

## Sponsors of the 2009 AMS Summer Community Meeting

### National Weather Center

[www.nwc.ou.edu](http://www.nwc.ou.edu)

#### Academic, Government, and Private Sector Partnerships

The National Weather Center and the nearby Partners Place at the University of Oklahoma house a unique confederation of university, federal, state, and private organizations. Working in close proximity, on topics of common interest, these synergistic organizations are helping to redefine partnerships within the weather, water, and climate community.

### Iberdrola Renewables

[www.iberdrolarenewables.us](http://www.iberdrolarenewables.us)

#### The World's Leading Provider of Wind Power

Iberdrola Renewables is the worldwide leader in wind power. With 10,000 MW of renewable energy in operation in 23 countries and more than 3,000 MW of that wind power located in the US, Iberdrola Renewables is currently the world's leading provider of wind power. The company is a proven economic engine, directly and indirectly creating 15,000 jobs worldwide in 2008 and investing \$2.2 billion in wind power in the US in 2008.

### Vaisala

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

#### Weather Monitoring Systems and Instruments for Industrial Measurements

Vaisala is a global leader in environmental and industrial measurement. Building on more than 70 years of experience, Vaisala contributes to a better quality of life by providing a comprehensive range of innovative observation and measurement products and services for meteorology, weather critical operations and controlled environments. Vaisala caters to business areas where environmental measurement plays a significant role including national meteorology organizations, airport operations, defense, road operations, wind energy, cleanrooms and chambers, and building automation. Vaisala's global headquarters are in Finland and Vaisala employs over 1200 professionals worldwide. The headquarters for Vaisala North America is in Boulder, Colorado.

### American Weather and Climate Industry Association

[www.weather-industry.org](http://www.weather-industry.org)

#### Trade Association for Weather, Water, and Climate Professionals

AWCIA represents the diverse private-sector weather and climate industry as well as the industry's diverse needs. It is run by its members, for its members and is committed to growing the industry, and the Enterprise, by promoting the unique position of the industry within the American Weather and Climate Enterprise. Prior to January 2009 AWCIA was the Commercial Weather Services Association (CWSA).

### National Council of Industrial Meteorologists

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

#### Professional Association for Applied Meteorologists in Private Practice

The National Council of Industrial Meteorologists (NCIM), founded in 1968, is a non-profit, professional association of meteorologists, principally engaged in the private practice of industrial and applied meteorological consulting. NCIM members represent many areas of professional specialization, including forensic meteorology, operational weather forecasting, air quality and environmental consulting, the collection or dissemination of meteorological data, and weather resources management.

### National Hydrologic Warning Council

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

#### Nonprofit Association for Water Resource and Emergency Management Professionals

The National Hydrologic Warning Council is a nonprofit association that hosts biennial conferences and workshops to assist local water resource managers and emergency management officials collect, evaluate, and disseminate real-time hydrologic data to protect lives, property, infrastructure, and resources; and to support subsequent uses of the data to improve knowledge and management of the environment.

### Vieux, Inc.

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

#### Water Information Technology

Vieux, Inc. is an engineering technology firm specializing in water software, products, and services. *We bring the atmosphere down to earth* by harmonizing weather radar data with rain gauge measurements and leveraging the power of Geographic Information Systems and physics to represent terrestrial features and the behavior of water. Water Information Technology results in better civil infrastructure operations and maintenance, flash flood forecasting, cleaner water, a safer environment and improved water resources management.

### AMS Corporate Patrons

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# American Meteorological Society

## 2009 AMS Summer Community Meeting - 10-13 August 2009

National Weather Center · Norman, Oklahoma

<http://www.ametsoc.org/boardpages/cwce/docs/index.html>

### OBJECTIVE OF THE SERIES OF AMS SUMMER COMMUNITY MEETINGS

The AMS Commission on the Weather and Climate Enterprise organizes the Summer Community Meeting to bring together members of the diverse weather, water, and climate community, representing the academic, government, and private sectors, to discuss timely topics of broad national interest.

