Confirmed Tornado
London, Ontario
September 2, 1984

Date- Local: Sunday, September 2nd, 1984.
UTC: Sunday, September 2nd, 1984.
Time-Local: 19:20
UTC: 23:20
Location: London, in Whiteoaks area
Region: London - Middlesex
Classification: Confirmed Tornado
Category: A
Casualties: None
Track Length: 3632m
Width: 120m
Motion: 301°
Damage Estimate: $5 000 000
F-Scale Rating: F2
Code: AH/IB
Damage Survey: One
Spotter Reports: None
Other Documents:

Logged event citing a report of a tornado.
Report from the Chinook (Vol 7, no. 4, pp58-60) by Luigi Bertolone (Operational Meteorologist with OWC). Newspaper clippings with photos showing the damage caused by the tornado. Articles/report can be found in the vanilla 'Ontario September 1984.' folder at the front of the year.

Tornado F-Scale Assessment

Marci Vanhoucke
Tornado Data Production Assistant, Environment Canada
July 27, 2005.

Classification: Confirmed Tornado
Date: Sunday, September 2nd, 1984.
Location: London (Whiteoaks area), London – Middlesex

Assessment: F2
F-Code: AH/IB
Explanation of Assessment: There is a report on this tornadic event with photos indicating a townhouse complex had it's roof removed and limited damage to the 2nd story. Also, factories had structural failure of some exterior walls and partial roof removal. Due to the damage stated, this tornado is rated an F2. Original F3 rating was downgraded due to the fact that industrial exterior walls appeared to be unreinforced concrete block construction and exterior walls of townhouse complex were still attached.

CLASSIFICATION: Severe Thunderstorm
SOURCE/WATCHER ID:
EVENT TIME (UTC): 23-20 **EVENT DAY:** 2.0 **MONTH:** 9.0 **YEAR:** 1984.0 **EVENT DURATION (HR):** 0.0 **(MIN):** 0.0
DAY OF THE WEEK:
EVENT LOCALE: London
ASOCTD PUBLIC RGN: London-Middlesex-Oxford
DETAILED DESCRIPTION: Major damage

INITIAL ASSESSMENT: YES
SPL WX STATEMENT IN EFFECT ?: UKN **STATEMENT LEAD TIME (HR):** **(MIN):**
WATCH IN EFFECT ?: UKN **WATCH LEAD TIME (HR):** **(MIN):**
WARNING IN EFFECT ?: UKN **WARNING LEAD TIME (HR):** **(MIN):**
TORNADO:
WINDSPEED:
RAINFALL: MM **RAIN DURATION:**
HAIL DIAMETER: MM **HAIL DESCRIPTION:**
EVENT DESCRIPTION: Tornado
Mesoscale ?: **Synoptic ?:** **Big Event ?:**
Statement Est Hit/Miss:
Watch Est Hit/Miss:
Warning Est Hit/Miss:
Separate Event (30km/30min): YES
Vetted by:
Vetted date:

1985: Chinook, Vol 7, no. 4. pp 58-60.

LABOUR DAY WEEKEND TORNADO AT LONDON, ONTARIO

by Luigi Bertolone

The Labour Day weekend of 1984 will long be remembered by residents of London, Ontario. Late on Sunday afternoon, a narrow wedge of hot and humid tropical air was drawn across southwestern Ontario by the approach of a frontal wave. By suppertime, there could be no doubt in the mind of anyone who scanned the blackening skies and boiling clouds that the severe weather forecast in the Ontario Weather Centre weather warning issued one and a half hours earlier was no false alarm. Between 6:00 and 7:30 p.m., southern Ontario's major tornado outbreak of the season occurred. Altogether, eight confirmed tornadoes were reported along a stretch from Windsor to London, Ontario. This is the area looked upon as the "tornado alley" of southern Ontario. The most devastating of these storms ravaged a densely populated area in London.

