

# PERMACULTURE

The best way to assure water for our future

*Grant Curry*  
*Permaculture Provision Project*



HANANIAH'S REST  
**RANCH**



# PERMACULTURALIST



WHAT MY FRIENDS  
THINK I DO



WHAT SOCIETY  
THINKS I DO



WHAT I  
THINK I DO



WHAT MY NEIGHBOURS  
THINK I DO



WHAT A MICROBE  
THINKS I DO



WHAT I REALLY DO



I'm serious

this is my serious face





**ASK**  
**NT WRIGHT**  
**ANYTHING**



Google







BY ALYSA LANDRY  
SPECIAL TO THE TIMES

**THIS TSON SIKAAD, N.M.**—The Burnham Chapter has a reputation for being barren. This square-shaped community, located south of Shiprock on Navajo Route 5, is plagued with sand dunes, badlands and the widespread belief that nothing will grow. But Ernest Diswood, who lives on 2,300 acres in the eastern portion of the chapter, is literally changing the surface of the land—and slowly the conviction that the soil here is infertile.

"People are always making comments that you can't grow nothing out here," Diswood said Friday as he sought shade under a huge umbrella in his front yard. "People say I can't do this, but I'm standing here saying yes I can."

Diswood, who is retired, spends his time coaxing dozens of varieties of trees and shrubs to grow in his scorched soil. With help from nonprofit organizations that specialize in transforming barren land into gardens brimming with growth, Diswood is pioneering the concept of permaculture in an area where Navajos once relied on methods of "dry farming."

It's particularly appropriate that Diswood's land is in Burnham, or T'lis Tsoh Sikaad, a chapter named after a "big tree spreading out" but that feels almost devoid of vegetation. His goal is to create an island of green in an otherwise brown landscape.

It's a lofty goal, but not unattainable, said Kevin Sofen, a 27-year-old Chicago businessman who raises funds for permaculture projects on the Navajo Nation. Sofen teamed up with the Permaculture Provision Project, a nonprofit organization operating out of Cortez, Colo., and helped connect Diswood with the training and resources needed to achieve his goal.

Sofen, who has visited the Navajo Nation four times, defines permaculture as "creating an oasis in the desert." He wanted to focus on Navajo communities because of the Nation's designation as a food desert and its high incidence of diabetes and other diet-related problems.

"It doesn't take a lot of money to make a big impact on the land," he said. "You learn how to dig some holes and create a natural water cycle, which transforms barren land into a food-bearing landscape."

Grant Curry, of the Permaculture Provision Project, helped Diswood get started on the ground. Curry, who works as a nurse in Chinle, spends his leisure time developing permaculture in the arid lands of the Southwest.

"Just by changing the way the land is shaped, it turns desert into paradise," he said. "For better or worse, I believe that much of the windblown landscape on the Navajo Nation might benefit from becoming more green."

# Barren no more

Burnham man coaxes life out of one of the Nation's brownest chapters

As seen on 6/22/17 in the **NAVAJO TIMES**



Ernest Diswood leans into a main-line drip system that keeps trees hydrated.

FOR THE NAVAJO TIMES | ALYSA LANDRY

Curry hosts workshops to teach people like Diswood how to transform their land with concepts of sustainable agriculture. It takes about three years of "help" in the form of drip systems and sculpted land before previously dry soil begins sustaining vegetation on its own, he said.

Permaculture calls for small alterations of the landscape, Curry said. He teaches people how to build berms or swells to catch rainwater, and how to transform badlands into usable territory.

"We are living in a harsh climate," he said. "Permaculture looks to nature to do what it does best. It's knowing how to build up a bank account of water under the ground; it's about changing the way the elements work."

Curry advised Diswood to use erosion rolls and check dams to catch sediment and fill in deep gullies. He also showed Diswood where to plant trees and how to persuade plants to grow.

"A lot of what this is, is based on ancient practices," Curry said. "These techniques are simple, but they bring more food and water to people than any high-tech agricultural approach."

Burnham is an extreme example of the barren landscape of the Nation, Diswood said. But his patch of green is proving that vegetation can grow, if given the right circumstances.

"We have native plants returning, traditional and ceremonial plants," he said. "We have birds and wildlife coming to live here



FOR THE NAVAJO TIMES | ALYSA LANDRY

Ernest Diswood points to a tree tube that protects saplings from predators.

To me, permaculture means more than growing plants now; it's looking at land management in the long run. It's making sure this growth is still here long after I'm gone."

