

U.S. Department of the Interior Climate Science Centers and U.S. Geological Survey National Climate Change and Wildlife Science Center—Annual Report for **2016**

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2016 was an exciting year for the Department of the Interior (DOI) Climate Science Centers (CSCs) and the U.S. Geological Survey (USGS) National Climate Change and Wildlife Science Center (NCCWSC). In recognition of our ongoing efforts to raise awareness and provide the scientific data and tools needed to address the impacts of climate change on fish, wildlife, ecosystems, and people, NCCWSC and the CSCs received an honorable mention in the first ever Climate Adaptation Leadership Award for Natural Resources sponsored by the National Fish, Wildlife, and Plant Climate Adaptation Strategy's Joint Implementation Working Group. The recognition is a reflection of our contribution to numerous scientific workshops and publications, provision of training for students and early career professionals, and work with Tribes and indigenous communities to improve climate change resilience across the Nation. In this report, we highlight some of the activities that took place throughout the NCCWSC and CSC network in 2016.

2016 Snapshot



More than **185** new publications

More than **100** new datasets



50 new projects

More than **\$11** million toward
new and continued research
projects



Science

The CSCs and NCCWSC continue to conduct innovative research, producing boundary-crossing and relevant science. We are focused on improving our understanding of climate change effects on natural systems at local and regional scales, investigating how climate change will affect water resources and droughts, and exploring ways in which wildlife and their habitats adapt to a changing climate. The following are some of the advancements our researchers and communities have made in climate change and wildlife science in 2016.

A Better Understanding of Climate Change Impacts on Southeast Ecosystems to Aid in Conservation Planning

According to two new reports from the Southeast CSC, several ecosystems in the Southeastern United States are highly vulnerable to the effects of climate change, including some that occur in the North American Coastal Plain, an area that was designated as the 36th global biodiversity hotspot in early 2016. Researchers identified threats from climate change, such as warming, changing precipitation patterns, sea level rise, droughts, wildfires, and extreme storms, in addition to threats from urbanization and land-use change. Assessing ecosystem vulnerability to climate change is a key first step in regional conservation planning and prioritization, allowing managers to assess where conservation resources would best be utilized.

Learn more at: <https://www.usgs.gov/news/ecosystems-southeastern-us-are-vulnerable-climate-change>

Southern Appalachian Bald, North Carolina.
(Credit: Alan Cressler, USGS)

Managing Climate Change Refugia to Protect Wildlife

A new study led by USGS Research Ecologist Toni Lyn Morelli, Ph.D., at the Northeast CSC and conducted in collaboration with a large group of Federal and university researchers, concluded that “refugia,” or areas that are likely to remain similar to current conditions despite climate change, should be identified, managed, and conserved. Conserving refugia should help managers adapt to a changing climate. As many national parks are already reaching historically warm temperatures, this strategy can be important for protecting species vulnerable to climate change.

Learn more at: <https://www.usgs.gov/news/managing-climate-change-refugia-protect-wildlife>



Native Westslope cutthroat trout. (Credit: Jonathan Armstrong, Oregon State University)



Colorado River, Utah (Credit: Alan Cressler, USGS)

Warmer Spring Temperatures Reduce Colorado River Flow

A new study supported by the Southwest CSC has found that temperature has a greater impact on the Colorado River than precipitation. Warm spring temperatures affect upriver snowpack, which subsequently influences the amount of water in the river. Seven States and Mexico rely on the Colorado River for water, and rising temperatures associated with climate change are expected to exacerbate drought consequences in the future. Watershed groups and water resource managers can use this information to enhance river function and prepare for extreme events.

Learn more at: <https://nccwsc.usgs.gov/content/colorado-river-flows-reduced-warmer-spring-temperatures>

Understanding Alaska's Potential to Store Greenhouse Gas

In 2016, researchers from the University of Alaska Fairbanks, USGS, Alaska CSC, and U.S. Forest Service released a report finding that plant growth in Alaska may be able to store as much carbon as the State releases due to wildfire and permafrost thawing through 2100. Although Alaska is currently a carbon sink, about 91 percent of its carbon is locked in frozen soils. Scientists are concerned that as temperatures rise and frozen soils thaw, this carbon will be emitted as greenhouse gases. However, the report predicts that productivity, or the generation of living matter, in Alaska will increase 8–27 percent over the remainder of the century, which may be sufficient to absorb the emitted carbon. The study was part of an effort to assess carbon stock and greenhouse gas levels in Alaska, which historically has been excluded from national assessments because of the large size of the State and the lack of field data.

