



SCIENCE • ADAPTATION • MITIGATION • COMMUNICATION

National Park Service Climate Change Action Plan: 2012-2014

President Obama challenged us all, in bold terms during his 2013 inauguration speech and state of the union address, to do more to address climate change, saying, “*But for the sake of our children and our future, we must do more to combat climate change.*”

This renewed support for climate change response at the highest level of our government reinforces the importance that National Park Service (NPS) leadership has placed on this issue. With the recently released *Climate Change Action Plan*, the NPS moves from strategy to action by articulating a set of high-priority actions we are committed to undertake in the next several years. The pages of this Plan outline the continued support of efforts to incorporate climate change into planning and decision making processes in every park, the development of innovative and effective training modules for NPS staff on aspects of climate change that personally relate to their jobs, and continuing to stretch our minds in developing adaptation practices showcasing how we as an agency can do things smarter with the limited resources available to us.

High-priority actions in the Plan are grouped into eight broad emphasis areas: (1) Enhance Workforce Climate Literacy, (2) Engage Youth & their Families, (3) Develop Effective Planning Frameworks & Guidance, (4) Provide Climate Change Science to Parks, (5) Implement the Green Parks Plan, (6) Foster Robust Partnerships, (7) Apply

Appropriate Adaptation Tools & Options, and (8) Strengthen Communication.

Actions under each emphasis are associated with a lead contact responsible for progress on the action. Park and program managers will recognize many initiatives in which they are already involved or can play a role implementing. The high-priority actions represent a framework for building capacity and meeting on-the-ground needs for information and tools for responding to climate change. A few example actions and updates on their implementation are given below:

Enhance Workforce Literacy: A prototype series of online training sessions for new superintendents was launched in July 2012 and is being further refined in 2013. The course includes case studies and lessons learned from superintendents leading the way for looking forward, taking risks, and making decisions under the uncertainties associated with a changing climate. A video series to increase climate change literacy with an NPS audience was also developed to supplement this and other training initiatives. In addition, NPS partnered with the USFWS to establish the Climate Academy, a 10-month climate change training course for federal, state, and other conservation practitioners.

Providing Climate Change Science to Parks: The development of spatially explicit historical and projected climate trends for all national parks

In this Issue

National Updates

NPS Climate Change Action Plan: 2012-2014	1
Featured Staff	2
Monthly Webinar	2
Storytelling Workshop	3
Storytelling tips.....	3

Regional Highlights

Midwest Region.....	4
Northeast Region.....	4
Alaska Region	5
Intermountain Region.....	5

Useful Resources.....

Interpreting Climate Change Training Available	6
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Above: Every small success makes a difference, just as this Great Blue Heron flies off with its daily catch. Photo courtesy of the USFWS.

Continued on Page 2



Follow this link to access the NPS Climate Change Action Plan:
http://www.nature.nps.gov/climatechange/docs/NPS_CCAActionPlan.pdf

Monthly Climate Change Webinar Series

2nd Thursday of every month
2:00 pm - 3:30 pm EST

Next Webinar: April 11th, 2013

April's presentation will feature Dr. Mark Anderson, Director of Conservation Science, Eastern North America Division of the Nature Conservancy.

Dr. Anderson will discuss his study on a way to approach land conservation that will conserve biological diversity in the context of a changing climate.

Follow this link to register for the April webinar:
<https://www1.gotomeeting.com/register/261532529>

Upcoming Webinar

May 9th, 2013
Matthew Nisbet, an Associate Professor from the American University School of Communication will discuss communication and social media for climate change education.

Follow this link to register for the May webinar:
<https://www1.gotomeeting.com/register/875588609>

NPS Climate Change Action Plan *Cont'd*

was initiated and is scheduled to be complete in 2013. This will give each park a consistent baseline of climate science for planning, decision-making and communication purposes. Fourteen fellows and 26 interns through the George Melendez Wright Youth Initiative conducted research and supported climate change projects in many parks and offices. NPS staff contributed to new knowledge about climate change impacts in the United States, through authorship on some of the National Climate Assessment reports, and globally through participation in the Intergovernmental Panel on Climate Change (IPCC) 2013.