EARTH CARE, PEOPLE CARE, FUTURE CARE

# permaculture

## Extinction Rebellion

## Turning Deserts into Food Forests



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SACRED SHELTER  
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HIVE • 2019  
PERMACULTURE  
MAGAZINE PRIZE

THE NAVAJO NATION



BEN SHELLY PRESIDENT  
REX LEE JIM VICE PRESIDENT

April 1, 2015

Dr. John D. Lui  
Commonland Foundation  
Ci Yun Si 11  
Beijing, China 100123

Dear Mr. Liu,

Please accept this letter officially inviting you to return to the Navajo Nation to present the potential of ecological restoration of land to the leadership of the Navajo government and to our Universities and Youth Groups.

We have studied the four returns model as defined by the COMMONLAND FOUNDATION CEO Willem Ferwerda and believe that this is of great importance for our people and our lands.

We welcome the interest and support of the COMMONLAND FOUNDATION to fully understand our situation, to analyze the problems and opportunities and to help us design integrated plans for restoring our landscapes. As you mentioned on your initial visit, this could begin rapidly with the creation of at least one Research, Training and Innovation Center for Ecological Restoration and from there grow to plans for restoration of our lands across the U.S. States of New Mexico, Arizona, and Utah.

Given the exigencies that face our people, both natural and manmade, the best and most long lasting way to ensure a legacy of wellbeing for the entire region is certainly to help return our land to ecological health.

The idea of restoring the natural ecological health of our landscapes is aligned with our unique cultural cosmology, our historical understanding and the need of our people to achieve satisfying and sustainable autonomous lives and protect our physical and cultural legacy for future generations.

We are hopeful that you can return soon to our land and we can begin work that will have positive repercussions for the whole world.

Sincerely,

A handwritten signature in black ink, appearing to read "Ben Shelly".

Ben Shelly, *President*  
THE NAVAJO NATION

POST OFFICE BOX 3440 • WINDOW ROCK, NAVAJO NATION, ARIZONA • 86513 • TELEPHONE: (928) 871-7000 • FAX: (928) 871-4025

cc: Grant Curry



PERMACULTURE  
PROVISION  
PROJECT



HANANIAH'S REST  
RANCH

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**Living Tiny**  
*Rosemerry Trommer 2014*

Chris Curry had a big problem. He didn't have much money, and he needed a place to live. Out of necessity, he did the opposite of what most of us are trained to do: Think small. Smaller than that, Think tiny.

Curry knew from working on large construction sites in Telluride and Durango that there was an abundance of materials that could be reclaimed. I would see them filling a 40 yard dumpster every week," he says.

[Read more](#)

