TORNADO IN EASTERN PENNSYLVANIA
October 11, 1975

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1. Introduction

A tornado occurred over the Southeast Piedmont Climatological Division of Pennsylvania on October 11, 1975 at about 2300 GMT. This tornado skipped along a 25 mile path extending from near Fontana in southern Lebanon county to near Ephrata in northern Lancaster County. An aircraft survey showed a well defined path averaging about 100 feet wide.

The Hershey Antique Automobile Show was in progress, with over 200,000 people on the grounds, a few miles from the first touchdown.

The quandry of the Weather Service Specialist is rather apparent. It was a Saturday evening in October, a cold front had previously passed through his area of responsibility, he was on duty alone and had just finished making his direct evening broadcast and taping the local forecast for eight local radio stations. The three TV weathermen had been briefed and he had just sat down, for the first time since coming on duty, in an attempt to eat his lunch, hopefully without interruption. All of a sudden the radarman at Atlantic City called to report a possible tornado!!

2. Climatology

The Southeast Piedmont Climatological Division of Pennsylvania has the highest tornado frequency in the state. Sixty-five confirmed tornadoes occurred during the period 1854 to 1969 (Daily, 1970). There have been several since. The one previous tornado during October was reported in 1967. Its path extended from Dauphin into Lebanon County.

3. Synoptic Analysis

The surface analysis, fig. 1, placed a large low pressure area near Lake Huron. The associated cold front had pushed through Pennsylvania during the previous 12 hours and was indicated over southern Virginia by 2100 GMT. The low was nearly vertical and can be seen on the 500 mb analysis fig. 1. Mostly westerly winds were over Pennsylvania. The tropopause was at 40,400 ft.

4. Satellite

By 1730Z the early stages of a possible squall line were noted over Pennsylvania. The early morning fog or stratus

