



## Boulder and Boulder County Leading the Way in Green

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### Nobel Prize Winners

When the U.N. Intergovernmental Panel on Climate Change (IPCC) won the 2007 Nobel Peace Prize with former Vice President Al Gore, several dozen scientists and support staff at the National Center for Atmospheric Research (NCAR) shared the honor. The researchers served as authors or reviewers of IPCC reports showing that the planet is undergoing a rapid climate transition with significant societal and environmental impacts. NCAR also helped develop computer models used by IPCC authors around the world to simulate global climate.

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[www.ucar.edu/news/releases/2007/nobel1.shtml](http://www.ucar.edu/news/releases/2007/nobel1.shtml)

[www.ucar.edu/news/releases/2007/ipcctips.shtml](http://www.ucar.edu/news/releases/2007/ipcctips.shtml)

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[www.ucar.edu/news/releases/2007/ipcctips2.shtml](http://www.ucar.edu/news/releases/2007/ipcctips2.shtml)

The 2007 Nobel Peace Prize recognized the immense importance of science for the world's well being. Boulder scientist Susan Solomon of NOAA's Earth System Research Laboratory co-chaired the latest scientific assessment of the Intergovernmental Panel on Climate Change (IPCC). Solomon was invited to Sweden to receive the 2007 Nobel Peace Prize, awarded to the panel and to former vice president Al Gore. Solomon has spent her career at the National

Oceanic and Atmospheric Administration (NOAA) in Boulder. The IPCC technical support team for the latest scientific assessment was also based at the NOAA site here in Boulder. Scores of other NOAA Boulder scientists have participated in IPCC reports over the years as lead authors, contributors, and reviewers. Expert: [Anatta](mailto:Anatta@noaa.gov), 303-497-6288

[www.noaa.gov](http://www.noaa.gov)

[www.esrl.noaa.gov](http://www.esrl.noaa.gov)

[www.cpo.noaa.gov/ipcc/first\\_ipcc.html](http://www.cpo.noaa.gov/ipcc/first_ipcc.html)

Boulder scientists from the University of Colorado's Cooperative Institute for Research in Environmental Sciences (CIRES) and National Snow and Ice Data Center (NSIDC) also received the 2007 Nobel Peace Prize. Tingjun Zhang, from NSIDC, served as a lead author of the chapter "Observations: Changes in Snow, Ice and Frozen Ground" for the IPCC's fourth assessment report. Other CIRES researchers and affiliates authored chapters on sea level rise and radioactive forcing caused by air pollutants and other atmospheric gases and particles.

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[cires.colorado.edu](http://cires.colorado.edu)

[www.nsidc.org](http://www.nsidc.org)  
[cires.colorado.edu/news/press/2007/07-10-12b.html](http://cires.colorado.edu/news/press/2007/07-10-12b.html)  
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Three physicists at the National Institute of Standards and Technology (NIST) have won the Nobel Prize in physics in the past 10 years. Two of them work in Boulder at JILA, a joint institute of NIST and the University of Colorado at Boulder. They are Eric Cornell, who shared the prize in 2001 for the creation of a new state of matter called the Bose-Einstein condensate, and John "Jan" L. Hall, who shared the prize in 2005 for his contributions to laser science and the development of optical frequency combs, precision tools for measuring different colors of light. A third physicist, William D. Phillips, who works at NIST's labs in Gaithersburg, Md., shared the prize in 1997 for his work using laser light to cool and trap atoms. Media Contact: [Laura Ost](mailto:Laura.Ost@nist.gov), 303-497-4880.

[www.nist.gov](http://www.nist.gov)  
[www.boulder.nist.gov](http://www.boulder.nist.gov)  
[physics.nist.gov/News/contents.html](http://physics.nist.gov/News/contents.html)

If you've heard that Arctic Sea ice is shrinking or that Greenland is melting, then you probably heard it from scientists in Boulder.