Learn more at: <https://csc.alaska.edu/news/new-report-calculates-alaska%E2%80%99s-greenhouse-gas-potential>



Permafrost terrace, Yukon National Wildlife Refuge. (Credit: Fred Broerman, U.S. Fish and Wildlife Service)

Ten New Northwest CSC Projects Focus on Ecological Drought

The newly funded projects focus on improving the ability of natural resource managers to adapt to the impacts of climate change and prolonged water deficits that affect natural systems, referred to as “ecological drought,” by examining the effectiveness of management actions, providing conservation planning tools, and building regional adaptation capacity. The projects are expected to engage managers from more than 30 different entities, including Tribes, Federal and State agencies, and nonprofit organizations, and will include active participation from natural and cultural resource managers in the Northwest.

To see the full list of projects, please visit:

<https://www.nwclimatescience.org/news/northwest-climate-science-center-funds-10-new-science-projects>



Salmon. (Credit: K. Mueller, U.S. Fish and Wildlife Service)



Improving the Downscaling of Regional Climate Models for the Hawaiian Islands

Researchers from the Pacific Islands CSC, the Pacific Regional Integrated Sciences and Assessments (Pacific RISA) program, and the Pacific Islands Climate Change Cooperative (PICCC) brought together two climate modeling teams, key model users, and water resource managers to compare climate modeling approaches and engage in a discussion of how to provide climate knowledge that is usable by resource managers. The researchers summarized their findings on improving the downscaling of regional climate models for the Hawaiian Islands in a report coauthored by the Pacific Islands CSC Federal Director David Helweg, Ph.D. The report explores the larger question of how to provide climate models that are useful to resource managers.

Learn more at:

<https://doi.org/10.3133/ofr20161102>

Waihee Stream, Maui. (Credit: Maoya Bassiouni, USGS)

Importance of Inland Fisheries to Global Food Security Underestimated

Although inland fisheries constitute more than 40 percent of the world’s finfish production, harvests are often unreported and their value overlooked. A new study, led by NCCWSC fisheries biologist Abigail Lynch, Ph.D., found that inland fisheries employ at least 21 million workers and supply food for billions of people globally. Alarming, more than half of the waterways used for inland fisheries are moderately or highly threatened. Without adequate knowledge of the fisheries and their importance to food security, it is difficult to incorporate inland fisheries into water management plans.

Learn more at: <https://nccwsc.usgs.gov/content/food-billions-inland-fisheries-and-world-food-security>



Fishing in Lao People’s Democratic Republic (Credit: Abby Lynch, USGS)

Celebrating the National Park Service Centennial: A Look at How Climate Change Could Impact National Parks

August 25, 2016, marked the 100th anniversary of the National Park Service, which oversees more than 400 parks. Continuing to protect these parks into the future requires an understanding of how climate change has and can impact the parks. Tasked with identifying the effects of climate change on wildlife and ecosystems, the CSCs have conducted research projects that inform this critical issue. From Acadia National Park in Maine, where researchers are identifying a range of possible climate scenarios for the park for the next 25 years, to Hawai'i Volcanoes National Park, where researchers are studying how plant distributions may shift under climate change and how management strategies may need to be adjusted, these projects have been geared toward helping park managers adapt to climate change by providing vital information on the implications of climate change for parks.

Learn more at <https://nccwsc.usgs.gov/content/no-picnic-our-parks-how-climate-change-could-impact-national-parks-and-species-they-protect>



Mt. Rainier National Park (Credit: Alan Cressler, USGS)

CSCs Produce Interactive Story Maps

The North Central (NC), Northwest (NW), Pacific Islands (PI), and Southeast (SE) CSCs have developed interactive Story Maps that allow users to view and learn more about the climate change research being done in their region.

