

Communications

PUBLIC PERCEPTION OF MEDIA WEATHER FORECASTS: THE CASE OF AMARILLO, TEXAS

by Ralph D. Cross (1) and Larry S. McDonald (2)

ABSTRACT

With the development of more sophisticated means of sampling meteorological variables, and the numerical capability of modern computers, weather forecasts have become increasingly more exact. However, there is still a high probability that the layman's perception of weather forecast terminology is misunderstood. By use of a case study this research attempts to determine the public's understanding of weather terminology as used in media weather forecasts in the Amarillo, Texas, area. The results show a definite tendency on the part of the general public in Amarillo to misinterpret media weather forecast terminology, although the public's awareness is somewhat better than in previous studies conducted in North America.

1. INTRODUCTION

Through the years, with the development of more sophisticated means of sampling meteorological variables, and the numerical capability of modern computers, weather forecasts have become increasingly precise. However, it is still evident that meteorological terminology is misunderstood by the layman. Granted, there is a certain amount of confusion generated by the terms themselves. Nonetheless, the improper use of meteorological terms by media "weathercasters" can create the public's misunderstanding of weather forecasts. The trend toward the employment of professional meteorologists to prepare the daily weathercast should go a long way to remedy this situation. Conversely, the actual forecast of tomorrow's weather is problematic only in the terminology used and in the public's perception of the meaning of the terms.

By use of a case study this research attempts to determine the public's perception and understanding of weather terminology as used in media weather forecasts in the Amarillo, Texas, area. A modification of a questionnaire used by Cross (4) in a study on media forecasts in Hattiesburg, Mississippi, was prepared to sample the public's response to media weather terminology in the Amarillo area (see Appendix). A stratified random sample of the population was taken from the Amarillo telephone directory; 250 questionnaires were then mailed to the randomly selected

individuals; 157 were returned fully completed.

Analyses of the public's perception of weather forecast terminology are not new. One of the earliest inventories was conducted by Landsberg (4). He sampled several groups of students at Pennsylvania State University to find the degree of association of weather terminology with actual weather conditions as the students perceived them. The results showed a close association but indicated a need for more exact terms which could be unmistakable and, therefore, accurate for a local area.

A questionnaire, circulated at the University of Toronto in 1949 by the Canadian Meteorological Service (5), concluded that the following, in descending order of importance, were the only terms of concern to the public: temperature, precipitation, sky aspect, and wind. The study also indicated that definitive adjectives were more meaningful than numerical description probabilities.

Between 1950 and 1952, Sherrod and Neuberger (6) tested several thousand students at Penn State via questionnaire. Their results indicated a poor understanding of meteorological terms by the public, and that more complex terminology only further confused the layman. They called for a simplification of weather terminology to aid the public's understanding of media forecasts. This suggestion for simplified terms was directly opposite to Landsberg's earlier proposal.

In 1974, G. R. McBoyle (7) assessed the public response to weather terminology in the Kitchener-Waterloo area of Ontario, Canada. McBoyle concluded that terms such as "light breezes", "overcast", "showers", "snow flurries", "freezing rain", and "occasional snow" were well understood by the layman. However, terms such as "clear", "sunny", "cloudy", "moderate winds", "mostly sunny", "calm", "chance", and "likelihood" were generally misunderstood.

A study by R. D. Cross in 1978 (4) revealed that there was considerable misinterpretation of weather terminology in Hattiesburg, Mississippi. Cross' findings were to a certain degree similar to McBoyle's conclusions in the Kitchener-Waterloo area.

2. SOURCES OF WEATHER INFORMATION

Amarillo is served by three commercial television stations. The stations and their network affiliations are: KAMR (NBC), KVII (ABC), and KFDA (CBS).

Each television station has available several sources of weather information. One source is the local "loop", which is a direct electronic hookup system with the National Weather Service in Amarillo. The "loop" provides general weather information in the form of statistical data, forecasts, weather watches, and weather warnings. For more detailed information, the stations rely upon Service A (no longer in use nationwide), another electronic hookup system with the National Weather Service. Service A furnishes coded aviation weather data. Weather information is also obtained by use of facsimile machines, which are connected by telephone to the National Meteorological Center, Camp Springs, Maryland. Finally, each television station maintains a radar unit.

Moreover, KAMR relies on a private weather information company, Accu-Weather. This service is offered to radio and television stations throughout the country for a fee.

