Aloha, Hafa adai, Yokwe, Talofa, Alii, Mogethin, Ran allim, Kaselehlie, Hello!

This issue focuses on the theme of COMMUNICATING CLIMATE CHANGE, which is a critical component of climate change mitigation and adaptation. Effectively communicating climate change impacts and solutions can allow for science to inform policymaking and planning in communities, states and nations all over the world. But complex science is difficult to translate into concise messages.

The article on page 2 digs more deeply into the strategies for communicating climate change causes, impacts, and solutions to audiences across the spectrum. From policymakers to the public, resource managers, and even other scientists, how we communicate climate change has become as essential as the science itself.
Throughout September 2016, conservation practitioners and leaders from around the world met in Honolulu, Hawai‘i to take part in the International Union for the Conservation of Nature (IUCN) World Conservation Congress (more on this on page 8).

The theme for this year’s WCC was “Planet at the Crossroads” and much of the program focused on the future: how climate change will affect conservation and how we can come together to define a sustainable path forward. Naturally, an important part of building forward momentum to address climate change is the effectively communicating the climate science, impacts of change, and potential solutions through mitigation and adaptation.

As the public hears more about climate change, there is a greater need to communicate the science and impacts effectively. Although progress has been made, challenges in communicating the science still remain. One challenge is how to effectively explain complex climate science without generating feelings of fear or hopelessness that can sometimes accompany climate change information. Even greater challenges lie in informing and supporting policymakers with the most current science without making climate change a political issue.

Understanding the Audience
The first approach to effectively communicating climate change is to understand the audience, including views and beliefs. The Yale Program on Climate Change Communication regularly polls the American public to understand the varying opinions, beliefs, and knowledge about climate change. A recent poll showed a substantial increase in the number of American people who believe that climate change will cause harm and who think it is a major scientific, environmental, and agricultural issue.

The discussion of climate change in the media forms the basis for opinions and beliefs among members of the public. A group of climate scientists that realize that accuracy matters in news reporting started the website Climate Feedback in order to allow scientists to evaluate the accuracy of media coverage on climate science. A scale on the website enables scientists to rate the scientific credibility of any given climate change article, and in this way allows scientists to have a say in the way that climate change is depicted in the media. This ensures that a reader can feel more confident in the science presented by the media, as well.

Language
The language we use to discuss climate change is also incredibly important to the discussion itself. The meanings of certain words that scientists typically use to discuss research results often differ from the meanings that the public assumes. One climate scientist, put on the spot at a comedy show, had to improvise when she realized that her terms did not easily translate to the general audience. See the box below for some examples of terminology that differ in meaning from science to the general public.

Putting Climate Change in Context
Another important factor in communicating climate change is setting it in the context of the places and subjects that people value. As climate communicators in the Pacific, we may talk about what’s happening in Antarctica to highlight that this is a global problem, but
we also know that discussing sea level rise and impacts to coral reefs will be more meaningful for a local audience. These local climate change impacts are much more likely to impact the lives and livelihoods of our friends, neighbors, and ourselves. In turn, this discussion might spur more action.

Overcoming Challenges and Motivating Action
There are still many challenges to helping the public understand and act on climate change. These include a growing sense of helplessness and deeply polarized political and public environments. In addition, many people also have difficulty transitioning from simple awareness of the problem of climate change to acting on that problem in their daily lives.

In order to tackle this, we need to understand how people are motivated and how they approach goals. Research has shown that presenting the fight against climate change as a collective responsibility is more effective at promoting action than presenting it as a personal responsibility. Incorporating these social science results into public presentations will help scientists to mobilize communities better.

When discussing climate change, visual narratives and story-telling make a difference. Climate science is compelling, but pairing it with illustrative images and stories really helps to drive the point home. Art installations like this one in the Netherlands allow visitors to see a virtual flood all around them. Another effective tool being used more frequently is interactive maps such as this carbon map at The Guardian which inflates and deflate boundaries to illustrate vulnerability, emissions, and other carbon footprints and demographics.

Talk story on climate change
In Hawai‘i, the tradition of talk story is meant to share and preserve stories for future generations. Two websites provide a kind of talk story for people to discuss personal impacts and express emotions about climate change.

Dear Tomorrow enables anyone to create a message about climate change - by letter, photos, or video - and send it to their child, grandchild, or other relative in the future. These communications will be delivered in the years 2030 and 2050. The people of today can reflect on their views of climate change and what they plan to do. Future recipients who see the messages will better understand the motivations and actions of people during this time.