To view the Story Maps, please visit the following websites:

NC CSC: <http://nccsc.colostate.edu/nc-map>

NW CSC: <https://www.nwclimatescience.org/story-map>

PI CSC: <http://uhh.maps.arcgis.com/apps/MapJournal/index.html?appid=1fc8bb734d9949759983b433a8bae2f7>

SE CSC: <http://ncsu.maps.arcgis.com/apps/MapSeries/index.html?appid=d41db93c9b0844f6b5a322204f4e68b7>



Southeast CSC Story Map (<https://globalchange.ncsu.edu/secsc/>)

Education and Training

The CSCs and NCCWSC support students and early career professionals in developing skills in climate change research, science communications, and stakeholder engagement, as well as provide them with opportunities to develop their peer networks. Programs for early career professionals focus on undergraduates, graduate students, and postdoctoral researchers, but additional programs also offer training to professionals at any level who are new to climate science.



More than **240** students/fellows were affiliated with the CSCs in 2016.

Icons designed by Freepik from www.flaticon.com

Undergraduate STEM Interns Explore Climate Change in the South Central United States

The South Central CSC again offered a 3-week summer undergraduate internship for underrepresented minorities interested in science, technology, engineering, and mathematics fields. Students traveled around the South-Central United States to work with faculty who conduct cutting edge research on climate impacts and participated in hands-on activities related to climate change adaptation on the West Texas Southern High Plains, prairie and forest ecosystems, and Tribal culture in Oklahoma, and the bayous, Mississippi River delta, and coastline of Louisiana.

Learn more at: <https://nccwsc.usgs.gov/content/2016-undergraduate-internship-south-central-climate-science-center>



Wichita Mountains, Oklahoma (Credit: Toni Klemm, University of Oklahoma)

Science to Action Fellow Works on Tool to Help Trout Management

The Science to Action Fellowship program, sponsored by NCCWSC and Michigan State University, supports graduate students in creating a policy-relevant product that directly applies research related to climate change impacts on fish, wildlife, or ecosystems to decision making about natural resources. During the 1-year program, fellows work closely with a USGS mentor and gain exposure to the challenges of natural resource policy. The 2016 fellow was Andrew Carlson, a Ph.D. student at Michigan State University. Carlson worked on creating a map-based decision support tool that provides stream-specific information on resource availability and biological conditions to assist with management programs for Michigan's trout.

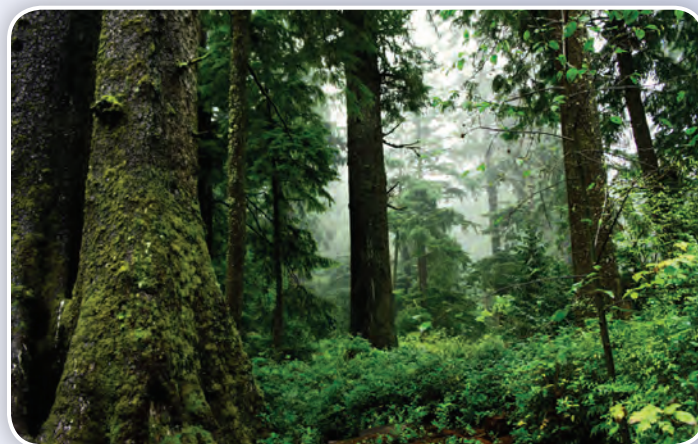
Learn more at: <https://nccwsc.usgs.gov/science-action-fellowship>



Science to Action fellow Andrew Carlson (Credit: Andrew Carlson, Michigan State University)

Northwest CSC Graduate Fellow Examines How Old Growth May Help Protect Northwest Birds From Warming Temperatures

Sarah Frey, a Northwest CSC graduate fellow working on her Ph.D. at Oregon State University, has found that air temperatures in old-growth forests are 2.5 degrees Celsius cooler than similar closed-canopy plantations that were logged 60 years ago. This is the same global temperature increase that has been predicted to occur over the next 50 years and indicates that some habitats can buffer the effects of global warming. The study provides a better understanding of microclimate variations and, hence, the temperatures that species actually experience. Frey also found that differences in temperature were comparable or even better indicators than vegetation characteristics at predicting where birds spend their time. Further, bird species that prefer cooler temperatures were more likely to be declining. These findings can help managers develop strategies to lessen the impact of climate change on birds.