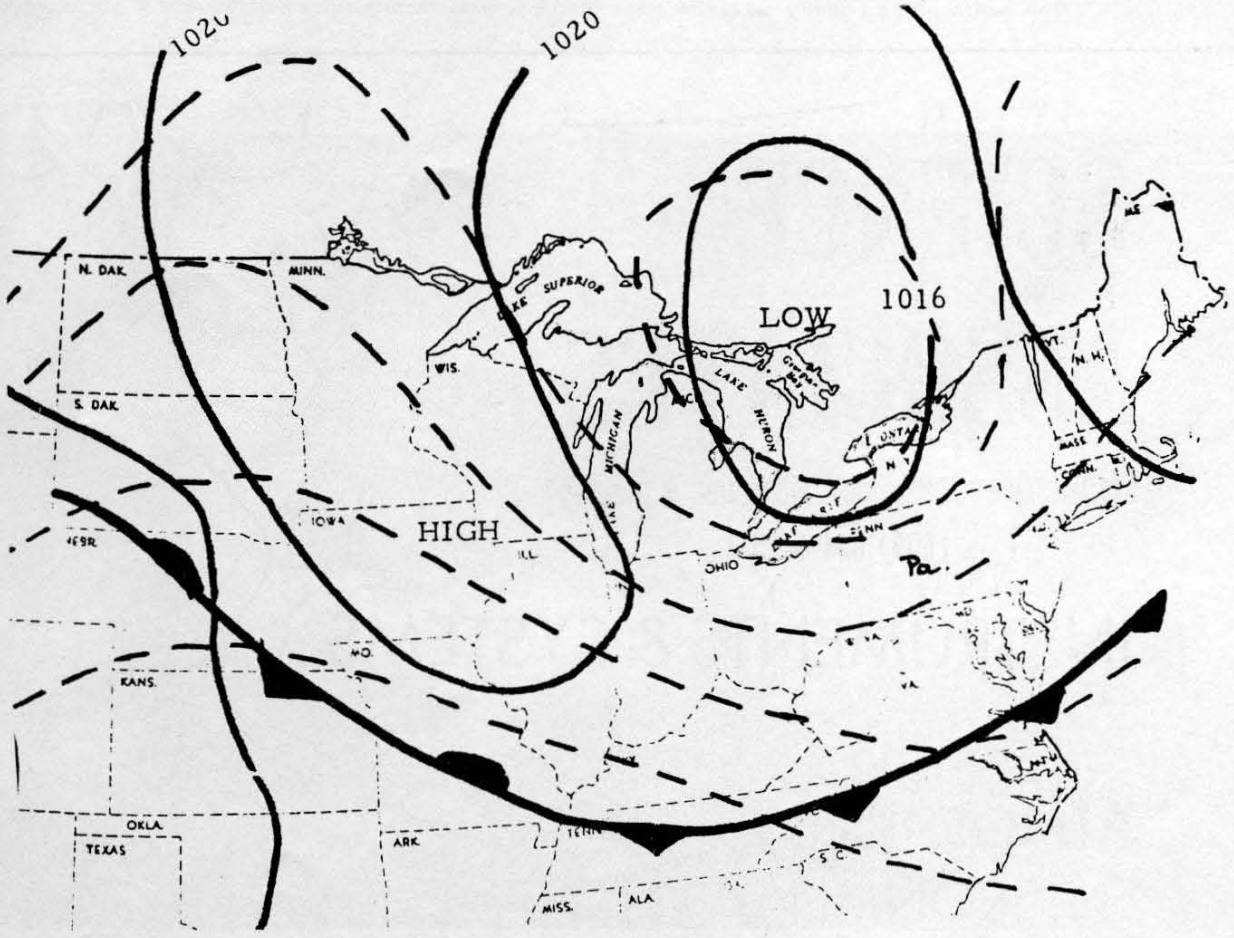

FIG. 1. Surface analysis 2100 GMT (solid lines) and 500mb analysis 1200 GMT, 11 October 1975.

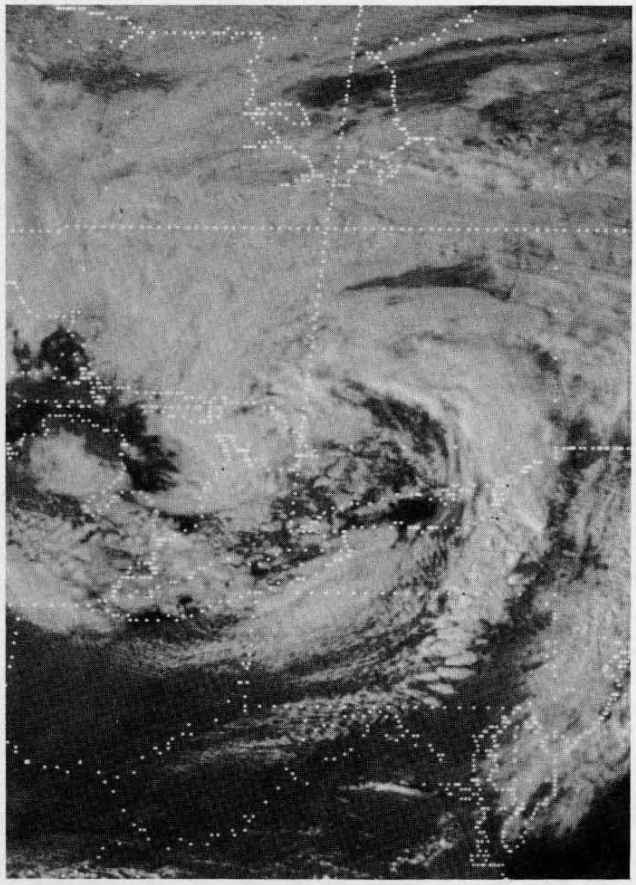

FIG. 2. SMS-1 Visible (2km) data, 2030 GMT, Oct 11, 1975.

had given way to clear skies in advance of this line, thereby providing strong heating conditions and instability. The area where the tornado occurred was the last place for the fog and stratus to burn off, leaving sufficient moisture. By 2000GMT merging echoes could be identified and a Line Echo Wave Pattern (LEWP) appeared to be forming over the state. The satellite view at 2030GMT is presented in fig. 2.

5. Radar

Close inspection of the Atlantic City WSR-57 radar film showed the movement of the tornado to be from 300 degrees at 15 knots, while other cells in the same vicinity were moving 260 degrees at 18 knots. A good severe weather indicator. (See fig. 3.)