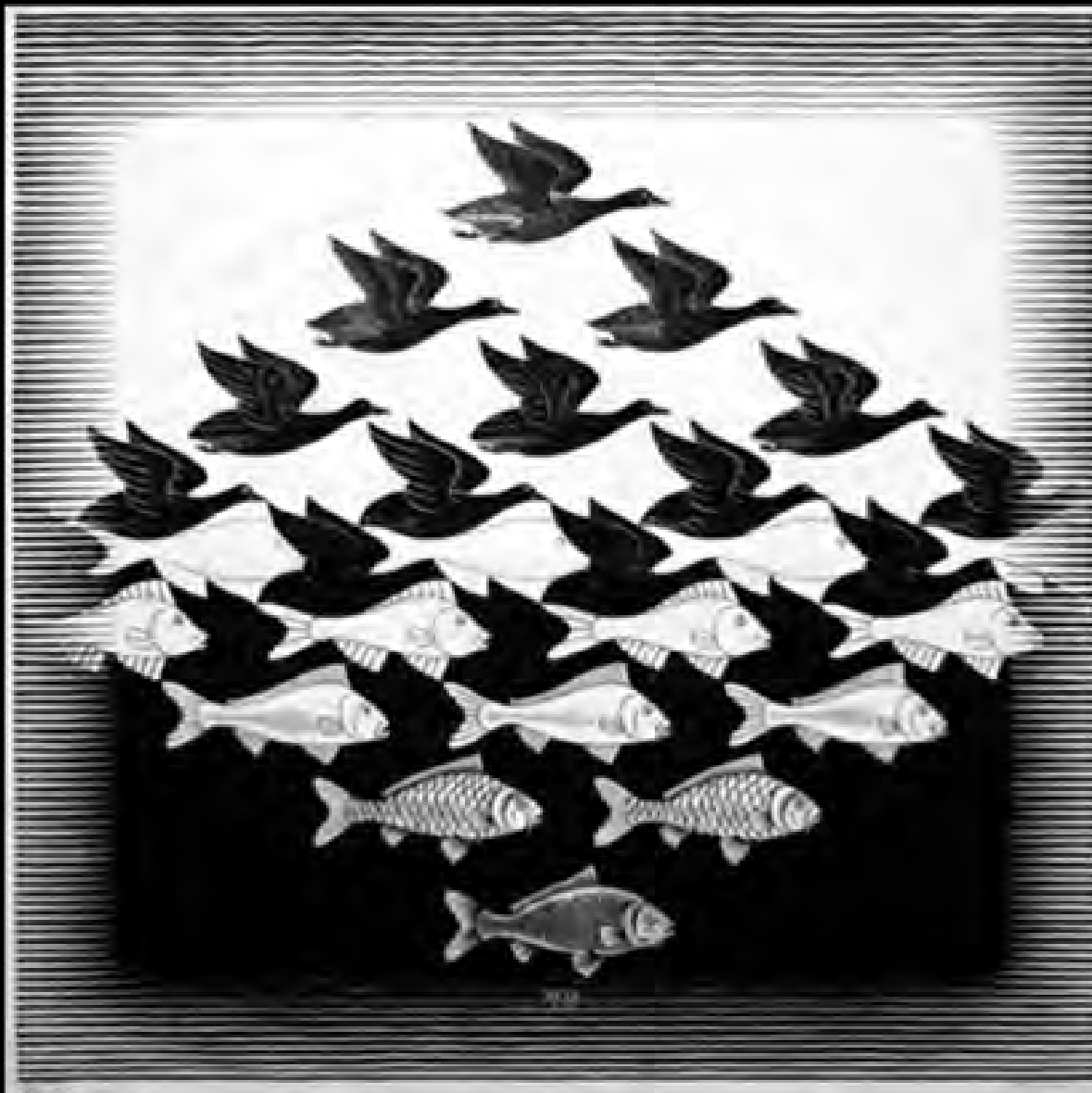


**Permaculture seen as a match for the Southwest**  
*Jim Mimiaga 2014*

"A forest full of food" has a nice ring to it, and the concept is realized using permaculture farming techniques.

Grant and Kathy Curry, of Dolores, are creating an innovative farm at the head of Trail Canyon that they hope will produce food for generations while skimping on water.





# Ex-Fighter Pilot Helps Navajo Dream Come True With Trees Program : Agriculture: Kit Carson's 1863 raid destroyed most of the tribe's fruit trees. Replanting program promises to give the Navajo more self-sufficiency.

By **MERCER CROSS**  
NATIONAL GEOGRAPHIC

JANUARY 3, 1993 | CHINLE, ARIZ

**F**rancis Draper, retired champion steer wrestler, wrestles his four-wheel-drive through miles of rough sand in Canyon de Chelly and Canyon del Muerto, mystical lands of ruined dwellings in red sandstone cliffs where his Navajo forebears lived 2,000 years ago.

He pulls to a stop at Twin Trails and looks with pride at the trees thriving in his apple orchard.

They are a living answer to a tragedy that befell the Navajo 129 years ago at the hands of frontier folk hero Kit Carson.

An Army colonel in the fall of 1863, Carson led his troops through Canyon de Chelly, burning hogans, slaughtering livestock and destroying crops, including about 5,000 peach trees.