"Is This How You Feel?" is another website that initiates the creation of letters, in this case from climate scientists. This site empowers climate scientists to express their real emotions about climate change, as people who research and understand its causes and effects. The feelings expressed range from despair to hope, frustration to confidence. The website also allows readers to respond.

How We Communicate
How are the PICCC and PI-CSC communicating? One way is through our story maps! These story maps allow us to depict the climate change projects we are working on, using strong visuals that help to give our audiences a greater understanding of the issues involved in our work. To view the PI-CSC's project story map, click here. To view the PICCC's project story map, click here.
PICCC Begins Hawaiian Islands Terrestrial Adaptation Initiative, Holds First Workshop in Maui

Natural and cultural resource managers today are faced with many challenges, including an uncertain but changing climate. Through the Hawaiian Islands Terrestrial Adaptation Initiative (HITAI), the PICCC is working to assist land managers, planners, natural resource specialists, scientists, and cultural and conservation practitioners develop a clearer vision of how climate change will affect resources, and what they can do about it.

Preparing the Hawaiian Islands for global climate change requires collaboration across sectors and agencies. This is why over thirty local natural and cultural resource managers from various government agencies and NGOs convened in Kahului on August 16-17, 2016 to discuss biodiversity conservation and climate change in the local context: focusing on Maui, Lāna‘i, and Kaho‘olawe.

Over the course of two days, Maui Nui’s natural resource specialists worked together to assess the vulnerability of local habitats and plan scenarios based on different climate drivers. This is the first of a series of climate synthesis workshops focused on the specific vulnerabilities of individual Hawaiian islands to climate change.

Beyond the workshops, the PICCC is also working with EcoAdapt as part of the HITAI to develop comprehensive, science-based syntheses of climate change projections and the anticipated impacts on terrestrial and freshwater resources on each of the main Hawaiian Islands. Development of adaptation options for these habitats and resources will then follow. The ultimate goal of this work is to support the integration of climate change research and information into resource management and decision-making in Hawai‘i, and plan forward in order to make our islands more resilient to environmental changes in the future.

The workshop was best summed up by one of the participants: “This helps stretch our imagination about what is possible in the landscape, and how we and the environment might respond.”

For more photos and quotes from the workshop, visit our blog on the PICCC website.
PICCC at LCC Network All-Hands Meeting

On June 21-24, 2016, PICCC Coordinator Deanna Spooner and Science Coordinator Jeff Burgett attended the Landscape Conservation Cooperative Network All-Hands Meeting in St Louis, Missouri. More than 60 Coordinators, Science Coordinators, and other partners from across the LCC Network came to this in-person meeting to discuss next step following the National Academy of Sciences Review of the Landscape Conservation Cooperatives.

The meeting examined a stakeholder-driven strategy of landscape conservation design, which ultimately aims to achieve a sustainable, resilient landscape. The meeting attendees identified best practices and took practical suggestions from the conservation and broader LCC practitioner community.

The group also began to develop preliminary performance measures for the LCC Network, which will help to track and improve collective network effectiveness over time. For more, check out the LCC Network news update about the meeting.

Confronting Climate Change in Molokai

On the evening of July 18th, 2016, local residents gathered at Kalanianaʻole Hall for a community meeting on climate change and its potential impacts on Molokaʻi. The evening was organized by Ka Honua Momona (KHM), a community-based non-profit organization that works to steward Molokaʻi’s environmental and cultural resources. The event included highlights from a series of climate change workshops held over the last two years on Molokaʻi, featuring invited climate scientists, environmental educators, and resource management specialists. Envisioned and led by KHM, these workshops have been part of the Molokaʻi Climate Change Collaboration, funded by the PICCC.

For more on the event, visit the blog on the PICCC’s website.
Team Effort to Map the Marshall Islands
On September 14, 2016, the PI-CSC and partners met at the College of the Marshall Islands in Majuro, Republic of the Marshall Islands (RMI), to continue discussions over detailed mapping efforts of the RMI’s unique 70 square miles of low-island topography (land structures) spread out across 750,000 square miles of bathymetry (ocean structures).

The seminar was an opportunity for a field team including Maria Kottermair and Romina King (University of Guam/PI-CSC), Jeff Danielson (USGS Coastal National Elevation Database [CoNED] Applications Project), Ed Carlson (NOAA National Geodetic Survey), and Matt Barbee (University of Hawai‘i) to introduce a combination of methods for data gathering to the group including traditional manual surveying and remotely sensed mapping. Remote-sensing techniques utilize specialized photographic equipment on small airplanes, which can provide high-definition images.