At 2305 GMT Mr. Al Chapates, the duty radarman at Atlantic City advised the WSO Harrisburg of this potentially dangerous cell. His reported cell movement was highly accurate. The identification and reporting of a possible tornado at a distance of 90 miles during October is indeed a commendable feat. His reports on RAWARC were:

2234Z — CELL TRW/+ at 300/110 TOP 300 3115

2312Z — SPL CELL TRW++/+ D12 TOP 380 3015 PSBL TORNADO THIS CELL

2335Z — TRW++/+ 302/85 TOP 340 3015

The top of 38,000 feet is within 5,000 feet of the tropopause, and also a good severe weather indicator. Portions of the radar display are shown in fig. 4.

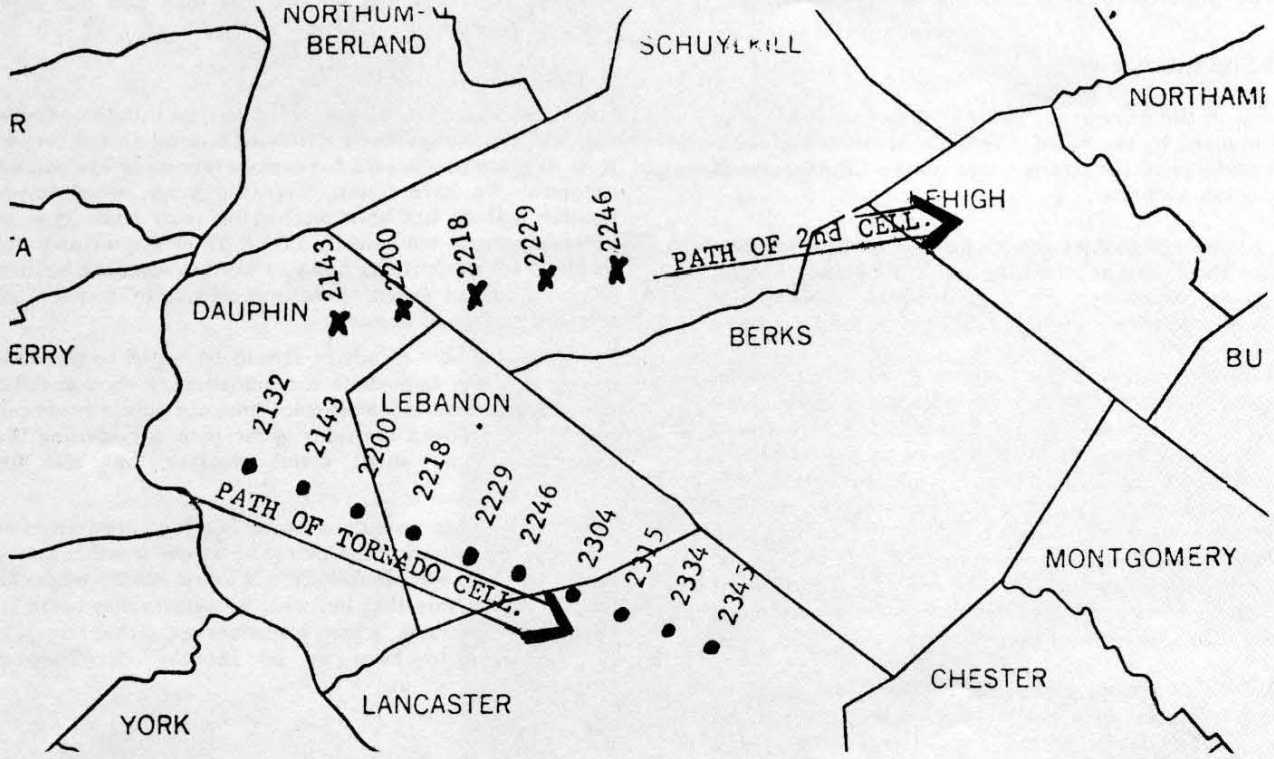

FIG. 3. Movement of radar cells 2131-2345 GMT 11 Oct. 1975.