Develop Effective Planning Frameworks & Guidance: The NPS Project Review Report now includes a checklist requiring all projects presented to the Development Advisory Board (DAB) to address the impacts of climate change. Climate change staff provide reviews and guidance to support parks in achieving this and help parks consider climate change in the development of all new Park Foundation Documents. NPS continues to conduct scenario planning workshops and training to explore options for managing park resources under different future conditions. To increase resiliency in all 85 coastal park units, a comprehensive listing of NPS assets vulnerable to sea level rise as well as long-term coastal adaptation strategies were developed. Staff also contrib-

uted to the interagency *National Fish, Wildlife and Plant Climate Adaptation Strategy* to conserve ecosystems and human benefits of those systems in a changing climate.

In addition to articulating a set of near term actions, the *Climate Change Action Plan* acknowledges how changing social and environmental conditions, including advances in science and information technology, will require new thinking and new approaches and suggests ways in which the NPS might prepare to meet the challenges and opportunities that lie ahead. Overall, the Plan aims toward building a flexible and coordinated NPS capacity to cope with climate change as it affects park resource and operations now and for decades to come. The actions in the Plan will be reviewed annually and a substantive revision conducted in 2014.

Despite the current fiscal challenges we face, we have witnessed time and again the dedication of our staff for addressing climate change. Parks continue to move proactively ahead and CCRP is here to support your efforts. We are making a difference.

Leigh Welling, Chief
Climate Change Response Program

Welcome to the Team: CCRP Featured Staff



Nick Fisichelli

Nick joined the CCRP in January as an Ecologist to work with various national parks and stakeholders to develop climate change adaptation strategies and conduct protection, mitigation, and restoration projects

aimed at fostering resilient ecosystems. For the past year, Nick was a Fulbright Fellow in Germany researching tree regeneration responses to enhanced climate variability. He earned a Ph.D. in Natural Resources Science and Management from the University of Minnesota in 2012. His dissertation research focused on how interactions among global change agents, such as climate change, overabundant deer, and exotic species, are driving tree regeneration trends across the temperate-boreal transition zone in the Great Lakes region. Prior to graduate school, he worked for the NPS in Natural Resource and Wildland Fire Management at Shenandoah NP and Lassen Volcanic NP. He got his first taste for Resource Management as a volunteer at Oregon Caves NM. Nick is excited to join the CCRP and to explore the Rockies with his wife and two-year-old daughter.

Lis Cohen

As the Education and Training Specialist for CCRP, Lis engages with staff and partners to facilitate training to increase awareness of climate change policy, science, adaptation actions, and management best practices. She helps share techniques to more effectively communicate this complex topic. Prior to joining CCRP, she graduated from Princeton University where she earned a degree in public affairs with a focus on climate and environmental policy. Lis has a master's degree in meteorology from the University of Utah and a bachelor's degree in earth system science and atmospheric science from Cornell. She has worked on environmental policy at the White House Council on Environmental Quality and for the Utah Governor's Office. She taught environmental science in the Atmospheric Sciences Department at the University of Utah, as an educator at the Boston Museum of Science, and in Yellowstone NP as an interpretive ranger. Lis enjoys exploring the beautiful Rocky Mountains and taking advantage of the powder skiing.



Learning to Tell an Effective Story - December Workshop

Standing in front of a group of strangers, like an improvisational actor, I was working with five scientists to create an impromptu story about two people who decided to make dinner together. Brian Palermo, an improvisational actor, pointed to my colleague. She started the story with “Patty put a pot with a turkey in it on the stove”. A second later Palermo pointed to me to pick up the story. I paused and blurted out “then Fred got ingredients out of the cupboard. He chose . . .” I was cut off because Palermo quickly called on someone else. I exhaled a sigh of relief. Our team described the list of ingredients and the origin of the recipe. Palermo jumped in saying, “someone needs to DO something. This story is getting boring because there is no action.”

In early December 2012, two dozen brave park service employees met in Ft. Collins for a storytelling workshop led by a scientist-turned filmmaker named Randy Olson, actor/story editor Dorie Barton, and Palermo. Why would scientists want to tell stories? Kevin Castle, a veterinarian with the Biologic Resources Management Division said the workshop taught him that “you gotta grab the audience’s attention in the first two minutes. Otherwise, you’re never gonna have them.” One way to arouse the audience is to tell an engaging story. Sara Melena, a workshop participant from the Office of Education and Outreach, says in the field of natural resources, storytelling is crucial. “It’s a tree, it’s a plant, it’s a rock. The only reason it matters,” Melena says, “is that there is a story behind it. . . otherwise it is just stuff.”