At about 7:00 p.m. on September 2nd the sky darkened and lightning snaked across the sky, while a black whirling engine of destruction started ripping roofs and smashing windows along its path of havoc. This vicious storm pursued a nearly straight swath about 5 kilometres long across the southern end of the city. The width along its damage path was fairly uniform at about 120 metres. According to several eyewitnesses, the funnel remained visible for about five minutes, then it dissipated after moving at a translational speed of about 60 km/h.

Heavy rainfalls and large hail (6.5 cm in diameter) also accompanied the storm in several localities. The hail caused considerable damage to parked vehicles and completely destroyed an entire concession planted with tobacco near Langton, a small community not far from Tillsonburg.

Close to 7:15 p.m. John Purvis saw a funnel forming over a grassy field (A in Figure 1) approximately 200 metres northeast of his house. A few seconds later, he heard a loud noise and found himself on the floor – his house (Figure 2) was the first to be damaged by the twister. While the tornado moved eastwards, it blew the roof off several townhouses (Figure 3) located at B.

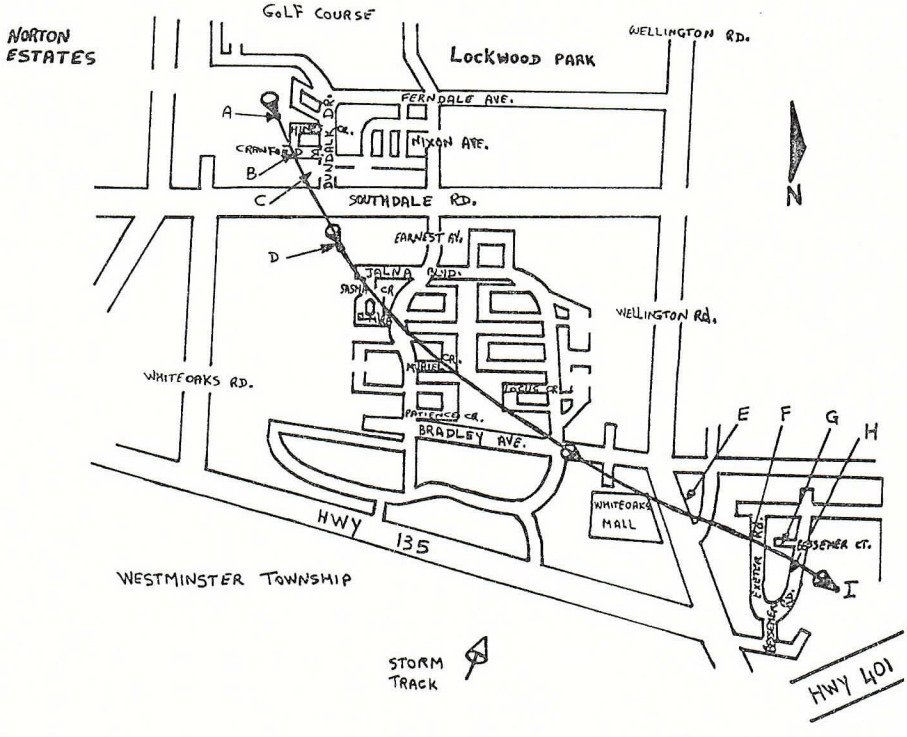

Figure 1 Partial map of the city of London, Ontario, indicating the damage path of the tornado (not to scale).

Figure 2 House at 11 Hines Crescent.

Figure 3 Townhouse complex on Crawford Street (B in Figure 1).

Figure 4 Apartment building on the north side of Southdale Road just west of Dundalk Drive (C in Figure 1).