# United States Drought Monitor

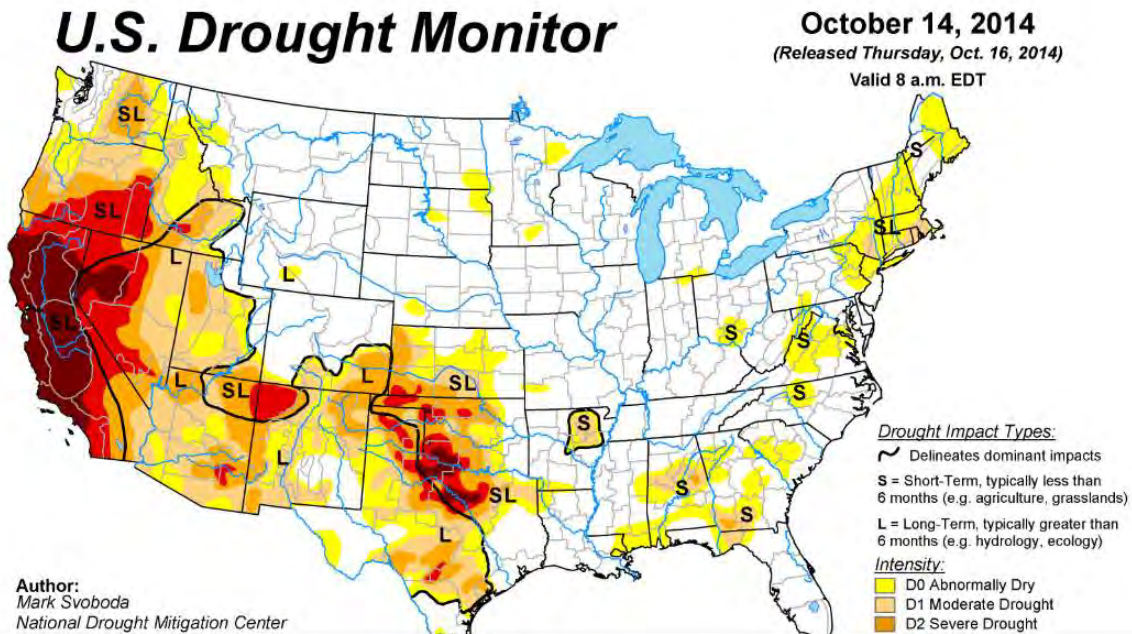
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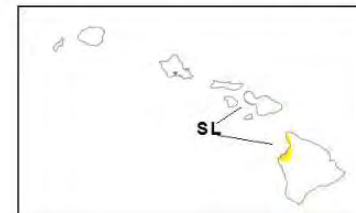
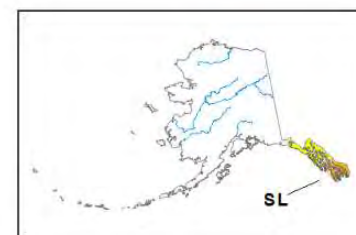
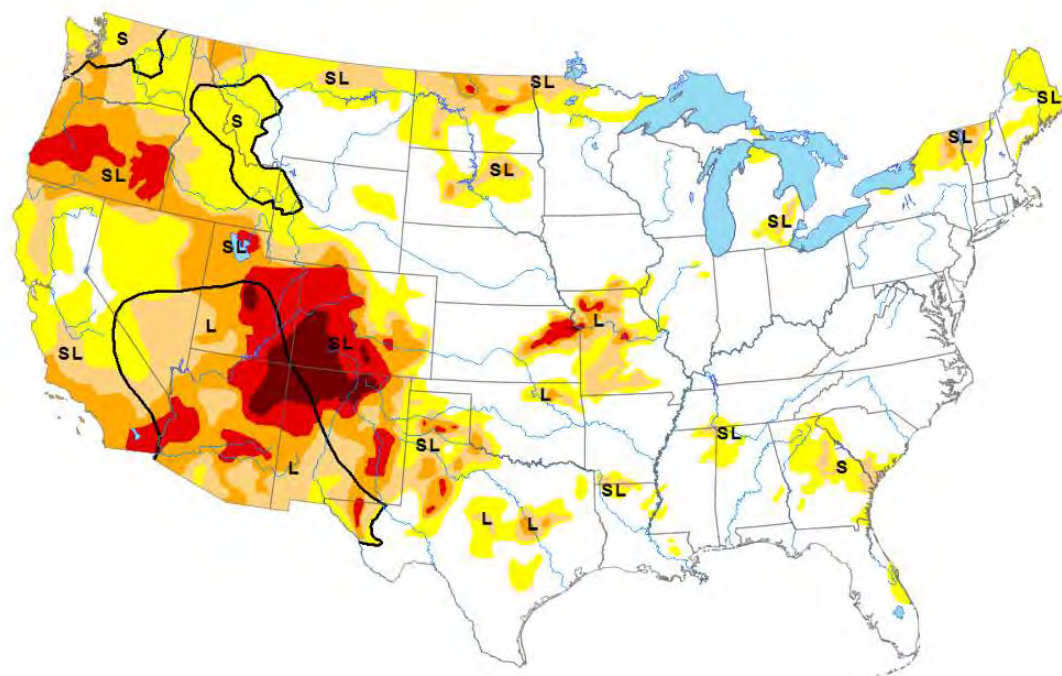
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Map released: October 4, 2018