Old-growth forest (Credit: David Patte, U.S. Fish and Wildlife Service)

Learn more at: <https://nccwsc.usgs.gov/content/old-growth-may-help-protect-northwest-birds-warming-temperatures-0>

First Sea Level Rise Adaptation Workshop for Hawai‘i

On February 11, 2016, the Hawai‘i Department of Land and Natural Resources held the first Hawai‘i Sea Level Rise Vulnerability and Adaptation Workshop. The event was attended by climate change experts, State and county leaders, and people interested in learning about how Hawai‘i may be affected by sea level rise and potential adaptation strategies. At the workshop, Pacific Islands CSC-supported researcher Chip Fletcher, Ph.D., presented sea level rise analyses for the Hawaiian Islands. Tiffany Anderson, Ph.D., and Dr. Fletcher produced shoreline erosion potential and inundation projections. Maps produced from this project can be used by decision makers to prioritize beach conservation efforts, identify future impacts on infrastructure, and improve decision making for climate change adaptation.

Learn more at: http://apdrc.soest.hawaii.edu/PICSC/research/pdf/2015/Fletcher_ShorelineInundation.pdf



Severe erosion on Oahu's North Shore (Credit: Dolan Eversole, University of Hawai‘i)



Mount Erebus on Ross Island, Antarctica (Credit: Michael Van Woert, National Oceanic and Atmospheric Administration)

Alaska CSC Graduate Fellow Goes to Antarctica to Study Climate Change

Joanna Young, a Ph.D. student at the University of Alaska Fairbanks (UAF) and a graduate fellow of the Alaska CSC, was selected to participate in the Homeward Bound Expedition to Antarctica. Along with 77 other women, Young spent 3 weeks in December 2016 in Antarctica, gaining leadership skills, learning about climate change, building a network of future collaborators, and addressing female leadership in science. The women also had the opportunity to collaborate on complex arctic systems research. Young studies glaciers at UAF and is also a lead instructor of the Alaska CSC-sponsored Girls on Ice Program. Her participation in the Homeward Bound Expedition was supported by the Alaska CSC.

Learn more at: <https://csc.alaska.edu/news/adventure-antarctica>

Northeast CSC Graduate Fellow Studies Water Management in the Face of Climate Change

Northeast CSC graduate fellow Katie Booras worked directly with partners in the city of Baltimore to modernize drought management on the east coast while completing her Master's of Science degree in Civil and Environmental Engineering at the University of Massachusetts Amherst. In the event of a drought, the city faces the decision to either spend money to pump water from the Susquehanna River Basin or use water from their reservoirs. However, resource managers are careful not to let water levels in the reservoirs get too low, as this may allow for sediment buildup and algal blooms that could be harmful to human health. Booras created models that can be used to determine at what point the city should begin pumping water from the basin in order to maintain water quality. This information can help the city create a cohesive plan to manage their water supply in the face of future water shortages and climate change.

Learn more at: <https://necsc.umass.edu/news/fellows-highlight-katie-booras>



Northeast CSC graduate fellow Katie Booras (Credit: Thomas Bonnot, Northeast CSC)

