest in relocation as a resilience strategy.” This recommendation gives credence to the climate research that the UUSC is supporting in partnership with indigenous communities and partners such as MICS and Jo-Jikum, which is allowing more indigeneity in the research agenda and methodologies being applied. We need to make forthcoming migration decisions more inclusive, while also addressing the fact that over 95% of our coastlines still remain without data essential to manage the climate risks. I believe that participating in the creation of our own maps will help our communities and especially our youth better channel our fear and grief in the decades to come. Having more local people doing the work can also help avoid perpetuating some systematic biases and historic injustices, as was and continues to be the case with the US nuclear testing

