

CONFIDENTIAL

RECEIVED
JUN - 3 1974
ADM - AES

NEPE FIELD REPORT 74/2

THE WARNING PHASE ACTIVITIES OF
THE 1974 WINDSOR TORNADO

By: Rodney M. Kueneman
and
G. Alexander Ross

NATIONAL EMERGENCY PLANNING ESTABLISHMENT
PEARSON BUILDING
OTTAWA, CANADA
MAY, 1974

The publication of this report
does not signify that the contents
necessarily reflect the views
and policies of NEPE

WORKING PAPER
For Information Only

This material is not to be
quoted or referenced without
the permission of NEPE

DISASTER RESEARCH CENTER
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43201

Working Paper 12

THE WARNING PHASE ACTIVITIES OF
THE 1974 WINDSOR TORNADO

by

Rodney M. Kueneman
EMO Fellow
Disaster Research Center
The Ohio State University

G. Alexander Ross
Research Associate
Disaster Research Center
The Ohio State University

WORKING PAPER
FOR INFORMATION ONLY

This material is not to be quoted or referenced

The Warning Phase Activities of the 1974 Windsor Tornado

On April 3, 1974, a tornado touched down briefly in Windsor, Ontario, destroying a curling rink and killing 8 persons. The only other significant damage was sustained by an addition to a shopping mall.

The purpose of this study is to chart the activities of various relevant organizations with respect to the warning phase of the tornado threat. In order to accomplish this task it will be necessary to analyze the nature of the relationships between: 1) the U. S. Weather Bureau and the Canadian Weather Bureau (both its Toronto and Windsor offices), 2) the Windsor Weather Bureau and the Local EMO, 3) Local EMO and the media and various emergency relevant organizations and 4) the Canadian Weather Bureau, the U.S. Weather Bureau and the media.

U.S. Weather Service-Canadian Weather Service

Windsor, Ontario has a weather office staffed with weather technicians. Since it has no meteorologists on staff, it receives the weather bulletins, which it releases from the weather office in Toronto, some 250 miles away. Toronto determines its weather forecasts for the Windsor-Essex County region in part from data it receives from the Detroit Weather Office. Both Toronto and Windsor get print outs of data from the radar and other meteorological equipment at Detroit and Cleveland. However, since the Windsor Office has only technicians on staff, they must wait upon weather forecasts from Toronto.

Upon occasion there arise discrepancies between the U.S. Weather Office and Canadian Weather Office forecasts for the Essex County area. The Windsor Weather Office staff have good working relationships with the Detroit Office and usually call them for more detailed information and relay this to Toronto for a resolution. On routine matters this arrangement is workable enough. There is generally a 20 minute to 30 minute delay from the time of release of forecasts in Toronto before they arrive and are released in Windsor.

Windsor Weather Service and Local EMO

Upon the forecast of any severe weather the Windsor Weather Office gives the local EMO a call and advises them of the possibility of community threat.

Local EMO and the Media and Emergency Relevant Organizations

Local EMO has, as part of its equipment, a receiver for the U.S. Weather Office reports from Detroit. Thus it is directly tied into the U.S. Weather Service system as well as directly tied into the Canadian Weather Service system. When EMO receives

information that Windsor may be threatened by severe weather activities it alerts the following organizations and advises them of the nature of the threat. Included are: 1) Police Department, 2) Fire Department, 3) local media, 4) Toronto EMO, 5) local hospitals, 6) large industries, 7) board of education, and 8) the telephone company.

The Canadian Weather Service, the U.S. Weather Service and the Windsor Media

All the Windsor radio stations and the TV station have CP newswire terminals and thus receive all weather forecasts from the Toronto Weather Office. The Windsor Weather Office also has a recorded tape which is updated each hour, to which media also have access. In the event of severe weather forecasts, the weather office also notifies all the local stations of it by a phone call to ensure that all media has been alerted.

Besides their contacts with the Canadian weather service, most of the stations also have access to the U.S. Weather Service for its forecasts. CKLW-AM and FM radio have both AP and UPI newswire services, both of which carry U.S. Weather Office forecasts. CHYR and CBE radio also have AP newswire hook-ups. CKLW-TV has a UPI wire. Only CKWW radio is not directly tied into U.S. Weather Office forecasts and they generally pick it up by monitoring other local stations.