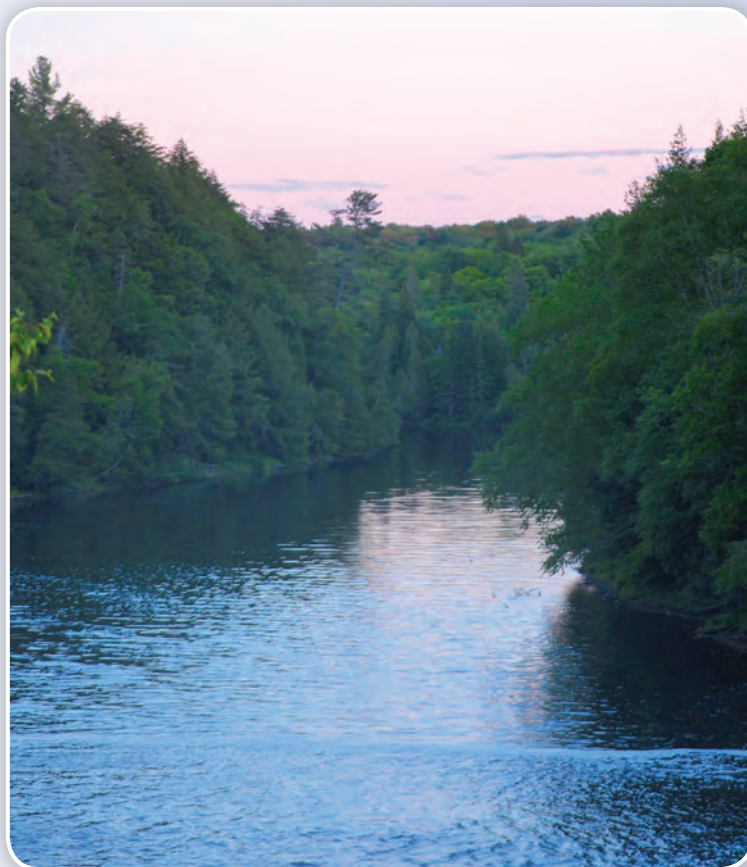
Tribes and Indigenous Communities

For centuries, Tribes and indigenous communities have depended on natural resources for survival and cultural identity, making them particularly aware of and vulnerable to the effects of climate change. The CSCs and NCCWSC work with Tribes and indigenous communities by providing research, outreach, and training to improve understanding of their specific vulnerabilities and to help them adapt to the changing climate.

Northeast CSC Cohosts the Second Annual Indigenous Planning Summer Institute

The second annual Indigenous Planning Summer Institute was held during the summer of 2016 and was hosted by the Northeast CSC and the College of Menominee Nation Sustainable Development Institute. The event included 26 undergraduate and graduate students who explored concepts of indigenous planning. Students visited the Menominee Nation, Oneida Nation, and Stockbridge-Munsee Community to see how these communities use their longstanding traditions to plan for the sustainability of their community and environment. At the end of the session, students presented what they had learned to the rest of the group and provided recommendations about how the Sustainable Development Institute could incorporate indigenous planning concepts into future research.

Learn more at: <https://necsc.umass.edu/news/indigenous-planning-summer-institute>



Tahquamenon River (Credit: Mara Koenig, U.S. Fish and Wildlife Service)

Northwest CSC Helps Facilitate the First Tribal Climate Camp

Native communities are among the most climate-sensitive groups in the United States. Many Tribes depend on the environment for their culture, tradition, and livelihood, thus increasing their need for resilience to climate change. To that end, the Affiliated Tribes of Northwest Indians (ATNI), Institute for Tribal Government, United South and Eastern Tribes (USET), Northwest CSC, and Bureau of Indian Affairs (BIA) held the first ever “The Tribal Climate Camp” (TTCC) in the summer of 2016 in McCall, Idaho.



From left to right: Keith Hatch (Siletz elder), TTCC educator, and BIA Fisheries Biologist, sits with Marcie Carter and Josiah Pinkham, both delegates from the Nez Perce Tribe. Meadow Wheaton (Nez Perce), Wisdom of the Elders film production intern, and Rachel Novak (Diné), BIA Climate Science Coordinator, also participate in the discussion. (Credit: Arwen Bird, University of Washington)

The week-long event, modeled after the Northwest CSC [Climate Boot Camp](#), provided intensive training on climate-related impacts with a specific focus on Tribal needs and concerns. Teams of environmental professionals from six ATNI and USET member Tribes attended the training: Coeur d'Alene Tribe, The Confederated Tribes of the Colville Reservation, Nez Perce Tribe (host), Passamaquoddy at Sipayik, Confederated Tribes of the Warm Springs, and Quinault Indian Nation. Attendees developed specific plans of action for building Tribal climate change programming within their Tribes and developed a network of Tribal professionals, scientists, and experts that could provide advice and feedback on future climate adaptation programming.

Learn more at: <https://www.tribalclimatecamp.org/>

Science, Collaboration, and Tribal Adaptation

The South Central CSC has been working with Tribes across the South Central United States to help them identify vulnerabilities, cope with environmental and weather emergencies, and develop long-term adaptation plans to address a changing climate. This partnership has benefited Tribes such as the Chickasaw Nation and Choctaw Nation of Oklahoma. The South Central CSC provided the Tribes with temperature and precipitation data and downscaled climate models, and coupled these to streamflow models. Analyzing these data helped reveal that the Choctaw Nation was vulnerable to future water shortages. Recognizing this vulnerability, the Tribe is now diversifying water sources and developing infrastructure for water recycling. The South Central CSC is also working with other Tribes to educate them about climate change, train them on how to conduct vulnerability assessments, and help create adaptation plans and obtain funding to carry them out.

