



Weather and Climate Enterprise Commission Semi-Annual Report 2010

Submitted by: L.J. (Len) Pietrafesa, Commissioner

June 2010

Brief Executive Summary

The Commission continued to greatly expand its activities and community-wide reach. The success of the commission is demonstrated by several sectors of our community approaching the commission and its boards to provide mechanisms for resolving issues. Several notable examples of this are initiatives to create committees focused on climate and security, renewable energy, and communication climate. The climate community has responded enthusiastically to a call for volunteers to serve on a committee that will discuss the science of climate, uncertainty and communicating science and climate in a professional, tempered respectful manner. Additionally, the Commission's response to the 2009 National Research Council Report by establishing the Ad Hoc committee on the Network of Networks (NoN) has resulted in 70 volunteers working on multiple sub-committees at the direction of George Fredericks. ACUF has been formed and the Commission has commissioned a Committee on communicating climate (the CCIC) which be chaired by Ray Ban and co-chaired by Andrea Bleistein and Paul Kroft. The solicitation for membership to the CCIC drew a response of 70 volunteers anxious to discuss "climate" in a professional, collegial, non-confrontational setting hosted and fostered by the AMS-CWCE. The attached reports from the Board chairs and the NoN chair contain details of their activities and lists board and committee membership. Some highlights from these reports are as follows:

Board on Enterprise Communications (BEC)

The AMS Board of Enterprise Communication (BEC) continues to be very active in 2010 under the dedicated leadership of Veronica Johnson..

The Committee on Climate Services (CCS): Chair Ed O'Lenic of NOAA has continued setting the agenda for hosting webinar sessions. A total of six webinars is planned covering various aspects of climate services. The first webinar is planned for September. The CCS hosted a well attended Town Hall for the AMS Annual meeting in Jan 2010.

Ad Hoc Planning Committee Co-Chairs John Gaynor of NOAA and Linda Miller of Unidata lead the effort in planning and hosting the Annual AMS Summer Community Meeting that was held August 10-13 in Norman, OK at the National Weather Center. The meeting was very successful. The attendance was a record for the summer meetings with 165 registered. The representation was well divided over the various sectors of the enterprise with about 24% academic, 37% government, 28% private, and 11% undefined. This year's meeting stressed two major topics:

Topic 1: NRC Report Response - Objective: Following the session held at the August meeting at the OU, Former Commissioner George Fredericks has led the way forward on each of the recommendations in the 2009 NRC BASC report on "Observing Weather and Climate From the Ground Up: A National Network of Networks." The discussions provided useful input from the Weather and Climate Enterprise to the community leadership group which is focusing on implementing the recommendations of the report as it prepares for a summit of the stakeholders for a national network of networks central session at the upcoming Summer meeting at Pennsylvania State University 9-12 August 2010.

Topic 2: Renewable Wind and Solar Energy Needs and Enterprise Roles - Objective: Major investments are being and expected to be 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 & climate enterprise have a significant role to play in supporting the new energy economy. What are the pressing needs of this industry and what are the proper roles of each sector? This session was designed to explore these issues and set the stage for a broader community discussion.

The Ad Hoc Committee on Uncertainty in Forecasts (ACUF): The purpose of the ACUF is to engage the weather and climate community in establishing goals and plans for forecast uncertainty characterization and communication. In forming this committee, the AMS is responding to the need to communicate more complete forecast information to an increasingly educated user community as reflected in the 2006 National Research Council report: "Completing the Forecast. Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts", hereafter referred to as the Completing the Forecast Report (CFR). ACUF is managed very effectively by co-chairs Paul Hirschberg of NOAA Elliot Abrams, CCM, of AccuWeather, and their designated NOAA assistant, Andrea Bleistein, and the committee was very active in 2009. A series of "Integration Meetings" and conference calls were held to pursue the aggressive charter. The final Enterprise Implementation Plan was reviewed in the Fall of 2009. The details of ACUF have now unfolded and are provided below by Dr. Paul Hirschberg.

Purpose: The Ad Hoc Committee on Uncertainty in Forecasts (ACUF) was formed under the auspices of the American Meteorological Society's (AMS) Board on Enterprise Communication (BEC) of the Weather and Climate Enterprise Commission (CWCE). The purpose of the ACUF is to engage the weather and climate community in establishing goals and plans for forecast uncertainty characterization and communication. In forming this committee, the AMS is responding to the need to communicate more

complete forecast information to an increasingly educated user community as reflected in the 2006 National Research Council report: "Completing the Forecast. Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts", hereafter referred to as the Completing the Forecast Report (CFR).

Vision: The ACUF vision is an Enterprise-wide partnership that generates and communicates weather, water, and climate (hydrometeorological) forecast uncertainty information that meets the Nation's needs for informed decisions protecting life and property, supporting national defense and homeland security, enhancing the economy, and the meeting specific needs of partners, users, and customers.

Mission: The ACUF mission is to develop an Enterprise-wide vision, goals, and roadmap for providing hydro-meteorological forecast uncertainty information to the Nation, building off the recommendations of the CFR.

Deliverable: The primary ACUF deliverable is an Enterprise Implementation Plan for Forecast Uncertainty that has been reviewed and coordinated appropriately with Enterprise partner organizations and includes the following major elements:

1. Needs, opportunities, and benefits of providing hydro-meteorological forecast uncertainty products and services to the Nation.
2. Enterprise goals for forecast uncertainty information, products, and services.
3. A description of what is needed to meet the goals and reach the vision.
4. Suggested roles and responsibilities of Enterprise partners, including coordination and governance mechanisms.
5. Enterprise-wide roadmap.

Term: The term of the ACUF is from October 1, 2007 through January 31, 2011. The term of the ACUF and this Charter will be revised and renewed as deemed necessary by the AMS.

Committee Structure:

- The ACUF will be Co-Chaired by one government and one non-government representative.
- The Committee will be organized into Topic Workgroups consisting of Co-Leads of topical experts from the general committee membership along the major elements of the plan deliverable described above. One Co-Lead will be from government and the other from non-government.
- Topic Workgroups may further organize into sub-workgroups as needed.
- An Integration Workgroup will consist of the Committee Co-Chairs, the Co-Leads of each Topic Workgroup and other committee members appointed by the Co-Chairs.

Roles and Responsibilities:

- The Co-Chairs, in conjunction with the Chair of the BEC, are responsible for staffing and managing the ACUF.

- ACUF members are responsible for their own committee-related expenses, including travel.
- Topic Workgroups will consider appropriate recommendations from the CFR, other sources of information, and its own deliberations to prepare their plan sections.
- Topic Workgroup Co-Leads are responsible for staffing and managing their Workgroups.
- The Integration Workgroup will review, coordinate, and integrate Topic Workgroup sections of the plan, and address issues as needed.
- The ACUF has no inherent budget. Any proposals to gather, analyze, or otherwise prepare information for plan sections requiring funding must be secured by the ACUF membership by working with stakeholders.

Scope of Authority and Limitations:

The ACUF is bound by the policies governing the BEC and AMS.

Decision Making Process:

- The ACUF Workgroups will strive for consensus in a peer review manner when decisions are necessary. If consensus is not achievable through the Workgroup, the issue will be elevated to the Integration Workgroup.
- The Integration Workgroup will provide recommendations to the full Committee.
- The ACUF deliverables will reflect all options examined for decisions that were made.

Meeting Frequency:

- Plenary ACUF meetings will be held at least once per year at the AMS Annual Meeting.
- Workgroup meetings will be held as necessary in order to meet Workgroup deliverables and milestones

Membership:

Co-Chair: Elliot Abrams, CCM, AccuWeather, Inc.

Co-Chair: Paul Hirschberg, National Weather Service

Dr. Jon Ahlquist, Florida State University

Lee Anderson, National Weather Service

Dan Bickford, WSPA-TV

Matthew Biddle, Ph.D., The University of Oklahoma

Andrea Bleistein, National Weather Service

Phil Breuser

David Bright, National Weather Service

Peter Browning, National Weather Service

Gordon Brooks, Air Force Weather Agency

Barbara G. Brown, University Center for Atmospheric Research

Dan Collins, National Centers for Environmental Prediction

Julie Demuth, National Center for Atmospheric Research

Shripad Deo, CIRA at Colorado State University

Dr. Charles A. Doswell III, CCM, Cooperative Institute for Mesoscale Meteorological Studies

Dr. Jun Du, National Centers for Environmental Prediction
Tom Dulong, COMET/UCAR
Chris Elfring, The National Academies (K-636)
Gina Eosco, Cornell University and AMS, Policy Program
Mary Erickson, National Ocean Service
John Ferree, National Weather Service
Greg Fishel, WRAL-TV Weather Center
John Gaynor, NOAA - Office of Weather and Air Quality
Bob (aka Harry) Glahn, National Weather Service
Thomas M. Hamill, NOAA/ESRL, Physical Sciences Division
Jim Hansen, Naval Research Laboratory
Pat Hayes, Northrup Grumman Corp.
Paul O. G. Heppner
Ross N. Hoffman, Ph.D. (tentative), Atmospheric and Environmental Research, Inc.
Eddie Holmes, CBM (tentative)
Carlie Lawson, Natural Hazards Consulting
Jenifer Clare Martin, National Center for Atmospheric Research
Chris Maier, National Weather Service
Bernard N. Meisner, Ph.D. CCM, National Weather Service
Dr. Betty Hearn Morrow, Florida International University
Rebecca Morss, National Center for Atmospheric Research
David Myrick, National Weather Service
Dave Novak, National Weather Service
Dr. Paul Nutter (tentative), University of Northern Colorado
Dan O'Hair, Ph.D., University of Oklahoma
Brenda Philips, University of Massachusetts
Carla Roncoli, PhD, The University of Georgia
Scott Sandgathe, University of Washington
Dan Satterfield, WHNT TV
John Schaake (retired NOAA)
Paul Schultz, NOAA/GSD
Prof Leonard A. Smith, London School of Economics
John Sokich, National Weather Service
Alan E. Stewart, Ph. D., The University of Georgia
Dan Stillman, Institute for Global Environmental Strategies
Neil Stuart, National Weather Service
Zolton Toth, National Weather Service, National Centers for Environmental Prediction
Steve Tracton, NOAA retired
Robyn L. Weeks, The Weather Channel
Dick Westergard, CCM, Shade Tree Meteorology, LLC
Bernadette Woods, WJZ-TV

The Ad Hoc Committee on “Climate Change-Improving Communication” (CCIC):
CCIC is being formed to address the lack of any forum for people within the AMS to professionally and collegially exchange their views on climate change. The BEC proposed the formation of an ad hoc committee that will allow our society the ability to

discuss "technical questions," and demonstrate that the AMS is open and inclusive to all its members. It is the BEC's ultimate wish that communication with all of the Weather and Climate Enterprise be improved. Seventy individuals responded to the AMS solicitation for membership interest and presently the CCIC leadership is being formed. The challenge is for CCIC to be an inclusive committee that will become a model for professional, collegial engagement and communication. The Chair of the CCIC has been selected, Ray Ban. The Co-Chairs of the CCIC have been selected and are: Andrea Bleistein and Paul Kroft.