The city's twelve radio stations depend upon the local "loop" for their weather information and forecasts. Amarillo's only newspaper prints a small national weather map showing the national forecast. The previous day's temperatures and precipitation amounts for selected U.S. cities are given along with a local forecast.

3. THE AMARRILLO RESPONDENTS

A generalized profile of those responding to the questionnaire (Appendix) showed that a slight majority of respondents were female (51%) and the greatest number of respondents were in the age group 21 to 35 (31%). Moreover, 60% indicated that weather forecasts had no bearing on their occupation. A little over half (55%) said that their main recreational activities were pursued out-of-doors, but 56% said that weather forecasts greatly affected their recreational activities.

4. TERMS DEALING WITH SKY ASPECT

Sky Aspect was ranked as the third most important variable by the Amarillo respondents, along with wind. The response to the term "clear skies" (question 11) shows that a large number of the respondents (78%) believe it to mean a cloud-free sky. An additional 21% picked less than 3/10 sky coverage, and only 1% selected the correct answer of less than 4/10 cloud cover.

The term "sunny" (question 20) is not well understood by the public. Only 1% of the respondents chose the correct answer of less than 7/10 sky coverage. A fairly significant percentage of individuals (23%) picked less than 3/10 sky coverage, and the majority (73%) selected less than 4/10 sky coverage for "sunny." These results raise two points: 1) just how well the layman can differentiate among varying amounts of cloud cover

is questionable, and 2) perhaps the official definition should be changed to reflect majority opinion. The latter suggestion is of note because Cross and McBoyle had similar findings in their respective studies.

Likewise, the term "mostly sunny" (question 16) was very little understood by laymen, and only 1% selected the correct answer. Most respondents (88%) chose the nonquantitative answer. The response to "partly cloudy" resulted in an intriguing distribution of replies. Most of the respondents (53%) demonstrated an optimistic outlook in selecting "sunny with occasional clouds." Responses to question 13 indicate a fairly good understanding of the term "cloudy skies" with 61% checking the correct answer of 7/10 or more of sky covered. Apparently a fairly large number of people (36%) require less cloud cover to experience "cloudy skies" than the official definition calls for. These results tend to support McBoyle's and Cross' findings that numerical definitions are less meaningful to the public than are purely descriptive terms.

5. TERMS CONCERNING WIND CONDITIONS

A fairly good understanding of the term "moderate winds" (question 9) is indicated, because 44% of the interviewees selected the correct response, that is, speeds from 16 to 20 miles per hour. Also suggesting that this term is more understandable is that the majority of respondent (49%) chose the next lowest range of winds (9 to 14 mph).

According to the Beaufort wind scale, winds of less than 1 mph constitute "calm" conditions. Forty-one % chose the correct answer. Another 36 % selected wind speeds from 2 to 7 mph, which tends to indicate that Amarillo respondents have a fairly good perception of wind speeds.

Also fairly well understood is the phrase "gusts of wind." A slight majority (47%) selected the proper response, whereas 43% chose brief periods in which winds increase to 30 mph or more.

6. TERMS CONNOTING PRECIPITATION

Amarillo respondents consider precipitation as the second most important variable in their weather reports. The term "freezing rain" is most often defined as rain falling as liquid and freezing upon impact. Eighty-four percent selected this answer, showing a good understanding of the term.

"Probability" as used by meteorologists is "possibility of", "likely", or "chance of" occurrence. Responses show that the public considers "probability" to be a more absolute term than "likely" or "chance of." In question 3, 45% chose the most precise term as being the most acceptable to them. In question 8, only 19% thought that "thundershowers likely" had a 70% or greater chance of occurring, while only 3% perceived "a chance of" as meaning a 70% or higher chance of showers occurring. If these results are indicative of the public's perception of these words, it would follow that forecasts should use "probable" with high, "likely" with moderate, and a "chance of" with the lowest possibilities, or rain occurring.

7. TERMS DEALING WITH TEMPERATURE

Temperature was selected by the Amarillo interviewees as the most significant variable in weather reports. The public's perception of relative terms, "mild", "cool", "cold", and "hot", when a series of absolute temperature ranges is given, seems to show very little agreement. The term "mild" was accepted to lie within the temperature range of 50° to 59°F by 74% for spring and 70% for fall, while summer "cold" lay between 51°F and 39°F for 72%. Winter "cold" was accepted to be 10° to 20°F.