According to Danielson, “The coastal topographic and bathymetric maps with high spatial resolution and high vertical accuracy are required to assess the vulnerability of Pacific islands to climate change impacts, including sea-level rise. This seminar addresses geospatial approaches for mapping high-accuracy elevations in the Pacific, particularly in the Republic of the Marshall Islands.”

Members of the RMI Coastal Management Advisory Council (CMAC), including Theresa Koroivulaono (College of the Marshall Islands), Mark Stege (Marshall Islands Conservation Society), Melinda Nish (National Spatial Analytic Facility), and Karl Fellenius (University of Hawai‘i Sea Grant College Program), updated the field team on complementary local initiatives including the National Reimaanlok Conservation Area Management Framework as well as the National Spatial Analytic Facility (NSAF), whereby topographic and bathymetric mapping is designed to be scaled up across all 29 atolls and 5 single islets of the Marshall Islands.

Two value-added examples of these mapping products covered during the CMAC presentation include updated homeowners guidance and improved PacIOOS (Pacific Islands Ocean Observing System) forecasting for wave inundation modeling to analyze sea-level rise impacts and inform development and adaptation planning. Additionally, scanned historical aerial photographs of the Marshall Islands from the 1960s and 1980s were shared and added to the NSAF archives. The outcome of this coordinated effort will add to the NSAF, which is located at the College of the Marshall Islands and is a storehouse for marine, terrestrial, and socioeconomic data to better track atoll habitability in the face of climate change.

The seminar was attended by the RMI Office of the President, the US Embassy to the Marshall Islands, Ministry of Internal Affairs—Lands & Survey Division, key government offices overseeing climate change and disaster risk management, and members of the local geospatial community.

Learn more about this project on the PI-CSC project page. Contributors: David Helweg, Karl Fellenius, Mark Stege, and Jeff Danielson.

Images, left: team meeting in Majuro at College of Marshall Islands; above: Dr. Theresa Koroivulaono (Photos: Isaac Marty/Marshall Islands Journal); background maps: Majuro Atoll
Pacific Climate Boot Camp Hits the Ground Running
The University of Hawai‘i at Hilo (UHH) and the PI-CSC developed and hosted the first Climate Change Boot Camp at the picturesque Kiloloka’a Ranger Station in Ka‘ū, August 9-12th, 2016. This event showcased recent collaborative research efforts driven by local natural resource managers across Hawai‘i Island in a new program entitled the UHH Manager Climate Corps (MCC).

Within the MCC program and guided by its fundamental mission of “getting to know one’s neighbor,” the boot camp was an exploratory forum for the 57 cultural practitioners, managers, scientists, graduate students, and community leaders to come together in person and collectively address important issues they face within our complex times. Open forums such as this, uniting distinct worldviews in growing collaboration, offer a major step toward building long-term and diverse local professional networks. These networks can be an effective means for communities to adapt to significant socio-ecological change.

There were three core themes of the boot camp: knowledge co-production, multiple ways of knowing (experience, culture, intellect, etc.), and place-based management. Knowledge coproduction is the process of developing locally useful science products and tools by uniting managers and scientists through collaborative research. The boot camp took place outdoors amid native forest species to stress experiential knowledge and a sense of place ecologically and culturally, while showcasing five newly developed manager-led graduate projects with UHH’s Tropical Conservation Biology and Environmental Science graduate program. Participants indicated interest in developing interdisciplinary discussion forums and professional networks in order to expand local resiliency, adaptation, and sustainability.

Learn more about the UHH Manager Climate Corps on its project page. Contributor: Scott Laursen
The PIRCA Website is Now Live!

The Pacific Islands Regional Climate Assessment (PIRCA) has launched its new website at PIRCA.org. The website provides a wealth of information and resources about climate change in Hawai‘i and the U.S.-Affiliated Pacific Islands (USAPI).

The new website makes it easier to access the 2012 PIRCA Report, *Climate Change and Pacific Islands: Indicators and Impacts and its findings, case studies, and figures*. In addition to showcasing the 2012 assessment report, the new PIRCA website hosts updated information, including the latest observed climate trends and projections for Hawai‘i and the USAPI from the scientists and federal agencies who work with PIRCA.

Key features enable anyone to view climate-related content by topic or location. This content includes, for example, charts and illustrations, animated data visualizations, maps, videos, presentations, and case studies that highlight real-world examples of impacts and adaptation in a variable and changing climate.

