

An NPS Framework for Addressing Climate Change with Cultural Resources

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CLIMATE CHANGE PRESENTS MANY CHALLENGES to the stewardship of both cultural and natural resources. These include a wide range of environmental impacts on the resources, as well as the attendant effects on social systems, food security, and public health, among other sectors, now projected to continue long into the future (Pachauri et al. 2014). Addressing environmental impacts and social changes in resource management is not new, and existing tools of cultural and natural resource management remain relevant as we focus on climate change and its interactions with other existing challenges. Nonetheless, the uncertainty of how environmental impacts will vary in time, space, and intensity, as well as interact with each other and social trends, requires managers to use a broader range of information in decision-making. What follows is a framework for beginning to identify such information to inform cultural resources management and to support coordination between cultural, natural, and facilities management in the places, resources, and stewardship responsibilities they share.

The US National Park Service (NPS) released its *Climate Change Response Strategy* in 2010, and is now developing a companion strategy document for cultural resources, which will provide additional guidance to assist with the interdisciplinary work and specific needs of cultural resource managers and historic preservation partners across the nation. This article outlines the principle framework of the cultural resources strategy under development.

Cultural resources have a two-fold relationship to climate change: impacts and information. While environmental forces have always affected cultural resources, the impacts of climate change are already being felt and will continue to accelerate, intensify, recombine, and present new stresses—this is the “impacts” component of climate change on cultural resources. Additionally, cultural resources provide useful information about and profound connection to the history of human interaction with climatic and environmental variability through time—this is the “information” component. In the face of climate change, many managers are already focusing on impacts on cultural resources, but the information to be gained from cultural resources is equally important in informing adaptation choices. The

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National Park Service director's policy memo 14-02, "Climate Change and the Stewardship of Cultural Resources," charges managers with addressing both aspects of cultural resources in an era of climate change.

A dual approach to responding to climate change

Climate change impacts on cultural resources. While some impacts of climate change on cultural heritage may seem apparent, such as the very visible effects of storm surges on coastal cities, there is still much to be learned about effects that range from deterioration of historic materials and erosion of archaeological sites to disruption or cessation of traditional lifeways. The UNESCO World Heritage Centre publication *Climate Change and World Heritage* lists a diversity of impacts, with an emphasis on buildings and traditional cultures (Colette 2007: Table 1). The European Union expanded on this information in an atlas of climate impacts on cultural heritage in Europe (Sabbioni et al. 2012). A scenario planning exercise by NPS at Catoctin Mountain Park in 2012 (North Wind, Inc. 2013) identified the need for detailed threshold information on the effects of projected climate trends on specific local historic materials.

For instance, understanding how wood cabins with stone chimneys may respond to different precipitation regimes will assist managers and inform plans in preparation for the range of potential conditions that may occur. Table 1 is a one-page synthesis of the diversity of climate change impacts across the five categories of cultural resources managed by NPS: archaeological sites, historic buildings and structures, cultural landscapes, ethnographic resources, and museum collections (NPS 2006). Works is close to completion on a larger cultural resources climate change impacts table, which links climate trends to sample impacts across the five categories of cultural resources with greater detail, including links between each listed impact and published references or field observations from across NPS. This larger impacts table is designed to provide better support to resource managers across NPS in preparing vulnerability assessments and resource management plans than the one-page synthesis in Table 1. As well, the 14-02 director's policy memo emphasizes the importance of continuing to look for impacts beyond well-publicized situations of coastal erosion and sea-level rise, as it is likely that many impacts on cultural heritage are already underway but are not yet recognized.

Learning from cultural resources. Recognition of the capacity to learn from cultural resources has been part of cultural resources management for a long time. Under Criterion D of National Register of Historic Places, cultural resources with integrity of location, design, setting, materials, workmanship, feeling, and association may be eligible for listing on the register if they are resources "that have yielded or may be likely to yield, information important in history or prehistory."