Data valid: October 2, 2018 | Author: David Miskus, NOAA/NWS/NCEP/CPC



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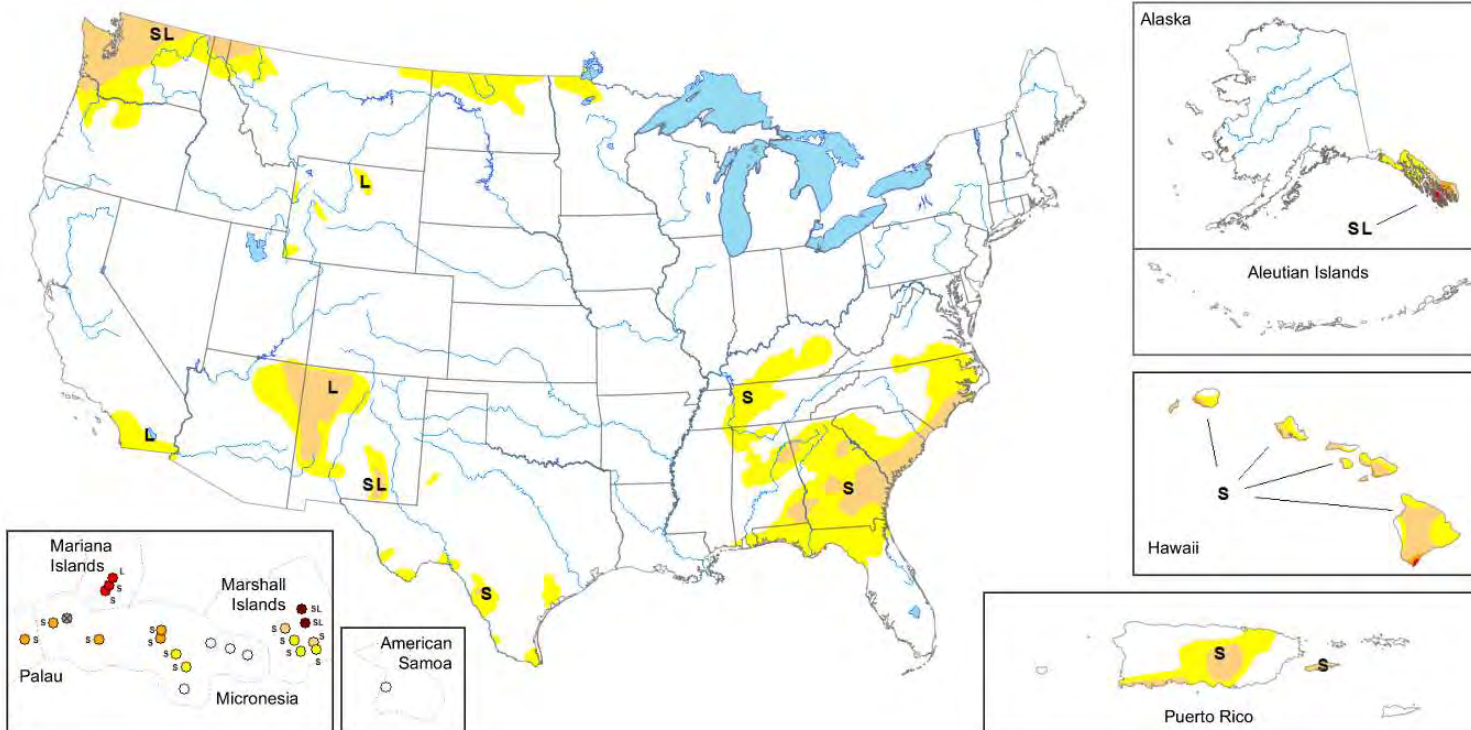
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Data valid: May 28, 2019



Global Assessment Report  
on Disaster Risk Reduction



Disaster risk assessment case study:

*Recent drought on the Navajo Nation, southwestern United States*


Margaret H. Redsteer, Klara B. Kelley, Harris  
Francis and Debra Block

2010



## **Technical Review** of the Navajo Nation Drought Contingency Plan – Drought Monitoring

Michael Crimmins, Nancy Selover, Karen Cozzetto, and Karletta Chief  
Editor: Alison Meadow



# CONSIDERATIONS FOR CLIMATE CHANGE AND VARIABILITY ADAPTATION ON THE NAVAJO NATION

March 2014

Julie Nania & Karen Cozzetto, et. al

## Recent Seasonal Variations in Arid-Landscape-Cover and Aeolian Sand Mobility, Navajo Nation, Southwestern United States