### Weather Research

Severe weather can inflict enormous costs on society, and improving the accuracy of weather forecasts is a top goal of meteorologists around the world. Researchers at the National Center for Atmospheric Research (NCAR) and its parent organization, the University Corporation for Atmospheric Research, make significant contributions to computer models, radars, satellites, and other instruments to help us better understand the atmosphere. Data from a new satellite system, known as COSMIC, are improving forecasts of hurricanes, while new mathematical techniques are extending the usefulness of radars that track thunderstorms and other potentially dangerous weather systems.

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[www.ncar.ucar.edu/research/meteorology](http://www.ncar.ucar.edu/research/meteorology)  
[www.ucar.edu/news/releases/2006/cosmic2.shtml](http://www.ucar.edu/news/releases/2006/cosmic2.shtml)  
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[www.ucar.edu/news/releases/2006/wrf.shtml](http://www.ucar.edu/news/releases/2006/wrf.shtml)

Here's a twist – when was the last time you heard that researchers and artists got together to collaborate on climate change? It happens every fall in Boulder when the researchers, artists and locals gather to learn about climate change and the possibilities of a sustainable future. It's called [EcoArts](http://www.ecoarts.org). There are performances, exhibits, talks, tours, feasts, and parades. Plus there are tours of solar homes, culinary gardens, science exhibits and wind turbines.

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[www.ecoarts.org](http://www.ecoarts.org)

Ever wonder where the weatherman gets his information? NOAA's Earth System Research Laboratory in Boulder is a world leader in weather research. NOAA (National Oceanic and Atmospheric Administration) scientists developed the workstation software used by every weather forecast office in the nation and are currently developing the nation's next-generation weather forecast models. NOAA scientists are leading a five-year program in Northern California to improve forecasts of the heavy winter rains and snows that pound the West Coast every year and threaten major urban areas with catastrophic flooding. The project will gradually move across the country to solve forecasting problems in other highly populated, vulnerable areas. NOAA space-weather scientists are extending their fine-scale computer model of the atmosphere as high as 600 kilometers above the ground. The model will be an important tool in extending accurate weather forecasts several weeks into the future.

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[www.noaanews.noaa.gov/stories2007/s2817.htm](http://www.noaanews.noaa.gov/stories2007/s2817.htm)  
[hmt.noaa.gov](http://hmt.noaa.gov)  
[fim.noaa.gov](http://fim.noaa.gov)

### Climate Change

If you've heard that Arctic Sea ice is shrinking or that Greenland is melting, then you probably heard it from scientists in Boulder. Researchers at the Cooperative Institute for Research in Environmental Sciences (CIRES) are experts in polar climate change, sea level rise, and water and climate policy. They also monitor heat-trapping gases like carbon dioxide and methane, and they explore interactions between air quality, landscape morphology, and Earth's climate. CIRES' researchers include Greenland climatologist Konrad Steffen, Brad Udall of the Western Water Assessment, and Mark Serreze of the National Snow and Ice Data Center. CIRES is jointly supported by NOAA and the University of Colorado at Boulder and is celebrating over 40 years of interdisciplinary, earth system research.

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[cires.colorado.edu](http://cires.colorado.edu)  
[www.nsidc.org](http://www.nsidc.org)

Global warming has emerged as a top concern for society, with policymakers needing to know how much temperatures are going to increase and what measures can be taken to prevent severe environmental damage. At NCAR, scientists use some of the world's most powerful supercomputers to study the far-reaching impacts of carbon dioxide and other greenhouse gases on our atmosphere. They have advanced our understanding of the vulnerability of coral reefs and arctic sea ice, the impacts of a changing climate of specific regions in North America, and the benefits of

dramatically reducing emissions over the next few decades.