We are, however, in the infancy of learning about adapting to modern climate change. One of the challenges climate change presents is how we can integrate the capacity to learn about history and prehistory from cultural resources into management decisions that address the diverse future uncertainties of climate change. The role of national parks as laboratories takes on added importance in this capacity, as NPS Director Jon Jarvis noted in his October

Table 1. Climate change impacts on cultural resources. This table incorporates data from the UNESCO World Heritage Centre (Colette 2007) and NPS field observations.

<i>Impact</i>	<i>Environmental Forces</i>	<i>CR Affected</i>	<i>Rate</i>
Submersion	SLR	AS, B/S, CL, E	Trend
Erosion	SLR, Storm surges	AS, B/S, CL, E	Event, Trend
Inundation	SLR, Storm surges, Flooding	All	Event
Saturation	SLR (rising water tables)	1st: AS, B/S, CL, E 2nd: MC	Trend
Deterioration	Precipitation variation Temperature variation Wind variation	AS, B/S, CL, E AS, B/S, CL, E AS, B/S, CL, E?	Trend/event Trend/event Event/trend
Dissolution	Temperature increase (permafrost) Ocean acidification	AS, B/S, CL, E AS (terrest..., underw.?)	Trend Trend
Destruction	Flooding Storm (rain/wind)	All All	Event Event
Oxidation	Increase atmospheric moisture	B/S	Trend
Depletion	Ecosystem changes due to human development	AS, B/S, CL, E	Event, Trend
Conflagration	Fire (Drought) (Temperature extremes +/- Insect effects)	All	Event
Dessication	Temperature extremes Drought	AS, B/S, CL, E AS, B/S, CL, E	Event (trend?) Long event
Invasion	Invasive species Mold	AS, BS, CL, E, MC BS, MC	Trend Event
Disruption	Loss of species Loss of access Looting	E E AS	Trend/event Event/trend Event

Key: SLR = sea level rise, AS = archaeological sites, B/S = buildings and structures, CL = cultural landscapes, E = ethnographic resources, MC = museum collections.

23, 2009, testimony before Congress: “One of the most precious values of the national parks is their ability to teach us about ourselves and how we relate to the natural world. This important role may prove invaluable in the near future as we strive to understand and adapt to a changing climate.”

The framework of the companion Cultural Resource Climate Change Strategy provides a context for bringing together management responses to environmental impacts on cultural resources and the information and stories they hold.

An organizing framework for impacts and information. The NPS *Climate Change Response Strategy* (2010) set out four components, or pillars, for climate change response:

science, adaptation, mitigation, and communication. For the new companion Cultural Resources Climate Change Strategy, each of these pillars is “doubled” to recognize the two approaches to cultural resources and climate change: impacts and information. For example, while the science component overall addresses climate change data, modeling, and trends, there are science techniques and practices to address impacts of climate change on cultural resources, and there are science techniques and approaches that can incorporate information from cultural resources. While adaptation is about what to *do*, or how to make decisions, regarding climate change, there are specific issues and approaches to address climate change impacts, and there are inherent ways of learning from cultural resources that can assist with adaptation, and so forth. A table of concepts organized by pillar is included in Table 2.

Table 2. Draft US National Park Service concept framework for cultural resources and climate change. This framework applies needs of resource managers to address the impacts of climate change on cultural resources (impacts) and the capacity to learn about long-term human interactions with environmental and climatic change (information) across the four pillars of NPS climate change response: science, adaptation, mitigation, and communication (NPS 2010). A detailed Cultural Resources Climate Change Strategy document further developing this approach is currently in preparation.

