

Special Weather Statement

SPECIAL WEATHER STATEMENT VERIFICATION FOR WSO-HARRISBURG, PA, 1987

Robert L. Curll (1), Jane E. Myers (2) and Stanley Wasserman (3)
WSO Harrisburg, PA

ABSTRACT

This study demonstrates the importance of the National Weather Service Special Weather Statement, in conjunction with Warnings, in notifying the public of impending severe and non-severe weather.

1. INTRODUCTION

The National Severe Storms Forecast Center (NSSFC) is responsible for issuing Severe Thunderstorm and Tornado Watches. Warning responsibility lies with the Weather Service Forecast Offices (WSFOs) and Weather Service Offices (WSOs), who are also responsible for issuing Special Weather Statements (SPSs). SPSs inform the public of non-severe weather events and increase the awareness of a potential hazard.

2. VERIFICATION CRITERIA

The National Weather Service currently has verification programs for watches and warnings; however, no formal program currently exists for SPS verification. This study evaluated SPSs pertaining to April through September 1987 thunderstorm activity in the WSO Harrisburg area of warning responsibility (there were no tornadoes). The SPSs were analyzed for their use as early indicators of severe weather or marginally severe weather activity. SPSs that merely indicated the issuance of a watch, gave an "all clear" of thunderstorm activity, updated flooding situations, or pertained to weather approaching, but outside of the Harrisburg area of warning responsibility, were not included.

The following criteria were used to verify the SPS:

1. 35 mph or greater observed wind speed, or wind damage reports.
2. 1 in. or greater rainfall in 1 hr, and/or urban flooding.
3. Hail of any size observed.

If any of these criteria were met in any of the counties listed in the SPS, then it was considered as one case with one hit, regardless of the number of events or the number of counties in the text of the message. A case where an SPS was not issued for any of the counties in the Harrisburg area of warning responsibility and where at least one SPS criterion was observed, was considered as one event without an SPS, regardless of the number of events. Events were determined from surface observations, ham radio reports, county Emergency Operations Center (EOC) reports, newspaper clippings, radio/tv and public reports.

3. SPECIAL WEATHER STATEMENT VERIFICATION FOR 1987 THUNDERSTORM SEASON

The WSO Harrisburg has an area of responsibility that includes 17 counties covering 9600 mi². Most of the northern areas are sparsely populated, with the main urban areas lying to the south. Thus, some severe events to the north may go

unreported. Efforts are underway to improve the severe weather spotter network in the sparsely populated areas.

MONTH	SPS's ISSUED	EVENTS MEETING SPS CRITERIA	EVENTS PRECEDED BY SPS	EVENTS WITHOUT SPS
APR	6	3	2	1
MAY	20	13	12	1
JUN	30	19	18	1
JUL	35	25	24	1
AUG	17	12	11	1
SEP	28	19	17	2
Total	136	91	84	7

Average SPS lead-time for 84 events preceded by an SPS was 55 min.

False Alarm Ratio (FAR) = .38

Probably of Detection (POD) = .92

Critical Success Index (CSI) = .59

FAR = 1 - (SPS Verified)/(SPS Issued); 0 = perfect

POD = (Events in SPS)/(Events Observed); 1 = perfect

CSI = 1/[1/(POD) + 1/(1 - FAR) - 1]; 1 = perfect

4. USE OF THE SPSs FOR SEVERE EVENTS

WSOs, like Harrisburg, cannot issue a watch. However, when WSO Harrisburg is concerned about the possibility of severe thunderstorms occurring in its area of responsibility, concern can be expressed by issuing a Special Weather Statement to increase the public's awareness of a potential hazard. A question arises as to how useful SPSs are in advising the public about potential hazards that eventually meet severe thunderstorm criteria (Hail > or = 3/4 in. diameter, Wind Speed > or = 58 mph).

In determining the usefulness of SPSs in advising about severe thunderstorms, one severe event was defined as: 1) reported damage or severe thunderstorm criteria were observed within one county, and 2) the event was separated from other events in the same county by 10 mi and/or 15 min. Events occurring in multiple counties are considered multiple events. These criteria differ from the definition of an event used in the first part of this study; therefore, the results are not directly comparable.