CKLW radio also calls the U.S. Weather Office (as well as the Windsor Weather Office) every hour for weather information. Thus by direct or indirect means nearly all of the Windsor radio and TV media has access to the U.S. Weather Office forecasts.

The media in the daily course of their activities do not tend to differentiate between CP, UPI or AP wire services and tend to look for news which is relevant to Windsor. As a result, the fact that news comes from the Canadian or U.S. Weather Service is irrelevant. If it has a bearing on Windsor it is reported.

Tornadoes and Perceptions of Weather Analysts for Windsor

Weather forecasting is a regular service and as a result has a history. People who observe and interact with these forecasters over time develop opinions and impressions about these forecasters which they use in the evaluation of the weather forecasts given. It is the impression shared by EMO, the Windsor Weather Office and most of the Windsor media that the U.S. Weather Office meteorologists in Detroit issue tornado watches whenever fairly severe thunder clouds are in the area. In comparison they feel that the Toronto office tends to be much more conservative and only issues tornado watches under conditions of very severe thunder cloud activity. Clearly, a judgment is involved in regards as to what are the appropriate conditions upon which to invoke a tornado watch; and Detroit invokes it under less severe conditions than Toronto.

Local EMO, the Windsor Weather Office and the Windsor media also agree that it appears that the U.S. media tend to exploit tornado watches to increase their audience. Whether this is the case is impossible to determine, but this perception is

significant since it influences how tornado watches transmitted by U.S. media are heeded. A study of the Windsor population would be required to determine whether or not the average consumer is also somewhat skeptical of tornado watches.

Local EMO tends to be somewhat skeptical about the reliability of weather forecasts from Toronto for the following reasons. First of all, they feel Toronto is too far away to give weather forecasts as quickly and as accurately as needed (especially in instance of tornado threats). Prior to 1970, Windsor got very little information from Toronto, which is on the fringe of its jurisdiction. As already mentioned, there is a time lag for reports to Windsor after release from Toronto. Examples over the past few months were furnished when water level forecasts issued from Toronto were the exact opposite to those forecasted and measured by the U.S. Weather Service on the Lakes and Rivers. Also, on occasions weather systems were forecast for Windsor after they had already passed over and were between Windsor and Toronto. EMO admitted that frequently the reports were accurate and timely but that the occasions where there were discrepancies tended to undermine confidence in Toronto's ability to forecast weather 250 miles away. As a result, EMO has felt no alternative but to look to the U.S. Weather Service for added information in case the Toronto Weather Office is not yet aware of weather systems which would affect Windsor.

Secondly, as already mentioned the Toronto weather office tends to require the presence of more severe thunder clouds than Detroit's Weather Office before it will issue a tornado watch. Thus while respecting the more conservative judgment of the Toronto Office, they nevertheless felt that the issuance of a tornado watch by another group of meteorologists who were closer to the area could not be dismissed simply because they tended to be more liberal in their invoking a tornado watch. In the dissonance of the situation EMO felt compelled to go with the tornado watch and thus be on the cautious side.

Thirdly, EMO felt that since much of the weather for Toronto is created by conditions north and east of Windsor and Essex County, much of the bulletins were irrelevant for Essex County, or were of a nature that made them somewhat inaccurate.

Lastly, EMO felt that Windsor was in a unique and problematic position whereby they were inundated by a U.S. media which tended to commercialize tornado watches as well as issue tornado watches more regularly since the U.S. Weather Office required less severe conditions to invoke a tornado watch. This situation tended to create an air of uncertainty which coupled with the above reasons made Local EMO concerned over the credibility and accuracy of the Toronto forecasts, especially when the discrepancies concerned the threat of a tornado.

The Windsor Weather Office admitted that on occasion the Toronto Office does tend to be forgetful of Windsor and is at times not on top of the Windsor Weather situation. They also stressed that this was better than it had been in past years but that sometimes Toronto is off the mark in its forecasts for Essex County.

In the past, EMO has issued over radio high water forecasts for the Windsor area based on U.S. Weather Office forecasts since this meant there was danger of flooding along the Lakes. The Weather Bureau apparently was aware of this and no controversy came about as a result of this. It was only when EMO issued a tornado watch on April 3rd that the Windsor Weather Bureau became upset.