Learn more at: <https://nccwsc.usgs.gov/display-project/4f8c652fe4b0546c0c397b4a/521cf67ce4b01458f7858040>



Mountains in New Mexico (Credit: Toni Klemm, University of Oklahoma)



Great Basin sunflower flats (Credit: Shanell Owen, U.S. Fish and Wildlife Service)

Report Released From Tribal Leaders Summit on Climate Change

In the fall of 2015 in Tucson, Arizona, the Tribal Leaders Summit on Climate Change, sponsored by the Southwest CSC and partners, brought together Tribal environmental managers and leaders from around the country to share experiences and lessons learned for developing climate adaptation plans and build support for broader Tribal climate adaptation planning and implementation. In the spring of 2016, a report was released that summarizes the objectives, outcomes, presentations, and breakout sessions of the summit. Outcomes of the meeting include new partnerships, shared knowledge across Tribes and communities, and identification of several useful deliverables to further support Tribal adaptation.

Learn more at: <http://www.nncap.arizona.edu/sites/default/files/NNCAPSummitFinal.pdf>

Drought Preparedness at the Wind River Indian Reservation

Shannon McNeeley, Ph.D., of the North Central CSC, along with partners at government agencies and universities, has been working with the Wind River Indian Reservation (WRIR) to assess drought vulnerability and response capacity and to develop decision support tools for drought preparedness. The project provides opportunities to develop Tribal capacity and educational programs that integrate traditional ecological knowledge. The goal of the project is to develop a WRIR Drought Management Plan that incorporates state-of-the-art climate science with hydrologic, social, and ecological vulnerabilities and identifies response strategies to improve resource management.

Learn more at: <http://nccsc.colostate.edu/revamp/project/wind-river-drought-preparedness>



Wind River (Credit: Shannon McNeeley, Colorado State University)

Partnerships

Effective response to the challenges of climate change requires collaboration between managers and scientists. Ongoing partnerships with Federal agencies, Tribes, State and local governments, nongovernmental organizations, and the public guide our research priorities and activities.

Northeast CSC Helps Develop Massachusetts Wildlife Climate Action Tool

The new Massachusetts Wildlife Climate Action Tool contains detailed information regarding climate change impacts and vulnerabilities of fish, wildlife, and their habitats, as well as potential adaptation strategies and actions. The web-based tool was released in early fiscal year 2016¹ by the Massachusetts Climate Adaptation Partnership, which includes the Northeast CSC, Massachusetts Division of Fisheries & Wildlife, the University of Massachusetts-Amherst, and the USGS Massachusetts Cooperative Fish and Wildlife Research Unit. The interactive tool allows local decision makers, conservation managers, land trustees, regional planners, landowners, and community leaders in Massachusetts and across the region to access information needed for effective local climate change adaptation planning and implementation. Northeast CSC staff and scientists worked with State officials to design and implement the tool.

Learn more at: <https://necsc.umass.edu/news/launch-massachusetts-wildlife-climate-action-tool>



Male wood duck (Credit: Alan Schmierer, <https://www.flickr.com/photos/sloalan/>)

¹Fiscal year 2016 ran from October 1, 2015, through September 30, 2016. The tool was released in November 2015.



Southeast CSC Science Informs New Climate Voyager Tool

Climate Voyager is a new web-based interactive tool developed by the State Climate Office of North Carolina with help from the Southeast CSC and input from the United South and Eastern Tribes. The tool was designed to inform decision making related to agriculture, land management, and other long-term planning and provides model projections for various future climate scenarios.

To view the tool, visit: <http://climate.ncsu.edu/voyager/index.php>

Blue Ridge Parkway,
North Carolina
(Credit: Alan Cressler, USGS)

Creation of a Tool to Prioritize Coral Reefs Threatened by Bleaching

Coral bleaching occurs when water becomes too warm and corals expel the beneficial algae found within their tissues that provide them with important nutrients and give them their beautiful colors. Bleaching causes the corals to become stressed and more vulnerable to threats such as erosion and disease. A new dataset developed by the United Nations Environmental Programme, National Oceanic and Atmospheric Administration (NOAA), World Wildlife Fund, and Pacific Islands CSC helps prioritize coral reef management in the face of climate change and rising ocean temperatures. By downscaling global climate model projections, researchers were able to determine which reefs are in the most immediate danger and should be the focus of management interventions.

