



# Climate Services

EconomicDevelopmentAsheville.org

*The world's largest archive of climate and weather data, stored by the National Centers for Environmental Information, is safely located in Asheville, North Carolina, protected by the Blue Ridge Mountains.*

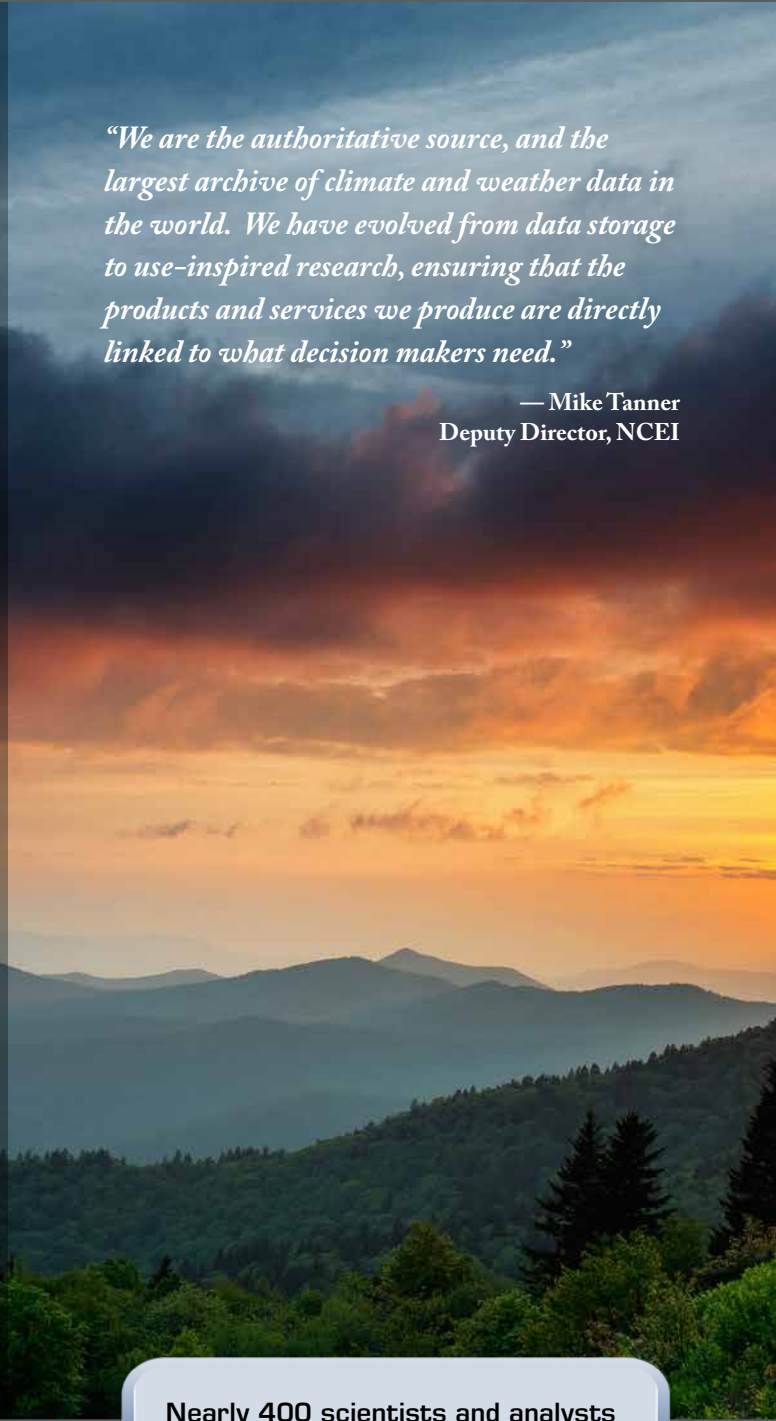
The Asheville area may have more climate assets than any other place in the world, including a large concentration of climate-based scientists. Utilizing this wealth of climate data, the private sector, nonprofit organizations, and academia are developing adaptation tools to make communities and businesses more resilient to the effects of climate change and extreme weather. Climate science-related educational programs in the area support a robust and experienced local talent pool well-equipped to move forward with current and future enterprise.