### 2009 PROGRAM COMMITTEE

John Gaynor (Co-Chair) · Linda Miller (Co-Chair) · John Snow, CCM (Host)  
Richard Eckman · George Frederick, CCM · Veronica Johnson  
Matt Parker, CCM · Cindy Schmidt · Betsy Weatherhead

### 2009 MEETING THEMES AND ONLINE RESOURCES

#### Steps Toward Implementing a Nationwide Network of Networks (NoN)

The first two thirds of the meeting this year will explore the way forward on the recommendations in the 2009 NRC Report: *Observing Weather and Climate from the Ground Up: A Nationwide Network of Networks* (NoN Report), from the Committee on Developing Mesoscale Meteorological Observational Capabilities to Meet Multiple National Needs (NoN Committee). The discussions will provide useful input from the weather, water, and climate community to the AMS Ad Hoc Working Group on a Nationwide Observing Network of Networks, as it focuses on implementing the recommendations of the NRC NoN Report, and as it prepares for the next step: a summit of stakeholders.

[http://www.nap.edu/catalog.php?record\\_id=12540](http://www.nap.edu/catalog.php?record_id=12540)

#### Meeting the Needs of the Renewable Energy Industry

Major investments are being made in renewable energy technologies. Accurate prediction of wind and solar conditions are necessary to support these industries and to facilitate the adoption of renewables across the nation. The public, private, and academic sectors of the weather, water, and climate community will play a significant role in supporting the new energy economy. What are the pressing needs of this industry? And, how can the various sectors of our community work together synergistically to meet these needs? This part of the meeting is designed to explore these issues and set the stage for a broader community discussion.

[www.esrl.noaa.gov/research/renewable\\_energy](http://www.esrl.noaa.gov/research/renewable_energy)

<http://tinyurl.com/pb4mwu>

<http://www.nrel.gov/docs/fy08osti/43521.pdf>

<http://power.larc.nasa.gov>

[http://aspires.gsfc.nasa.gov/upload/EM\\_proj-230\\_5887\\_NASAEnergy.pdf](http://aspires.gsfc.nasa.gov/upload/EM_proj-230_5887_NASAEnergy.pdf)

[http://aspires.gsfc.nasa.gov/upload/EM\\_proj-231\\_5888\\_NASAEnergy2.pdf](http://aspires.gsfc.nasa.gov/upload/EM_proj-231_5888_NASAEnergy2.pdf)

## AGENDA

### Day 1: Monday, 10 August 2009

- 8:00 AM **Breakfast on your own.** The Flying Cow Café in the National Weather Center opens at 7:00 AM
- 9:00 AM **Pre-Meeting Activity:** a free, two-hour **Tour of Nearby Community Organizations.** **Lee Anne Sallee**, staff assistant in the Office of the Dean of the OU College of Atmospheric and Geographic Sciences is coordinating a free two-hour tour of several nearby community organizations. The tour departs from the National Weather Center Atrium and

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stops at:

- ❖ **Stephenson Research and Technology Center**, home of OU supercomputing and genomics. **Melany Dickens**, Tour Guide
- ❖ **Weather Decision Technologies**, a global leader in state-of-the-science weather detection, alerting, nowcasting, and forecasting systems and services. **Richard Carpenter, CCM**, Tour Guide
- ❖ **Center for Spatial Analysis**, a multidisciplinary OU research center specializing in the study and application of geospatial science and technology. **Sarah Glenn**, Tour Guide
- ❖ **Vieux Inc.**, an engineering technology firm specializing in integrating weather radar and rain gauge data, leveraging the power of GIS and physics to represent terrestrial features and the behavior of water. **Jean Vieux**, Tour Guide
- ❖ **Weathernews America Inc.**, the world's largest, publicly-traded, full-service weather company, employing over 750 people, including more than 400 meteorologists. **Dawn Kreider**, Tour Guide

**Tour Start:** Meet at the Summer Community Meeting Registration Desk just inside the first floor entrance to the National Weather Center. You may choose to walk (a 0.5 mile loop), or to ride one of seven golf carts (available on a first-come basis; departing at regular intervals from each location). A tour map/guide is available at the link below:  
<http://www.ametsoc.org/boardpges/cwce/docs/2009-08/TourMap.pdf>