Amy E. Draut

*U.S. Geological Survey, Santa Cruz, California, USA*

Margaret Hiza Redsteer and Lee Amoroso

*U.S. Geological Survey, Flagstaff, Arizona, USA*

The socioeconomic impacts of climate change pose problems not only in developing countries but also to residents of arid lands in the United States among marginalized societies with limited economic means. In the Navajo Nation, warming temperatures and recent drought have increased aeolian sediment mobility such that large, migrating sand dunes affect grazing-lands, housing, and road-access. Dust derived from this region also affects albedo and longevity of the Rocky Mountains snowpack, located downwind. We present initial results from a study that monitors sand transport and vegetation within a 0.2 km<sup>2</sup> site in the Navajo lands, measuring the effects of drought on landscape stability since 2009. Sand mobility decreased substantially as 1 year with near-normal monsoon rainfall (2010) somewhat abated a decade-long drought, temporarily doubling vegetation cover. Vegetation that grew during 2010, with adequate rain, died off rapidly during dry conditions in 2011. Short-term increases in rainfall that promote annual, but not perennial, plant growth will not improve landscape stability in the long term. Climate projections suggest that a warmer, drier climate and potentially enhanced sediment supply from ephemeral washes will further increase aeolian sand transport and dune activity, worsening the present challenges to people living in this region. Connections among climate, vegetation, and aeolian sediment erodibility in this region are highly relevant to other areas of the world with similar environmental problems.

### 1. INTRODUCTION

Human communities most vulnerable to the effects of climate change are those with limited natural resources for subsistence, limited economic means, and rapid population growth. Although such conditions are more commonly associated with developing countries, even within some of the

wealthiest nations there are societies whose environmental and socioeconomic resources render them particularly vulnerable to twenty-first century climate change. The Navajo Nation is the largest tribal reservation within the United States, and its location is presently restricted to arid and semiarid lands within the Navajo ancestral homeland. These lands are stressed by drought, land-use practices, and a population that grew rapidly during the twentieth century. Like many other Native American communities, the Navajo people face economic disadvantage and, owing to livestock-management regulations and cultural ties, cannot readily relocate either their grazing lands or settlements [Redsteer et al., 2010a].

*Climates, Landscapes, and Civilizations*  
Geophysical Monograph Series 198  
This paper is not subject to U.S. copyright.  
Published in 2012 by the American Geophysical Union.  
10.1029/2012GM00214

NEW YORK TIMES BESTSELLER

SECOND EDITION

With a new section, "On Hubris and Envy"

THE  
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Nassim Nicholas Taleb



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**Michael Burry contacted the government several times to see if anyone wanted to interview him to find out how he knew the system would collapse years before anyone else.**