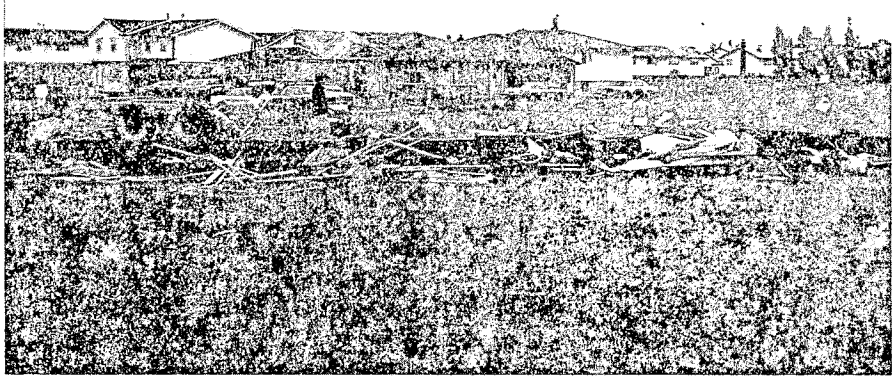

Figure 5 Remains of two 18-metre construction trailers (D in Figure 1).

Then it passed between two apartment buildings (C) smashing all of their windows (Figure 4) and, shortly afterwards, completely destroyed two 18-metre construction trailers (Figure 5) at D. Then, the twister swept through a rather large subdivision of residential houses and over a steel-framed metal sign (E) bending it to the ground (Figure 6). This was the first damage inflicted on the commercial area. At this time the fury of the twister climaxed and thereafter caused nearly total destruction along the final portion of its swath (I). The total damage done to the industrial area was incredible. Typical examples of this destruction are shown in Figures 7, 8 and 9.

The scene was chaotic. The hydro was out. Police officers were busy directing the heavy traffic generated by confused motorists inching along without the aid of traffic lights. The evening darkness was frequently interrupted by the flashing lights of their emergency vehicles. All available fire-fighters and their equipment were deployed to respond to trouble spots. Public Utility Commission workers tried to restore electrical power, while Bell telephone employees did their best to replace telephone wires.

By 10 p.m., 140 city police and military personnel from Canadian Forces Base London had been called in to guard damaged buildings from being looted, and to set up an emergency shelter which was quickly accomplished at Cleardale Public School where victims obtained help. At least 30 people were injured by flying debris. Luckily, most had only superficial cuts and bruises. Just two of them were detained at Victoria Hospital for treatment of deeper lacerations, but they were in satisfactory condition the next day. Dazed victims spoke with deep gratitude about the wonderful response of groups of volunteers who gracefully offered aid to temporarily homeless families.

When one resident of Sasha Crescent found enough courage to emerge from his basement, he found that all the windows of his house were blown in and the shingles, aluminum siding and eavestroughs were blown off. Yard furnishings had also disappeared while the mail box at the corner of Sasha Crescent and Elvira Crescent had been replaced by a bathtub partly full of water that belonged to the Sedley family of 3 Sasha Crescent As the news of the destruction spread, local residents who left town for the long weekend rushed home. Marty Harrop, of 1 Hines Cres., had been watching the Canada Cup hockey game in Fergus. When news of the tornado flashed on the televison screen he left immediately and found his house had suffered a direct hit.

As a cool and cloudy Labour Day dawned, much more work had to be carried out in the twisted aftermath of the tornado. Industrial refuse dumps were opened to dispose of debris. Massive clean-up and restoration efforts were rapidly started by the victims themselves.

Tornado severity is commonly estimated by using the Fujita F-scale. As a

Figure 6 Motel sign. Sign post – 40 cm in diameter (E in Figure 1).

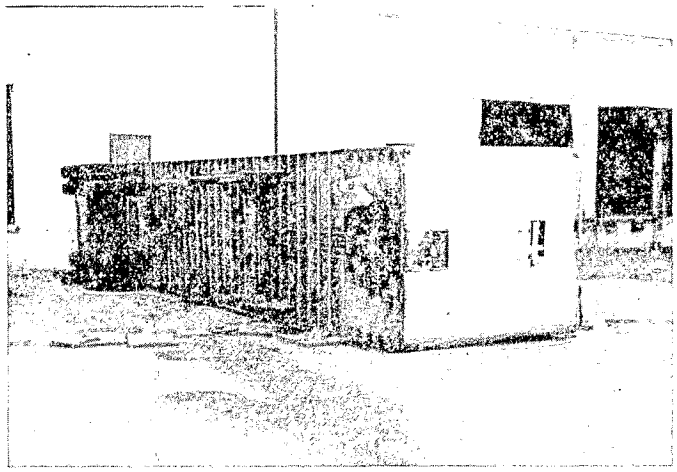

Figure 7 An 18-metre trailer (F in Figure 1).