With regard to the term "hot", 78 and 79%, respectively, considered the range 70° to 89°F as hot for both spring and fall. Ninety percent favored a range of 90° to 100°F for summer, and 58% saw 50° to 69° as hot for winter.

8. TERMS CONCERNING HIGH- AND LOW-PRESSURE SYSTEMS

The terms "High" (question 23) and "Low" (question 22), seem to be somewhat more meaningful to the public, with 17% and 29%, respectively, choosing the most appropriate answers. At best the terms "High" and "Low" are relative. The word "High" is most frequently used by weathercasters as a substitute for anticyclone, which not only carries a barometric pressure connotation but also implies a wind trajectory system. All too often the term "High" is substituted for air mass.

Media weathercasters use the term "Low" to pinpoint the center of a low-pressure system. Its relationship to the air masses, which create the fronts associated with most lows, are ignored. Here, perhaps, the concept of the mid-latitude cyclone could be well used. Most respondents (69%) perceive a high as a large area of calm with high pressure, clear skies and warm temperatures; likewise they (67%) see a low as a small center of concentrated low pressure associated with fronts. Only 17% (High) and 29% (Low) selected the more appropriate meteorological definition for Highs and Lows. One-third chose "Highs" and "Lows" to be separate, nonconnected entities rather than "peaks" and "depressions" in a continuous distribution of barometric pressure.

9. CONCLUSION

The findings of this study reveal a definite tendency on the part of the general public in Amarillo to misunderstand media weather forecast terminology, although the understanding is slightly better than that found in the Cross and McBoyle studies. The main difference between the Amarillo report and the other two studies is in the interpretation of wind terminology. The people of Amarillo show a better perception of wind conditions than do their Mississippi and Ontario counterparts.

Those terms that have specific meteorological definition and are not well understood by the public are: "clear skies", "mostly sunny", and "sunny"; moderately understood are "moderate winds" and "gusts of wind"; and moderately well understood is "calm". Although short intervals of "light rainfall" was the answer most often given (84%) in response

to the term "showers", the short interval connotation of the question was probably more germane to their perception of "showers" and appears to be quite appropriate.

Several factors are more than likely responsible for the misunderstandings encountered: 1) a public poorly educated with regard to weather terminology; 2) inexperienced or poorly trained nonmeteorological media weather personnel; and/or 3) use of weather terms contrary to the public's most popular perceptions.

Amarillo findings are quite similar to the findings in the Hattiesburg and Kitchener-Waterloo areas. We attribute differences to the diversity of the geographic locations and variations in temperature, precipitation, and wind. The similarity in findings supports the idea that misunderstanding of weather terminology is not local in scope nor confined to any particular climatic region. Solutions to misunderstandings lie in either re-educating the public in regards to exact definitions, redefining weather terms to more closely concur with the most popular definitions as perceived by the public, and/or re-educating weathercasters so that they use correct terminology or more meaningful terminology in their reports.

NOTES AND REFERENCES

1. Dr. Ralph D. Cross is Professor of Geography at the University of Southern Mississippi, Hattiesburg, MS. He teaches courses in Climatology, Meteorology and Hydrology. His major research efforts are in air pollution climatology. Dr. Cross received a Ph.D. in Geography from Michigan State University.
2. Larry S. McDonald is an engineer with Macobar-Dressler, Inc., Dickinson, TX. He is a graduate of the University of Southern Mississippi and has taken courses in Meteorology and Climatology.
3. Cross, Ralph D. 1978, "Public Perception of Media Weather Forecasts: The Case of Hattiesburg, Mississippi." *Climate and Human Ecology*. Edited by Jim Norwine, D. Armstrong Co., Inc., Houston, TX.
4. Landsberg, H., 1940: "Weather Forecasting Terms." *Bulletin American Meteorological Society*, Vol. 21, pp. 317-320.
5. Canadian Meteorological Service, 1949: "University of Toronto Poll of Students on Weather Terminology." *Bulletin American Meteorological Society*, Vol. 30, pp. 61-62.
6. Sherrod, J., and Neuberger, H., 1958: "Understanding Forecast Terms: Results of a Survey." *Bulletin American Meteorological Society*, Vol. 69, pp. 34-36.
7. McBoyle, G. R. 1974: "Public Response to Weather Terminology in the Kitchener-Waterloo Area." *Climatological Bulletin*, Vol. 15, pp. 11-29.
8. Maunder, W. J. 1969: "The Consumer and the Weather Forecast." *Atmosphere*, Vol. 7 pp. 15-22.