Barton taught us a recipe for a powerful story. The first ingredient is a relatable main character or hero. The ideal hero is a human or an anthropomorphized creature. Surprisingly, it is often

more powerful to focus a story around a single person rather than multiple prominent characters. For example, a charity often gets more money when it asks donors to feed a specific child instead of a hundred children. Once the hero is selected, she needs to go on a journey. Storytelling journeys often mimic the same pattern. Imagine the story from a movie. Is this the way it unfolds?

The hero starts out in an ordinary world and something happens that makes her world different. An adventure or challenge presents itself, she doesn’t want to participate, but she meets someone who helps guide her to accept the challenge. She encounters enemies, but overcomes them and learns a lesson. She exits the special world and returns back to her ordinary world.

The story line above sounds familiar because according to Barton, it is the recipe for a successful story. In addition to these tips, we learned that it is important to be specific with the details of your story. Eva DiDonato, a marine ecologist with the Water Resources Division, said because of the workshop “now I am going to walk around looking for stories. . . to connect people to oceans and make them care.”

In addition to storytelling as a technique we were given other advice on delivering better presentations. “If people are laughing or emotional, they are listening” DiDonato recalls learning during the workshop. Connecting with your audience and being relatable is an important skill. To learn more about the reasons to incorporate storytelling into your presentations, see the article below written by Randy Olson.

Contact: elisabeth_cohen@nps.gov

I’m a Scientist, do I REALLY need to know about storytelling?

Yes. And even better if you can learn the basics of “critical storytelling.”

Science is nothing without effective communication. Just ask Gregor Mendel’s ghost. He was the 1800’s Austrian monk who figured out modern genetics, but failed to communicate what he learned, leaving his work forgotten for decades until its rediscovery. You don’t want to be a Mendel. Specifically, here are four reasons for learning storytelling dynamics.

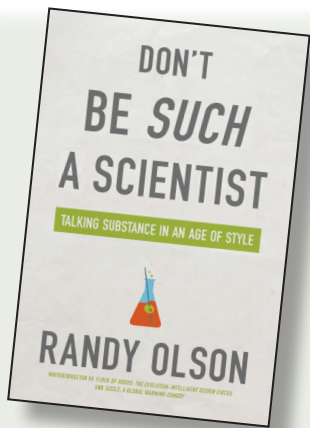
Narrative Instinct - Imagine you’re five minutes into hearing a twenty minute talk and the speaker is ambling all over the place, then seems to be starting over, then suddenly says, “Thank you, are there any questions?” You don’t want to be that speaker. There is a storytelling instinct that

we all share and that makes us comfortable. We want your beginning to sound like a beginning, your middle to sound like a middle, and your end to sound like the end. This is the case for almost everything you do. When you start to tell a joke, when you ask a detailed question, when you tell about going to a bar last night -- there is a basic structure we all want you to follow. When you don’t, everyone gets lost, and so does what you say. What we teach in the workshop helps to solidify the narrative instinct.

Grant Writing - Prior to becoming a filmmaker I was a tenured professor of marine biology. I remember talking with program officers about rejected grants and hearing them say, “Why should we care about starfish larvae?”

Continued on Page 4





Randy Olson is a scientist turned filmmaker and author of the book, *Don't Be Such A Scientist*, in which he outlines the importance of storytelling in science. He has also created a video with on how to develop effective powerpoint presentations. To view this video, go to:

<http://www.youtube.com/watch?v=QmAUad9U8-8>

Do I really Need to Know About Storytelling? *Cont'd*

Which meant that in my proposals I needed to do a better job of convincing the funders why my topic was worth funding. It's the same thing for storytelling. If I tell you the story of a man struggling to pay his bills in Ohio, your first question will be, "Why should I care about this man?" The better you get at answering that question in a story, the better you will get at answering the question in grant proposals. It's the same basic narrative dynamics.