## **National Centers for Environmental Information and NOAA**

Located in the heart of downtown Asheville, NCEI is the world's largest archive of weather and climate data and the center of worldwide communication about climate change. NCEI and NOAA provide services to every sector of the U.S. economy, informing crucial choices that governments, businesses, and individuals make every day. A powerful economic engine, NCEI provides entrepreneurs, data modelers, and collaborators with data to better understand climate impacts and engage new strategies for preparedness and strategic planning. With this knowledge, communities and businesses can save considerable expenses, and in some cases even save lives.

*"We are the authoritative source, and the largest archive of climate and weather data in the world. We have evolved from data storage to use-inspired research, ensuring that the products and services we produce are directly linked to what decision makers need."*

— Mike Tanner  
Deputy Director, NCEI



Nearly 400 scientists and analysts work at NCEI, including 16 Nobel Prize Laureates. Ask someone on the street about the weather, and a climatologist might respond.

*Focus Report from the*



Asheville-Buncombe County

Benefits of applying climate data strategically include:

- Conservation of Natural Resources
- Minimizing Natural Disaster Risks
- National Security
- Transportation
- Engineering
- Construction
- Insurance
- Education
- Public Health
- Agriculture
- Forestry
- Ecosystems
- Wildlife
- Quality of Life



## Asheville Climate

	January	July
Avg. High Temp.	47°F	85°F
Avg. Low Temp.	28°F	65°F
Mean	38°	75°F
Record High	78°F	99°F
Record Low	-17°F	49°F
Avg. Precip.	2.89 in.	3.33 in.

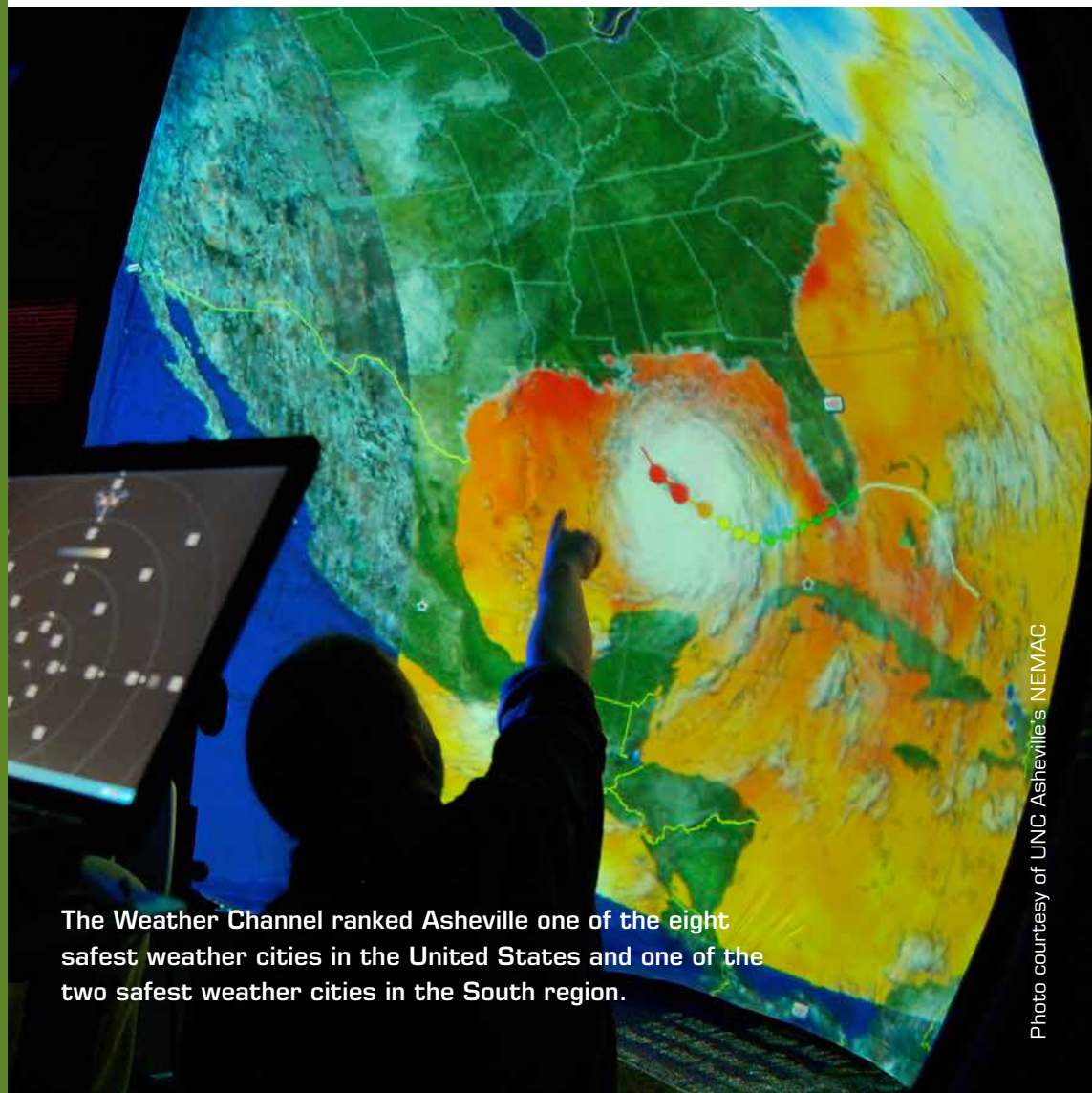
Source: [www.weather.com](http://www.weather.com)