**No one ever returned his calls.  
But he was audited four times and questioned by the FBI.**

**The small investing he still does is all focused on one commodity: water.**

# Water Conflict Chronology

Date Range: Conflict Type: Region: Search 655 Conflicts

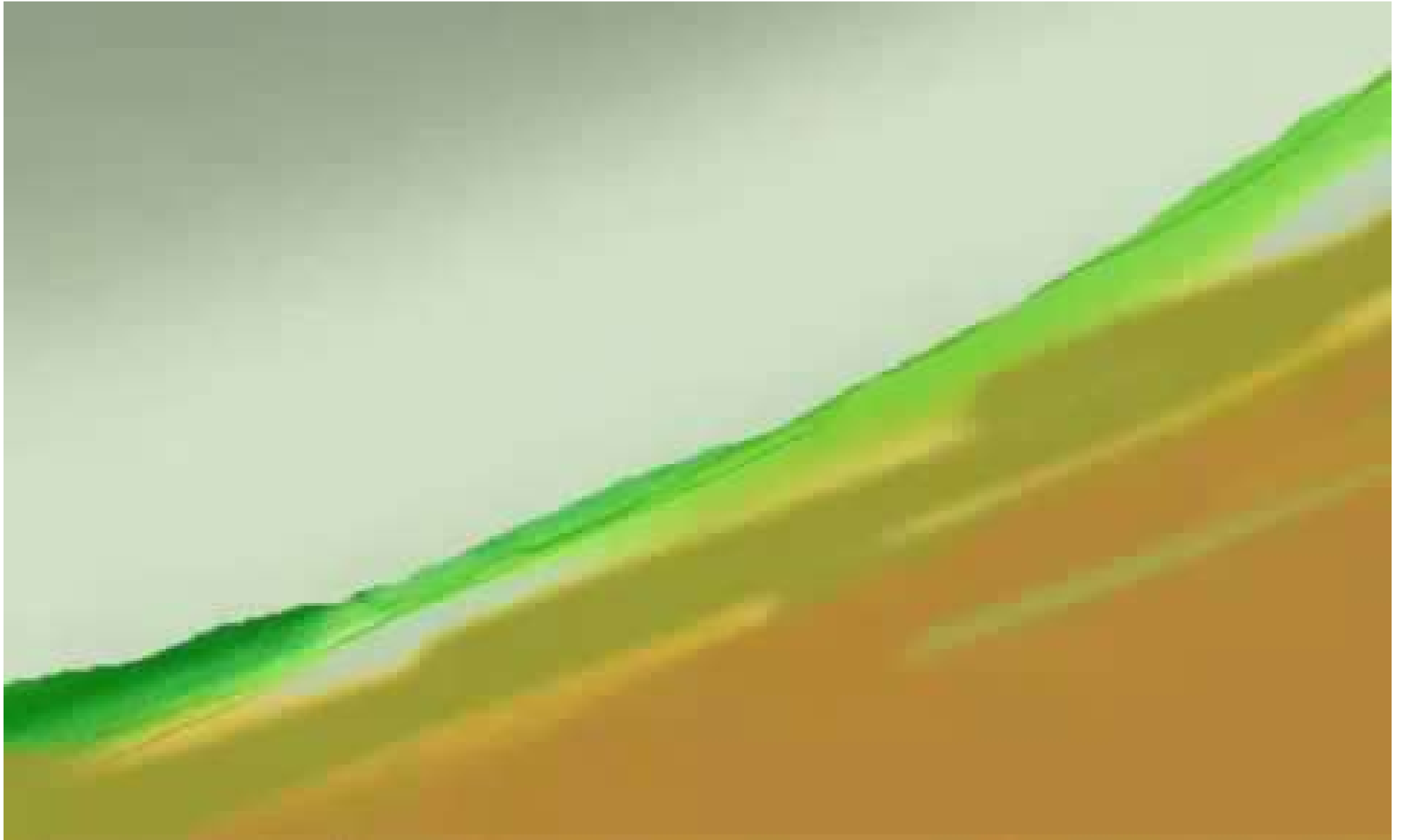
- 1. God Punishes Man with Six-Day Storm (3000 BC)
- 2. Lagash-Umma border dispute (2500 BC)
- 3. Tigris River dammed (1720-1684 BC)
- 4. Kishon River flooded in defeat of Sisera (circa 1300 BC)
- 5. Moses parts the Red Sea (1200 BC)
- 6. Assyrian king destroys Armenian irrigation network (720-705 BC)
- 7. Sennacherib razes Babylon (705-682 BC)
- 8. Hezekiah stops springs in advance of Assyrian Invasion (701 BC)
- 9. Assyrian king cuts off water of enemy (681-699 BC)
- 10. Assyrian king dries up enemy's wells (669-626 BC)
- 11. Khosr River diverted by Babylonians (612 BC)
- 12. Nebuchadnezzar uses Euphrates River as defense (605-562 BC)
- 13. Athens poisons enemies' water (590-600 BC)
- 14. Assyrians poison wells of enemies (6th Century BC)
- 15. The use of water as a weapon in the ancient Middle East (596 BC)
- 16. Cyrus diverts the Diyala River (558-528 BC)
- 17. Cyrus diverts the Euphrates (539 BC)
- 18. Spartans poison cisterns of Piraeus (430 BC)
- 19. Water as a weapon in the battle of Delium, 424 BC (424 BC)
- 20. Alexander tears down Persian dams (355-323 BC)
- 21. Parthian king Arsaces III destroys water supply system (210 BC)
- 22. Wei River dams in China are breached in 204 BC (204 BC)
- 23. The Achaeans use water as a weapon in the siege of Phana (2nd century BC)
- 24. Water is used as a weapon in 101 BC China (101 BC)
- 25. Caesar constructs ditches in Siege of Alesia (52 BC)
- 26. Caesar attacks water supplies during siege of M...