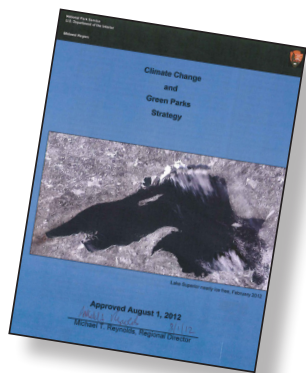
Opening Anecdote - Telling a good story is one of the most powerful ways to open a presentation. In my book, "Don't Be Such a Scientist," I talked about the need to "arouse and fulfill," meaning first you need to arouse the interest of your audience, then once you have them listening, you need to fulfill their expectations. A good story arouses the audience's interest. In the workshops I often show a clip of Mike Rowe speaking to a Senate Committee on Labor Relations. He's the former host of the enormously popular show, "Dirty Jobs," on Discovery Channel. He has only five minutes to speak to the Senators. Guess how he spends his time. The first three minutes are given over to telling the story of his grandfather who was a plumber. The story is funny, heartwarming, pointed, and ends up putting the entire committee

in the palm of his hand, ready to hear the dry facts and figures he came to deliver.

Boredom Analysis - What do you do when you get stuck listening to a boring presentation or watching a boring film? You should make it into a "teachable moment" for yourself by bringing out your knowledge of narrative structure and begin asking where things have gone wrong. If you've learned the basics of what we've taught in our workshop, you should be able to pinpoint it eventually -- there's no conflict in this story -- there's a lack of specifics -- the points are failing to advance the narrative. I actually believe you can learn more from analyzing bad presentations than from watching good presentations. And that is the very essence of what we're teaching, which is what we call, "critical storytelling."

It's impossible to understate the importance of storytelling. There's no reason for scientists to not be taking advantage of it in all facets of their lives. And it begins by gaining a critical understanding of how stories work.

Article by Randy Olson, author of the book, *Don't be Such a Scientist*, Contact: rolson@usc.edu

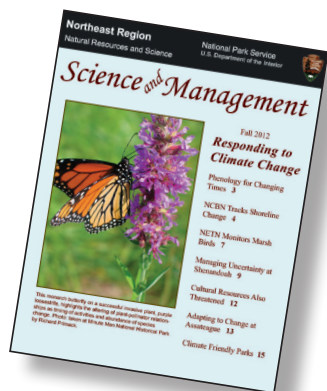


Midwest Region Releases Climate Change Strategy

In August 2012 the Midwest Region released their *Climate Change and Green Parks Strategy*. In the words of Midwest Regional Director, Michael Reynolds, this document is meant to give leadership and policy direction for the Midwest Region and its parks and programs to best marshal all resources toward managing and dealing with the issue of climate change and its many impacts to parks and programs. This document was created through an interdisciplinary team within the Midwest including personnel from parks, offices, and programs. It is tiered from the *NPS Climate Change Response Strategy* released in 2010

and the *Green Parks Plan* in 2012 at the national levels within the NPS and is designed to be the Midwest's contribution to responding to these national directives. It is also clearly linked to many of the goals in the *Call to Action* leading MWR to being ready for the NPS's next Century of Service. All regional employees were encouraged to review and be familiar with the actions and strategies proposed by this document.

Download a copy of the MWR's Strategy at: <http://midwest.nps.gov/office/natural/Climate/climate.cfm>



Northeast Region Fall Climate Change Newsletter

The Fall 2012 issue of the Northeast Region's *Science and Management* newsletter was a special edition highlighting various examples of how their parks are responding to climate change throughout all aspects of the NPS Strategy - science, adaptation, mitigation and communication.

Articles include: an overview of the Northeast Temperate Network's phenology monitoring efforts in collaboration with the Schoodic Education and Research Center in Acadia; the Northeast Coastal and Barrier Network's research and monitoring of changing shorelines for their

coastal parks as well as their efforts to monitor tidal marshes to better understand habitat changes for birds; efforts underway to protect habitat for the endangered Shenandoah salamander; NER's collective efforts to address climate change and cultural resources; Assateague NS's adaptation efforts to create more resilient facilities; and lastly a summary of Climate Friendly Park actions for the region.