Learn more at: <https://nccwsc.usgs.gov/content/amid-%E2%80%98bad-year%E2%80%99-coral-new-tool-helps-prioritize-reefs-threatened-bleaching>



Coral, Northwest Hawaiian Islands (Credit: NOAA)



USGS Researchers Present at World Fisheries Congress

Doug Beard, Ph.D., Chief of NCCWSC, Bonnie Myers, Research Fish Biologist with NCCWSC, and six other USGS scientists attended and presented at the World Fisheries Congress in Busan, South Korea, in May 2016. The conference is held every 4 years to promote international cooperation in fisheries science, conservation, and management. At the conference, NCCWSC led and sponsored a scoping meeting to identify how to assess the impacts of climate change on inland fisheries globally. Additionally, Dr. Abigail Lynch, Research Fisheries Biologist with NCCWSC, is acting as lead guest editor for a special issue of “Reviews in Fish Biology and Fisheries” that will serve as a companion to the climate sessions from the meeting.

Participants at a NCCWSC led workshop at the World Fisheries Congress, Busan, South Korea (Credit: Bonnie Myers, USGS)

Coastal Resilience Workshops in Alaska

The Alaska CSC is working with partners at the Western Alaska, Aleutian/Bering Sea Islands, and the Arctic Landscape Conservation Cooperatives, the Aleutian Pribilof Islands Association, and Agnew Beck Consulting on a series of Coastal Resiliency Workshops in remote Alaska. The purpose of the workshops is to bring together community leaders, scientists, and natural resource managers to discuss tools and solutions to increase the ability of communities to address climate change impacts. The Alaska CSC is providing climate science support that, along with indigenous and local knowledge, can result in coproduction of adaptation strategies.

Learn more at: <https://lccnetwork.org/news/promoting-coastal-resilience-and-adaptation-arctic-alaska>

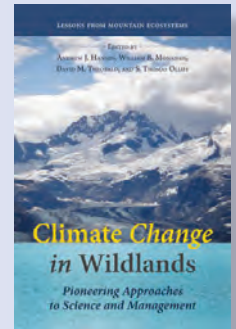


Permafrost, Arctic Coast (Credit: USGS)

Climate Change in Wildlands

A team of North Central CSC sentients lead by Andrew Hanson, Ph.D., working with the National Aeronautics and Space Administration (NASA) and DOI, sought to understand the effects of climate and land-use change on the montane landscapes of the Rockies and the Appalachians and how this knowledge could be applied to other protected areas. Looking at past and projected future changes, the team examined the vulnerability of species and ecosystems. In a new book, "Climate Change and Wildlands," Dr. Hanson and his colleagues discuss this work and provide novel, collaborative management approaches to alleviate climate change impacts. The book is a collaborative effort between scientists and managers, and provides science-based approaches for maintaining healthy parks and protected areas in the face of climate change.

Learn more at: <http://www.islandpress.org/book/climate-change-in-wildlands>



Personnel and Researcher Achievements

The CSCs and NCCWSC have a talented, dedicated group of personnel and researchers who work hard to improve the state of climate science and education. In recognition of this excellence, several of our researchers have been acknowledged for their contributions this year. Congratulations to all of our recognized scientists, and thank you to all of the NCCWSC and CSC personnel that continue to make our work possible!

CSCs and NCCWSC Receive Award for Leadership in Climate Adaptation

The NCCWSC and CSCs were awarded an honorable mention for the inaugural Climate Adaptation Leadership Award for Natural Resources for their outstanding work in raising awareness and addressing the impacts of climate change on the nation's valuable natural resources. Recipients and honorable mentions were recognized for their outstanding leadership in advancing adaptation of the nation's valuable fish, wildlife, and plant resources in a changing climate. The North Central CSC, with Colorado Parks and Wildlife and the Colorado Natural Heritage Program, also won an honorable mention award for their collaborative effort to incorporate an assessment of how key habitat types could be impacted by a changing climate in Colorado's 2016 State Wildlife Action Plan. In addition, the Swinomish Indian Tribal Community won an award for their efforts to address climate risks and, through a Northwest CSC-supported project, examined the potential climate change impacts to important natural and cultural resources and evaluated the associated impacts to community health.