- 10:30 AM **Registration Desk Opens: Marjorie Huntington**, Meetings Manager at the American Meteorological Society (AMS) in Boston, Massachusetts
- 11:00 AM **Lunch on your own.** The Flying Cow Café in the National Weather Center will be open until 3:00 PM
- 1:15 PM **Meeting Call to Order: Veronica Johnson**, Broadcast Meteorologist at NBC TV-4 in Washington, D.C.; and Chair of the AMS Board on Enterprise Communication
- 1:20 PM **Welcome: Joe Friday**, Professor Emeritus of Meteorology at the University of Oklahoma in Norman, Oklahoma; Commissioner of the AMS Commission on the Weather and Climate Enterprise; and AMS Past President
- 1:25 PM **Welcome: John Snow, CCM**, Dean of the College of Atmospheric and Geographic Sciences at the University of Oklahoma in Norman
- 1:30 PM **Keynote Address**

**Keynote Speaker: Tom Cole (R-OK)**, member of the U.S. House of Representatives in Washington D.C., representing Oklahoma's Fourth Congressional District, which includes Norman

- 1:50 PM **Question and Answer Session with Congressman Cole**

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### Meeting Theme 1: Steps Toward Implementing a Nationwide NoN

- 2:00 PM **Overview of the NRC NoN Report: Rit Carbone**, Science Advisor and Senior Scientist in the Earth Observing Laboratory at the National Center for Atmospheric Research, Boulder, Colorado; and Chair of the NRC NoN Committee
- 2:45 PM **Session Discussion**
- 3:15 PM **Break**
- 3:45 PM **Expected Outcome of These NoN Discussions: Veronica Johnson**, broadcast meteorologist with NBC TV-4 in Washington, D.C. and Chair of the AMS Board on Enterprise Communication
- 4:00 PM **NOAA/NWS NoN Perspectives: Jack Hayes**, NOAA Assistant Administrator for Weather Services and Director of the National Weather Service in Silver Spring, Maryland
- 4:30 PM **Private Sector NoN Perspectives: Walt Dabberdt**, Chief Science Officer of Vaisala in Boulder, Colorado; and AMS Past President
- 5:00 PM **Sessions adjourn for the day.** We reconvene for the **Icebreaker Reception**
- 5:15 PM **Icebreaker Reception for all attendees**, with cash bar, at the Stephenson Research and Technology Center (2 hours)

### Day 2: Tuesday, 11 August 2009

- 7:30 AM **Light Breakfast for all attendees**
- 8:30 AM Session Chair: **John Gaynor**, Senior Research Meteorologist and Director of the NOAA Office of Weather and Air Quality Research in Silver Spring, Maryland
- 8:35 AM **Overview of the AMS Annual Partnership Topic (APT) on Mesoscale Observations: Fred Carr**, McCasland Professor and Director of the University of Oklahoma School of Meteorology in Norman; and member of the NRC NoN Committee.  
<http://www.ametsoc.org/boardpges/cwce/docs/apt.pdf>
- A discussion of how the AMS APT links to and complements the NRC NoN report*
- 9:30 AM **Break**

### NRC NoN Recommendations: The Human Dimension

- 10:00 AM **The Human Dimension**, Panel Moderator: **John Gaynor**, Senior Research Meteorologist and Director of the NOAA Office of Weather and Air Quality Research in Silver Spring, Maryland
- Experts from the academic and user communities discuss the socioeconomic benefits of observing systems and issues related to the public availability of observations from private networks.*

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- ❖ **Walter Diaz**, Professor in the Center for Applied Social Research at the University of Puerto Rico in Mayaguez
- ❖ **Heather Lazrus**, Post-Doctoral Fellow with the Cooperative Institute for Mesoscale Meteorological Studies at the University of Oklahoma in Norman
- ❖ **Justin Sharp**, Manager of Wind Asset Management Meteorology for Iberdrola Renewable Energies USA in Portland, Oregon
- ❖ **Bart Nijssen**, Chief Information Officer for 3TIER, Inc. in Seattle, Washington
- ❖ **Nick Keener, CCM**, Manager of Meteorology for the Duke Energy Corporation in Charlotte, North Carolina
- ❖ **Renee McPherson**, Associate Director of the Oklahoma Climatological Survey in Norman

Noon **Luncheon for all attendees** in the NWC Atrium. The OU College of Atmospheric and Geographic Sciences is offering several 30-min tours of the National Weather Center during lunch, staggered so participants can take the tour and still have lunch. Please sign up, in advance, at the AMS meeting registration desk in the NWC Atrium.