Download a copy of the NER's Newsletter at: <http://science.nature.nps.gov/im/units/NERO/newsletters/SMFall12.pdf>

Thermokarst Monitoring in the Arctic Network

The Arctic Inventory and Monitoring Network (ARCIN) is tracking changes in thermokarsts. Retrogressive thaw slumps (thermokarsts) are large erosion and subsidence landforms caused by thaw of ice-rich permafrost. These slumps often occur near streams or lakes and they can shed significant amounts of sediment into the nearby water body. Most retrogressive thaw slumps have a steep escarpment (scarp) that exposes a meter or two of glacial till over Pleistocene glacial ice that has survived in permafrost for over 10,000 years. As the ice thaws, it forms a mud slurry that flows away from the scarp. The slurry gradually loses water and becomes more solid as it flows downhill.

ARCIN uses aerial photographs to create high resolution, three-dimensional topographic models to calculate slump area, main scarp height, slope, and volume change. These models allow us to monitor changes in growth rate and size of slumps in Noatak National Preserve and Gates of the Arctic National Park & Preserve.

Active, rapidly migrating slumps grow by a process called fall and flow (pictured right), where

turf and sediment blocks fall down near-vertical scarp and either disintegrate or sink into liquefied mud below. Slower, less active slumps grow by extensional flow— long fractures develop parallel to the main scarp, exposing less ice, and split turf into elongated blocks which survive their trip down the main scarp. Slump activity in Gates of the Arctic and Noatak varies greatly. Between 2010 and 2011 slumps migrated from a few feet to over 160 feet (50 m). We will continue to monitor change in these features.

To date thermokarst-related features have been documented in all Arctic Network parks. Reports can be accessed online:

<http://science.nature.nps.gov/im/units/arcn>

Also, check out ARCIN's video about this project:

<http://www.youtube.com/user/AlaskaNPS>

Or contact: David_K_Swanson@nps.gov

Right – Top to Bottom: Fall and flow illustration and image; extensional flow illustration and image; Dave Swanson monitoring thermokarst.

Intermountain Region Hosts Climate Change Meeting

On February 5 and 6, the Intermountain Region Resource Stewardship and Science Directorate and the Denver Service Center - Planning Division hosted NPS employees and partners from the Intermountain Region and national program offices to discuss climate change, its impacts on natural and cultural resources in parks, and the guidance and tools available to support action.

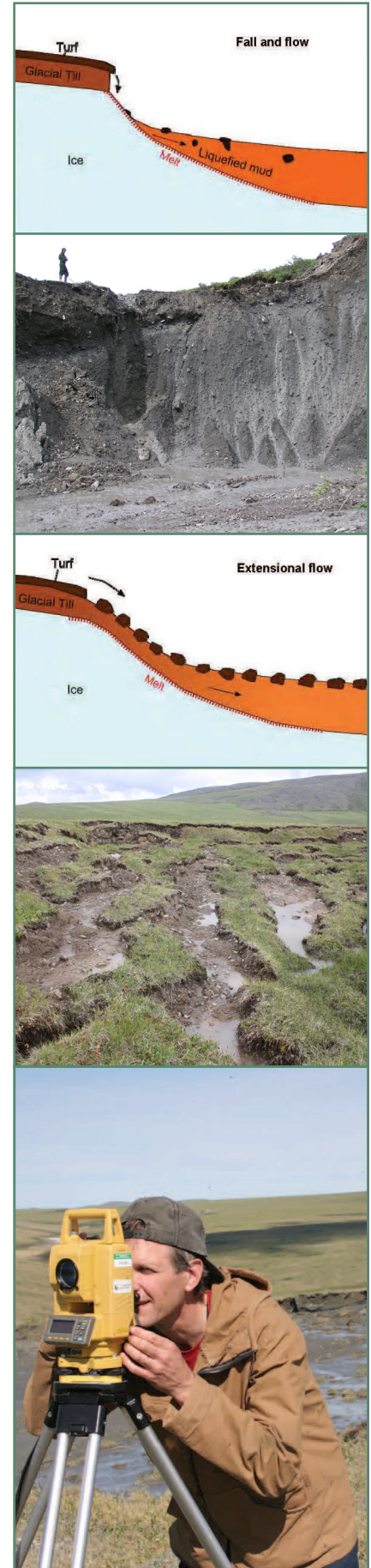
The first day focused on bringing together the primary climate change staff from NPS partnerships to share information, clarify shared goals and priorities across DOI and other federal entities, and identify opportunities for collaboration and communication. The day's presentation topics included an introduction of the NPS Climate Change Response Program, the latest NPS guidance in the *Climate Change Action Plan* as well as science, planning, adaptation, and communications tools that parks can use; representatives from NOAA's Regional Integrated Sciences and Assessments (RISA) described products from the Climate Science Centers and RISAs, staff from Landscape Conservation Cooperatives (LCC) talked about the cross-jurisdictional partnership opportunities afforded by the LCCs; and staff from the Intermountain Region presented their regional climate change initiatives.