Board on Enterprise Economic Development (BEED)

The BEED continues its very important work under the outstanding leadership of Pam Emch.

The BEED organized and successfully conducted the 2010 Public-Private Partnership Forum (PPPF) at the University of California Washington Center in Washington, D.C. from 06-07 April 2010. This year the agenda consisted of six sessions:

- Congressional Staff Panel Discussion
- Nationwide Network of Networks Panel Discussio
- Federal Agency Leadership Panel Discussion (DOC-NOAA, NASA, DHS, DOE, FAA)
- Adaptation and Mitigation: The Role of Climate Services
- Executive Branch Panel Discussion
- Effectively Communicating: Learning to Present our science as Motivation Toward Action
- Key Meteorological Problems Hindering Renewable Energy Use

RADM David Titley (US Navy) and Mr. Andrew Winer (NOAA) were luncheon speakers.

Dr. David Evans (Noblis) was the dinner speaker.

Following the PPPF, the name of the Forum was changed to the AMS Washington Forum.

The UC Washington Center has been reserved for the 2011 AMS Washington Forum, scheduled to take place April 07-08, 2011. This is expected to be the congressional Easter break; we are hopeful that we can obtain increased participation from congressional staffers during this time. A 2011 PPPF Organizing Committee has been formed and is staging telecons to discuss the logistics, potential session topics, speakers, and session chairs. One goal is to carry forward the momentum from topics of interest at the other CWCE-organized events that will have taken place during the 2010- 2011 year.

The Board successfully held the Eighth Users Forum and the Conference on Weather, Climate, and the New Energy Economy during the Atlanta Annual Meeting. The Energy Committee, headed by Jon Davis) successfully hosted the First Conference on Weather, Climate, and the New Energy Economy January 19-21 at the 2010 AMS Annual

Meeting. This proved to be an extremely timely topic and dovetailed with the related 2009 AMS Summer Meeting theme of Renewable Energy. Over 60 papers were presented. The largest number of submissions came from the private sector. The large amount of presentations necessitated that the conference extend to 2 ½ days in length, from Tuesday morning through Thursday morning. A full day was spent on wind energy. The morning of each day or of each particular session topic opened with an invited speaker (set up as part of the 8th Users Forum). There were five of invited speakers. BEED members agree that this is a very exciting time to be focusing on the topic of renewable energy – this is becoming a national focus and AMS can continue to help foster the exchange of information and collaboration between sectors.

Jon Davis (Chesapeake Energy) completed his term as Chair of the AMS Energy Committee at the AMS Annual Meeting.

Steve Bennett of the Scripps Institution of Oceanography is the new Energy Committee Chair and thus he will be the POC for organizing the 2nd Conference on Weather, Climate, and the New Energy Economy, which will be held jointly with the 9th Annual User's Forum, in January 2011. In keeping with the goals of the Forum, speaker selection will be focused on finding representatives from a variety of local/regional economic sectors who will discuss how weather and climate impacts their operations, how they use weather and climate information, and where there are gaps in service.

Intelligent Transportation System (ITS) and Surface Transportation Committee:

The ITS/ST Committee successfully transitioned from the leadership of Paul Pisano to new chair Ed Boselly (Weather Solutions Group). The Committee met jointly with Intelligent Transportation Society of America's Weather Information and Applications Special Interest Group (WIA-SIG) during the AMS Annual Meeting. The session organized by the ITS/ST Committee at the Annual Meeting, Advances and Applications in Surface Transportation Weather (in the 26th IIPS Conference), was good and about 100 people attended. The Committee networks across several organizations including FHWA, NOAA, AMS, Transportation Research Board (TRB), American Association of State and Highway Transportation Officials (AASHTO), and State DOTs.

Energy Committee: Jon Davis (Chesapeake Energy) completed his leadership of the Energy Committee. Steven Bennett (Scripps) is the new Energy Chair. The committee met during the AMS Annual Meeting and had several telecons throughout the year. The session that the Energy Committee organized, Modeling Tools for Energy Production in Urban and Complex Terrain (in the 9th Symposium on the Urban Environment) was well attended by approximately 130 people. The BEED Energy Committee has become the nucleus for starting a new Renewable Energy Working Group / Committee with Melinda Marquis (NOAA) as the Chair. This new Committee is constituted by members who represent several facets of the energy industry including oil, natural gas, wind, trading, exploration, and research.

Water Resources Committee: This committee is being formed at present under the leadership of Pam Emch as acting chair.

Board on Enterprise Planning (BEP)

Dr. Tim Spangler, CCM, continues as Chair of BEP

Mesoscale Observing Networks Annual Partnership Topic (APT): The Working group (WG) and Topic Committee had been on hold because of the related Academy study. The committee is now planning their approach to the task, since the NAS report is complete.

See the Board report for details.

Building America's Resilience to Hurricane Disasters APT (Hurricane Disasters APT): See the Board report for details. This APT was completed by the working group and presented to the Commission. Several suggestions were made by members of the Commission Steering Committee. The BEP decided to form a small new committee to edit the report and also update it with lessons learned from Gustav and Ike, after the official report from FEMA is available.

New APT "Expanding the National Surface Observing Network – Realizing the Potential of Vehicle-based Observations": The BEP discussed this proposed topic including issues of calibration, quality, and data assimilation techniques. The BEP agreed to recommend the topic to the commission for adoption and implementation, and the commission has approved this APT. The committee is being formed.

New APT "The Offshore Wind Energy"- A Committee is being formed that will have an overarching charge to discuss the need and expansion of environmental data needed to support studies of the wind resource and conditions relevant to wind farm development in offshore locations.

Visioning activity for NWS: a proposed on line forum that would solicit views and suggestions from the Weather Enterprise that could be used as input to the NWS strategic plan. The BEP felt that the proposal from the NWS was very ambitious, and wondered if it wasn't very similar to the purpose of the APT process and other meetings the commission sponsors. There were other questions about how much it would be used and about the mechanics of the proposed technical solutions. Some felt that this kind of activity in the past has not been very successful. The result was a request to Chairman Spangler to meet with Ed Johnson from NWS and discuss his ideas further, especially focusing on the technical solution, and ways that the visioning activity would be marketed.

Johnson and Spangler met in Washington on 6 November 2008 and discussed alternatives. They are recommended that the BEP consider an online Charrette – a collaborative process often used in urban planning to generate design solutions by incorporating the ideas of many different stakeholder groups.

NWS worked hard all Spring and Summer 2009 to get this process approved within the DOC. Finally, in November 2009, Ed Johnson called to say that NWS was ready and hoped to have the activity finished by Spring 2010. The Commissioner, AMS HQ, and the BEP Chair discussed this proposal and felt that it was too ambitious for AMS to take on. Don Winter was asked to meet with NWS to see what alternatives could be used to assist NWS in their planning activity.

Commission Steering Committee (CSC)

The CSC holds two meetings a year – one just prior to the Annual Meeting and one in association with the Summer Community Meeting. Guidance from the committee and approval of the APTs have been crucial to the success of Commission activities. At the August meeting, Dr Kelvin Droegemeier proposed a joint activity between the Commission and the Norman Weather Community that would result in the publication every two or three years of an authoritative document: Report on the State of the US weather and Climate Enterprise”. The proposal was well received by the Steering Committee and will be pursued over the next few months. We will continue to schedule Steering Committee meetings twice per year and conduct other business via e-mail. Membership of the CSC as of January, 2010 is as follows. (Terms expire in year in parentheses):

Commission on the Weather and Climate Enterprise Steering Committee (As of January 2010)

- Voting members by position (6)
 - Len Pietrafesa, CSC Chair, WCEC Commissioner (2012) Becomes Past Commissioner (2012-2014)
 - Joe Friday, Past Commissioner (2012)
 - Matt Parker, Future Commissioner (2016)
 - Pam Emch, BEED Chair (2011)
 - Tim Spangler, CCM, BEP Chair (2011)
 - Veronica Johnson, BEC Chair (2012)

- Senior members (voting) from the provider community (7)
 - Dr. Joel Myers, President and Founder of AccuWeather (2012)
 - Jack Hayes, Director, NWS (2011)
 - Rene McPherson, Oklahoma Climate Survey (2013)
 - Ray Ban, Sr. VP The Weather Channel (2011)
 - Steve Root, CCM, President WeatherBank & President AWCIA (2011)
 - Dick Westergard, CCM, President NCIM (2013)
 - Sam Williamson, OFCM, (2013)

- Senior members (voting) from the user community (5)
 - Kevin Stewart, Chair of the National Hydrologic Warning Council (2012)

- Dr Eve Gruntfest, University of Oklahoma (2012)
- Warren Qualley, Harris Corporation (2012)
- Shelley Row, DOT, (2011)
- Sean McGrath, WGA & Mayor of Boulder, (2011)

- At-large members (voting) to ensure diversity (4)
 - Todd Glickman, CBM, Associate Director of Corporate Relations, Massachusetts Institute of Technology (2011)
 - Dr. John Snow, CCM, Dean, College of Atm & Geogr Sciences, University of Oklahoma (2011)
 - Steve Harned, Executive Director NWA (2012)
 - Dr. Susan Avery, CCM, Woods Hole Oceanographic Institute (2012)

- Non-voting members by position
 - Keith Seitter, CCM, Executive Director AMS (N/A)
 - Peggy Lamone, AMS President (2011)
 - Jay Trobec, Professional Affairs Commissioner (2013)
 - Mary Cairns, STAC Commissioner (2010)
 - Eugene S. Takle, CCM, Education and Human Resources Commissioner (2012)

Attachments: 5(NoN, BEC, BEED, BEP Annual Reports, Hurricane APT Report)



AMS Ad Hoc Committee on a Nationwide Network of Networks

Annual Report 2009

Submitted by: George Frederick, Chair & Past Commissioner

Membership Status

The current Committee membership as of the January 2010 is listed below:

Ad Hoc Committee Member	Organization	Sector*
Steven Fine	NOAA/OAR	G
Paul Pisano	DoT/FHWA	G
Samuel P. Williamson	NOAA/OFCM	G
Don Berchoff	NOAA/NWS	G
Scott Hausman	NOAA/NESDIS	G
Rich Scheffe	EPA	G
Walt Dabberdt	Vaisala	P
Bob Marshall	AWS	P
Joel Myers	Accuweather	P
Jim Block	DTN	P
John Horel	Univ. of Utah	A
Earle Buckley	Buckley Assoc.	P
Fred Carr,	Univ. of Oklahoma	A
Rit Carbone	NCAR	A
Len Pietrafesa	NC State/CCU	A
George Frederick	Falcon Consultants	AMS/Chair
Gary Rasmussen	AMS	AMS/Support
<i>Ex Officio</i> Members – Commission Executive Committee and Working Group Chairs		
Pam Emch	BEED Chair	
Veronica Johnson	BEC Chair	
Tim Spangler	BEP Chair	
Joe Friday	Commissioner	
Matt Parker	Future Commissioner	
John Lasley	Measurements/Infrastructure WG Chair	
John Horel	Architecture WG Chair	
Renee McPherson	Metadata Policy WG Chair	
Paul Campbell	Org/Business Models WG Chair	
James Stalker	R&D/Testbeds WG Chair	
Brenda Phillips	Human Dimension WG Chair	

* AMS Sectors: A – Academic, G – Government, P – Private

Committee Terms of Reference

- Ad Hoc committee with free and open discussion of the issues encouraged
- Committee resides under the Commissioner of the AMS Weather and Climate Enterprise Commission.
- Strategy development includes addressing potential business models, organizational structure and operating modes.
- A plan for a summit of stakeholders will be developed
- Other committees and/or working groups may be established to address specific aspects of the issue and to plan for implementation of the strategy developed.
- Life of the ad hoc committee indefinite but should be reviewed at least annually

Primary Activities

The past year was a highly successful formative and expansive year for this committee. Following the Town Hall hosted by Rit Carbone at the 2009 Annual Meeting in Phoenix, the Commission Executive Committee decided to form an ad hoc Working Group to address the community response to the NRC Report “Observing Weather and Climate FROM THE GROUND UP: A Nationwide Network of Networks”. After the AMS 2009 Summer Community Meeting it was apparent that there was enthusiastic and growing support for moving forward with an expanded effort. Thus, the Commission upgraded the Working Group to ad hoc Committee status and authorized it to form subordinate working groups to deal with specific aspects of the NRC report recommendations. Over 60 people volunteered to serve on these groups. Six working groups were formed and up and running by late in the year. Check out the AMS Website at <http://www.ametsoc.org/boardpages/cwce/docs/NoN/index.html> for more detail on the Committee and the Working Group membership and tasks.