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[www.ucar.edu/news/releases/2008/coral.jsp](http://www.ucar.edu/news/releases/2008/coral.jsp)

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The Boulder City Council adopted a goal to reduce greenhouse gas emissions in 2002 and in 2006 adopted the Climate Action Plan (CAP) and CAP tax to fund implementation. The tax is sometimes referred to as the carbon tax, and its passage by Boulder voters garnered global recognition as Boulder was the first city to enact a carbon tax to address climate change.

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[www.beclimatesmart.com](http://www.beclimatesmart.com)

Climate change infuses every aspect of research activities at the National Oceanic and Atmospheric Administration. NOAA has supported or led the monitoring of carbon dioxide for a half-century and provides authoritative data on carbon dioxide and other heat-trapping gases. Researchers analyze extreme weather and climate to determine which can be linked to human activities affecting the natural climate. They travel to remote parts of the globe, such as the Arctic, to understand weather, climate processes, and chemistry that may be accelerating warming and melting or changing the climate in other ways.

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[hmt.noaa.gov](http://hmt.noaa.gov)

[fim.noaa.gov](http://fim.noaa.gov)

## Aerospace

Air travel is congested and plagued by delays, with little relief in sight. The National Center for Atmospheric Research (NCAR) researchers are using their highly detailed knowledge of the atmosphere to make flying safer and more convenient. By studying very fine-scale movements in the atmosphere, they can give aircraft more advance warning of turbulence. The research team is also developing increasingly sophisticated weather tools to guide airplanes away from potentially dangerous areas of atmospheric icing and to enable them to use limited airspace more efficiently.

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[www.ucar.edu/news/releases/2007/turbulence.shtml](http://www.ucar.edu/news/releases/2007/turbulence.shtml)

[www.ucar.edu/news/releases/2006/icing.shtml](http://www.ucar.edu/news/releases/2006/icing.shtml)

Space weather consists of storms, wind, and heat and it is driven by the Sun—just like our daily weather here on Earth. But space weather originates on the Sun itself. Every aspect of our economy that depends on space-based technology is vulnerable to space weather. Among these are airlines, communications, military operations, power grids, the Global Positioning System (GPS), transportation, mining, surveying, and others.

NOAA's Space Weather Prediction Center monitors the Sun and the space between the Sun and Earth 24 hours a day, every day of the year. Part of the National Weather Service, the center is the nation's official source of space weather alerts and warnings.

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[www.swpc.noaa.gov](http://www.swpc.noaa.gov)

## Tours (great for kids, too)

The NCAR Mesa Laboratory offers a wealth of weather and climate exhibits at the Walter Orr Roberts Weather Trail, North America's first weather-oriented nature trail. Self-guided tours are available 8-5 weekdays and 9-4 weekends, with drop-in guided tours at noon each day. Organized group tours can be arranged. For more information, see [www.eo.ucar.edu/visit](http://www.eo.ucar.edu/visit) or call 303-497-1174.

[www.ncar.ucar.edu](http://www.ncar.ucar.edu)

[www.ncar.ucar.edu/organization/about](http://www.ncar.ucar.edu/organization/about)

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[www.ucar.edu/org/history.shtml](http://www.ucar.edu/org/history.shtml)

The highlight of a visit to the National Oceanic and Atmospheric Administration's Boulder site is a dramatic visualization invention, Science-on-a-Sphere®, which presents spherical animations of climate change, ocean currents, hurricane formation, tsunamis, and other natural phenomena. Visitors get a close look at two 24/7 operational forecast centers: one for our daily local weather, the other for the world's space weather. Among other tour stops is a working laboratory, where air samples arriving from around the world are analyzed to track carbon dioxide and other atmospheric gases. Visitors learn about computer models of weather and climate and see observing instruments developed here and used around the world. NOAA Boulder also gives visitors a scientist's view of what's below Earth's surface and above its atmosphere.

Tour hotline: 303-497-3333

[www.esrl.noaa.gov/outreach/tours.html](http://www.esrl.noaa.gov/outreach/tours.html)

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