APPENDIX

Questionnaire on Weather Terminology

1. How often do you normally read, listen or watch the weather forecast? Please indicate the number of times and sources.

	Newspaper	Radio	Television
a) Every day	21%	33%	53%
b) Almost every day	12%	22%	35%
c) Before weekends	4%	1%	2%
d) Read, listen or watch but do not usually pay attention	14%	8%	5%

2. Please rank these items of the weather forecast in order of importance to you. (Number 1 is most important, number 5 is least important.)

	Average Ranking
a) The temperature expected tomorrow	1.53
b) How clear or cloudy tomorrow's sky will be	3.07
c) The precipitation (rain) expected tomorrow	2.37
d) The barometric pressure expected tomorrow	4.70
e) The expected wind speed tomorrow	3.04

3. Which of the following forecasts on precipitation (rain) would be most acceptable to you? Please check one only.

a) Cloudy today, rain tonight, clearing tomorrow	21%
b) Rain probability today 40%, tonight 80%, tomorrow 30%	34%
c) Cloudy today, with rain probability 40%, rain tonight with rain probability 80%, clearing tomorrow with rain probability 30%	45%

4. For each season indicate the temperature for which a forecast of "mild" today would apply. Please check only one for each season.

	Spring	Summer	Fall	Winter
a) 20 - 29° F	0%	0%	0%	8%
b) 30 - 39° F	1	0	0	21
c) 40 - 49° F	5	0	9	46
d) 50 - 59° F	26	0	31	12
e) 60 - 69° F	48	3	39	1
f) 70 - 79° F	13	40	16	2
g) 80 - 89° F	0	52	0	0
h) The term does not seem applicable for this season	1	1	1	5

5. For each season indicate the temperature range for which a forecast of "cool" today would apply.

	Spring	Summer	Fall	Winter
a) 20 - 29° F	1%	0%	0%	28%
b) 30 - 39° F	17	1	0	37
c) 40 - 49° F	38	1	9	11
d) 50 - 59° F	27	11	31	5
e) 60 - 69° F	14	39	39	1
f) 70 - 79° F	0	37	16	1
g) 80 - 89° F	0	5	0	0
h) This term does not seem applicable for this season	0	1	1	15

6. For each season indicate the temperature for which a forecast of "cold" today applies. Please check only one answer for each season.

	Spring	Summer	Fall	Winter
a) -10 - 5° F	0%	0%	0%	26%
b) 6 - 20° F	5	0	3	54
c) 21 - 35° F	35	1	45	15
d) 36 - 50° F	49	15	40	1
e) 51 - 65° F	8	51	7	1
f) 66 - 80° F	1	21	1	0
g) Not applicable for this season	0	9	0	1

7. For each season indicate the temperature for which a forecast of "hot" today applies. Please check only one answer for each season.

	Spring	Summer	Fall	Winter
a) 50 - 59° F	1%	0%	1%	33%
b) 60 - 69° F	9	0	7	25
c) 70 - 79° F	33	0	32	15
d) 80 - 89° F	45	1	47	3
e) 90 - 99° F	6	56	11	0
f) 100° F and higher	0	41	0	0
g) Not applicable for this season	1	1	1	18

8. If in the morning you hear a forecast for "thunderstorms likely this afternoon", what is the chance of a thunderstorm occurring that afternoon? Please check only one.

a) 1 - 10%	13%
b) 20 - 29%	29%
c) 30 - 49%	21%
d) 50 - 69%	18%
e) 70% or more	19%

9. What does the term "moderate winds" mean to you? Please check only one.

a) Wind speeds between 5 - 8 miles per hour	5%
b) Wind speeds between 9 - 14 miles per hour	49%
c) Wind speeds between 15 - 20 miles per hour	44%
d) Wind speeds between 20 - 25 miles per hour	2%

10. What does the term "showers" mean to you? Please check only one.

a) Short intervals of light rainfall	84%
d) Short intervals of heavy rainfall	10%
e) Long intervals of light rainfall	6%
f) Long intervals of heavy rainfall	0%

11. What does the term "clear skies" mean to you? Please check only one.

a) No visible clouds	78%
b) Less than 3/10 of the sky is covered with clouds	21%
c) Less than 4/10 of the sky is covered with clouds	1%
d) Less than 6/10 of the sky is covered with clouds	0%