At the Summer Community Meeting, 9-12 August 2010, the following describes the intent of the NoN sessions. One of the biggest challenges faced by our Enterprise is utilizing the vast amount of data and information we have accumulated to assist in making the most difficult decisions businesses and society face in some of the most critical situations. At stake are hundreds of billions of dollars and the safety of countless of lives. Are we, as an Enterprise, prepared to effectively rise to the challenges? We will take a look at the sectors of society to see where the needs are now and get some opinions of where they will be heading in the future, the data and the model and display capabilities we have, how they can be used and what is still needed and some examples of how we have already taken on the need to craft decision-making tools and products and whether their development processes can be replicated to address the increasing risk posed by climate and weather in the time scale from minutes to decades. This meeting will provide insight toward the next steps of coordinated, effective action across all members of the Enterprise to address this risk.

Committee Meetings: The Ad Hoc Committee conducted meetings on the following dates:

- Immediately following the Town Hall the committee will met in the same room at Annual Meeting Atlanta, 22 January 2010
- 6-7 April 2010 (PPPF Spring Community Meeting)
- 9-12 August 2010 (Summer Community Meeting)
- E-mail updates between January and December of 2010
- January - December 2010 WG Chair telecon and WG Meetings (telecons)

Plans for 2011

The primary plans for 2011 are listed below:

- Town Hall Meeting at the Annual Meeting in Seattle on 20 Jan 2011
- Working Group Meetings—Spring 2011
- Washington Policy Forum—7-8 April 2010
- Summer Community Meeting—Boulder 10-14 August
- Stakeholders “Summit”--TBD

All activity will be focused on arriving at a strategy and plans for implementing a Nationwide Network of Networks. A key recommendation of the NRC report was the need for a “Stakeholders Summit” at an appropriate point in the process. Involvement of Federal Agencies will be a key to success in concert with the rest of the community. In this vein, the Committee has ties to a parallel effort under the aegis of the OFCM and its Committee on Integrated Observing Systems (CIOS). It is our goal to foster the public-private-academic partnership principle as we move forward on this effort.

Below are the Annual Report Summaries of the CWCE Boards for 2009.

The Annual Reports of the Boards for 2010 will be submitted to the AMS in December 2010.



Climate and Weather Enterprise Commission Report

Activities of the Board on Enterprise Communication (BEC) in 2009

December 10, 2009

Submitted by: Veronica Johnson
Chair, BEC
NBC-4
Washington, DC

The BEC enjoyed another busy year! The following summary highlights BEC activities in 2009. An update of these activities will be provided to the Steering Committee of the Climate and Weather Enterprise Commission (Joe Friday, Commissioner) at the AMS Annual Meeting in Atlanta, GA on January 16th.

BEC Membership Summary

The BEC will have 5 members and Past-Chair (Matt Parker) rotate off in 2010. We have recruited candidates that will fill 2 private positions, 2 government positions, and one academic position. The table below summarizes the BEC membership for 2010.

AMS Board On Enterprise Communication Membership

Member	Affiliation and Location	Term Ends	Academic	Government	Private
1. Veronica Johnson, Chair	NBC4 in Washington, DC	2013			X
2. Heather Lazrus	National Weather Center, OU	2013	X		
3. Ken Reeves*	Pennsylvania State University	2013			X
4. Eric Webster	ITT Corporation	2013			X
5. Joel Cline	NOAA, Washington, DC	2013		X	
6. Ed O'Lenic**	NOAA, Washington, DC	2011		X	
7. Paul Hirschberg***	NOAA, Silver Spring, MD	2011		X	
8. Elliot Abrams, CCM***	AccuWeather, State College, PA	2011			X
9. Julie Demuth	NCAR Boulder, CO	2012	X		
10. Chris Vaccaro	NOAA, Washington, DC	2012			X
11. Gerald Dittberner, CCM	GJDittberner Science & Techn.	2012			X

*Chair, Planning Committee for the AMS Summer Community Meeting

**Chair, Committee on Climate Services

***Co-Chair, Ad Hoc Committee on Uncertainty in Forecasts

BEC Summer Meeting Overview August 10-13, 2009

National Weather Center Norman, OK

The Summer Meeting was a huge success. There were more people in attendance than any other BEC Summer Meeting. At final count 168 people from the government, academic, and private sectors attended.

Chair, Veronica Johnson and Past Chair, Matt Parker acted as moderators for several of the sessions. In addition, Co-Chairs John Gaynor and Linda Miller served as moderators for several sessions, too. Members of the Steering Committee and the AMS pitched in to provide special original photographic artwork as a well-deserved, “Thanks for all the hard work” that John and Linda provided during their 3-year tenure as lead meeting planners.

Additional support and help with planning was provided by John Snow (Host), Richard Eckman, Betsy Weatherhead, Cindy Schmidt, and George Frederick. The Theme of this years meeting was “Observing Weather from the Ground Up – A National Network of Networks” & “Atmospheric Science’s Role in Renewable Wind and Solar Energy”. Note that we added 1.5 days to cover Renewables. Melinda Marquis(NOAA, ESRL), Bill Mahoney (NCAR, WSAP) and Richard Eckman (NASA) were brought in to make suggestions and provide feedback, and they also helped facilitate the additional sessions.

At the Summer Meeting in 2008, AccuWeather and Pennsylvania State University agreed to host in 2010. Planning for the upcoming Summer Meeting began in September. Ken Reeves, Director of Forecasting Operations at Penn State is serving as Chair of Planning. He has enlisted a number of people to support the planning on campus. Topics are coming along and we are making good progress. Dates for next year- August 9-12, 2009.

The Adhoc Planning for the Summer Meeting was disbanded after the conclusion of this year’s event. Through discussions between the BEC leadership and with the Commissioners, it was agreed that it would be more effective to have BEC members do the planning. The reasoning was two-fold; the Summer Meeting planning effort has now become a major BEC effort every year, and a wealth of BEC talent on the committee-proper was not tapped as effectively as it could be. This change does not reflect negatively upon the previous Ad Hoc Planning Committee for the Summer Community Meeting, but it does reflect a significant change in the logistical approach. As before, talent required to facilitate the Summer Meeting planning process will be recruited as necessary each year. Typically, this will include members from the host sites and subject matter experts on the topics selected for a particular meeting.

Climate Services Committee (CCS)

1. MEMBERSHIP

Member	Affiliation and Location	Tem Ends	Academic	Government	Private
1. Ed O'lenic, Chair	NOAA, Silver Spring, MD	2010		X	
2. John Dutton	Weather Ventures, Ltd.	2010			X
3. Chuck Hakkarinen	Private Consultant	2010			X
4. Holly Hartmann	University of Arizona	2010	X		
5. Paul Llanso	Private Consultant	2010			X
6. Kelly Redmond	Western Regional Climate Ctr.	2010		X	
7. Eileen Shea	NOAA, Honolulu, HI	2010		X	
8. Caitlin Simpson	NOAA, Silver Spring, MD	2010			X
9. Ken Hubbard	University of Arizona	2010		X	
10. Ryan Boyles	NC State University	2010	X		
11. Bob Cohen	Aerospace & Marine Inter. Corp.	2010			X

2. The committee met via telephone conference call 10 times from January to November, 2009. We also held numerous practice webinars for organizers and speakers prior to the two formal events we held.

3. Webinars. CCS is the only AMS committee using Webex in this manner.

- CCS-CCM Joint Webinar on Climate Services: Climate Services for Water Clients: User Needs and Data Availability – September 16, 2009 from 1:00 to 2:00 PM EDT. This very successful webinar was attended by 53. Invited speakers: Kristen Averyt, Deputy Director of the Western Water Assessment; John Henz, CCM, leader of the Meteorology Group in HDR Engineering, Inc; Baxter Vieux, Vieux & Associates, Inc.; and Eileen Shea, Chief of the Climate Services Division, NCDC.

A summary of the webinar and the issues raised is given below

- Climate Services for Health, November 6, 2009. Paul Llanso played a major role in organizing and running this webinar. Two panelists (George Luber, Centers for Disease Control, and Noah Diffenbaugh, Stanford University, significant contributors to the science of applying climate analysis and prediction to human health decisions, each gave 15-minute powerpoint presentations. These were followed by questions and answers. There were 40 registered attendees, the maximum allowed by the AMS. Unfortunately, several people had to be turned away once registration was closed. Gary Rasmussen says that there is a way to avoid this circumstance in the future, and we will work with him to make that possible. The recording of the webinar can be found at:
<https://ametsoc.webex.com/ametsoc/ldr.php?AT=pb&SP=MC&rID=23464847&rKey=2dd947016118391d>

Discussion following the presentations dealt with:

1. Possible competition between the private sector and NCAR.

2. The tension between producing optimum products in a research environment and the desire of universities to market these products.
3. The need to look at private companies as a source of jobs for young meteorologists.
4. The fact that RISAs primary focus is learning, not business competition.
5. How the Regional Water Resource Policy Commission in the Shenandoah Valley has been effective, by engaging as members a broad cross-section of the local community.
6. How the effects of climate need to be carefully distinguished from possible problems with data.
7. How radar has refined our view of rainfall, it is much superior to gauges.
8. How important it is to stop the decline in USGS streamflow stations.
9. What will be the effect of the ongoing decline in surface observing stations?
10. How the decline may not be as bad over the world, as it seems to be in the U.S.

Ad Hoc Committee on Uncertainty in Forecasts

The Ad Hoc Committee on Uncertainty in Forecasts (ACUF) continues to be managed very effectively by co-chairs Paul Hirschberg of NOAA Elliot Abrams, CCM, of AccuWeather, and their designated NOAA assistant, Andrea Bleistein.

The ACUF Intergration Team is editing the draft report and has been since they made a presentation at the 2009 Summer Meeting.