SCIENCE	
IMPACTS	INFORMATION
<ul style="list-style-type: none"> • Climate science at culturally relevant scales • Cultural resource (CR) vulnerability assessments • CR inventory/monitoring techniques and protocols • CR integrated databases/GIS • Preservation science • Documentation science 	<ul style="list-style-type: none"> • Paleoclimate/social climatic thresholds • Shifting baselines • Past land use and human impacts on environments • Paleogenetics
MITIGATION	
IMPACTS	INFORMATION
<ul style="list-style-type: none"> • Integration of historic buildings into energy efficiency plans • Resource conservation through historic or native landscapes • Reduce C footprint of management practices 	<ul style="list-style-type: none"> • Past architectural and landscape techniques suited to local environments • Cultural heritage to conserve/re-establish sense of place and community stewardship
ADAPTATION	
IMPACTS	INFORMATION
<ul style="list-style-type: none"> • Adaptation options • Decision frameworks • Contexts/studies to support decision frameworks • Policies and standards • Scenario planning 	<ul style="list-style-type: none"> • Identifying examples of past social adaptability per environmental change • Relating past adaptability to current issues, methods, and decisions
COMMUNICATION	
<ul style="list-style-type: none"> • Cultural resources climate change (CR-CC) literacy • Dialogue between impacts and information in all pillars • CR-CC links between managers (local-international) • CR-CC links to public 	Every place has a climate story: <ul style="list-style-type: none"> • Climate impacts to CR • Past human interaction with climate variability • Origins of modern climate situation • Traditional ecological knowledge

The organization of concepts shown in Table 2 is part of the NPS vision for a national approach to cultural heritage and climate change. As noted in the 14-02 Director’s policy memo,

The NPS leads the Nation in the care and management of our country’s cultural resources through the national park system and our programs. On behalf of the Secretary of the Interior, we manage preservation programs that extend to nearly every American community. The National Register of Historic Places and National Historic Landmark Programs, the Federal Historic Preservation Tax Incentives Program, Technical Preservation Services, National Heritage Areas, National Scenic and National Historic Trails, certification of local governments, and our partnerships—including collaborations through the Landscape Conservation Cooperatives, and with tribal governments, States, universities, and other Federal agencies—form a framework for historic preservation inside parks and around the country. Our leadership role in cultural resources now requires engaging this framework to set priorities, to share techniques for protecting significant resources, and to help guide our collective actions with respect to climate change.

The organization of concepts in Table 2, hereafter termed the “concept framework,” is a starting point for guiding our collective action. For the broadest level of collective action, encompassing NPS and its partners, once work is underway in at least a majority of topics within the framework (both on the impact side and the information side of each pillar), then the range of effort will begin to encompass that which will be necessary to address the needs of cultural heritage in relation to climate change. The concept framework is also designed to support resource management decision-making across cultural and natural resources management as well as facilities management, by setting out the diversity of cultural resource impacts and information topics, many of which overlap with natural resource science and facilities management topics.

The concepts listed in the framework in Table 2 are not expected to be exhaustive—certainly topics will arise in climate change that we can’t yet foresee—but this framework is, we hope, sufficiently comprehensive to be useful. Currently, as the following discussion will show, more work has already begun on the impacts side of science and adaptation than in mitigation and communication, and more work on impacts overall than on the information side. Nonetheless, having the information side “on the map” is an important step forward.

The balance of this article expands on the topics shown in the concept framework (Table 2), linking them to research in parks and recent work in climate change response.

The science pillar. The science pillar of climate change response addresses climate data, models, and related data gathering and analysis techniques. Concepts within science for climate impacts on cultural resources follow this organization. For instance, climate science at culturally relevant scales refers to the spatial scales of data needed to assess potential future climate change impacts on a given cultural resource or set of resources. When addressing impacts on natural resources, it can be appropriate to assess impacts on a watershed or ecologically defined unit. These units also may be appropriate for assessing the effects of climate

