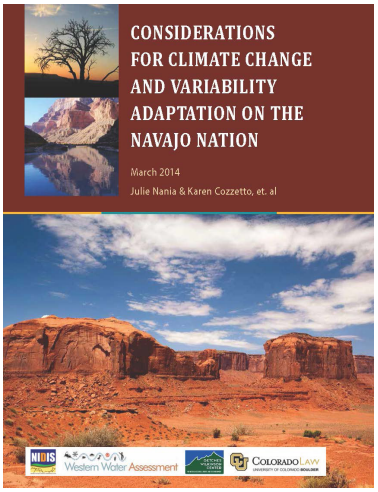
As the Navajo Nation anticipate a hotter, drier future, report offers tools and insights for adaptation, and hope for resilience

Four Corners face changing climate

In the U.S. Southwest, 2001-2010 was warmer than any decade in the 20th century. Heat waves are happening more often, cold waves less. On the Navajo Nation, drought conditions have dominated since 1994, punctuated by brief episodes of wetness, yet there have been even worse droughts in the Southwest in the last 2,000 years.

In the middle of this region are the Navajo Nation reservations lands, 27,000 square miles (the size of West Virginia) of arid to semi-arid land that's home to more than 170,000 people.



A new report led by the University of Colorado Boulder, "Considerations for Climate Change and Variability Adaptation on the Navajo Nation," synthesizes state-of-the-science information on the region's climate, water cycle, and ecology. And it goes much further, discussing social, legal, economic, infrastructural, and other factors that affect people's vulnerabilities to climate impacts as well as their adaptive capacity, outlining one approach for how the region's residents might plan for ongoing environmental change.

"It's not only that the Navajo Nation is facing serious climate challenges," said report lead author Julie Nania, Esq., with the Getches-Wilkinson Center for Natural Resources, Energy and the Environment at the University of Colorado Boulder. "It's also that in some cases, they may be vulnerable to climate-related impacts, for example, because many people run livestock," she said.

"On the other hand, they may be particularly well-poised to take leadership on adaptation planning, because they have the sovereign authority to address some of these issues very effectively."

During the past decade, intertribal organizations around the United States have started to recognize climate change and variability as significant factors that can affect tribal resources, livelihoods and cultures. The National Tribal Air Association calls climate change "perhaps the most pressing environmental issue of our time."

The new report--more than 200 pages long--highlights likely and actual environmental changes occurring in the Southwest and Four Corners region. Among them:

■ Average annual temperatures in the U.S. Southwest increased by about 1.6 degrees Fahrenheit between 1901 and 2010.

■ There were more heat waves in the 2001-2010 decade than there were in 20th century decades, on average.

■ Snowmelt and snowmelt-fed streamflow peaks occurred earlier in many areas.

■ On the Navajo Reservation, many streams that once flowed yearlong flow only intermittently now; and others once intermittent have dried entirely.

■ The growing season is longer by 17 days, compared with the 20th Century

■ Climate projections suggest that annual average temperatures in the Southwest will increase by between 2 and 9 degrees Fahrenheit by the end of the 21st Century.

■ Moving sand dunes on the Navajo Reservation, which have buried homes, cropland and ranchlands since the 1950s, may become more widespread in the future.

The report also presents an example of an adaptation planning and implementation process, applicable to any group facing disruption. It outlines many of the challenges that Navajo communities may face, considers the strengths and capacities that the Nation may already have in place to institute adaptation efforts, and suggests potential adaptation strategies.

Nania said she and her co-authors hope Navajo Nation natural resource planners -- some of whom worked closely with the authors of the new report -- will find the information a helpful guide for the adaptive planning process.

One example in the report features the golden eagle, which is protected on Navajo Reservation lands. The bird's numbers are declining on the Colorado Plateau, likely due due in part to climate shifts and non-climatic factors. The report outlines a process that resource managers and the broader community could use to come up with effective ways to address the eagles' decline.

"We hope resource managers and communities will take this report and adapt it to suit their own needs," said Dr. Karen Cozzetto, co-lead author on the report and a researcher with NOAA's Cooperative Institute for Research in Environmental Sciences at CU-Boulder. "They have the expertise and the knowledge to carry forward this kind of adaptation planning."

WHERE TO FIND THE REPORT

Go to http://drought.gov/drought/news/new-report-documents-changes-navajo-nation-lands-offers-hope-resilience or contact the authors at Julie.Nania@colorado.edu or Karen.Cozzetto@colorado.edu

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Primary authors of the report include CU-Boulder's Julie Nania, Getches-Wilkinson Center for Natural Resources, Energy and the Environment, and Karen Cozzetto, Western Water Assessment. Contributing authors include Nicole Gillette, Ann Mariah Tapp, Sabre Duren, Michael Eitner and Beth Baldwin. Although this report is not a product of the Navajo Nation, the knowledge shared by tribal resource managers and other professionals across the Southwest have been incorporated throughout this report.