April 3rd - Forecasts, Sources and Warning Activities

In the following section, an attempt will be made to reconstruct as much of the warning activities of April 3rd as possible. While times are approximate, the sequence was nevertheless captured without difficulty.

At 10:30 a.m., Toronto released the following forecast which was received in Windsor between 10:50 and 11:05 a.m. (Wording is approximate).

Heavy thunderstorm advisories for Lakes St. Clair and Erie were issued by Toronto Weather Service at 10:30 a.m. An intense spring storm is developing over Missouri and is drawing humid unstable air into the Mississippi and Ohio River Valleys.

Heavy thunderstorms will develop over south western Ontario and proceed eastward to affect all of Southern Ontario by this evening.

Some of these storms will reach severe proportions with large hail and locally damaging wind gusts. Maximum activity is expected over the south west this afternoon and evening.

The Windsor Weather Office notified EMO and the media of this forecast.

EMO, at this time, had also been receiving disturbing news off the U.S. Weather Service receiver. A tornado possibility was indicated by the U.S. Weather Service for a storm center in Ohio which was moving in a North Easterly direction at 15 mph.

Based on both of these reports, at approximately 11:10 a.m., EMO contacted the local media (namely CHYR, CKWW, CBE), Toronto EMO, Police, Fire, Hospitals, industry, board of education and the telephone company of the Toronto watch in the U.S. CHYR had a pre-produced tape of instructions for activities to be done in case of tornado recorded by an EMO official which they broadcasted along with an almost verbatim transcript of the U.S. Weather Service forecast and tornado watch. An EMO official commented that CHYR may have tended to play it to often. At any rate a Windsor Weather Office employee heard this tape at approximately 1:00 p.m. when no tornado watch had yet been issued by the Canadian Weather Service. By 4:00 p.m., a heated phone conversation occurred between EMO and the Windsor Weather Service concerning the reputed lack of EMO authority to release such weather information.

At 12:55 p.m. Toronto released another weather forecast which was received by the Windsor Weather office at approximately 1:20 p.m. It read approximately as follows:

Severe thunderstorm warning for Lake St. Clair released at 12:55 p.m. Thunderstorm advisory issued today has been upgraded to a thunderstorm warning for the Lake St. Clair region only.

Severe thunderstorms have been reported over Lower Michigan and northern Ohio; a tornado funnel has been reported near Jackson, Michigan. Severe thunderstorm activity is expected over St. Clair Region

by early part of this afternoon and are expected to produce hail 1-1½ inches in diameter and wind gusts to 70 mph. An advisory will be issued when the threat has passed.

A slight possibility of tornado in this area this afternoon. Residents are alerted to the possibility of high waves and damaging winds.

At 1:30 p.m., EMO picked up a weather forecast from the U.S. Weather service which carried a tornado watch for a storm front stretching from West Lansing, through Toledo, to Zanesville, Ohio.

At 2:00 p.m., the U.S. Weather Service cancelled this tornado watch (number 93) but advised that more severe weather was coming. With only the severe thunderstorm warning in effect then at that time EMO cancelled the tornado watch with all organizations and the media, excepting the Windsor Police and Fire Department at approximately 2:40 p.m.

At approximately 4:30, the dispatcher on the Police Radio stated that the tornado watch was still in effect until 10:00 p.m. Thus it seems clear that the operations sector of the Police Department was alert to the tornado possibilities. The Chief of Police later stated that they had no warning. From the official Canadian Weather Office forecasts, this is the case. It seems that the operations sector of the Police Department must have been monitoring commercial radio, since neither EMO nor the Canadian Weather Office had set the 10:00 p.m. time limit on the tornado watch.

At 4:45, the Toronto weather office issued an update which said:

Interests in the Lake St. Clair region including Windsor City should now ignore the advisory for their region and use only the severe thunderstorm warning issued at 12:55 p.m.

Thus the above cited severe thunderstorm warning with a slight tornado possibility was still operative in the 4:45 p.m. update.