**Water Conflict Chronology** All Dates All Regions All Conflict Types **655 Conflicts**

2018	Water shortages in India lead to deadly fights between civilians and harassment of water company employees	Trigger	Southern Asia	Lack of water in cities across India -- due to drought, growing populations, and inadequate infrastructure -- leads to high tensions, resulting in at least two deaths when a fight breaks out between residents waiting in line at a water truck. Those working for the water companies with the responsibility of turning different water lines on and off, called "key men," are increasingly harassed by residents wanting to persuade them to keep their water on.	<a href="#">AbiHabib and Kumar 2018</a>
2018	Protests over water shortages turn violent	Trigger	Southern Asia	Water shortages in the southern part of Iran have caused protests, which turned violent with attacks on property and other infrastructure. Police action to break up the protests lead to several injuries and deaths.	<a href="#">Maclean 2018</a> ; <a href="#">Campbell 2018</a> ; <a href="#">Hameed 2018</a> ; <a href="#">Givetash 2018</a>
2018	Alleged support of Taliban by Iran, in part to disrupt water projects in Afghanistan	Trigger	Southern Asia	Attacks to the city of Farah in the western region of Afghanistan in early 2018 by the Taliban may, in part, be supported by Iran in an attempt to reduce Afghanistan's ability to pursue water dam infrastructure projects. Experts disagree to the amount of support given to Taliban militants by Iran, but water projects in Afghanistan's western region are indisputably a point of contention between the two nations.	<a href="#">Hussein and Jedinia 2018</a> ; <a href="#">Jerusalem Post 2018</a>
2018	Water project workers killed and kidnapped by suspected militant group	Casualty	Northern Africa	Attacks to the city of Farah in the western region of Afghanistan in early 2018 by the Taliban may, in part, be supported by Iran in an attempt to reduce Afghanistan's ability to pursue water dam infrastructure projects. Experts disagree to the amount of support given to Taliban militants by Iran, but water projects in Afghanistan's western region are indisputably a point of contention between the two nations.	<a href="#">OOSKANews 2018</a>
2018	Airstrikes damage water and sanitation infrastructure	Casualty	Western Asia	Airstrikes over several days in the city of Hodeidah, Yemen, damage water and sanitation infrastructure, including many drinking water wells.	<a href="#">UNOCHA and UNOCHA Yemen 2018</a> ; <a href="#">Alghobary 2018</a> ; <a href="#">Al Rodaini 2018</a>
2018	11 deaths attributed to ongoing conflict between herdsmen and farmers	Trigger	Sub-Saharan Africa	11 are killed and 11 more injured during an attack by Fulani herdsmen on a farming community in Central Nigeria, ignited by the continuing conflict over land and water resources.	<a href="#">AP 2018</a> ; <a href="#">Nation Newspaper 2018</a>
2018	More than 70 water systems damaged in Ethiopia related to violent conflicts	Casualty	Sub-Saharan Africa	At least 76 water systems have been damaged by the ongoing conflict in the Oromia region of Ethiopia. The larger conflict leading to these casualties is between different ethnic groups and has displaced hundreds of thousands of people.	<a href="#">UNICEF 2018</a>
2018	Iraqi female activist assassinated	Trigger	Western Asia	An Iraqi activist, Soad Al-Ali, is assassinated while getting into her vehicle in Basra, Iraq. Mrs. Al-Ali had worked to bring better government services to her community, including safe and reliable drinking water.	<a href="#">Al Jazeera 2018</a>
2018	Tens of thousands admitted to hospitals from contaminated drinking water, inciting violence that leads to deaths and injuries	Trigger	Western Asia	Tens of thousands fall ill from contaminated drinking water in Basra, Iraq. In response, citizen unrest escalates and protests turn violent, leaving at least 15 dead and hundreds injured.	<a href="#">Trew 2018</a> ; <a href="#">Al Jazeera 2018</a> ; <a href="#">Amnesty International 2018</a>
2018	Conflicts over pasture land and water resources lead to violence	Trigger	Sub-Saharan Africa	14 people are killed in Northern Kenya, near Marsabit, after ongoing conflicts between two ethnic groups over land and water resources turns violent.	<a href="#">Abidi 2018</a>
2018	Protest to prevent oil pipeline that threatens water resources is met with violent arrests	Trigger	North America	Dozens of protestors are arrested and restrained, sometimes with violent tactics, as they physically resist the construction of a major oil pipeline. The protestors argue that the pipeline is proceeding illegally and that it threatens their water supplies as well as other resources that are vital to their way of life.	<a href="#">Leau Est La Vie Camp No Bayo Bridge 2018</a> ; <a href="#">Zanolli 2018</a> ; <a href="#">Jamail 2018</a>















Map

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Navigation controls including a compass, a 3D view button, a street view pegman icon, and zoom in/out buttons.