Climate Downscaling in Hawai‘i: Workshop Outcomes

PI-CSC, the PICCC, and the Pacific RISA collaborated on a report that discusses the outcome of a workshop on climate downscaling and its application in High Hawaiian Islands, that was held September 16–17, 2015. This workshop explored spatial and temporal scales of natural resource management, and participants identified priority needs for translating and communicating about climate projections. This report, available online, outlines the methods and outcomes of the workshop so that regional stakeholders, and people working on similar efforts in other regions, may continue to engage with this issue.
Climate In Action

From local to global:

The World Conservation Congress in Hawai‘i

On September 1-10, 2016, Honolulu hosted the International Union for the Conservation of Nature’s (IUCN) World Conservation Congress (WCC). The WCC, held once every four years, provides a place for the IUCN’s more than 1300 members to guide the work plan for the following four years. The theme for the 2016 WCC was “Planet at the Crossroads.”

The Forum took place from September 2-5 and included innumerable events from high level dialogues to training workshops which explored the depths of conservation and innovation. The Members’ Assembly, the highest decision-making body of the IUCN, was convened on September 6-10. The purpose of the Assembly is to gather IUCN members to debate and establish environmental policy, to approve the IUCN Programme and to elect the IUCN Council and President.

Both the PICCC and PI-CSC were heavily involved in the WCC. The PICCC collaborated with partners across the LCC Network to develop an LCC Network iPoster and a story map, which PICCC GIS & Data Manager Patrick Grady presented at the event. PICCC’s Research Ecologist, Lucas Fortini, presented research at two events highlighting bird and plant vulnerability in Hawai‘i. The PICCC also supported the National Host Committee in crowd-sourcing a story map to promote IUCN events and showcase the partnerships in Hawai‘i and a special story map that highlights Special Congress Excursions.

David Helweg, PI-CSC federal director, spoke on the importance of climate science for coastal communities in the Pacific islands at the US Pavilion’s Science for Conservation Planning--Integrating Sea Level Rise into Coastal Management Planning. Two PI-CSC researchers, Chip Fletcher and Rick Camp, also spoke at the Forum on their work regarding climate change impacts to shoreline position and vegetation composition, respectively.

The WCC is held every four years and brings together thousands of leaders and decision-makers from 160 countries, across governments, the public sector, non-governmental organizations, businesses, UN agencies and indigenous organizations. These individuals gather to discuss and create solutions for challenges with biodiversity and conservation. This year’s WCC, held for the first time in the United States, put a global spotlight on the biocultural diversity of Hawai‘i and the acute threat of climate change to Pacific Islands.
President Obama Expands Papahānaumokuākea Marine National Monument

In late August 2016, President Obama used his executive authority to make Papahānaumokuākea Marine National Monument (PMNM) the largest ecologically protected area anywhere in the world. The monument, which was originally established by President George W. Bush, was expanded to encompass more than half a million square miles of land and sea in the Northwestern Hawaiian Islands. To see a map of the expansion, visit this article from the Washington Post.

This move comes after years of work from scientists and environmentalists, who argued for better protection for the region due to threats including mining of the sea bed and climate change.

The proclamation of the expanded monument area prohibits all commercial extraction activities including fishing and future deep-sea mining while still allowing for recreational fishing and cultural and research activities, with a permit.

President Obama visited Midway Atoll in September to highlight the critical nature of protecting ecosystems in the face of climate change and other degradation.

Dancing at the Rio Olympics to Highlight Climate Change

David Katoatau of Kiribati competed in the Rio Olympics this summer, finishing 6th in the 105 kg event. But he will be remembered for something even greater than his place in the competition: Katoatau danced after every event he competed in, to highlight the impact of climate change on his home nation.

Kiribati is projected to experience catastrophic effects of sea level rise and other major impacts due to climate change on each of the 21 low-lying islands that comprise the nation. Katoatau’s own home was once destroyed by a cyclone, so he is acutely aware of the potential for damaging environmental impacts.

Watch the video of Katoatau competing and dancing.
Recent events...

June
19-24 **13th International Coral Reef Symposium**

July
6-8 **Rising Voices Workshop**, Hawaii Island, HI

August
9-12 PI-CSC Climate Boot Camp, UH-Hilo
16-17 PICCC/EcoAdapt Maui Climate Adaptation Workshop

September
1-10 **IUCN World Conservation Congress**, Honolulu, HI
14 Webinar, C. Fletcher: Empirical projection of future shoreline due to sea level rise ([web flyer](#))
19-23 Coral Reef Task Force Meeting, CNMI and Guam
21-22 **International Conference on Sustainable Development**, Columbia University, NY
26-28 National All-hands CSC Meeting, Skamania, WA

Coming up...