There is a Town Hall scheduled for the AMS Annual Meeting in Atlanta to report out on ACUF. That meeting will be held Tuesday, 19 January, 12:15-1:15pm.

Membership: has not changed over the last year.

Subgroup 1: Needs, opportunities, and benefits of providing hydrometeorological forecast uncertainty products and services to the Nation.	Subgroup 2: Enterprise goals for forecast uncertainty information, products, and services.	Subgroup 3: A description of what is needed to meet the goals and reach the vision.	Subgroup 4: Suggested roles and responsibilities of Enterprise partners, including coordination and governance mechanisms.	Subgroup 5: Enterprise-wide roadmap.
Bickford, Dan	Abelman, Steve	Abshire, Wendy	Biddle, Matthew	Ahlquist, Jon
Cetola, Jeff	Brown, Barbara	Alpert, Jordan	Bright, David	Browning, Peter
Demuth, Julie	Devaris, Aimee	Bua, Bill	Brooks, Gordon	Collins, Dan C
Deo, Jayant	Fishel, Greg	Carver, Mark	Eosco, Gina	Doswell, Chuck
Du, Jun	Hayes, Pat	Dulong, Tom	Ferree, John	Erickson, Mary
Dumais, Bob	Hilderbrand, Doug	Hamil, Tom	Hansen, Jim	Morss, Rebecca
Gaynor, John	Johnson, Mike	Heppner, Paul O. G.	Nutter, Paul	Smith, Leonard
Glahn, Bob	Lawson, Carlie	Hoffman, Ross	O'Hair, Dan	Stuart, Neil
Martin, Jenifer	Maier, Chris	Holmes, Eddie	Philips, Brenda	Tracton, Steve
Morrow, Betty	Manousos, Pete	Kuchera, Evan	Sokich, John	Woods, Bernadette
Satterfield, Dan	Meisner, Bernard	Myrick, Dave		
Sauter, Barbara	Novak, Dave	Nietfeld, Daniel		
Westergard, Dick	Stewart, Alan	Payne, Steven		
Wöll, Steve		Schultz, Paul		
		Schaaake, John		
		Stillman, Dan		
		Toth, Zoltan		
Members not in Subgroups		Yun, Jimmy		Co-leads are in BOLD
<i>Hannan, John</i>				
<i>Kiley, Christopher</i>				
<i>Farrell, Robert</i>				

**Ad Hoc Committee on Climate Change-
“Improving Communication”
(CCIC)**

Members have been chosen recruited and approved by the Commissioners. The committee will be comprised of initially of 6 members who represent the diversity within our community.

Members include: Warren Washington, Paul Knight, Heather Lazrus, Jim Mahoney, and Richard Breene. I anticipate having the 6th member by the end of 2009.

The first conference call is planned for December 2009. Members will be busy writing the Terms of Reference as their first task. In addition, they will decide what, if any, information can be presented at the AMS Conference in Atlanta.

CCIC was built to address the lack of any forum for people within the AMS to exchange their views on climate change. The BEC proposed the formation of an ad hoc committee that will allow our society the ability to discuss "technical questions," and hopefully show that the AMS is open and inclusive to all its members. It is the BEC's ultimate wish that communication with all of the Weather and Climate Enterprise be improved.

(End)



AMS Board on Enterprise Economic Development (BEED)

Annual Report 2009

Submitted by: Pam Emch, Chair, AMS BEED

Membership Status

The Board membership for 2009 is listed below:

BEED Member	Organization	Sector*	Term Ends (Jan.)
Pam Emch, Chair	Northrop Grumman	P	2011
Robert Plante	Sasaki Institute	A	2010
Dorlisa Hommel	Noblis	P	2011
Richard Ohlemacher	Northrop Grumman	P	2010
Monica Hale	SAIC	P	2010
Andrea Bleistein	NWS	G	2011
Holly Hartman	University of Arizona	A	2011
John Henz	HDR Engineering, Inc.	P	2011
Eva Regnier	Naval Postgraduate School	A	2011
DeWayne Cecil	USGS; NASA LaRC	G	2012
Richard Eckman	NASA LaRC	G	2012
Dave Jones	Storm Center	P	2012
<i>Ex Officio</i> Member - Chair, ITS & Surface Transportation Committee– Ed Boselly (Weather Solutions Group)			
<i>Ex Officio</i> Member - Chair, Energy Committee – Jon Davis (Chesapeake Energy)			

* AMS Sectors: A – Academic, G – Government, P – Private

Primary Activities

Board Meetings: The BEED conducted meetings on the following dates:

- 12 January 2009 (Phoenix)
- 10 March 2009 (telecon)
- 5 May 2009 (telecon)
- 15 July 2009 (telecon)
- 6 October 2009 (telecon)
- 10 November 2009 (telecon)
- 22 December 2009 (telecon, proposed)

2009 Users Forum: The Board successfully held the Seventh Users Forum during the Phoenix Annual Meeting. In keeping with the goals of the forum, speaker selection was focused on finding representatives from a variety of local/regional economic sectors who were willing to discuss how weather and climate impacts their operations, how they use

weather and climate information, and where there are gaps in service. The theme of this year's Users Forum was "Water Resources in the Urban Environment." The morning session was titled "Weather and Short-Term Decision Making in Water Resource Operations". The afternoon session was titled "Climate and Long-Term Planning of Water Resources". The last slot of each session served as a panel discussion for the session and an opportunity to summarize the session and talk about "where we go from here". Invited speakers included representatives from the Salt River Project in Phoenix, the City of Phoenix Water Services Department, Southern California Edison (SCE), California's Delta Vision Task Force, Arizona Department of Water Resources, the City of Tucson, NCAR, and the NWS Western Regional Headquarters. The speakers were engaging, the session chairs energetic, and the topics intriguing. Unfortunately, due to a combination of factors, the Forum was poorly attended with less than 20 in the audience including some of the speakers. The primary factor appears to be that as a "Forum" with invited speakers, often secured late in the year, this event falls outside some of the normal planning and advertising mechanisms for the AMS Annual Meeting. Typical AMS conferences and symposia secure speakers earlier via the submitted abstract system. The User's Forum is designed to provide a venue for (typically) non-AMS members to make presentations to interested AMS Annual Meeting attendees. The BEED and AMS are working on ways to prevent a repeat of the unfortunate circumstances that took place in 2009.

2010 Users Forum: The 8th Users Forum is scheduled for January 2010. It will be joint with several sessions – the First Conference on Weather, Climate, and the New Energy Economy, and lunchtime panel on NPOESS / GOES data and users. The Users Forum provides an opportunity to invite specific speakers on the New Energy Economy or another topic if desired, meaning that submitted abstracts would not be required. The First Conference on Weather, Climate, and the New Energy Economy is being organized by the BEED's Energy Committee – additional details are provided later in this report.

Public-Private Partnership Forum 2009: The BEED organized and successfully conducted the 2009 Public-Private Partnership Forum (PPPF) at the University of California Washington Center in Washington, D.C. from 21-22 April 2009. This year the agenda consisted of six sessions:

- Congressional Staff Panel Discussion
- OMB Examiner Panel Discussion
- Federal Agency Leadership Panel Discussion (DOC, NASA, DHS, DOE, FAA)
- Private Sector Leadership Panel Discussion (large and small company reps, "traditional" and non-traditional AMS areas)
- Recent Activities of the National Academies
- Community Priorities – Next Actions

Berrien Moore of Climate Central was the luncheon speaker; Rit Carbone of NCAR was the dinner speaker. Overall the PPPF went very well - 92 people attended this year – a record. We had 79 registered in 2009 and not all attended. We received quite a few positive comments on the agenda, sessions, venue, speakers, interaction, etc. As with last year, we received accolades on the amount of time available for Q&A and networking. This year the agency session was restructured into a panel format; this went well and both

attendees and speakers indicated approval of the new format. The private sector session was very good – the downside was that few agency people were in the audience so that the cross-sector discussion was very limited.

Public-Private Partnership Forum 2010: The 2009 Forum was even more successful than last year in terms of the layout of the agenda, number and type of sessions, event venue, and the dinner venue. Planning for the 2010 Forum began upon completion of the 2009 Forum. Discussions were held with the 2009 organizers and with the BEED. Comments from attendees were taken into account. The plan for 2010 is to repeat the successful aspects while working to make improvements. The UC Washington Center has been reserved for the 2010 Public-Private Partnership Forum, scheduled to take place April 6-7, 2010. This is expected to be the congressional Easter break; we are hopeful that we can obtain increased participation from congressional staffers during this time. A 2010 PPPF Organizing Committee has been formed and has held several telecons to discuss the logistics, potential session topics, speakers, and session chairs. One goal is to carry forward the momentum from topics of interest at the other CWCE-organized events that have taken place during the year. An example of this is the topic of Renewable Energy. This was a popular topic at the 2009 Summer Meeting, and it has drawn the majority of the abstracts for the First Conference on Weather, Climate, and the New Energy Economy at the 2010 Annual Meeting.

Intelligent Transportation System (ITS) and Surface Transportation Committee: The ITS/ST Committee transitioned from the leadership of Paul Pisano to new chair Ed Boselly (Weather Solutions Group). The Committee met jointly with Intelligent Transportation Society of America's Weather Information and Applications Special Interest Group (WIA-SIG) during the 2009 AMS Annual Meeting. The session organized by the ITS/ST Committee at the 2009 Annual Meeting, Advances and Applications in Surface Transportation Weather (in the 25th IIPS Conference), was good and about 100 people attended. Eight speakers were lined up – five from aviation and three from services. The committee met during the 2009 Annual Meeting and held telecon meetings throughout the year. With respect to the 2010 Annual Meeting, only a few abstracts were received for a potential Weather and Transportation Symposium – so it was decided to merge this into the Fifth Symposium on Policy and Socio-economic Research. Monday morning and Monday afternoon there will be two joint sessions with seven presentations on weather and transportation. It was thought perhaps few abstracts were received this year because the Transportation Research Board 2010 Annual Meeting will take place two weeks before the AMS Annual Meeting more folks will be planning to present talks at that event. AMS has formed an APT on vehicle based observations – members of the ITS/ST Committee are involved. Membership in the ITS/ST Committee represents all AMS sectors and members are involved in several transportation weather activities including research, operations, and community service (supporting various surface transportation weather conferences, symposia, and workshops). One of the Committee's primary activities is sharing information and promoting cross discipline activities. The Committee networks across several organizations including FHWA, NOAA, AMS, Transportation Research Board (TRB), American Association of State and Highway Transportation Officials (AASHTO), and State DOTs.