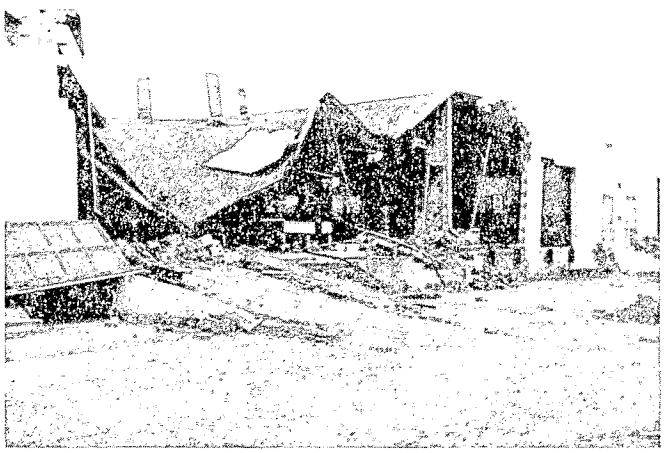

Figure 8 Conference Cup building (G in Figure 1).

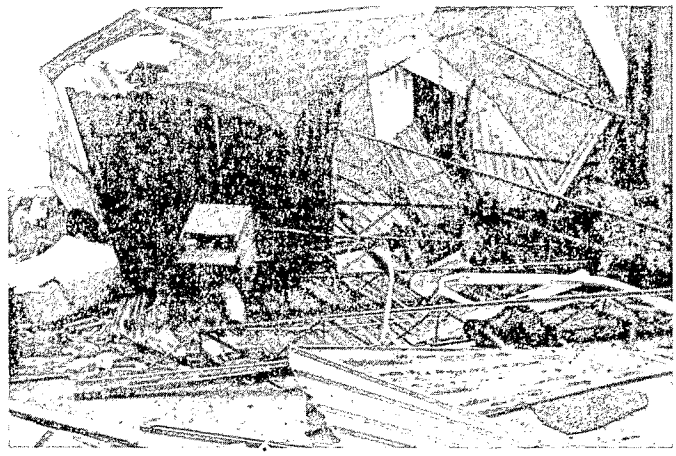

Figure 9 Christie Biscuit factory (H in Figure 1).

result of the damage inflicted, this tornado was classified as an F-3 tornado, which has characteristic wind speeds in the range from 250 to 330 km/h.

Although catastrophic, this blow was not as devastating as the 1979 Woodstock tornado, nor as severe as the one that hit Reeces Corners in 1983. However, it ranks higher, in the F-damage scale, than the Metropolitan Toronto tornado that occurred two weeks earlier. In spite of the strong winds and the damage inflicted (several millions of dollars), miraculously not a single human life was lost. Most likely, the reason for this is the tornado hit during a Sunday evening on a holiday weekend. On a regular working day people would have been at home in the evening, and several could have lost their lives.

Such shocking and devastating events have been considered freak accidents that rarely occur. Recently, however, tornadoes appear to be occurring more frequently. This apparent increase in tornado frequency may not be true: tornadoes are likely to have been just as frequent 80 years ago. The reason is that tornado detection depends on population density. With an increasing population, more tornadoes would be reported to Weather Service staff by the public.

Today the mass media have advanced public awareness and communication tremendously, which in turn has made citizens more aware of tornadoes. At the same time, the steady rise in population is making southern Ontario more vulnerable to tornado damage.

Luigi Bertolone is an operational meteorologist at the Ontario Weather Centre and has been involved particularly with the prediction of summer severe weather. The photographs are provided by the author.