Learn more at: <https://nccwsc.usgs.gov/content/usgs-climate-change-and-wildlife-program-receives-award-leadership-climate-adaptation>



Elk, Great Sand Dunes National Park, Colorado (Credit: National Park Service)

Southwest CSC Director Awarded the USGS Excellence in Leadership Award

Stephen Jackson, Ph.D., the Federal Director of the Southwest CSC, was awarded the USGS Excellence in Leadership Award. This award is given to an employee for outstanding acts, services, or achievements that exemplify and support the USGS goals of developing a leadership-centered culture throughout the Bureau. Dr. Jackson was given the award for his efforts in implementing an innovative problem-solving approach to strategic planning that encourages collaboration among multiple partners, allowing for the most efficient use of limited resources. His approach has since been used by other CSCs, demonstrating his excellent leadership abilities.

Learn more at: <http://www.swcsc.arizona.edu/announcements/director-jackson-receives-leadership-award>



Stephen Jackson, Director of the Southwest CSC (Credit: USGS)

South Central CSC Receives DOI Environmental Achievement Award

The South Central CSC received a DOI Environmental Achievement Award for their work in Climate Science and Partnerships—Increasing Tribal Capacity for Climate Change Adaptation. The South Central CSC has worked with Tribal communities over several years to enhance Tribal engagement and climate change adaptation capacity. Projects have included workshops on climate change impacts, vulnerability assessments, and grant writing, which allow Tribes to successfully assess how they are vulnerable to climate change and to obtain funding to support adaptation plans.

Learn more at: <https://nccwsc.usgs.gov/content/south-central-climate-science-center-receives-doi-environmental-achievement-award>

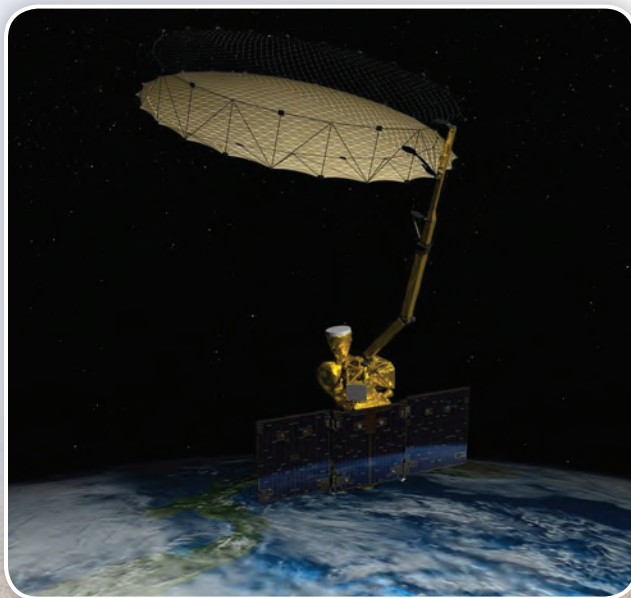


The South Central (SC) CSC team. From left to right: Aparna Bamzai, University of Oklahoma, University Deputy Director, SC CSC; Kim Merryman, University of Oklahoma, Assistant Tribal Liaison, SC CSC; April Taylor, Chickasaw Nation, Tribal Liaison SC CSC; Dr. Mike Langston, USGS, Federal Deputy Director, SC CSC; Dr. Kim Winton, USGS, Federal Director, SC CSC; Dr. Renee McPherson, University of Oklahoma, University Co-Director, SC CSC (Credit: Toni Klemm, University of Oklahoma)

North Central CSC Scientists Recognized for Soil Moisture Satellite Program

A team of scientists led by USDA and NASA, including 44 researchers from 18 different Federal agencies, has been awarded the 2016 Federal Laboratory Consortium Interagency Partnership Award. Jeff Morisette, Ph.D., former Federal Director of the North Central CSC, and Gabriel Senay, Ph.D., USGS Earth Resources Observation and Science Researcher associated with the North Central CSC, were among the recognized scientists. The award was given for their work on the Soil Moisture Active Passive Applications Program, an orbiting satellite that provides daily global measurements of the water content of the top 5 centimeters of the Earth's soil. These data can be used for improved monitoring of hydrologic occurrences, such as crop and rangeland monitoring and early drought warnings.

Learn more at: https://www.federallabs.org/index.php?tray=award_detail&tid=1512gptop66&cid=1512gp708



Soil Moisture Active Passive satellite (Credit: NASA)

Learn more about the NCCWSC and the CSCs at:
<https://nccwsc.usgs.gov/>