	ITS & Surface Transportation Committee Member	Organization	Sector	Term Ends (Jan.)
1	Ed Boselly, Chair	Weather Solutions Group	P	2012
2	Paul Pisano	USDOT/FHWA	G	2010
3	Jim O'Sullivan	NOAA/NWS	G	2010
4	Kevin Petty	Vaisala, Inc.	P	2010
5	Renee McPherson	Oklahoma State University	A	2010
6	Denise Stephenson-Hawk	Self-employed	P	2010
7	Jim Block	Meteorlogix	P	2011
8	Steve Conger	AvaTerra Services/Iteris, Inc.	P	2011
9	Kathy Osborne	Meridian Environmental Technologies, Inc.	P	2011
10	Tina Greenfield	Iowa DOT	G	2012
11	Sheldon Drobot	UCAR	A	2012
12	Mark Askelson	University of North Dakota	A	2012
<i>Ex Officio</i> , Chair, ITS America Weather Information and Applications Special Interest Group - Art Handman				
<i>Ex Officio</i> , Chair, Transportation Research Board Task Force on Surface Transportation Weather - Wilf Nixon				
<i>Ex Officio</i> , Federal Coordinator for Meteorology or designee – Judson Stailey				

Energy Committee: Jon Davis (Chesapeake Energy) is continuing his leadership of the Energy Committee for an extended year. The committee met during the 2009 AMS Annual Meeting and had several telecons throughout the year. The session that the Energy Committee organized, Modeling Tools for Energy Production in Urban and Complex Terrain (in the 8th Symposium on the Urban Environment), although held on Thursday afternoon, was well attended by approximately 130 people. The Committee continues to interface actively with NCDC on the Decadal Normals. The Energy Committee, along with NCDC, co-hosted a Webcast on optimal normals on June 2. This meeting helps cap off 2 1/2 yrs of effort focused on NCDC Decadal Normals. The Energy Committee has spent much of its effort this year organizing the First Conference on Weather, Climate, and the New Energy Economy that will take place on January 19-21 at the 2010 AMS Annual Meeting. This is an extremely timely topic and it dovetails with the related AMS Summer Meeting theme of Renewable Energy. Over 60 abstracts were accepted. The largest number of submissions comes from the private sector. This large amount of presentations necessitates that the conference extend to 2 ½ days in length – it will start Tuesday and run through Thursday morning. A full day will be spent on wind energy. The morning of each day or of each particular session topic is planned to open with an invited speaker (set up as part of the 8th Users Forum). There will be five of these invited speakers. BEED members agree that this is a very exciting time to be focusing on the topic of renewable energy – this is becoming a national focus and AMS can help foster the exchange of information and collaboration between sectors.

	Energy Committee Member	Organization	Sector	Term Ends (Jan.)
1	Jon Davis, Chair	Chesapeake Energy	P	2010
2	Beth Stump	Chevron	P	2010
3	Rick Petty	DOE	G	2010
4	Cathy Finley	WindLogics, Inc.	P	2010
5	Kathleen Moore	Integrated Environmental Data, LLC	P	2010
6	Steve Bennett	Scripps	A	2013
7	Matt Coleman	Citadel	P	2013
8	Heidi Centola	AWS – Weatherbug	P	2013
9	Russ Bigley	Xcel Energy	P	2013
10	Anthony Arguez	NCDC	G	2013
11	Jerry Crescenti	Iberdrola Renewables	P	2013

Water Resources Committee: At the BEED meeting held 21 January 2008 during the AMS Annual Meeting possible focus areas for new BEED committees were discussed. It was decided to initiate a new BEED Water Resources Committee. Activities thus far have focused on discussing the Terms of Reference for the Committee, the range of representation from across the enterprise that should be encompassed within the committee, and collecting recommendations for members. In order to ultimately create a slate of members with staggered terms, the BEED plans to start with 8-9 members on this committee in 2009 with the remaining 3-4 members to start in January 2010. However, as of this date membership selection has not yet begun. Pam Emch, BEED Chair, will act as Chair of the Water Resources Committee until a suitable replacement can be found.

New Renewable Energy Sub-Committee: The Commission on the Weather and Climate Enterprise proposed that the BEED be the host organization for a new sub-committee focused specifically on renewable energy. This has been initiated. There is now a new “ad hoc” Renewable Energy Sub-Committee. It reports in to the Energy Committee within the BEED. Terms of Reference, potential type and number of members, focus of the sub-committee, and potential activities have all been discussed. The first chair will be Melinda Marquis of NOAA ESRL. The Renewable Energy Sub-Committee will be assisting the BEED and the CWCE right away with one of the likely sessions for the upcoming 2010 Public-Private Partnership Forum – on Renewable Energy.

Miscellaneous Activities

BEED Website: The BEED website has been updated and the format altered somewhat. Overall the website format is now similar to the BEC website format. The website is here:

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

Commission Executive Committee: The BEED Chair participated in Commission Executive Committee Meetings and telecons throughout the year.

Commission Steering Committee: The BEED Chair participated in the Commission Steering Committee meeting held in January 2009.

AMS Summer Community Meeting: BEED members participated in the Summer Meeting. BEED member Richard Eckman co-chaired the Renewable Energy Session.

Plans for 2010

The primary plans for 2010 are listed below:

First Conference on Weather, Climate, and the New Energy Economy: The BEED's Energy Committee will plan, organize, and conduct the First Conference on Weather, Climate, and the New Energy Economy scheduled for 19-21 January, 2010.

Eighth Users Forum: The BEED will plan, organize and conduct the Eighth Users Forum scheduled for January 2010, in conjunction with the Energy Committee's planning of the First Conference on Weather, Climate, and the New Energy Economy.

Public-Private Partnership Forum: The BEED will plan, organize and conduct the 2010 Public-Private Partnership Forum, scheduled for 6-7 April 2010.

Commission Support: The BEED will continue to work with the Commissioner, BEP, and BEC in planning and organizing various Commission and Board meetings.

ITS/ST, Energy, and Water Resources Committees: The BEED will continue to provide oversight to the ITS/ST, Energy, and Water Resource Committees.



AMS Board on Enterprise Planning (BEP)

Annual Report 2009

Submitted by: **Tim Spangler, Chair, AMS BEP**

Membership Status

The current Board membership as of the end of 2009:

- Timothy Spangler (Chair), University Corporation for Atmospheric Research, (2010)
- Laura Furgione, NOAA (Chair for 2011)
- Fred Carr, University of Oklahoma (2010)
- Bruce Telfeyan, Air Force Weather Agency (2010)
- Don Winter, Harris Corporation (2010)
- William Massey, Dewberry (2009)
- Kristina Peterson, University of New Orleans (2009)
- Bill Mahoney, NCAR (APT on mobile measurements-2011)
- Jim O'Sullivan, NWS (APT on mobile measurements-2011)
- William Carle, Air Force Weather (2012)
- Tom Paylor, RenaissanceRe Corporation (2012)

Primary Activities

Meetings: The board held a meeting during the AMS 2009 annual meeting, held a conference call (9 October), Spangler and Furgione met 19 May, and the board engaged in email discussions.

Mesoscale Observing Networks Annual Partnership Topic (APT): The Working group (WG) and Topic Committee conducted a Town Hall Meeting [THM] at AMS in January 2007. The Topic Committee Charge for the Mesoscale Observing Networks APT is:

- Criteria for Evaluating Potential Testbeds. Identify potential technical criteria for evaluating mesoscale observing network testbeds. Propose ways the criteria can be applied to rank order potential testbeds
- Business Models for Partnerships in Mesoscale Network Testbeds. Identify potential business models. Propose ways the business criteria can be applied in conjunction with the technical criteria to rank order potential testbeds
- Potential Mesoscale Network Testbeds. Identify potential mesoscale network testbeds that meet at least some of the technical criteria

- Recommended Mesoscale Network Testbeds. Recommend at least three mesoscale network testbeds

The WG chair/co-chairs are: Fred Carr (chair), Tim Spangler , Don Winter, and Bruce Telfeyan. The Topic Committee members are:

- Education: Rebecca Morss (NCAR), Ken Crawford (OU), John Horel
- Private Sector: Maria Pirone (AER), Mike Kalb (GST), John Lasley (SAIC), Peter Neilley (WSI), and Brent Shaw (Weathernews)
- Government: Greg Mandt (NOAA/NWS), Marty Ralph (NOAA/ESRL), Ralph Patterson (Utah DOT), and Paul Pisano (DOT/FHWA) or Andy Stearns (DOT/FHWA)

This working group was on hold until the results of the related Academy study was completed. It is expected that the group will focus their discussions and report on test beds and business plans by winter 2009/10.

Hurricane Disasters APT

The working group held its town hall meeting at the January 2007 and 2008 annual meetings and completed a draft of its report in February 2008.

The Topic Committee Charge for the Hurricane Disasters APT is:

- [Private Sector Engagement] How can the private sector engage more fully in hurricane disaster prevention, preparedness and recovery actions nationwide?
- [High Risk Populations] How can we do more to protect the poor and most vulnerable in hurricane disasters?
- [Educating the Enterprise] What can be done to better educate the Enterprise on responses to forecasts and warnings for hurricanes

During 2007 and 2008, the APT working group primary accomplishments included information gathering on study topics:

Private Sector Engagement

- Enhance incentives for the private sector
- Meet individual and community unmet needs in the recovery phase of a hurricane disaster

High Risk Populations

- Achieve selected improvements which will have high consequence results for vulnerable populations
- Resolve selected communications issues

Educating the Enterprise

- Achieve improvements in areas related to NOAA Weather Radio All Hazards (NWR)
- Achieve improvements in education and training on hurricanes and preparedness

The WG members are James Harrison (NOAA/OFCM) [.gov]; Kristina Peterson (Presbyterian Disaster Assistance) [.edu], and Bill Massey [.com]. The Topic Committee members are:

- Education: Joe Friday (OU), John Harrald (GWU), Susan Cutter (U. South Carolina), Shirley Laska (U. New Orleans), Jeff Lazo (UCAR)
- Private Sector: Paul Try (STC), Jingli Yang (ERT), George Haddow (Bullock & Haddow LLC), Betty Hearn Morrow (SocResearch Miami)
- Government: Margaret Davidson (NOAA)

The BEP Chair solicited comments from the Board and the Commission, and then sent suggested edits and comments on the report to the APT committee. The APT topic committee did not respond to the memo about proposed edits, and private conversations suggest that the committee believes they are done, and some are confused about the purpose of the report or the target audience. The BEP was a bit conflicted about how to proceed with some concerned that if the BEP revises the report, it will no longer reflect views of the committee and the process. Others felt that the report should also be revised to reflect lessons learned in Gustav and Ike.

The BEP decided to form a small committee to edit the report. The Committee met via email and submitted comments to the BEP Chair who finalized the report and submitted it to the Commissioner on 8 December for review by the Steering Committee.