# Climate Resiliency

Climate resilience means understanding the risk posed by weather and climate, and having the resources and capacity to adapt. Flexibility makes good business sense.

For business, this means minimizing risk and predicting potential disruptions to operations. Changing conditions, including extreme weather events, affect operations and can derail strategic objectives. There is a need for tools in the marketplace that address these disturbances and help prioritize the risks. Armed with climate data tools, businesses can mitigate the threats. Governments can make informed decisions to minimize negative environmental impacts. Resiliency is a factor in every company or community's ability to withstand the unexpected.

Easy-to-understand scientific models help community and business leaders make better informed decisions on issues ranging from disaster recovery, climate change and land use planning to energy conservation, water quality, and wildfire prevention. UNC Asheville's National Environmental Modeling and Analysis Center (NEMAC) located in The Collider uses custom, high-tech visualization tools, including a 3D GeoDome and a visualization wall to present this type of complex data to local decision makers.



The Weather Channel ranked Asheville one of the eight safest weather cities in the United States and one of the two safest weather cities in the South region.

Photo courtesy of UNC Asheville's NEMAC



# Business Synergy

*“The government is a data collector, curator, and steward of datasets and information. As for resilience, adaptation, and mitigation, the government is tailoring maybe 10 or 15 percent of what society needs, because the government shares the need. That means 85 to 90 percent of the need has to be met by the private sector and academia. This is an obvious economic development opportunity.”*

— Dr. Otis Brown, Founding Director of CICS-NC  
Research Professor in the Department of Marine, Earth and Atmospheric Sciences

## The Right Partnerships at the Right Time

The private, public, nonprofit, and academic sectors in Asheville are uniting around climate science. Together, they are innovating and exploring adaptive approaches using big data and advanced technology. This synergy not only provides expanded business opportunities but also utilizes skills across organizations and industries to increase and leverage capacity. This is a powerful approach in a globally competitive economy.

### UNC Asheville: NEMAC

UNC Asheville’s National Environmental Modeling and Analysis Center (NEMAC) has responded to the growing demand for climate data and disaster response tools. Professors, scientists, researchers, and students specialize in converting complex climate data into digital visualization and computer models easily and quickly understood. These help predict how higher temps and more extremes in rainfall and severe storms could affect specific areas and developments, from coastal regions to mountain valleys. It’s also used to address regional and national environmental issues.

### Global Science & Technology, Inc.

Global Science & Technology, Inc. (GST), a meteorological and climatological services company in Asheville, works predominantly in the federal sector with NOAA and the National Aeronautics and Space Administration (NASA). GST solves challenges of advanced science and technology enterprises. They are a perfect example of how information from the public sphere can be turned into a usable format for city planners and other important decision makers. GST currently has a Climate Data Research Support Contract with NOAA at NCEI.

### The Collider: Ideas to Solutions

The Collider is a one-of-a-kind, world-class coworking, education and meeting space for entrepreneurs and tech companies focused on innovating products and services for environmental and climate change adaptation and resilience. It’s designed to accelerate an emerging climate resilient economy by combining talent, knowledge, and technology to build up the nation’s first climate technology ecosystem. The nonprofit, next-generation innovation center is housed within the 26,000-square-foot Callen Center in downtown Asheville, just 2 blocks from NCEI.