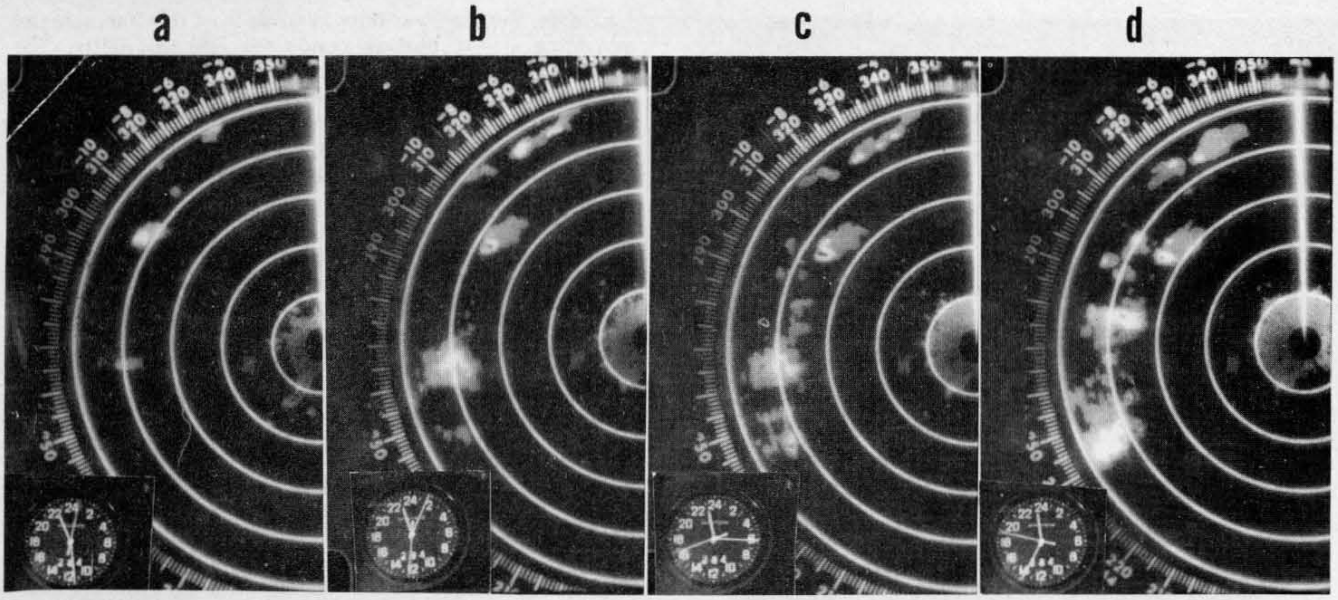

FIG. 4. Atlantic City radar display, October 11, 1975; a. 2229 GMT, tornado cell at 300/105. Second cell at 318/110. Larry Bender is now watching the funnel from his kitchen window. b. 2304 GMT — Tornado cell at 300/95. Note 'hook' trying to become visible. Al Chapates, duty radarman at Atlantic City is now calling the WSO Harrisburg to advise of this potentially dangerous cell. c. 2315 GMT. Note cell configuration at 300/90. Attenuation from the front wall of tornado probably prevented a perfect 'hook' from being visible. Atlantic City radar report on RAWARC. .PSBL TORNADO THIS CELL. . . d. 2334 GMT. Tornado cell at 300/86.

6. Action of the Weather Service Specialist

Immediately after Mr. Chapates called Harrisburg, Mr. Paul Leshko, the duty Weather Service Specialist called the Lebanon County Civil Defense Communications Center and informed them of this dangerous cell. Admittedly some damage had already occurred by the time the radar operator and the WSS made their calls, but this does not negate the importance and admirability of their actions.

7. On Site Interviews

Residents in the damage area were generally stunned at the havoc wreaked by the storm in such a short time. Estimates of the duration of the strong winds ranged from 5 seconds to nearly two minutes.

Larry Bender was looking out his kitchen window when he ". . .seen the funnel approaching and heard this god awful noise as it passed by." He stayed by his window and suffered no injuries but his home suffered major damage.