Proposed APT “Expanding the National Surface Observing Network – Realizing the Potential of Vehicle-based Observations”: The BEP discussed this proposed topic including issues of calibration, quality, and data assimilation techniques. The BEP agreed to recommend the topic to the commission for adoption and implementation, and the commission approved the proposal at the AMS annual meeting. The topic committee membership is:

Name	Affiliation
Bill Mahoney (Co-Chair)	NCAR
Jim O’Sullivan (Co-Chair)	NOAA
Andrew Stern	NWS Local Forecast & Warnings Manager
Dave Helms	NWS OS&T
Jud Stailey	OFCM
Jon Tarleton	Quixote Transportation Technologies
Jim Block	DTN/ Meteorlogix
Ben McKeever	RITA/USDOT
Paul Pisano	FHWA/USDOT
Gina Eosco	AMS
Leon Osborne	Meridian Environmental Technologies & UND Surface Transportation Weather Research Center
Greg Krueger	Michigan DOT
Michael Hooper	XM Radio

Jim Sayer	U. of Michigan Transportation Research Institute (UMTRI)
Robert Koeberlein	Idaho DOT
Bob Baron	WxWorks, Inc., Baron Group
Richard Clark	Millersville University
Kevin Petty	Vaisala
- TBD -	(Auto Industry Representative)
Art Handman	Chair, ITSA Weather Committee (ex-officio)
Ed Boselly	Chair, AMS ITS/Surface Surface Transportation Weather Committee (ex-officio)

The APT committee charge is:

Explore the emerging capability,
 Evaluate the potential quality of the observations,
 Address issues of calibration and data assimilation,
 Comment on prospective roles for the public, private and academic sectors to participate
 in this emerging area, and,
 Propose potential methods of coordinating the activities.

The topic committee held a conference call on 24 August, and 6 October 2009 and will hold a face-to-face meeting at the AMs Annual meeting on 19 January 2010. Working groups are being formed to focus on addressing the committee topics. A BAMs sidebar article on mobile observations is in progress.

Offshore Wind Energy APT:

Laura Furgione, William Carle, Tom Paylor, along with Larry Atkinson from Old Dominion University, are working to develop a proposal for this APT. The purpose is to explore ways that the wind energy industry can obtain or develop important weather climatology to develop offshore wind energy.

Visioning activity for NWS: a proposed on line forum that would solicit views and suggestions from the Weather Enterprise that could be used as input to the NWS strategic plan. The BEP felt that the proposal from the NWS was very ambitious, and wondered if it wasn't very similar to the purpose of the APT process and other meetings the commission sponsors. There were other questions about how much it would be used and about the mechanics of the proposed technical solutions. Some felt that this kind of activity in the past has not been very successful. The result was a request to Chairman Spangler to meet with Ed Johnson from NWS and discuss his ideas further, especially focusing on the technical solution, and ways that the visioning activity would be marketed.

Johnson and Spangler met in Washington on 6 November 2008 and discussed alternatives. They are recommended that the BEP consider an online Charrette – a collaborative process often used in urban planning to generate design solutions by incorporating the ideas of many different stakeholder groups.

NWS worked hard all Spring and Summer 2009 to get this process approved within the DOC. Finally, in November 2009, Ed Johnson called to say that NWS was ready and hoped to have the activity finished by Spring 2010. The Commissioner, AMS HQ, and the BEP Chair discussed this proposal and felt that it was too ambitious for AMS to take on. Don Winter was asked to meet with NWS to see what alternatives could be used to assist NWS in their planning activity.

Planned Activities for 2010

Mesoscale Observing Networks Annual Partnership Topic (APT): The working group will redefine their goals, most likely focusing on test beds and business plans, and strive to release its report by the spring.

Building America's Resilience to Hurricane Disasters APT (Hurricane Disasters APT) After review by the commission, the report will be forwarded to the AMS council along with recommendations for potential society actions.

APT "Expanding the National Surface Observing Network – Realizing the Potential of Vehicle-based Observations": The committee will hold a face-to-face meeting during the Atlanta annual meeting. They plan a community web survey during the spring, a BAMS article in the summer, a Town Hall meeting at the 2011 Annual Meeting, and a final report in the spring of 2011.

Proposed APT on Offshore Wind Energy: The BEP will develop an APT proposal for consideration by the commission

New APT: An open invitation to submit APT nominations to the CWCE web site will be established. The BEP will review the applications and make recommendation to the commission during its summer meeting.

Visioning Activity: the BEP will discuss any actions it can take to assist the NWS in its strategic planning activities

Membership: the BEP will lose Bill Massey, Kristina Peterson, Don Winter, and Bruce Telfeyan. The membership will gain a potential member from the Offshore Wind Energy APT committee, and could look for a university representative during the year.

*Building America's Resilience to
Hurricane Disasters*

an

Annual Partnership Topic

of the

**American Meteorological Society
Commission on the Weather and Climate Enterprise
Board on Enterprise Planning**

October 2009

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Topic Committee

Susan L. Cutter, University of South Carolina, Columbia, South Carolina

Margaret Davidson, National Oceanic and Atmospheric Administration, Charleston, South Carolina

Elbert (Joe) Friday, University of Oklahoma, Norman, Oklahoma

George Haddow, Bullock & Haddow LLC and The George Washington University, Washington, D.C.

John R. Harrald, The George Washington University, Washington, D.C.

James B. Harrison, National Oceanic and Atmospheric Administration, Silver Spring, Maryland

James Kunde, University of Texas at Arlington

Shirley Laska, University of New Orleans, Louisiana

Jeffrey K. Lazo, National Center for Atmospheric Research, Boulder, Colorado

William G. Massey, Dewberry & Davis LLC, Atlanta, Georgia

Betty Hearn Morrow, Florida International University, Miami, and SocResearch Miami

Kristina Peterson, Presbyterian Disaster Assistance and University of New Orleans, Louisiana

Paul D. Try, Science and Technology Corporation, Hampton, Virginia

Jingli Yang, Earth Resources Technology, Inc., Annapolis Junction, Maryland

Foreword

Hurricane Katrina opened the nation's eyes to our vulnerability to massive storms, and meteorologists were no exception. As a result, the American Meteorological Society decided to take action. In the November 2005 *Bulletin of the American Meteorological Society*, a special report on the hurricane said, "... scientists should openly and consistently address basic assumptions about our society and its relationship with disaster," and, "The meteorological community once again needs to determine how to get better results out of its best efforts to fight the unthinkable."

In this Annual Partnership Topic, "Building America's Resilience to Hurricane Disasters," the AMS Commission on the Weather and Climate Enterprise (CWCE) seeks to provide the government, private sector, and academia some answers to the following related questions:

- How can the private sector engage more fully in hurricane disaster prevention, preparedness, and recovery actions nationwide? [Private Sector Engagement]
- How can the Weather Enterprise do more to protect the poor and vulnerable in hurricane disasters?
- What can be done to better educate the Weather Enterprise on responses to forecasts and warnings for hurricanes?

In this report, the "Private Sector Engagement" chapter builds on work done at the December 19-21, 2005, *A Policy Forum: Building America's Resilience to Hazards* on improving U.S. hurricane response. The "High Risk Populations" chapter seeks ways to avoid a repeat of the embarrassing and heart wrenching societal failure seen in post-Katrina New Orleans. The "Educating the Enterprise" chapter tries to encourage a built-in system resilience to the massive storms that will inevitably batter our coasts.

Annual Partnership Topics are new to the AMS, and this is the second. It was approved by the AMS Commission on the Weather and Climate Enterprise (CWCE) Commission Steering Committee (CSC) in October 2006. It falls under the jurisdiction of the Board on Enterprise Planning (BEP). A Topic Committee was assembled and asked to express their

views on building hurricane resilience, summarize them in a concise report, identify any consensus views and resulting recommendations, and describe differences of opinion when consensus could not be reached. This topic committee reviewed literature, attended conferences and workshops, and brainstormed ideas to reach its conclusions. It did not sponsor primary research on the subject. This report is the result of the committee's labors.

The report has been edited, modified, and reviewed by the AMS Board on Enterprise Planning, and the Commission on the Weather Enterprise. The AMS Council will consider whether a committee should be created to implement certain key recommendations. The Board expresses its appreciation to Jennifer Frazer of the COMET Program for her extensive editing and to Hildy Kane of the COMET Program for retyping the report.

Executive Summary

- The Weather Enterprise should identify incentives like tax breaks or insurance options that could increase private sector participation in hurricane disaster prevention, preparation, and recovery. It should also outline the steps necessary to enact such incentives. Ideally, these measures would help businesses feel comfortable monitoring NOAA Weather Radio; providing help with disaster planning and response, buses and trains for evacuations, and employee releases during emergencies; and engaging in better, more frequent planning with state and local emergency managers.
- In every hurricane disaster there are public needs that government relief programs do not address. Businesses and non-governmental organizations (NGOs) often have the materials or services the government lacks. The Weather Enterprise should establish a partnership between government emergency officials, businesses and NGOs to bridge this gap. To do so, they should write an agreement that identifies how to find out what needs are unmet, who should complete this task, and who should direct the actions of partners during all phases of emergencies. Finally, the agreement would detail what resources and systems each partner would commit to provide.
- After a hurricane disaster, prompt temporary housing is essential. This housing should reflect the long-term sustainable housing goals of the community. These dwellings may even be built to segue into attractive, permanent solutions similar to Katrina cottages -- tiny storm-resistant cottages built solidly in the style of classic American homes (see www.katrinacottagehousing.org/.) Planners shouldn't feel limited to rebuilding to pre-disaster conditions. Yet in the past, many agencies and NGOs have used pre-disaster conditions as the standard for repair and rebuilding. This is short-sighted for facing future storms.
- All agencies should work toward 100% evacuation of areas that are so designated as storms approach. If previous evacuations have seen 80% response rates in a region, the Weather Enterprise should investigate how to evacuate the remaining 20 % before future storms. Emergency managers should work with nonprofit

groups, churches, synagogues, mosques, etc., in this task. Plans for evacuating seniors are especially important. During Katrina, 70% of the dead were 60 or older even though they make up only 20% of the population. Half of those over 65 describe themselves as infirm, and many seniors said they would die before leaving the area again. Having a plan for where seniors will go and making sure they understand it well ahead of time is key.

- The NOAA and NWS StormReady program should be expanded beyond forecasting and warning messages to include response. StormReady certifications could include evacuation criteria. For example, a community must show evidence of an updated registry and plan for evacuating those without transportation, or those who are disabled or sick. The Committee is concerned that the current program gives communities a false sense of security and recommends a study be conducted to see if including such response criteria could be done in line with the goals of the program. The Committee further recommends creating StormReady grants that would provide incentive and support to communities who wish to join. Joint social science research on the program could help maximize the program's effectiveness.
- The Weather Enterprise should work to make itself a public-driven enterprise. Sometimes scientists overemphasize training and educating the public in the way scientists think about science. But often, the public doesn't think that way. We should study the best ways to communicate and distribute information to the public so that they will heed warnings and take appropriate action. The Weather Enterprise should ensure it is meeting the public's needs before it creates and releases products.

The local communities should have NOAA All Hazards Weather Radio (NWR) in all volunteer fire departments, emergency medical services, hospitals, nursing homes, gathering places such as senior centers, public and private schools and universities, and private sector companies. The community should encourage them to monitor NWR.

- Local communities should have NOAA All Hazards Weather Radio in all volunteer fire departments, emergency medical services, hospitals, nursing homes,

senior centers, schools and universities, and businesses. The community should encourage them to monitor NWR carefully.