12. What does the term "freezing rain" mean to you? Please check only one.
 - a) Rain that falls in liquid form but freezes upon impact to form a coating of ice 86%
 - b) A form of precipitation that although frozen at higher elevations, arrives at the surface as cold rain 7%
 - c) Rain followed by freezing temperatures later on in the day which leads to the formation of ice 3%
 - d) Other (please specify) 4%
13. What does the term "cloudy skies" mean to you? Please check only one.
 - a) The sky will be 1/10 to 4/10 covered with clouds 3%
 - b) The sky will be 5/10 to 6/10 covered with clouds 35%
 - c) 7/10 or more of the sky will be covered 61%
14. What does the term "partly cloudy" mean to you? Please check only one.
 - a) The day will be cloudy with occasional periods of sunshine 21%
 - b) The day will be sunny with occasional periods of clouds 53%
 - c) The day will consist of about 50% sunshine and 50% clouds 26%
15. What does "gusts of wind" mean to you? Please check only one.
 - a) Brief periods during which the normal wind speed increases to 10 miles per hour or more 10%
 - b) Brief and rapid increase in the wind speed, and the speed fluctuates by 10 miles per hour or more between peaks and lows and the maximum speeds attained in the gusts exceed 10 miles per hour 47%
 - c) Brief periods during which the wind speed increases to 30 miles per hour or more 43%
16. What does a "mostly sunny" day mean to you? Please check only one.
 - a) The day will be cloudy in the morning and sunny in the afternoon 2%
 - b) It will be sunny with occasional cloudy periods 88%
 - c) For most of the day the sky will be less than 7/10 cloud covered but there will be periods of 3 - 4 hours when the sky will be 7/10 or more cloud covered 1%
 - d) For most of the day the sky will be less than 5/10 cloud covered but there will be periods of 3 - 4 hours when the sky will be more than 5/10 cloud covered 8%
17. What does "overcast" skies mean to you. Please check only one.
 - a) The same as "cloudy skies" 6%
 - b) More cloud cover than a forecast for cloudy skies 7%
 - c) Less cloud cover than a forecast for cloudy skies 8%
 - *d) Complete sky cover giving dull gray conditions 79%
18. What does "calm" conditions mean to you? Please check only one.
 - a) No wind detectable at all 16%
 - b) Winds less than 1 mile per hour 41%
 - c) Winds between 2 - 7 miles per hour 36%
 - d) A gentle breeze, winds 8 - 12 miles per hour 7%

19. If in the morning you hear a forecast of "a chance of showers this afternoon", what is the probability of showers occurring that afternoon? Please check only one.
- | | | |
|----|-------------|-----|
| a) | 1 - 19% | 36% |
| b) | 20 - 29% | 44% |
| c) | 30 - 39% | 12% |
| d) | 50 - 69% | 5% |
| e) | 70% or more | 3% |
20. What does a "sunny" day mean to you? Please check only one.
- | | | |
|-----|---|-----|
| a) | Less than 8/10 of the sky will be covered with clouds | 23% |
| *b) | Less than 7/10 of the sky will be covered with clouds | 2% |
| c) | Less than 6/10 of the sky will be covered with clouds | 1% |
| d) | Less than 5/10 of the sky will be covered with clouds | 1% |
| e) | Less than 4/10 of the sky will be covered with clouds | 73% |
21. What does a "light breeze" mean to you? Please check only one.
- | | | |
|----|--|-----|
| a) | Wind speeds between 5 - 8 miles per hour | 68% |
| b) | Wind speeds between 9 - 14 miles per hour | 32% |
| c) | Wind speeds between 15 - 20 miles per hour | 0% |
| d) | Wind speeds between 21 - 25 miles per hour | 0% |
22. What does the term "low" as used in local weather forecasts mean to you? Please check only one.
- | | | |
|----|--|-----|
| a) | A small area of concentrated low pressure with fronts extending out from its center | 67% |
| b) | A large, generally circular-shaped area with decreasing pressure toward the center, and fronts separating the three air masses generally found within it | 29% |
| c) | A whirling vortex of relatively strong winds and heavy rain with trailing fronts | 4% |
23. What does the term "high" as used in local weather forecasts mean to you? Please check only one.
- | | | |
|----|---|-----|
| a) | A very large high pressure area exhibiting calm conditions, clear skies, and warm temperatures | 69% |
| b) | A very large high pressure area exhibiting strong winds, clear skies, and cool temperatures | 14% |
| c) | An area of relatively high pressure with closed isobars, the pressure gradient directed from the center to produce outward spirals of wind in a clockwise direction | 17% |
24. How do you interpret "highs" and "lows" as depicted in local forecasts? Please check only one.
- | | | |
|----|---|-----|
| a) | As separate entities with different characteristics | 68% |
| b) | As continuous systems one grading into the other with varying characteristics | 32% |
25. Sex:
- | | |
|--------|-----|
| Male | 49% |
| Female | 51% |
26. Please state your occupation:
- | Housewives | Students | Retired | Employed Outside the Home |
|------------|----------|---------|---------------------------|
| 22% | 5% | 11% | 62% |