changes on cultural resources, but this has not yet been clearly demonstrated. In some cases, finer-scale data likely would be more useful (for example, timing of rainfall intensity per adobe stress, such as analyzed in Moss 2010). Vulnerability assessments are analyses of the sensitivity and exposure of resources to projected impacts and their capacity to adapt to changing circumstances. For cultural resources, which derive significance from place and are in large part non-living, capacity to adapt may be limited, particularly without affecting integrity of the resource. An integrated vulnerability assessment—addressing vulnerabilities of both cultural and natural resources in the same park—was conducted for Badlands National Park (Amberg et al. 2012), although this may not be appropriate in all places. Monitoring techniques track climate impacts, and ideally are related to vulnerability. As noted in policy memo 14-02, there is potential to collaborate on monitoring across natural and cultural resources, although it is not yet clear in which situations a given monitoring system can provide data at spatial and temporal scales needed by multiple, different types of resources. For example, increased heat will stress both furry pikas and wooden buildings, but magnitude and scale of stress on each are different.

Inventorying, also discussed in policy memo 14-02, should prioritize areas that are most at risk from broad geographic climate impacts. Integral to such efforts is the capacity to link resource data bases with each other and GIS. Spatial data transfer standards, which have been established by the NPS Cultural Resources GIS Program, will be useful in this regard. The standards will help insure spatial data consistency, quality, and accuracy by using location to link existing descriptive databases and will allow users to explore many facets of a cultural resource in ways that are not currently possible (McCarthy 2014).

Preservation science, including such things as materials conservation and the study of materials and the performance of buildings and structures as well as building systems, refers to the many tools already developed by the historic preservation community. In the US, this includes work conducted by the NPS National Center for Preservation Technology and Training. Similarly, documentation science refers to the array of tools and techniques developed by programs such as the Historic American Building Survey (HABS), Historic American Engineering Record (HAER), and the Historic American Landscape Survey (HALS). Additional tools in both preservation and documentation science will be needed going forward, but there is already a broad established knowledge base.

On the information side of the science pillar is the fundamental record of human interaction with the natural world over millennia. Specific examples of cultural resource science information include both direct environmental information as well as indications of how humans have affected and responded to changes in natural systems through time. For example, isotopic analysis of shells from shell mound sites in the western Everglades provides a record of changes in sea surface temperatures during the Medieval Warm Period (ca. AD 900–1300; Lamb 1965; Crowley and Lowery 2000), while analysis of settlement patterns and other indications of occupation history show human abandonment of the area ca. AD 1300 (Schwadron 2010).

Archaeological deposits also have the capacity to offset the limits of human memory by illustrating how animal and plant communities have changed over time, and that which

appears “natural” may not have been so in the past, a process known as “shifting baselines” or “shifting baseline syndrome” (Pauly 1995, 2001; Bunce et al. 2008; Pinnegar and Engelhard 2008; Papworth et al. 2009). An example in and adjacent to national parks is ongoing work in archaeological sites in the Channel Islands which demonstrates changes in the size and composition of Guadalupe fur seal and elephant seal populations over the past 7,000 years (Erlandson and Rick 2010: 174). Similarly, combinations of archaeological, historical, and landscape analyses can outline the range of impacts humans have had over the course of millennia. The use of fire by Native Americans and the adaptation of ecosystems to frequent burning, as well as recognition over the past several decades of the ecosystem consequences of nearly a century of fire suppression, is one of the best known examples in the US (van Wagtenonk 2007).

Indeed, the capacity of humans to modify the global environment has recently been recognized in the effort to define a new geological era : the Anthropocene. Delineation of the beginning of Anthropocene currently appears likely to be set somewhere in the mid-twentieth century, with recent proposals citing the first nuclear fallout and dramatic rise in the use of plastics (Revkin 2015). Debate over the appropriate demarcation line has brought out many examples of human modification of the environment over approximately the past 10,000 years, including domestication of plants and animals, spread of agriculture, and initiation of the Industrial Revolution (Smith and Zeder 2013). An appropriate balance has not yet been found between this record of human impact, practices of ecosystem restoration, and current cultural values of wilderness and natural areas distinct from culture (Cronon 1995; see also Marris 2013).

The contribution of the cultural resources climate change framework is that cultural resources have important information to add to the science of identifying and understanding the impacts and directions of climate change.