### NRC NoN Recommendations: Measurements and Infrastructure

- 1:25 PM **Measurements and Infrastructure.** Session Chair: **Linda Miller**, Manager of Unidata Community Services and External Liaison at the University Corporation for Atmospheric Research in Boulder, Colorado
- 1:30 PM **Overview of the AMS Annual Partners`hip Topic on Mobile Observations:** **Jim O`Sullivan**, Surface Weather Program Manager with the National Weather Service Office of Climate, Water, and Weather Services in Silver Spring, Maryland; and **Paul Pisano**, Road Weather Team Leader at the Federal Highway Administration in Washington, D.C., and Past Chair of the AMS Committee on Intelligent and Surface Transportation
- 2:00 PM **Status of NOAA`s Satellite Program and Its Links to the NRC NoN Report Recommendations:** **Hal Bloom**, GOES-R Deputy System Program Director at the NOAA/NESDIS Office of Systems Development in Greenbelt, Maryland
- 2:30 PM **Break**
- 3:00 PM **Observation Expertise and Perspectives Panel.** Moderator: **George Frederick, CCM**, President and Chief Executive Officer of Falcon Consultants in Georgetown, Texas; and AMS Past President
- ❖ **David Helms**, Meteorologist and Observing Systems Focal Point for the National Weather Service Office of Science and Technology in Silver Spring, Maryland; and **Patty Miller**, Research Project Manager for the Meteorological Assimilation Data Ingest System (MADIS) in the Global Systems Division of NOAA`s Earth System Research Laboratory in Boulder, Colorado (While she did attend the meeting, Ms. Miller was unable to attend this session.)

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- ❖ **Julie Campbell**, President of the Campbell Marketing Group in Kensington, Maryland
- Ken Reeves**, Expert Senior Meteorologist and Director of Forecasting Operations for AccuWeather, Inc. in State College, Pennsylvania
- ❖ **Jay Titlow**, Senior Meteorologist at WeatherFlow, Inc. in Poquoson, Virginia; and member of the NRC NoN Committee
- ❖ **Ken Crawford**, Vice Administrator, Korea Meteorological Administration in Seoul, Republic of Korea
- ❖ **Bill Callahan**, Director of Program Management for WeatherBug Professional Services at AWS Convergence Technologies, Inc. in Germantown, Maryland
- ❖ **Garry Schaefer**, Hydrologist and Leader of the Water and Climate Monitoring Team at the USDA National Water and Climate Center in Portland, Oregon

- 5:00 PM **Report of the AMS Ad Hoc Committee on Uncertainty in Forecasts (ACUF): Paul Hirschberg**, Committee Co-Chair and Chief of Staff to the NOAA Assistant Administrator for Weather Services, in Silver Spring, Maryland
- 5:30 PM **Sessions adjourn for the day.** We reconvene for the **Dinner Banquet**
- 6:30 PM **Dinner Banquet for all attendees**, with cash bar, in the National Weather Center Atrium.

**Banquet Entertainment** is provided by the **Larry Hammett Trio**. **Larry Hammett** is Director of Guitar Studies in the School of Music at the University of Oklahoma in Norman.  
[http://www.larryhammett.com/OU\\_Guitar\\_Program.html](http://www.larryhammett.com/OU_Guitar_Program.html)

### Day 3: Wednesday, 12 August 2009

- 7:15 AM **Light Breakfast for all attendees**

### NRC NoN Recommendations: Steps to Ensure Progress

- 8:00 AM **Steps to Ensure Progress.** Session Chair: **Matt Parker, CCM**, Fellow Meteorologist at the Savannah River National Laboratory near Aiken, South Carolina
- 8:05 AM **Observation Expertise and Perspectives of the Government, Academic, and Private Sectors Panel.** Moderator: **Matt Parker, CCM**, Fellow Meteorologist at the Savannah River National Laboratory near Aiken, South Carolina
- ❖ **Sam Williamson**, Federal Coordinator for Meteorology at the National Oceanic and Atmospheric Administration in Silver Spring, Maryland
  - ❖ **Don Berchoff**, Director of the National Weather Service Office of Science and Technology in Silver Spring, Maryland