RÉSUMÉ *Une forte tornade (F-3 sur l'échelle Fujita) a balayé la ville de London, Ontario pendant la fin de semaine de la Fête du travail de 1984. Son sillon destructeur, d'une longueur parcourue de près de 5 km, a traversé une région à forte densité de population et a semé le désordre complet ne laissant derrière que des zones ravagées. Néanmoins, personne n'a perdu la vie en dépit de cette tempête furieuse.*

Les conditions météorologiques étaient propices au développement de temps violent même avant la formation de la tempête qui a engendré la tornade. Cela a incité le Centre météorologique de l'Ontario à diffuser un avertissement de la situation imminente de temps violent.

Cet article vise à décrire aux lecteurs tous les détails du phénomène, y compris les dommages subis, les répercussions du choc sur l'être humain, les mesures prises par la population et ses réactions face à la tempête.

Government of Canada / Gouvernement du Canada

MEMORANDUM NOTE DE SERVICE

TO / À: METL

FROM / DE: OAEM

SECURITY - CLASSIFICATION - DE SECURITE:

OUR FILE - N/REFERENCE: 8960-8 (OAEMM/ms)

YOUR FILE - V/REFERENCE:

DATE: September 4, 1984

SUBJECT / OBJET: **Briefing Note: Tornado Hits London, Ontario - September 2, 1984**

1. At approximately 7:15 p.m. September 2, 1984, a very strong tornado struck southern London causing extensive property damage and about 30 injuries. A tornado was also reported near Melrose, a small hamlet about 20 km west of London, damaging the roof on two barns and one house and toppling many large trees.

2. Hail as large as 5 to 6 cm and heavy rainfalls were reported in several localities near London, especially to the north and west. At London Airport, 70 mm of rain as well as 2 to 3 cm hail was observed, the latter causing damage to vehicles. In addition, large hail was reported to have destroyed a whole concession of tobacco near Langton, a small community near Tilsonburg.

3. This severe weather was caused by a line of thunderstorms along a very sharp polar cold front which moved across southwestern Ontario from Michigan during the early evening of September 2nd. Afternoon temperatures in extreme southwestern Ontario in the mid thirties were in sharp contrast to fifteen degree Celcius values reported in other parts of Ontario. This coupled with the presence of a jet stream across southwestern Ontario and an approaching short wave from Michigan resulted in a high potential for severe weather.

4. At 3:27 p.m. September 2nd, the Ontario Weather Centre issued a severe weather watch for Lake Huron, Lake St. Clair and Lake Erie regions valid from 4 p.m. to 10 p.m., before any thunderstorms were actually reported. During the late afternoon a weak line of thunderstorms formed over Michigan and then moved eastward intensifying rapidly as they moved over Lake Huron. At 5:17 p.m. a marine warning was issued for Lake Huron followed by a severe weather warning valid until 7:45 p.m. for Huron, northern Middlesex and Perth counties at 5:47 p.m.. London and Windsor Weather Offices were advised that this included the city of London. As a result the warning was in effect for one and one-half hours before the tornado struck London.

...2

5. Warnings were subsequently issued for Wellington, Oxford and Brant counties and the regional municipality of Waterloo at 6:06 p.m. and for Elgin and southern Middlesex counties at 7:26 p.m. Once the area of severe thunderstorms reached the Kitchener area the intensity of the activity decreased rapidly to below severe limits resulting in no further damage.

6. On September 3rd, the Chief Meteorologist and Severe Weather Meteorologist visited the London tornado site to assess the damages. The path of destruction was 5 km in length and 120 metres in width, from northwest to southeast across residential and industrial subdivisions in southern London.

7. Eyewitnesses claim that the tornado bounced up and down along the path. However, it does not appear that the vortex lifted clear off the ground at any point since there is damage at all points along the 5 km path, although the amount of damage varies considerably.

8. The damage along the path is extensive and costs will likely exceed that for the Toronto tornado two weeks ago. Heaviest damage occurred in the industrial subdivision along the last kilometre of the tornado path with major structural and roof damage to at least 10 large industrial buildings involving at least 15 different companies. About 65 single or double residences were damaged significantly, ranging from loss of roof shingles and broken windows to substantial structural and water damage to interiors where portions of roof were blown off. Three construction trailors were totally destroyed after being thrown more than 30 metres. Three 10 story apartments, 7 row houses and many vehicles were also damaged.