The second day was a national workshop led by DSC-Planning through a partnership with the Cultural Resource Directorate. The days' goal was to assess the state of current integration of

climate change response, cultural resources, and planning, and to identify opportunities for collaboration. Topics covered included the national perspective from the Cultural Resources and Climate Change Program, Native American and Alaska Native outlooks on climate change, viewpoints from the field, and tools and resources for practitioners. Small breakout group sessions were held to identify tools needed for successful stewardship of cultural resources in the face of climate change, programmatic opportunities and challenges, and opportunities for collaboration.

“Many participants said they learned a lot about cultural resources in general, and that they were inspired to become stewards of the resources in the face of climate change,” Brenda Todd co-organizer of the meeting described. One message she hopes to convey is that “cultural resources do not have the ability to adapt or move or any of the things we think of with natural resources. We need to think about them differently.” But, she says, “we sort of have an arbitrary distinction between natural and cultural resources and in order to take care of things, we need to take care of them together.”

For the conference report and presentation materials, contact: Tom_Olliff@nps.gov Or Brenda_Todd@nps.gov, For more information about climate change and cultural resources, contact: Marcy_Rockman@nps.gov



Resources Related to Climate Change

In January 2013 the Washington Post published a news article titled, *2012 Hottest Year on Record in Contiguous U.S.*, which gives a nice summary of temperature data in



2012 compared to the previous years. The full article is available at: http://www.washingtonpost.com/national/health-science/2012-hottest-year-on-record-in-contiguous-us-noaa-says/2013/01/08/5c9dc1ae-55d9-11e2-8b9e-dd8773594efc_story.html?hpid=z1

The Climate Reality Project has an engaging website where you can find tools to assist with climate change communication efforts. You can sign-up for their newsletter, find answers to the top 100 common misconceptions about climate change, short educational videos, and other communication tools. Website available at: <http://climaterealityproject.org/>

Through a series of beautiful photographs, National Geographic discusses the impacts of increased global temperature through the eyes of animals. *Animal Winners and Losers of Summer's Heat Waves* is available at: <http://news.nationalgeographic.com/news/2012/09/pictures/120910-animals-heat-wave-drought-global-warming-science-enviro/>

Based on recent published articles describing how arctic ice cover has reached its lowest point in recorded history, actors created a funny but poignant video about this news. http://www.youtube.com/watch?feature=player_embedded&v=TmfcJP_0eMc



Future citizen scientists at Black Canyon of the Gunnison NP; photo courtesy of Susanna Ausema.



Interpreting Climate Change Training Available May 7-10, 2013

This course will provide an overview of the practical knowledge and skills that will enable interpreters to develop effective, engaging climate change programming for both natural and cultural sites. Participants will consider a range of engagement techniques such as facilitated dialogue, skills for dealing with controversy, and presenting multiple perspectives. These and other techniques will be applied to an overview of climate science and audience research. Participants will engage in group discussions to share best practices, build confidence and identify meaningful site connections. Although the focus of this course will be on personal services interpretation, many of the best practices are also applicable to media development.

This course will be presented via a distance learning "virtual" classroom -- each day will involve a schedule of webex plenary sessions, activities, and group discussions. Virtual class participation will require a work station with computer, reliable internet and phone access.

The class will include 5-hours of instruction each day and will have pre-requisite and homework assignments.

Read the entire course description and register using the code NPS-INT3351VC on DOI Learn at the following link: <http://www.doi.gov/doilearn/index.cfm>

No travel required

More Information

This newsletter is a bimonthly forum to share the latest actions relating to NPS efforts to manage our parks in a changing climate.

Dr. Leigh Welling, Chief Climate Change Response
Leigh_Welling@nps.gov

Comments, Submissions:
Angie_Richman@nps.gov

The Climate Change Response Program websites:

External: <http://www.nps.gov/climatechange>

Internal: <http://www1.nrintra.nps.gov/climatechange>