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- ❖ **Rit Carbone**, Science Advisor and Senior Scientist in the Earth Observing Laboratory at the National Center for Atmospheric Research, Boulder, Colorado; and Chair of the NRC NoN Committee
- ❖ **Len Pietrafesa**, Associate Dean (retired) of the College of Physical and Mathematical Sciences, and Professor of Oceanic and Atmospheric Sciences (retired) in the Department of Marine, Earth, and Atmospheric Sciences at North Carolina State University in Raleigh
- ❖ **Joel Myers**, Founder, Chairman, and President of AccuWeather, Inc. in State College, Pennsylvania
- ❖ **Bob Marshall**, Cofounder, President, and Chief Executive Officer of AWS Convergence Technologies (WeatherBug) in Germantown, Maryland
- ❖ **Dennis Todey**, Associate Professor in the Department of Agricultural and Biosystems Engineering at South Dakota State University in Brookings; South Dakota State Climatologist; and President Elect of the American Association of State Climatologists

9:45 AM Break

10:15 AM **National Weather and Climate Priorities: Legislation and Advocacy.** Session Chair: **Cindy Schmidt**, Director of Government Affairs at the University Corporation for Atmospheric Research in Boulder, Colorado

*An update on community priorities, advocacy activities, and relevant legislation*

- ❖ **Washington D.C. Update: Wendy Naus**, Public Policy Advisor with Lewis-Burke Associates LLC in Washington, D.C.
- ❖ **Weather Coalition Update: John Snow, CCM**, Dean of the College of Atmospheric and Geographic Sciences at the University of Oklahoma in Norman
- ❖ **AWCIA Update: Steve Root, CCM**, President of the American Weather and Climate Industry Association and President and Chief Executive Officer of WeatherBank, Inc. in Edmond, Oklahoma
- ❖ **AMS Update: Keith Seitter, CCM**, Executive Director of the American Meteorological Society in Boston, Massachusetts

11:15 AM **Summary of Meeting Theme One:** Community Response to the NRC NoN Report, including report recommendations, meeting outcomes, the way forward, and next steps. Moderator: **Veronica Johnson**, Broadcast Meteorologist at NBC TV-4 in Washington, D.C.; and Chair of the AMS Board on Enterprise Communication

- ❖ **The Human Dimension: John Gaynor**, Senior Research Meteorologist and Director of the NOAA Office of Weather and Air Quality Research in Silver Spring, Maryland

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- ❖ **Measurements and Infrastructure: George Frederick, CCM**, President and Chief Executive Officer of Falcon Consultants in Georgetown, Texas; and AMS Past President
- ❖ **Steps to Ensure Progress: Matt Parker, CCM**, Fellow Meteorologist at the Savannah River National Laboratory near Aiken, South Carolina

Noon **Lunch for all attendees** in the NWC Atrium

Luncheon Address: **A Role for a Nationwide Network of Networks in Harnessing the Power of Wind, Will Shaw**, Technical Lead at the Pacific Northwest National Laboratory in Richland, Washington

### Meeting Theme 2: Meeting the Needs of the Renewable Energy Industry

#### Session 1: Understanding and Meeting Industry Needs

- 1:30 PM **Understanding and Meeting Industry Needs Panel.** Moderator: **Julie Lundquist**, Physicist in the Atmospheric, Earth, and Energy Department of Lawrence Livermore National Laboratory in Livermore, California
- ❖ **Industry Requirements and Interacting with the Public Sector: Mark Ahlstrom**, Chief Executive Officer of WindLogics in St. Paul, Minnesota
  - ❖ **Operational Wind Forecasts: Andy Stern**, Manager of the Local Forecast and Warnings Program for the National Weather Service Office of Climate, Water, and Weather Services in Silver Spring, Maryland
  - ❖ **Improving Wind Forecasts: Stan Benjamin**, Chief of the Assimilation and Modeling Branch at the Earth System Research Laboratory in Boulder, Colorado
  - ❖ **Off-shore Wind Energy Resources and Observational Needs: Larry Atkinson**, Samuel and Fay Slover Professor of Oceanography in the Department of Ocean, Earth, and Atmospheric Sciences at Old Dominion University in Norfolk, Virginia
  - ❖ **Global Monitoring from Space in Support of Renewable Energy: Richard Eckman**, Senior Research Scientist in the Chemistry and Dynamics Branch at the NASA Langley Research Center in Hampton, Virginia
  - ❖ **Measuring Solar Radiation from the Ground: Tom Stoffel**, Principal Group Manager at the National Renewable Energy Laboratory in Golden, Colorado
  - ❖ **Improving Solar Forecasts: Betsy Weatherhead**, Director of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado in Boulder, Colorado
- 3:30 PM **Break**

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### Session 2: Understanding Sector Roles

4:00 PM **Understanding Sector Roles Panel.** Moderator: **Matt Parker, CCM**, Fellow Meteorologist at the Savannah River National Laboratory near Aiken, South Carolina.