5. SPS IDENTIFICATION OF SEVERE THUNDERSTORM POTENTIAL

Severe thunderstorm events:	44
Severe thunderstorm events preceded by an SPS:	31 (70%)
Severe thunderstorm events preceded by a warning:	27 (61%)

Severe thunderstorm events preceded by an SPS or Warning:	41 (93%)
Severe thunderstorm events preceded by a watch:	9 (20%)
Verified warnings preceded by an SPS:	21 (78%)
Average lead-time for SPS issued prior to a verified warning:	63 min

Summarizing the results for severe thunderstorm events, 31 of the 44 events (70%) were preceded by an SPS with an average lead-time of 55 min. In contrast, only 20% of the severe thunderstorm events were preceded by a watch. Of the 27 verified warnings, 21 (78%) were also preceded by an SPS, with an average SPS lead-time of 63 min prior to the warning release. Also, 41 of the 44 (93%) severe thunderstorm events were preceded by an SPS or a Severe thunderstorm warning, or both.

6. CONCLUSION

Special Weather Statements are very useful in advising the public about potential hazards that eventually become severe thunderstorms. Also, the public is very well served by the combination of SPSs and warnings. More studies like this will help make the media more aware of the importance of the Special Weather Statement and hopefully they will give

it better dissemination to the public. Also, the results of this study should motivate other offices to perform the same type of analyses to highlight the value of SPSs in their area of responsibility.

NOTES

1. Robert L. Curll is a Weather Service Specialist at the National Weather Service Office in Harrisburg, PA. Previous assignments include duty at National Weather Service Forecast Offices in Pittsburgh, PA, and Buffalo, NY, as well as at the National Weather Service Office in Atlantic City, NJ. Mr. Curll received his meteorological training during his four years in the U.S. Air Force.

2. Jane E. Myers is a meteorologist at the National Weather Service Office in Harrisburg, PA. Previous assignment was at the Weather Service Office in Fort Wayne, IN. Her meteorology degree was received in 1985 from The Pennsylvania State University (B.S. with distinction).

3. Stanley E. Wasserman is Chief of the Meteorological Services Division for the Eastern Region of the National Weather Service. Previous assignments include Chief of DATAC and meteorologist for the Scientific Services Division, both in the Eastern Region of the National Weather Service. In addition, Mr. Wasserman worked at the National Aviation Forecast Section of the National Weather Service at JFK, as well as serving in the U.S. Army as a meteorologist.

The Cloud Chart 1, 2, 3 1-88

The Cloud Chart 1, 2, 3, NWA publication 1-88 is now available. It is composed of three 12 × 24 charts showing various cloud types, the weather they bring, cloud weatherlore and optical phenomena, and contains more than three dozen color photographs with accompanying text and state locations.

The three chart collection sells for \$7.50 to NWA members and \$9.00 to nonmembers. Shipping and handling charges are included in this special offer.

To order chart, send check to: The Cloud Chart 1, 2, 3, NWA, 4400 Stamp Road, Room 404, Temple Hills, MD 20748.

Script Slide Satellite Training 2-88

The training program, prepared by NESDIS, on "polar orbiter imagery interpretation" has been delayed, but should be available in early August. The Script-Slide Training Program, publication 2-88, contains 76 slides and a comprehensive script that addresses many aspects of basic satellite imagery interpretation from a polar orbiter perspective. However, the information can also be used for understanding geostationary satellite imagery, as well.

Worldwide examples show synoptic scale storm systems, jet streams, tropical cyclones, thunderstorms, land and ocean

features, and basic cloud identification. One section describes the differences in imagery characteristics among various AVHRR channels. The package concludes with a "test" so viewers can determine how well they understood the material.

The cost of \$70.00 for NWA members and \$82.00 for nonmembers includes postage and handling. To order package, send check to: Script-Slide Training Program 2-88, NWA, 4400 Stamp Road, Room 404, Temple Hills, MD 20748.