- The Weather Enterprise should create more education, training, and outreach materials. It should do this first by outlining what information should be included in material for students, teachers, the public, emergency managers, and businesses. For businesses, the material should focus on the nuts and bolts of preparedness. The Weather Enterprise should also inventory, assess, and improve currently available materials. It should identify gaps in current materials and what information should be particularly emphasized in training. It should work with the U.S. Department of Education and state school boards to include hurricane, flooding and severe weather instruction in core science curricula. It should also work with the National Science Centers (Fort Discovery) to create interactive displays, presentations, and videos/CDs. Finally, the Weather Enterprise should consult the national media (TWC, CNN, networks), FEMA, and the NOAA National Hurricane Center (NHC) to gain support and assistance in developing these materials.
- The Weather Enterprise should formally define resilience in a way that includes sociological effects, ecological footprints, and climate change, not just economic and engineering issues. Such a definition would encourage building that prepares us for future storms and environmental conditions.
- National emergency response planning should consider and include the advice of state and local emergency officials to build a spirit of cooperation and trust. That, in turn, will build a stronger team when a hurricane does strike. Further, all evacuation plans should be made public. Waiting until a disaster strikes and only then telling people what to do flies in the face of everything known about successful evacuations.

1. Private Sector Engagement

“How can the private sector engage more fully in hurricane disaster prevention, preparedness, and recovery actions nationwide?”

A. Create incentives for the private sector.

Private industry could help prepare and respond to hurricanes in many ways, but in order to capitalize on these abilities, the nation must provide incentives. Businesses could help with disaster planning and response, providing buses and trains for evacuation, releasing employees during evacuation, cooperating with state and local emergency managers, and in monitoring NOAA Weather Radio All Hazards (NWR). The American Weather Industry is uniquely qualified to help achieve this goal since they interact with most other weather sensitive U.S. industries.

To improve businesses’ ability to perform these actions, the Nation should identify incentives like tax breaks, better insurance, and remove liability-related barriers to cooperation and then specify what needs to be done to create and promote these incentives. The American Weather Industry should be included in these efforts.

Finally, communities in harm’s way should reach out to businesses and ask for their help in all phases of hurricane response. Insurance companies, for example, have begun educating communities about ways to reduce hurricane damage, and this sort of effort should be encouraged.

B. Address unmet needs during hurricane recovery.

In every hurricane disaster there are public needs that government relief programs do not address. Businesses and non-governmental organizations (NGOs) often have materials or services the government lacks. However, designing and implementing a system that identifies these needs and matches businesses and NGO resources to them is challenging.

The Weather Enterprise should establish a partnership between government emergency officials, businesses and NGOs to bridge this gap. Churches, synagogues, and mosques can also be very good partners as they often work with vulnerable people. The American Weather Industry should also be approached since they have ties to businesses already

through mobile phones and the internet and have already prepared for maintaining their communication networks during disasters.

To do so, the Weather Enterprise should write an agreement that identifies how to find out what needs are unmet, who should complete this task, and who should direct the actions of partners during all phases of emergencies. Finally, the agreement would detail what resources and systems each partner would commit to provide.

Concrete actions to achieve this goal include:

- Establish a partnership between community businesses and NGOs.
- Identify the hurricane hazard risks faced in the community.
- Identify hurricane-related risks faced by a community.
- Find out from local, state, and federal emergency officials what their relief programs provide.
- Identify community needs that are not met by government relief programs.
- Identify the resources and systems that partners could make available during hurricanes.
- Create a formal written agreement among partners to provide these resources.
- Establish an organization that would perform all of the above activities, and in addition, hire and train staff and monitor and evaluate program activities and partners' follow-through.

2. High Risk Populations

“How can we do more to protect the poor and vulnerable in hurricane disasters?”

The vulnerable include the poor, members of some races or ethnicities, the disabled, those in substandard housing, the homeless, those isolated socially or geographically, children, foreign-language speakers, tourists, transients, immigrants, seniors, and single parents.

A. Plan for vulnerable populations’ needs during storms and to rebuild sturdy, semi-permanent storm-resistant housing.

Pre-disaster housing should not be the benchmark for post-disaster rebuilding. A disaster is a golden opportunity to radically improve local housing and transportation.

Unfortunately, many agencies and NGOs use pre-disaster conditions as their rebuilding standard. After a storm, new housing concepts can be presented to communities as a chance to make their homes and environment more resistant to storms. As climate change progresses and available building materials change, the ways we construct our communities must change too. When we use renewable resources and storm-resistant building standards, we become responsible stewards of both our natural resources and taxpayer dollars.

Post disaster, temporary housing must augment and reflect the long-term sustainable housing goals of the community. There needs to be pre-planning for disaster housing, so that options such as the Katrina cottage (a building block towards permanency) can be used immediately and then segue into long-term solutions.

This new housing should fit well into the existing community and with its long-term goals. Ideally, communities should plan ahead so semi-permanent post-disaster housing options like the Katrina cottage could be used immediately and segued into a long-term solution. Katrina cottages are tiny, wind-resistant real houses that can be built for less than the price of a trailer. Katrina cottages can be lived in as-is indefinitely, but if desired, they can be added on to later to create a larger permanent dwelling. Green habitat houses, homes built by Habitat for Humanity using green materials and techniques, are another

alternative. Existing housing coalitions targeting the poor can be valuable allies in this effort.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act is the statutory authority for most Federal disaster response activities, particularly for FEMA programs. However, this act calls for temporary structures to be constructed after disasters. This law should be challenged and ideally rewritten so that sound but modest structures like Katrina cottages can be built with federal dollars after hurricanes.

The nation should infuse mitigation measures with housing coalitions for the poor.

Coastal communities should warn seniors well in advance of dangerous storms where they will be going in an evacuation. Many seniors say they would rather die than evacuate again. Half of those over 65 describe themselves as “infirm”. In Katrina, even though only 20% of the population was older than 60, people in this group represented 70% of deaths. It’s important for seniors to know well ahead of time where they will go and when.

Coastal communities should also work towards 100% evacuation rates. If a previous evacuation yielded 80% evacuation, the community should focus on finding out why 20% did not and what can be done to evacuate them in the future. Emergency managers may find working with non-profit groups and churches helpful in this regard.

Emergency managers often think of people as individuals, but they exist in families and communities of friends. During and after disasters, managers should plan ways to help keep these psychologically important groups intact.

Still, emergency managers cannot foresee all problems and should understand that every storm brings unique circumstances that will create problems they cannot anticipate.

B. Compose warning messages so they will be heeded by the poor and vulnerable and can be received in areas without power.

The NOAA and NWS StormReady program should be expanded beyond forecasts and warnings to include response planning. We should consider whether criteria should be

added to StormReady certification regarding evacuations. For example, a community could be required to document an updated registry and make a plan for evacuating vulnerable populations like those without transportation or who are disabled or sick. We are concerned that the existing program gives communities a false sense of security. Further, we recommend creating a grant program to encourage communities to participate through incentives and support. Joint social science research on the program should be conducted to help maximize the program's effectiveness.

Often during storms, TV broadcasts and internet access to emergency management websites are ineffective in reaching the public because the power is out a long time. After Hurricane Katrina, a New Orleans-area TV meteorologist took great pains to get back on the air two weeks after the storm, but this was largely symbolic as no one in areas still without power could watch TV. In these areas, only battery-powered radios, most without the ability to hear the NOAA weather band, worked. The NWS, NOAA Weather Radio, coastal TV stations, local emergency managers, and FEMA should consider creating a communication system using satellite radio (like XM and Sirius) to reach people without power in hard-hit areas after storms. We should also make greater use of cell phones to communicate with the public, since more people have these than battery-operated radios or NOAA Weather Radio All Hazards (NWR).

The Weather Enterprise should work to make itself a public-driven enterprise. Sometimes scientists overemphasize training, educating, or warning the public in the way scientists think about science. But often, the public doesn't think that way. The Western Enterprise should study the best ways to communicate and distribute information to the public so that they will heed warnings and take appropriate action. When composing storm warnings, the NWS should base its language on the latest science on effective public communication. This can include very practical considerations. For example, a team of sociologists, linguists, and geographers convinced emergency managers in New York City to use a megaphone to communicate to the public during a heat wave because they recognized people were outside cooling off and not inside watching the news. Thus, the Weather Enterprise should ensure it is meeting the public's needs before it creates and releases products.

3. Educating the Enterprise

“What can be done to better educate the enterprise on responses to forecasts and warnings for hurricanes?”

A. Improve NOAA All Hazards Weather Radio (NWR).

All communities should have NOAA Weather Radio All Hazards (NWR) in volunteer fire departments, emergency medical services, hospitals, nursing homes, senior centers, schools and universities, and businesses. They should be encouraged them to monitor NWR carefully.

Some examples:

- A grant for a fire truck should not be awarded unless it includes NWR.
- NWR should be installed in all newly built mobile homes.
- The public should be encouraged to purchase an NWR-capable radio that can be both plugged in or charged by hand cranking.

NWR messaging should also be improved by giving people actions they can take and broadcasting in more than one language.

B. Improve education and training on hurricane preparedness.

The Weather Enterprise, in partnership with the American Weather Industry, should improve and create more education, training, and outreach materials. Continuing education and reinforcement are essential to maintaining our hurricane defense and recovery system. The Weather Enterprise should do this first by outlining what information should be included in material for students, teachers, the public, emergency managers, and businesses. For businesses, the material should focus on the nuts and bolts of preparedness. It should also inventory and assess currently available materials. It should identify gaps in current materials and what information should be particularly emphasized in training. It should work with the U.S. Department of Education and state school boards to include hurricane, flooding and severe weather instruction in core science curricula. It should also work with the National Science Centers (Fort Discovery) to create interactive displays, presentations, and videos/CDs. The Enterprise should also consult the national media (TWC, CNN, networks), FEMA, and the NOAA National Hurricane Center (NHC) to gain support and assistance in developing these materials.

4. Additional Findings and Recommendations

The Weather Enterprise should formally define resilience in a way that includes sociological effects, ecological footprints, and climate change, not just economic and engineering issues. Such a definition would encourage building in such a way that prepares us for our future environment.

- Evacuation plans should include early return policies so that the population can protect their property.
- The AMS must strongly advocate for the public right to timely weather information by pushing for improved communication during disasters.
- National emergency response planning should consider and include the advice of state and local emergency officials to build a spirit of cooperation and trust. This will build a stronger team when a hurricane does strike. All evacuation plans should be made public. Waiting until a disaster strikes and only then telling people what to do flies in the face of everything known about successful evacuations.