The adaptation pillar. Adaptation addresses the issues of what to do about, and with, the impacts and lessons developed in the science pillar. The impacts side of the pillar is a series of interlinking approaches to addressing management of climate change impacts on cultural resources. For example, adaptation options is a process of identifying the universe of possible management actions for a resource identified as vulnerable to, or threatened by, climate change impacts. Decision frameworks are processes for deciding among one or more adaptation options. Policies and standards support decision frameworks by setting out priorities and principles. And scenario planning is a method that supports the decision-making process by framing multiple possible futures, and assessing different courses of action against those futures. These futures incorporate different potential climatic developments and possible social situations, including political, technological, economic, and cultural developments. Detailed guidance on conducting scenario planning for NPS climate change response is presented in the NPS handbook *Using Scenarios to Explore Climate Change: A Handbook for Practitioners* (Rose and Star 2013).

The process of scenario planning and the interlinking of the connected options and decision-making are key for turning this set of practices into *adaptation*. “Adaptation” has been defined by the Intergovernmental Panel on Climate Change (IPCC) as “an adjustment in nat-

ural or human systems that moderates harm or exploits beneficial opportunities in response to change.” This definition has been adopted by NPS (NPS 2010). In this sense, adaptation consists of creating and using a flexible system that takes climate change and other uncertainties into account when reaching the decision to follow a particular option.

Developing adaptation options is a key interaction point for cultural and natural resources. Many of the options themselves are not substantially different from management actions that may be taken now for resources that have deteriorated or otherwise been affected by ongoing environmental processes. Although the options are not new, a fundamental difference is the deliberate consideration of climate projections and plausible future scenarios prior to selecting actions as part of adaptation strategies. Designating them as adaptation options provides a means for describing how the options may function under future variable conditions, and a basis for developing a common language for adaptation between cultural and natural resources. More detailed discussions of the cultural adaptation options and related decision frameworks are included in the Preserving Coastal Heritage Workshop report (NPS 2014) and forthcoming in the NPS Cultural Resource Climate Change Strategy and other future publications.

Setting adaptation as adjustments to a system provides a close parallel to how we can learn from cultural resources for the purposes of adaptation, drawing from their information side. Collectively, cultural resources—archaeological resources, built environment, cultural landscapes, archives and museum collections, and the practices and knowledge gathered together under the heading of ethnographic resources—provide the means to assess the pasts of civilizations, societies, social groups, and communities and to ask: What does it mean to adapt? What do resilience and sustainability look like?

No past society is a direct stand-in for the present. However, these pasts allow us to challenge our assumptions about what change and adjustment of systems can look like. For example, the Chumash of the central Californian coast, including the islands now encompassed within Channel Islands National Park, lived through the Medieval Warm Period, the same climatic interval during which major droughts affected the Four Corners area of the American Southwest and, possibly, the western Everglades. Paleoclimatic research shows that central California also was affected by drought (Kennett and Kennett 2000). While communities in the Four Corners area and in the Everglades left the places in which they had lived for centuries, the Chumash remained in place. Archaeological and linguistic work shows that they reorganized trade between the Central Valley to the coast, and evidence from multiple village sites suggests a change in power structures from areas of production to in-between areas for management of trade (Johnson 2000). The Chumash have remained themselves from prior to the Medieval Warm Period to present day. Does this fit our current definition of resilience? Physical anthropological research also shows, however, a decrease in disease and in violent injuries following the end of droughts (Walker 1986, 1989; Lambert and Walker 1991; Lambert 1993; Raab and Larson 1997). Where does social stress fit into our concepts of resilience (Rockman 2012)? More recent ethnography research records the tradition of yearly battle between the coyote and the sun; if the coyote wins, it will be a good year, while

if sun wins, it will be a drought year (Blackburn 1975; Johnson 2000). How well really do we incorporate uncertainty into our plans and understanding of how the world works?

