

REGIONAL INTEGRATED SCIENCES & ASSESSMENTS (RISA)

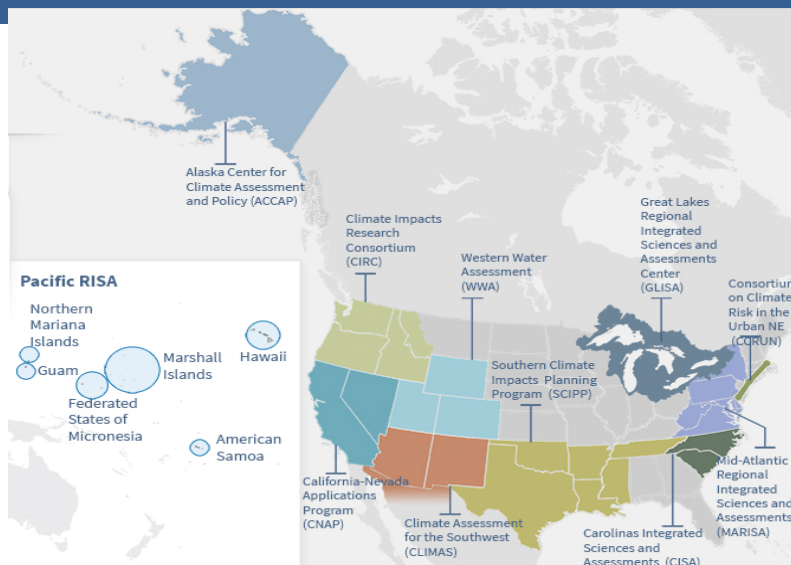
Helping regions and communities better prepare and plan for hazards and extreme events for more than 20 years.

In 2016 alone, the United States experienced 15 billion-dollar weather and climate disasters, which resulted in 138 fatalities and cost \$46 billion.

For more than 20 years, the NOAA **Regional Integrated Sciences and Assessments (RISA)** Program has been producing actionable climate research, helping to reduce economic damages that Americans face every year due to droughts, floods, forest fires, vector-borne diseases, and a host of other climate and extreme weather impacts. The **network of eleven RISA teams across the country** work hand-in-hand with stakeholders and decision makers in regions across the United States to ensure that research and information is responsive to their needs.



Photo Courtesy: Pacific RISA



The sustained regional presence of RISA enables teams to effectively support responses to extreme events. In 2012, CCRUN's expertise in coastal inundation informed New York City planning efforts after Hurricane Sandy, WWA researchers aided Colorado after 2013's record flooding, and RISA teams in the Western United States have supported the region during its recent intense drought.



Photo Courtesy: WWA

Research produced by the RISA program has educated, informed, and closely interacted with thousands of decision makers across the nation, helping them build the expertise to better plan and prepare for climate variability and extreme weather events. RISA products are making a difference today, helping communities and individuals improve resilience, enhance growth, and reduce costs in a variety of sectors. RISA is supported by the National Oceanic and Atmospheric Administration's (NOAA) Climate Program Office.

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Learn more: [CPO.NOAA.gov/RISA](https://cpo.noaa.gov/RISA)



HOW IS RISA HELPING COMMUNITIES NEAR ME?

Bound by the Lakes that shape both their cultural and natural resources, Great Lakes communities have faced dramatic changes in the past five decades—including deep economic downturn, population shifts, and negative environmental impacts. While climate change impacts are projected to exacerbate some of these challenges, leaders in the region are increasingly committed to a sustainable future by leveraging opportunities to mitigate climate impacts and adaptively respond to them. The **Great Lakes Integrated Sciences & Assessments (GLISA)** supports the Great Lakes region across the United States and Canada, building the capacity to manage risks from climate change and vulnerability.

GREAT LAKES INTEGRATED SCIENCES & ASSESSMENTS (GLISA)



glisa.umich.edu

Predicting Lake Ice with Apostle Islands National Lakeshore

Climate change and other stressors are altering ecosystems within the National Parks, impacting park management and operations. GLISA partnered with the National Park Service (NPS) in 2015 to integrate climate information into NPS's scenario planning approach to help Apostle Islands better prepare for changing conditions in their popular ice caves. During this engagement, a park official wondered aloud whether it would be possible to predict ice formation in time for the park to make seasonal planning decisions. This question sparked a partnership between Apostle Islands and GLISA to develop a model to do just this. Generally, ice forms through interactions between water levels, temperature, and atmospheric events. To model these dynamics, GLISA researchers looked to phenomena such as El Nino and the Arctic



Photo credit: Brian Rauvola, Duluth Billboard Art Project

Oscillation, and NPS provided historical data. This partnership has yielded exciting results. A new model has been developed to successfully forecast the likelihood that Lake Superior freezes firmly enough to provide safe access to the caves, as well as the date of ice formation. The predictions are extremely localized – a major advance in modeling – and can be made months in advance, in time for NPS to plan and budget for the upcoming season. The predictive power of this new model empowers decision makers at Apostle Islands in a way that did not previously exist.