References and Meetings

Hurricane Katrina Special Report, Bulletin of the American Meteorological Society, November 2005

Materials from “A Policy Forum: Building America’s Resilience to Hazards,” American Meteorological Society Policy Program in collaboration with the Space Enterprise Council of the U.S. Chamber of Commerce, December 19-21, 2005

Exploratory Meeting at the 32nd Annual Hazards Research and Applications Workshop, July 8, 2007, Boulder, Colorado

Topic Committee Meetings:

- (1) January 17, 2007, in conjunction with the 87th American Meteorological Society Annual Meeting, San Antonio, Texas
- (2) July 8, 2007, in conjunction with the 32nd Annual Hazards Research and Applications Workshop, Boulder, Colorado

Town Hall Meeting at the 88th American Meteorological Society Annual Meeting, January 21, 2008, New Orleans, Louisiana

APPENDIX

Appendix A. Best Practices, Some That Could Use Some Improvement,
Worst Practices A-1

Appendix B. StormReady ProgramB-1

Appendix C. Housing, Vulnerability and Sustainable OptionsC-1

APPENDIX A

Best Practices, Practices that Could Use Some Improvement, and Worst Practices

Best Practices

1. Follow the example of firefighters and educate young children. Lessons learned early in life tend to stick.
2. Publicize and encourage the method of Sylvia Warren, director of a senior citizens center, who is working with the University of New Orleans' Center for Hazards Assessment, Response and Technology to build an evacuation plan for seniors in the New Orleans region.
3. In heat waves and other natural disasters, consider using direct methods to communicate with the public. During a heat wave in New York City, sociologists, linguists, and geographers encouraged emergency managers to use a megaphone because people were outside cooling off rather than inside watching news.
4. Walmart and Home Depot are good examples of businesses with superior emergency-related logistics. We should identify more examples and work with them to improve governmental logistics during emergencies.
5. Businesses should be encouraged to monitor weather radio and follow the example of K&K Industries of Daviess County, Indiana. On November 15, 2005, an F3 tornado touched down near Washington, Indiana, in Daviess County and traveled northeast for 12 miles, reaching a quarter mile wide at maximum strength. The owner of K&K Industries was monitoring law enforcement radio at work and heard chatter about the approaching storm. As a result, he sent his 120 employees home early. Many lives were likely saved by this decision, since 30 minutes later the tornado destroyed the plant in what was to be the most heavily damaged part of the storm's path.

Some That Could Use Some Improvement

1. Expand the role of faith-based organizations by working with them ahead of time. Community governments, businesses and interfaith associations can all work together better to help protect the poor and vulnerable during emergencies.
2. Criteria for National Oceanic and Atmospheric Administration (NOAA)-designated "TsunamiReady" and "StormReady" communities should be rewritten to require concrete evacuation plans for people without transportation or with special needs

for all new designations and designation renewals. Without criteria that include emergency management and evacuation, the existing warning dissemination standards may lead communities to falsely believe they have done all they need do to prepare. The existing program may thus be counterproductive. Further, criteria should be added that require all evacuation plans include provisions for high-risk populations. Grants should also be created to encourage community participation in the program. Joint social science research on the program should be conducted to help maximize the program's effectiveness.

Worst Practices

1. Suppressing information at the expense of the public's health is not an acceptable practice. FEMA allegedly did so when it ignored warnings from its own field workers about health problems experienced by hurricane victims living in government-funded trailers leaching a toxic chemical at 75 times the recommended maximum for U.S. workers. This agency allegedly did so because they were concerned they would be legally liable for the illnesses of the trailers' inhabitants. (The Washington Post, July 20, 2007, "FEMA Knew of Toxic Gas In Trailers")

Appendix B

StormReady Program

Betty Hearn Morrow

One issue that came up in APT discussions was the National Weather Service's StormReady program. According to the StormReady Organization and Operations Manual (www.weather.gov/stormready/resources/OpsManual2005.pdf, p. 2), this is "a program to help communities and counties implement procedures to reduce the potential for disastrous, weather-related consequences. StormReady helps communities attain a new level of preparedness and mitigation awareness for extreme weather-related events. StormReady communities have a strong commitment to putting in place infrastructure and systems that save lives and protect property when hazardous weather strikes." While this implies a comprehensive approach, in reality most StormReady criteria are designed to provide a "basic accounting of technology" (p. 8) related to forecasts and warnings.

To qualify a community must:

- Establish a 24-hour warning point and emergency operations center;
- Have more than one method of receiving weather forecasts and warnings and alerting the public;
- Create a system that monitors local weather conditions;
- Promote the significance of public readiness through community seminars;
- Develop a formal hazards weather plan, which includes training severe weather spotters and holding exercises.

However, applicants are also required to provide "a brief narrative describing aspects of preparedness and planning activities."

Applications are sent to the National Weather Service local Weather Forecast Office where they are reviewed by a Local StormReady Advisory Board and then verified by a site visit. Once approved the community receives official recognition and signs for posting. Certification is for 3 years and there is a process for re-certification.

The suggestion was made to the APT committee on several occasions that one possible way to make American's coastal communities safer from hurricanes was to expand the StormReady program beyond just forecast and warning messages, but to include response initiatives. In particular could criteria be added related to storm-related evacuations? For example, a community would have to show evidence of keeping an updated registry and having a plan for evacuating vulnerable populations such as those without private transportation and those with special medical and disability needs. There was some concern that the program as it now stands gives a community's residents a false sense of security. Thus one recommendation of the APT is that a feasibility study be conducted to see if the StormReady program could be raised to a more comprehensive program designed to improve not only weather forecast and warning communication, but also response plans. This would seem in line with the stated goals of the program.

Appendix C
Housing, Vulnerability and Sustainable Options
Reverend Kristina Peterson

Again, many Americans are realizing that the nation is in a housing crisis. They are experiencing first hand unpayable mortgages, predatory lending, foreclosures and bankruptcies. Again the government and the media are recognizing the crisis. This crisis is a perpetual crisis for those on the lower end of the income scale and again the government and the media fail to notice this chronic problem. Predatory lending, inadequate and substandard housing has been a regular experience for those who do not have the connections or resources to benefit from better mortgages, banks and contractors. The housing crisis for the economically poor is always exacerbated during and after a disaster.

The economically poor continue to skillfully use what is available and make the best of what can be used. This has often given way to creative solutions and homemade remedies. These remedies manifest themselves into a multitude of forms ranging from land usage to extended family living arrangements. These solutions are not always “bad” or “undesirable” and are often quite resilient.

People who have the means to get the materials to repair their homes from Lowes or Home Depot do not often think about what they would do if they didn't have their charge card, an SUV, access to the hardware store and the time to purchase the needed items to repair or mitigate their home.

The economically poor, who are without these resources, often find other options through the recycling, reusing and sharing materials to make ends meet and often do this in a seldom recognized environmentally friendly manner. An example of this would be the line of refrigerators on the side porch that are used for parts to keep the one in the house functioning.

All this is to say, the economically poor may not have the showiest or prettiest of housing but they are by no means incompetent in knowing what is needed for resilience. It is with

that understanding that their knowledge and creativity can be accentuated in the visioning of appropriate housing as we battle with climate change and the storms that will follow.

Project Impact under the Clinton administration gave the country a successful model of community partnerships that built mitigation strategies. Project Impact understood the synergy that happens when diverse partners work together for a safe community and future. School children and engineers found that they could make positive changes for their future. This type of collaboration is essential for the predicted weather patterns caused by climate change.

The aftermath of a disaster provides a possibility of radically changing outdated patterns of housing and transportation. Early in the post-disaster time period new concepts of housing can be entertained with and in the affected community for a more resilient rebuilding process. Old building techniques are not necessarily appropriate for our awareness of changing climates and natural resource depletion. As our available resources change and our climate risks increase, the ways we conceive of housing and community must change to reflect a responsible stewardship to renewable resources and building standards to withstand potential risks.

Two excellent examples of this shift or change post-disaster are in very different communities. The Holy Cross community of the Ninth Ward in New Orleans has been talking, thinking and building 'green' since Hurricane Katrina. Their enthusiasm and leadership in their vision to grow a green recovery has captured the imagination of many nonprofit groups and high profile celebrities. This engagement of creativity and vision will prepare this community for the changes in their future. Solar and high efficient building standards will build resiliency in a variety of ways for Holy Cross's community. Resources that once were spent on fuel, utility cutoff and reconnections by the religious community and safety net organizations can instead go to the betterment of the people instead of the utility company.

The other community, miles away in Greensburg, Kansas is rebuilding green. Ninety percent of the community was destroyed in May of 2007 by an F5 tornado, a community

that, in the words of its residents, did not have long to live. As a result of the creative thinking by the residents and political leaders, as well as community partners and outside support systems, the town has re-imagined itself into the future as a green model community for the region.

The town has committed itself to Leadership in Energy and Environmental Design (LEED) Platinum standards for all public and municipal buildings, a bold step not taken by any other community in the United States. In an NPR interview, December 27, 2007, a young man stated that he has had a change of heart to stay in his community now that he sees it has a future, whereas prior to the tornado he saw the town dying, with no future that could include himⁱ.

There have been other attempts to address the changing climate and environmental issues with creative and appropriate rebuilding post-disaster, but not necessarily successful due to negative outside influences. Several coal communities in southern West Virginia responded to their plight following multiple disasters in 2001 and 2002 by developing a plan to rebuild in a green and sustainable way inclusive of changing livelihood options. This was brought to a halt when several national disaster agencies involved with disaster rebuilding funds did not see this as an appropriate way to bring the community back to pre-disaster conditions. Pre-disaster housing conditions should not be the benchmark for post-disaster recovery and rebuilding. Unfortunately many agencies and NGO's use the pre-disaster conditions as the standard for repair and rebuilding which is neither desirable nor advantageous for mitigation or sustainabilityⁱⁱ.

Any appropriate vision of resilience must take into consideration future environmental factors, like global warming and climate change. One indispensable way for envisioning resilience is to build differently so as to mitigate climate and other environmental factors that are in our projected future.

A real and living example of these possibilities is the Vietnamese American community in New Orleans East, Village de L'est. After Katrina, the community, without government help, used its own resources and knowledge to develop a plan for a healthy

walkable community that reflected their culture and heritage, and as a viable alternative to the pre-Katrina-urban-sprawl-neighborhood.

The work on this vision was delayed by the community's decision to stop their work on sustainable development to address the more pressing issues of both legal and illegal toxic dumping that would severely impact communities far beyond Village de L'est. This is a striking example of a community that is able to see and act beyond its own time and spaceⁱⁱⁱ.

What can we learn from these communities that have addressed their future given projected climate changes:

- People and communities are more creative than usually recognized by planners, academics and agencies.
- People want to have a safe future for their families and their extended community.
- People will rise to the opportunity to vision something better and are willing to work for that vision.
- Partnerships are vital – all knowledge is needed at the table, including knowledge from the climatologist and meteorologist who know risk predictions that will affect housing and living conditions.
- People who have lower incomes or more simple means of living are creative and have ideas that are valuable and critical for collaboration and for resolving problems.
- Immediate and temporary housing post-disaster must reflect the geographic livelihood needs, community networks and the participatory ability of families to plan their future lifeworld.
- Post-disaster, temporary housing must augment and reflect the long-term sustainable housing goals of the community. There needs to be pre-planning for disaster housing, so that options such as the Katrina cottage (a building block towards permanency) can be used immediately and then segue into long-term solutions. This is in stark contrast to the present FEMA trailer

parks and other unsuitable arrangements, which are isolated, unhealthy, formaldehyde ridden, and cramped.

If post-disaster sustainable housing is to be solved, and sustainable communities realized, then those involved with meteorology must be a vital part of the conversation. Their knowledge must make us all uncomfortably aware of the unheeded consequences of our lack of action.

ⁱ Interview with **Chris Kliewer, AIA, LEED® AP WDM Architects P.A.** 105 North Washington, Wichita, KS 67202 - 316.262.4700

ⁱⁱ Author's field notes and organizational minutes from WVMAW

ⁱⁱⁱ Interview with Father Vien and Father Luke, Queen Mary of Vietnam Church, Village de L'est