9. Clean up operations were already well underway on September 3rd with many volunteers from the community helping those in need. Police reported that the majority of the injuries were minor cuts and bruises from flying debris, however, 3 persons were hospitalized with more serious injuries.

Walter D Lawrynuik

Walter D. Lawrynuik
Officer-In-Charge
Ontario Weather Centre

cc AFDG
OAED

Environment Canada / Environnement Canada
Atmospheric Environment / Environnement atmosphérique

CLIMATOLOGICAL STATION REPORT

614 8120-105

STATION STRATHROY

Time of observation 8.00 a.m. 5.00 p.m. T x P x

PROVINCE

Observer Harry W. Marshall

MONTH September 19

DAY OF MONTH	TIME OF OBSERVATION	TEMPERATURE (°C) Maximum Observed	Maximum For Day	Minimum Observed	Minimum For Day	Minimum AFTER RESET	PRECIPITATION Rain Measured mm	Rain For Day mm	Snow Measured cm	Snow For Day cm	Total For Day mm	TIMES OF PRECIPITATION (Calendar Day) Began	Ended	Depth of Snow on Ground whole cm	Weather (Calendar Day) Thunderstorm	Freezing Rain	Hail	REMARKS
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	a.m.			11.5		13.5												Mod.W-E.Winds.
[1]	p.m.	21.0	22.0	13.5	11.5	21.0		9.8			9.8		At night.		I			Mostly cloudy,mild.
2	a.m.	22.0		16.5		17.0	9.8											Inc.S.W-N.W.Winds.
	p.m.	28.0	28.0	16.5	16.5	28.0		21.2			21.2	6.30	7PM.		I		I	Partly cloudy,warm.
3	a.m.	28.0		18.0		18.0	21.2											Fresh N.Winds.
	p.m.	18.0	18.0	15.5	15.5	16.0		T			T		At night.					Overcast,cooler.
4	a.m.	16.0		12.0		12.0	T						8-9AM.					Brisk N.W.Winds.
	p.m.	18.0	18.0	12.0	12.0	17.0	1.2	2.0			2.0		At night.					Partly cloudy,cool.
5	a.m.	17.0		8.5		8.5	0.8											Fresh N.Winds.
[2]	p.m.	17.0	17.0	8.5	8.5	16.0												Clearing,cool.
6	a.m.	16.5		5.5		6.5												Light variable Winds.
	p.m.	19.5	19.5	5.0	5.0	19.0												FW cumulus,mild.
7	a.m.	19.0		7.0		8.5						12	2.30PM.					Inc.to gusty S.E.Winds
	p.m.	19.5	19.5	8.5	7.0	16.0	1.0	1.0			1.0							AM clouding,mild.
8	a.m.	18.0		16.0		17.5												Gusty S.Winds.
	p.m.	25.0	25.0	16.5	16.0	24.0												Late altocirrus,mild.
9	a.m.	24.5		18.0		18.0							Afternoon.					Brisk S.W.Winds.
[3]	p.m.	21.0	21.0	16.0	16.0	16.5	4.4	20.4			29.4		At night.					Early clouding,mild.
10	a.m.	17.5		15.5		16.5	16.0						Noon.					Fresh S.W.Winds.
	p.m.	23.5	24.0	16.5	15.5	23.0	T	9.4			9.4		At night.					Mostly cloudy,mild.
11	a.m.	24.0		16.5		17.0	9.4						8-9AM.					Mod.N.W.Winds.AM fog.
	p.m.	20.5	21.0	15.5	15.5	20.5	1.6	1.6			1.6				I			Clearing,mild.
12	a.m.	21.0		10.0		12.0												Inc.S.E-S.Winds.