*What are the proper roles for government, industry, and academia? Where are the primary knowledge gaps? Who should contribute to filling them? What technology transfer practices should be explored? How can all the parties leverage their expertise to move the nation forward to improve the adoption of renewables?*

- ❖ **Henry Durrwachter P.E.**, President of the Utility Wind Integration Group in Reston, Virginia and Director of ERCOT (Electric Reliability Council of Texas) Market Services at Luminant Energy Company in Dallas, Texas
- ❖ **Don Berchoff**, Director of the National Weather Service Office of Science and Technology in Silver Spring, Maryland
- ❖ **Greg Holland**, Director of the Mesoscale and Microscale Meteorology Division in the Earth and Sun Systems Laboratory at National Center for Atmospheric Research in Boulder, Colorado
- ❖ **John Snow, CCM**, Dean of the College of Atmospheric and Geographic Sciences at the University of Oklahoma in Norman
- ❖ **Justin Sharp**, Manager of Wind Asset Management Meteorology at Iberdrola Renewable Energies USA in Portland, Oregon
- ❖ **Bart Nijssen**, Chief Information Officer at 3TIER, Inc. in Seattle, Washington

5:15 PM **Session Discussion**

5:30 PM **Sessions adjourn for the day.** We reconvene for the **Icebreaker Reception**

5:45 PM **Icebreaker Reception for all attendees**, with cash bar, at the Stephenson Research and Technology Center (2 hours)

### Day 4: Thursday, 13 August 2009

7:30 AM **Light Breakfast for all attendees**

### Session 3: Future Solutions to Renewable Energy Challenges and Paths Forward

8:30 AM **Future Solutions and Paths Forward Panel.** Moderator: **Andy Stern**, Manager of the Local Forecast and Warnings Program for the National Weather Service Office of Climate, Water, and Weather Services in Silver Spring, Maryland

- ❖ **Renewable Energy Challenges and Opportunities: Stan Calvert**, Wind Technology Application Team Lead and Chief Engineer of the Wind and Hydropower Technologies Program of the U.S. Department of Energy in Washington, D.C.

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- ❖ **Collaborative Partnerships for Renewable Energy: Mike Robinson**, Manager of the Wind Research and Development Group at the National Renewable Energy Laboratory in Golden, Colorado
- ❖ **Future NWS Activities in Support of Renewable Energy—Current Plans and Possibilities: David Green**, Physical Science Manager in the Marine And Coastal Weather Services Branch of the NWS Office of Climate, Water, and Weather Services in Silver Spring, Maryland
- ❖ **NOAA's Potential to Support Renewable Energy: Melinda Marquis**, Physical Scientist in the Research Program Office at the NOAA/OAR Earth System Research Laboratory in Boulder, Colorado
- ❖ **Academic Contributions to Renewable Energy: Charlie Stanier**, Assistant Professor in the University of Iowa College of Engineering, in Iowa City (Dr. Stanier was unable to attend the meeting and was represented by Betsy Weatherhead.)

10:00 AM **Wind Power in Oklahoma—Development to Date and Future Prospects: Kylah McNabb**, Wind Development Specialist for the Oklahoma Department of Commerce and the Oklahoma Department of Career and Technology Education in Oklahoma City, Oklahoma

10:30 AM **Break**

11:00 AM **Summary of Meeting Theme Two: Meeting the Needs of the Renewable Energy Industry. Betsy Weatherhead**, Director of the Cooperative Institute for Research in Environmental Sciences at the University of Colorado in Boulder, Colorado

- ❖ ***What are the priorities for atmospheric science in support of renewable energy?***
  - *How important are improved forecasts to implementing renewable energies over the next 20 years?*
  - *Which key measurements need to be added to support renewable energy planning and implementation?*
- ❖ ***How do government, industry, and academia proceed forward?***
  - *What lessons can we learn about from our international colleagues?*
  - *Where are the roadblocks to integrating renewable energy technologies into the national grid?*
  - *What is the appropriate separation between federal, state, and private roles?*
- ❖ ***Next steps***
  - *Meeting conclusions*
  - *Venues for coordination*
  - *Communication strategies for implementation coordination*

Noon **Meeting adjourns**