Claude Houser, owner of the Country Road Restaurant on Route 322, was in the kitchen when he was informed by a waitress of the tornado. Mr. Houser had the presence of mind to quickly herd his 75 customers to the basement. Good thing too. "It sounded like an old locomotive roaring along, mixed in with the sound of splintering and cracking like someone was demolishing a building." Which is exactly what was happening to his restaurant. The funnel passed directly overhead removing the roof and upper portions of the one story building, sucked out all four doors and spread mud and debris throughout his restaurant.

A couple of ladies going home from the Antique Automobile Show were pulling into the Country Road parking lot and stayed in their car as the funnel passed overhead. They escaped unhurt but needed help getting a 26-foot mobile travel trailer off their car roof.

8. Damage

Although a $1 million loss was estimated, it was refreshing and interesting to see the Amish gather at the farms the next day and work together to repair the ruins. Damage was mostly confined to the tops of buildings, trees snapped off or uprooted and some small buildings demolished. Automobiles with their windows closed had windshields and headlights popped out. The path was over open country, farmlands and hills of less than 500 feet high. Some of the damage can be seen in figs. 5a - f.

9. Conclusion

Here is another good case showing why we should use radar data on a real time basis. These situations do not give us time to place phone calls for damage reports or eye witness accounts. We have found, over the years, when severe weather criteria has been reached on radar some type of damaging storm will usually occur. These storms may not reach severe proportions but you can bet someone has had a barn knocked down, trees uprooted, roof torn off or some other type of damage.

We feel some sort of advice should be issued to the mass news media for immediate dissemination as soon as radar personnel alert us. At the present time our public image can be vastly improved by using radar data for advising the public not only about severe weather, but also for Nowscasting.

The action of the restaurant owner is a good illustration of the value of educating the public on severe weather safety rules. Although Mr. Houser did not know exactly where he had heard the rule that he used, he nevertheless heard it. Even in Pennsylvania, where tornadoes are rather rare, it is a good idea to keep up or increase our Disaster Preparedness Program.

REFERENCE

Dailey, Paul W. Jr., 1970: Tornadoes in Pennsylvania, Information Report Number 63.

FIG. 5a. Path of tornado visible through field.

FIG. 5b. Note scattering of debris.

FIG. 5c. Damage to Larry Bender's farm.

FIG. 5d. Damage to house.

FIG. 5e. 2" x 8" plank through wall of house.

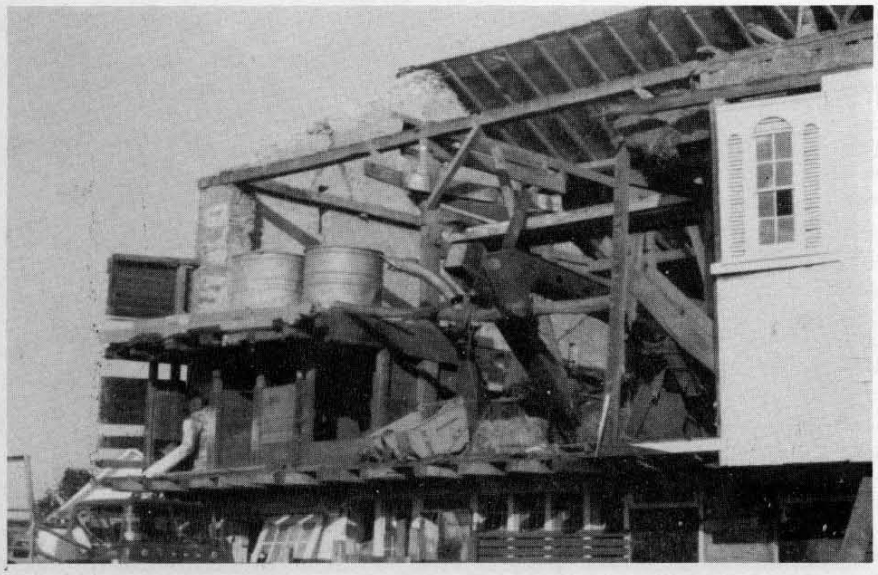

FIG 5f. Damage to farm building.