27. Please indicate your age group.

- | | |
|-----------------|-----|
| a) 20 and under | 4% |
| b) 21 - 35 | 31% |
| c) 36 - 50 | 22% |
| d) 51 - 64 | 30% |
| e) 65 and over | 13% |

28. To what extent do weather forecasts affect your occupation in terms of money losses or gains? Please check only one.

- | | |
|------------------|-----|
| a) Not at all | 60% |
| b) Slight effect | 28% |
| c) Great effect | 11% |

29. Are most of your recreational activities related to: (Please check only one)

- | | |
|-----------------------|-----|
| a) Indoor activities | 45% |
| b) Outdoor activities | 55% |

30. To what extent do weather forecasts affect your recreational activities? Please check only one.

- | | |
|------------------|-----|
| a) Not at all | 17% |
| b) Slight effect | 56% |
| c) Great effect | 27% |

This is the end of the questionnaire. Thank you very much for your cooperation.

Announcements

PROGRAM

ELEVENTH CONFERENCE ON WEATHER FORECASTING AND ANALYSIS OF THE AMERICAN METEOROLOGICAL SOCIETY, JUNE 17-20, 1986, KANSAS CITY, MO.

AMS NATIONAL OFFICERS	President: Joseph Smagorinsky Executive Director: Kenneth C. Spengler	President-Elect: Albert J. Kaehn, Jr.
AMS 1985 COMMITTEE ON WEATHER FORECASTING AND ANALYSIS	Louis W. Uccellini, Chairperson Don Beran Gilbert Clark Roger Daley	Gary Grice James Hoke Richard Reed Ian Rutherford David Spiegler Carlyle Wash Alan Weinstein Jerry A. Williams
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LOCAL ARRANGEMENTS COMMITTEE	Joseph T. Schaefer, Chairperson Lawrence R. Burns	David I. Duisik Edward F. Ferguson Richard P. McNulty Larry F. Wilson

SYNOPSIS OF SESSIONS

Jun 16 Mon	7:30 pm	Registration	Jun 19 Thurs	8:00 am	Session 9: Synoptic Scale Processes
Jun 17 Tue	8:00 am	Registration (continued)		10:00 am	Coffee Break
	8:15 am	Welcoming Remarks		10:20 am	Session 10: Satellite Applications I
	8:30 am	Session 1: Verification and Applications of Statistics I.		12:00 noon	Lunch Break
	10:00 am	Coffee Break		1:30 pm	Session 11: Satellite Applications II
	10:00 am	Spouses' Coffee		3:10 pm	Coffee Break
	10:30 am	Session 2: Verification and Applications of Statistics II.		3:30 pm	Session 12: Field Exercises
	12:00 noon	Lunch Break		7:30 pm	Tour of National Severe Storms Forecast Center (weather permitting)
	1:30 pm	Session 3: Numerical Model Performance	Jun 20 Fri	8:00 am	Session 13: Numerical Modelling
	3:00 pm	Coffee Break		9:40 am	Coffee Break
	3:30 pm	Session 4: Forecasting the Rare Event (poster session)		10:00 am	Session 14: Computer Assisted Analysis and Forecast Techniques
Jun 18 Wed	5:30 pm	Icebreaker (cash bar)		11:40 am	Presentation of Forecast Contest Awards
	8:00 am	Session 5: New Technology I: Data Collection and Analysis			
	9:40 am	Coffee Break			
	10:00 am	Session 6: New Technology II: Impact on Operations			
	11:40 am	Luncheon			
	1:30 pm	Session 7: Mesoscale and Sub-Synoptic Scale Forecasting			
	3:10 pm	Coffee Break			
	3:30 pm	Session 8: Convection and Severe Storms			
	7:30 pm	Tour of National Severe Storms Forecast Center (weather permitting)			