October
26-27 PI-CSC Stakeholder Advisory Committee Meeting, Honolulu, HI

November
1-4 National CSC Student and Early Career Training, Amherst, Massachusetts
9 Webinar, M. Haws: Vegetative Guide & Dashboard relating traditional atoll agroforestry recommendations to predicted climate and sea level conditions in the Marshall Islands
14 Webinar, T. Giambelluca: Understanding the response of native and non-native forests to climate variability and change to support resource management in Hawaiʻi

December 13-14 Symposium on Climate Displacement, Migration and Relocation, University of Hawaiʻi at Mānoa

Opportunities

**PACE Fellowship**: Postdocs Applying Climate Expertise. The goal of this postdoctoral program is to grow the pool of scientists qualified to transfer advances in climate science and climate prediction into climate-related decision frameworks and decision tools. The program provides the opportunity for the PACE fellow to be immersed in a decision-making culture. Learn more about the program here.

**Carnegie Science Global Ecology** has an immediate opening for a full-time postdoctoral researcher to evaluate the potential for negative emissions through biomass energy with carbon capture and storage (BECCS). Considerations will include availability of land and water, trade-offs with food security and ecosystem protection, interactions with other mitigation technologies, and implications for near-term emission reductions. The project will culminate with a community-based assessment informing policy arenas. We are especially looking for an individual with strong skills in integrated assessment models and agricultural assessment with a PhD in a relevant field. To apply, please submit a letter of application, resume and contact information for three references online at this site.
The Stanford University **Office of Sustainability** seeks a 3-yr fixed term Sustainability Programs Coordinator to support development of sustainability programs in operations, communications, and education for the campus-wide **Sustainable Stanford Initiative**. This is an exciting opportunity for a rising sustainability professional to work in collaboration with faculty and staff in a top academic institution consistently recognized for its leadership in campus sustainability. Learn more at [Stanford Careers website job 72233](http://www.stanfordcareers.com/jobdetail.aspx?postingid=72233).

The **American Institute of Biological Sciences** (AIBS) is offering scientists a new professional development opportunity to meet the needs of everyone from graduate students to senior researchers and program administrators—the **AIBS Communications Boot Camp**. The Boot Camp is an intensive, two-day, hands-on training program in Washington, DC. Participants will have the opportunity for formal and informal discussions with science policy and communications experts and learn how to communicate their science to non-technical audiences, policymakers, and journalists. A [course outline is available here](http://www.aibs.org/learn/communications-boot-camp). Dates: December 7–8, 2016. For registration and to learn more go to the [AIBS boot camp website here](http://www.aibs.org/learn/communications-boot-camp).

### Staff in Focus

Dr Lerner joined the PI-CSC team in July as the University Consortium Director. Darren joins us while serving as the director for the Sea Grant College Program at the University of Hawai‘i, Mānoa campus. His experience in the Pacific and at Hawai‘i Sea Grant will bring a fresh perspective to the climate science center. To learn more about Dr Lerner, see his welcome article on the [PI-CSC university website](http://www.pi-csc.org/about/staff/index.php).

Wendy specializes in the human dimensions of environmental change, and ways in which public programs can be improved to support people through such changes. She holds a PhD from the University of Hawai‘i and an MSc from the University of Oxford, and has more than 15 years of work, education, and research experience spanning the socio-economic, political, cultural, and ecological dimensions of natural resource management. Wendy is deeply committed to supporting the resilience of island communities and ecosystems. She is employed by the University of Hawai‘i to serve as the PICCC Adaptation Initiatives Project Manager.

Since 1995 Peter has held technical and managerial positions on Saipan, Palau, Guam, American Samoa, and Hawai‘i. His research interests focused on the undescribed biodiversity of coral reefs (MSc) and environmental risks from contaminants in connected terrestrial and near-shore systems (PhD). More recently, Peter’s work included consequences of contaminant exposure for island populations and management of environmental stressors at local and regional scales. Based in Hilo, Hawai‘i, Peter is the PI-CSC Science Coordinator and will continue to deliver scientific information and education to assist land managers and policy-makers effectively respond to climate change.
Do you have climate work that you would like us to highlight in our next quarterly newsletter? Please send submissions and mailing requests to the editors: snash@hawaii.edu & whitney.peterson@piccc.net

Missing our list of stakeholders and partners? Visit the PICCC and PI-CSC websites to see the full lists and links to our partners' websites.