The mitigation pillar. Mitigation addresses reduction of greenhouse gas emissions and our environmental footprint. On the impacts side, cultural resources contribute to these efforts by reducing overall energy needs and usage. This is particularly the case for the built environment and cultural landscapes, as they tend to be more energy intensive than other cultural resources.

Recent research by the National Trust Green Lab has demonstrated that, in most cases, the “greenest” building is a building that already exists, based on embodied energy (National Trust 2012). Older buildings, particularly those built prior to 1920, also tend to have many energy-conserving architectural features that developed in response to the surrounding environment and local climate. The design of these older buildings also reflect the higher labor and financial costs of energy at the time they were built, as well as incorporating unpowered, or passive, heating, cooling, lighting, and ventilation features (Burns 1982).

Related to this, NPS has developed *The Secretary of the Interior’s Standards for Rehabilitation and Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings* for improving energy efficiency while preserving and maintaining historical character (Grimmer et al. 2011). It is also possible in some instances to reduce the carbon footprint of cultural resources management activities. For instance, work by the NPS Cultural Landscapes program has begun to identify and implement techniques for landscape maintenance that require less mowing and conserve water across many parks (NPS, Cultural Landscapes Program, n.d.).

The information side of mitigation draws on the energy-saving features and practices to inspire alternative lower-energy ways of constructing, renovating, or using existing buildings, and interacting with landscapes and other aspects of the surrounding environment. As noted throughout the diverse examples illustrated by Burns (1982), many energy-saving features of older buildings may no longer be recognized as such, and so current use may not be using them effectively, or they may have been covered over with more recent renovations.

Cultural resources also relate to mitigation through the opportunities they provide to engage with buildings, landscapes and materials, and how and why we have come to use them in the ways that we do. While most visitors to Marsh–Billings–Rockefeller National Historical Park don’t have the opportunity to build a home on the scale of the Rockefellers, the orientation of the main house with respect to landforms and prevailing winds is a contrast to how most homes are sited today. What have we gained in the current system? What has been lost, including but not limited to energy used for heating and cooling?

The communication pillar. Communication incorporates the goals of connecting all of the pillars of climate change response and being able to share climate change information effectively within NPS, and outward to NPS partners and the public. While there are strong connections between the impacts and information sides of all the cultural resource climate change pillars, these connections are particularly strong for communication. In fact, for communication the impacts side of the pillar might also be seen as establishing the pathways for communication, while the information side helps with content for the communication.

While there are several topics within communication impacts, the scope of this side of the pillar is perhaps best illustrated with the example of climate change training for park interpretive staff. NPS interpreters do not work from scripts. Rather, following the vision of Stephen T. Mather and others (Ward and Wilkinson 2006), they are trained in techniques for understanding their different audiences and engaging those audiences with the places they are visiting to create a meaningful experience.

Climate change presents several challenges in this regard. Among them, climate change science presents a range of uncertainties for the future, and many of the most widely publicized anticipated impacts will affect areas distant from units of the national park system. Among other tools, NPS has developed a training course in climate change for interpreters. Cultural resources relationships to climate change (impact and information) are less well documented and discussed than environmental impacts such as melting glaciers, which presents an additional training challenge. One approach to address these challenges within the NPS Cultural Resources Partnerships and Science Directorate, in collaboration with the NPS Climate Change Response Program, is the “Every Place has a Climate Story” initiative, which is a key example on the information side of communication.

Every Place has a Climate Story is based on the idea that in every place for which the NPS is a steward, it is possible to talk about at least one of the following (likely, more than one can apply):

1. How we see change happening in material cultural heritage;
2. How traditional, indigenous, and affiliated communities are experiencing change in their lifeways and in relation to traditional knowledge;
3. How communities in past societies responded to past climatic and environmental variability; and
4. How the modern climate situation has come to be.