	p.m.	21.0	21.0	12.0	10.0	21.0												Mostly cloudy,mild.
13	a.m.	21.0		15.0		18.0							Intervals.					Fresh S.W.Winds.
[4]	p.m.	24.0	24.0	18.0	15.0	23.5	11.2	13.0			13.0		Evening		I			Mostly cloudy,mild.
14	a.m.	23.5		13.0		10.5	1.8											Fresh N.W-N.Winds.
	p.m.	16.5	16.5	10.5	10.0	16.0		2.0			2.0		At night.					Mostly cloudy,cooler.
15	a.m.	16.0		8.5		9.0	2.0						4-5PM.					Mod.N.W.Winds.
	p.m.	14.5	15.0	8.5	8.5	14.5	T	0.6			0.6		At night.					Mostly cloudy,cool.
16	a.m.	15.0		2.5		3.0	0.6											Fresh N.W.Winds.AM fog
	p.m.	15.5	16.0	3.0	2.5	15.5												FW cumulus,cool.
17	a.m.	16.0		3.5		3.5												Light W.Winds.AM fog.
[5]	p.m.	19.5	19.5	3.5	3.5	19.0												FW clouds,milder.
18	a.m.	19.5		5.0		5.0												Mod.S.Winds.
	p.m.	21.0	21.0	5.0	5.0	21.0												Sest.altocirrus,mild.
19	a.m.	21.0		11.5		11.5												Mod.W.Winds.
	p.m.	23.0	23.0	11.5	11.5	23.0												Sunny,mild.
20	a.m.	23.0		13.0		17.0												Brisk N.W.Winds.
	p.m.	23.0	23.0	17.0	13.0	21.0												AM p.clouds,mild.
21	a.m.	21.0		6.0		7.0												Light variable Winds.
[6]	p.m.	19.5	20.0	6.0	6.0	19.0												Mostly sunny,mild.
22	a.m.	20.0		8.5		13.0												Mod.S.Winds.
	p.m.	26.5	26.5	13.0	8.5	26.0		T			T		At night.					Inc.altocirrus,warm.
23	a.m.	26.0		19.5		19.5	T						Intervals					Mod.S.W.Winds.AM fog.
	p.m.	20.0	20.0	17.5	17.5	19.0	2.6	2.6			2.6							Cloudy,mild.
24	a.m.	19.5		18.5		18.5							8-9AM.					Inc.S.Winds.
	p.m.	24.0	24.5	18.5	16.5	24.0	T	T			T		Morning.					PM p.clearing,mild.
25	a.m.	24.5		19.0		19.0	T						Morning.					Inc.S.W-N.W.Winds.
[7]	p.m.	23.0	23.0	19.0	19.0	22.5	1.4	17.6			17.6		Evening.		I			Mostly cloudy,cooler.
26	a.m.	22.5		6.5		7.0	16.2						Noon.					Brisk N.W.Winds.
	p.m.	11.5	11.5	6.5	6.5	11.0	T	T			T							Partly cloudy,cold.
27	a.m.	11.5		4.0		4.5												Light variable Winds.
	p.m.	11.5	11.5	4.0	4.0	11.0												Mostly cloudy,cold.
28	a.m.	11.0		3.0		3.5							Afternoon.					Light S-W.Winds.
	p.m.	11.5	11.5	2.5	2.5	11.0	T	T			T		At night.					Mostly cloudy,cold.
29	a.m.	11.0		7.0		7.0	T											Mod.N.W-N.E.Winds.
[8]	p.m.	13.0	13.0	6.5	6.5	12.0												Partly cloudy,cold.
30	a.m.	13.0		3.5		6.0												Mod.N.Winds.
	p.m.	10.0	10.0	6.0	3.5	10.0												Mostly cloudy,cold.
31	a.m.	10.0																
	p.m.																	
1	a.m.																	
SUMS			583.5		310.5			110.2			110.2							
MEANS																		

Total no. of days with: 5

TEMPERATURE EXTREMES

Maximum...28.0...Date..2..... Mean Max.....

Minimum....2.5...Date..16,28. Mean.....

TEMPERATUR