*“There is nowhere else in the world like The Collider in Asheville. Think of it as the climate sciences version of Silicon Valley. It’s an incredibly exciting opportunity for Acclimatise to locate our North American office here.”*

— John Firth, CEO & Co-Founder, Acclimatise Group Ltd, London

### NC State University: Cooperative Institute for Climate and Satellites

The Cooperative Institute for Climate and Satellites (CICS-NC), part of North Carolina State University, is an inter-institutional research center that links government, private industry, and academia in Asheville. CICS creates a dialogue about what needs exist and what skills are available, finding the best way to continually further knowledge and communication around climate data. CICS is the research sector of NCEI, incorporating academic rigor techniques and algorithms to make the data more accessible to businesses and the public. CICS enhances climate resilience through informed decision-making, because climate resilience is good for the community and the economy.

Additional climate data and science focused partnerships are active between educational programs interconnected with nonprofits such as American Association of State Climatologists (AASC), private business like Climate Interactive, and government agencies such as United States Global Change Research Program (USGCRP) and the Department of Energy. This reciprocity fosters collaborative opportunities, exchange of information across sectors, development of adaptive management strategies, and an accessible pool of data, talent, products, and services.



## Current Conditions

With more than 16 climate services organizations and 4 times the national average concentration of atmospheric scientists, Asheville has exciting opportunities to commercialize on climate data.

### Climate Interactive

Climate Interactive builds climate-based simulation models to show decision makers how scenarios play out based on hypothetical choices they have to make to visualize potential effects in the real world. Using data sources like NCEI, Climate Interactive creates mathematical models and tools to understand the big picture, plan ahead for challenges, and determine the best options for their future well-being.

### Acclimatise

Acclimatise is a specialist consulting, communications and digital application company providing world-class expertise in climate change adaptation and risk management. It bridges the gap between the latest scientific developments and real world decision-making, helping its clients introduce cost-effective measures to build climate resilience into their strategies, processes and activities.

### American Association of State Climatologists

In 2015 the American Association of State Climatologists (AASC) relocated its national headquarters to Asheville, citing the city's high concentration of climate-related organizations and activity. The AASC supports the development of science-based climate services that assist in climate-related decisions for the public and private sectors at the state and local levels, from community planning to business resiliency and risk mitigation.

### Locus Technologies

Locus Technologies created the world's first commercial online environmental data management system. The streamlined applications enable businesses to easily track carbon management and environmental activities while saving time and lowering costs with improved efficiencies. Its consulting services range from groundwater and soil contamination, to greenhouse gas emissions. Locus was honored by the Environmental Business Journal with a Business Achievement Award in IT eight of the last ten years and ranked on ENR's Top 200 Environmental Firms in 2014 and 2015 as the only EHS software company.

### Fernleaf Interactive

Fernleaf designs cloud-based decision tools to help leaders of public and corporate organizations identify environmental risks and determine the most cost-effective solutions to build resilience. Turning complex data into interactive maps and graphs, it enables decision makers to visualize scenarios of how climate change could impact a community or business and identify which risks present the largest socio-economic threat.

### Wired for the Future

Climate data companies demand a robust infrastructure from providers like ERC Broadband. This non-profit provides reliable, secure fiber-optic based network services with speeds up to 10 Gbps that serve educational and research institutions and supports economic growth in Western N.C. Critical data hosting companies like Immedion Asheville, Netriplex, and Google rely on and enhance the region's infrastructure.

More than 130 students earned bachelor's degrees in weather and environment-related programs at six higher education institutions in 2012 in the Asheville MSA. These specialized degrees include Atmospheric Science and Meteorology, Environmental Science, and Forestry, as well as Physics and Chemistry.

## A Favorable Climate

Local climate partners helped develop the **U.S. Climate Resilience Toolkit** launched by the White House in Nov. 2014. It provides best practices to help communities prepare for and boost their resilience to the impacts of climate change.

Asheville was recently named an **InnovateNC Community**, a two-year initiative to spur innovation and growth in its emerging climate science sector. With an increasing presence of innovative organizations in the private, non-profit and academic sectors uniting around climate science, Asheville has potential to become a world-class destination for new technologies, eco-friendly businesses, and high-growth ventures.

**Contact us to learn more about how NCEI and The Collider are fueling a climate services revolution in Asheville.**

[EconomicDevelopmentAsheville.org](http://EconomicDevelopmentAsheville.org)