How we see change happening in material culture is a profound opportunity to bring climate change into a human scale that can be seen, touched, and felt. Research into park records at Saint-Gaudens National Historic Site, for example, shows that flowers in the garden that have been planted with the same plantings since the 1930s, and in the same arrangements since 1902, are blooming close to a week and a half earlier now than they did approximately a century ago. Bricks along the edges of those gardens are flaking at a faster rate, as northern New Hampshire experiences more freeze-thaw cycles each winter than it did previously.

In another example, surveyors along the edges of ice patches in multiple mountain parks are recovering artifacts left or dropped by hunters long ago that were covered by snow and ice, and are now melting back out, such as bows and fletched arrows and leather hunting pouches. The organic parts of the artifacts can be dated, and some go as far back as 8000–9000 years (Dixon et al. 2005; Lee 2012). Organic artifacts tend to be quite fragile, and so would not survive multiple episodes of exposure and refreezing. Their reappearance now is hand-sized evidence that environmental change is happening.

Changes in traditional lifeways trace personal and community experiences in environmental change across recent generations. At Apostle Islands National Lakeshore, the Ojibwe

describe difficulties in harvesting wild rice due to falling lake levels. At Pipestone National Monument, increases in flooding are making it difficult for members of the Yankton to quarry stone needed for pipes and perform associated rituals. And near Saint-Gaudens, the community lilac festival which was held over Memorial Day weekend for much of the 20th century must recognize that lilacs are now usually fully done blooming by that time (Superintendent Rick Kendall, personal communication 2012).

Examples of past human response to past climatic and environmental variability in the United States are best known from places in the American Southwest. These include parks such as Chaco Culture National Historical Park and Mesa Verde National Park, from which the Anasazi people left during the droughts of the Medieval Warm Period. The people of the western Everglades shell mounds (Schwadron 2010) is another example, as well as the previously discussed story of the Chumash, who inhabited the area that is now within Channel Islands National Park. But really, this approach to connection can be developed anywhere there have been people.

The origins of the modern climate situation story asks us to consider, How did we get here? Why are we now addressing climate change? Industrial sites such as Harpers Ferry and Lowell national historical parks, and westward emigration sites such as Golden Spike National Historic Site, make it possible to talk about the decisions and priorities of many different peoples at different times that were part of the development of our modern world. The history of Jamestown at Colonial National Historical Park includes the climatic expectations of the early colonial investors (Kupperman 1982; Rockman 2010), and places such as Independence National Historical Park are a reminder that many of the political and economic institutions existing now have deep historical and philosophical roots.

The origins of the modern climate story also remain an uncomfortable topic in many places. The NPS policy memo 14-02 states that

Building on the communication goals of the NPS Climate Change Response Strategy, each park and program should engage its staff, including facilities and maintenance staff, rangers, resource managers, scientists, and superintendent, and its surrounding communities to begin to identify and share their climate stories. It is important to do this—even when doing so is uncomfortable—so that they can spark discussion and inform choices.

Including the origins of the modern climate situation in the climate stories initiative follows this directive. The current goals of the Every Place has a Climate Story initiative is to complete guidance on researching and writing a climate story (in development, as part of the National Climate Change Interpretive Plan), and an initial set of case examples prepared in collaboration with parks, to be used in interpretation preparation and other types of communication. Climate stories also were the focus of an NPS-led session on cultural World Heritage at the 2014 World Parks Congress, as part of the NPS co-led “Responding to Climate Change” program stream.

Conclusion

There is already a great deal of work done that addresses cultural resources in relation to climate change, and there is much still to do. The vision for the concept framework described here is for it to serve as a reference for NPS to engage its local, state, federal, tribal, and heritage partners, in the US and around the world, on the broad scope of climate change impacts on cultural resources. As noted in Policy memo 14-02:

The process of adaptation will not return us to the way things have been done before, but it will assist us in making choices in the face of uncertainty and change. Cultural resources remind us of who we are and where we have come from. They offer clues on past climate variability and speak to the many different ways humans have adapted to changing environments over time, in our parks and across the country. We need their information and their inspiration.

This framework is a start in bringing that information and inspiration together with management and preservation.

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