At 5:30, the EMO staff went home, and since no tornado watches had been instituted by the Canadian Weather Office (and perhaps because they had a disagreement over the phone at 4:00 p.m. with them) and since no real threats were reported over the U.S. Weather Service, EMO did not reinstitute a tornado watch with the media and other organizations, nor did it cancel the watches with the Police or Fire Departments.

As previously mentioned, most of the media had U.S. Weather Service connections. As a result in late afternoon they were broadcasting tornado watches off and on all afternoon and steadily in early evening. Radio station CBE broadcast the 12:55 p.m. forecast with the possible tornado item at 4:40, 5:03, 5:20, 5:40 and 5:50 p.m. CKLW was monitoring other stations and forecasting tornado watches after 5:00 p.m. At approximately 7:00 p.m., they broadcast that the U.S. Weather Service had issued a tornado warning for Wayne County, implying that Windsor people should stay alert. CKLW radio was also doing likewise. At 7:45 p.m., their newsroom called the Windsor

Weather station and were told that a tornado was extremely unlikely and that there was little or no chance since tornadoes never cross that (the Detroit) river.

CKLW-TV had been issuing tornado watches since late afternoon. Between 5:00 p.m. and 8:00 p.m. they had cut into regular programming 5 times to issue tornado watches. At 7:52 p.m. they issued a tornado warning for Windsor after they picked up the story off of the UPI wire that Flat Rock, Michigan had been hit by a tornado which was proceeding in their direction. Thus 18 minutes before it hit Windsor, channel 9 had issued a tornado warning. It is also important to note that all the U.S. radio and TV stations were issuing tornado watches and also possibly tornado warnings.

At 8:00 p.m., the dispatcher at the Police Department asked if there was a police car near Peach Island because a funnel cloud had reportedly been sighted. A few minutes later, a call came in saying that the mall in Windsor had been hit by a tornado. At 8:09:57 p.m., the curling club was hit by the tornado and the call came in for it minutes later.

At 8:15 p.m., a tornado warning was issued by the Canadian Weather Service for the Windsor area.

Analysis of Warning Process

The process of alerting residents of Essex County labours under four major problems. Some are structural, others are more psychological. 1) Structurally, Windsor is quite far removed from Toronto which tends to lead to inaccurate and/or delayed weather forecasting for Essex County. 2) Also structurally, Windsor is directly affected by the U.S. media which broadcasts tornado watches based on U.S. Weather Service forecasts so that Windsor residents are bombarded with them whether the Canadian Weather Service issues tornado watches or not. Also since all Windsor media have information ties into the U.S. Weather Service they broadcast tornado watches independent of what the Canadian Weather Service forecasts. 3) Structurally, Windsor is affected by a U.S. media which tends to exploit tornado watches to increase their audience and there seems to be little that can be done to alleviate this condition. 4) Psychologically, even if tornado watches and warnings are issued, Essex County residents are under tornado watches so frequently from U.S. media that they tend to ignore or underplay their meaning and thus do not remain alert to the possible threat. 5) Psychologically, the staff of emergency relevant organizations are put in a rather dissonant information environment. On the one hand, they have a group of meteorologists, close at hand, who tend to be rather liberal in their invoking tornado watches. On the other hand, they have another group of meteorologists, some 250 miles away, who are more conservative in the use of the term tornado watch (or alert) and who upon occasion are either somewhat inaccurate or at least 20-30 minutes behind Detroit in issuing advisories (due to time lost in the transmission of data from Detroit to Toronto to Windsor, plus time needed for analysis and judgment). Concerning normal weather this is not too serious, but under tornado threats the dissonance increases and most of the emergency organizations went onto tornado watches and EMO in particular alerted other organizations including media. Clearly this cast them in the weather forecasting role, (especially over CHYR radio which used tapes of an EMO official's voice) a role which they did not particularly want but which they felt they must play to be on the safe side.

Conclusion

Clearly many of these problems cannot be reduced or solved. The U.S. Weather Service will continue to evoke tornado watches under less severe conditions. The U.S. media will continue to transmit this into Windsor. The Windsor residents will probably continue to ignore these watches for the most part. Perhaps the only problem which might be changed is the status, staff or authority of the Windsor Weather Office. The present structure is felt to be too slow and distant from Windsor to be relied upon in a tornado situation.

WORKING PAPER
FOR INFORMATION ONLY

This material is not to be quoted or referenced