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MANITOBA AND SASKATCHEWAN TORNADO DAYS 1960 TO 1982

by

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1. Includes tornadoes and waterspouts.

2. A tornado day is defined as a calendar day with at least one tornado occurrence. On a tornado day, tornado occurrences have been separated on the basis of time and location.

1. Introduction

Tornadoes, which have been observed in Manitoba and Saskatchewan during the past two decades, have been investigated and enumerated by a number of researchers. In the main, the enumerators focused on a specified region of one province or the other and on selected time-periods. Their primary data sources were the archives of selected newspapers located in the region of interest. These enumerations have been amalgamated into one chronological list of known tornadic events¹ from the period 1960 to 1982 inclusive, and for the area defined by Manitoba's census divisions 1-18 plus 20 and Saskatchewan's divisions 1-17 (Figure 1). The list, included as an Appendix, contains the date and time of occurrence as well as a reference location. Where possible, the original source, describing the tornadic event, (i.e., newspapers, Prairie Weather Centre Severe Weather Logs and correspondence, etc.) is given along with the enumerator's name and allotted abbreviation. In all cases, the judgement of an enumerator that an event was a tornado, has been accepted.

2. Data Analysis

2.1 Tornado Occurrences and Tornado Days

Tornado occurrences over the 23 year period from 1960-1982 have been tabulated by year and by province. A distinction has been drawn between occurrences and tornado days² (Tables 1 and 2). A total of 345 occurrences took place on 242 days. Saskatchewan averaged 9.6 tornadoes and 6.6 tornado days per year while Manitoba's mean number of occurrences was 6.1 and its mean number of days was 4.8. As some tornado days were common to both provinces the mean numbers for the entire region were 15.7 and 11.0 per year.

1. Includes tornadoes and waterspouts.

2. A tornado day is defined as a calendar day with at least one tornado occurrence. On a tornado day, tornado occurrences have been separated on the basis of time and location.

A frequency distribution of tornado occurrences per tornado day has been prepared for each province, Table 3. This reveals that Saskatchewan has had as many as ten occurrences per tornado day. The mean number of occurrences, however, was 1.3 with a standard deviation of 0.6. Up to six occurrences have been distinguished per Manitoba tornado day. The mean number was 1.3 with a standard deviation of 0.8.

2.2 Annual Frequency and Trend - Tornado Days

The annual number of tornado days, by province, are plotted in Figures 2 and 3. The trend lines and their equations are also given where Y is the number of days and X is the year. Saskatchewan exhibited a positive trend while Manitoba's curve has a negligible slope. The upward swing in Saskatchewan's tornado days could be the result of (a) climate change, (b) an increasing population, (c) an increasing tornado awareness, and/or (d) a bias in the data. The nearly constant slope of Manitoba's counts suggest that Saskatchewan's trend was likely due to demographic or data collection factors.

2.3 Seasonal Distribution and Length of Season - Tornado Days

The total number of tornado days per month is given in Figure 4. The peak number of days was in July with June and August having fewer but still significant numbers. Table 4 contains the start date, end date and duration of each tornado season for the entire region. The mean date of the first tornado day was May 22nd (i.e., Julian day, JD = 142), however, the season has begun as early as April 6th (JD = 97). On the average the last tornado day was August 27th (JD = 239). The season has lasted until September 26th (JD = 269). The mean duration was 98 ± 28 days.

2.4 Geographical Distribution - Tornado Days

It is generally accepted that there is a population bias in tornado incidence observing and reporting. In order to minimize this effect, the

tornado days have been stratified by the rural population densities of the census divisions in which they occurred. Rural densities were used as the inclusion of urban populations unduly influences the value of the mean density for the entire district. Saskatchewan's (1-17) and Manitoba's (1-18 plus 20) census divisions were divided into two groups - category (a), 1.0 or more people per km² and category (b), 0 to 0.9 people per km². With densities greater than or equal to one, all tornadoes should be observed or, at least, their aftermath discovered (Newark, 1981). The method of Schaefer and Galway (1982) was used to calculate the bias of each category as follows:

$$\begin{aligned}
 B(a) &= \frac{N(a)}{N(a) + N(b)} \times \frac{A(a) + A(b)}{A(a)} & B(b) &= \frac{N(b)}{N(a) + N(b)} \times \frac{A(a) + A(b)}{A(b)} \\
 &= \frac{198}{311} \times \frac{431,608}{226,119} & &= \frac{113}{311} \times \frac{431,608}{205,489} \\
 &= 1.22 & &= 0.76
 \end{aligned}$$

where B is bias
N is the number of known tornado days
A is area

A bias greater than one indicates that proportionately more tornadoes were observed and reported from the districts in this category than would come if the entire region had a uniform population distribution. Similarly a bias less than one indicates that fewer than the expected number of occurrences were observed.

If the tornado climatology for the census districts in category (a) is assumed reasonable, then the population bias can be removed from the sparsely populated category (b) districts using the following formula:

$$D(b)_i = B(a) \frac{N(b)_i}{B(b)}$$

$$= 1.61 N(b)_i$$

where the subscript i refers to the number of the census divisions and the $D(b)_i$'s are the "real" number of tornado days.

Figures 5 (a) and (b) are census division maps with the observed and bias adjusted number of tornado days plotted.

This procedure for estimating the population bias assumes a uniform climate or predisposition for tornadoes across the entire region.

2.5 Relative Frequency of Tornado Days, Risk and Return Periods

The bias adjusted relative frequencies of tornado days per 10,000 km^2 per season, f_i , the probability or risk, R_i , that a day will contain one or more tornadic events and the period during which there is a 50% chance of recurrence, $T(50:50)_i$ and a 95% change of recurrence $T(95:05)_i$, can be calculated for each census division as follows:

$$f_i = \frac{\text{Number of tornado days (bias adjusted) in division \#i}}{23 \text{ seasons} \times A_i \times 10^4 \text{ km}^2}$$

$$R_i = f_i / 98 \text{ days per average season}$$

and

$$T(50:50)_i = \frac{\ln(0.5) \text{ days}}{\ln(1-R_i)}; \quad T(95:05)_i = \frac{\ln(0.05) \text{ days}}{\ln(1-R_i)}$$

The bias adjusted frequencies were used to approximate the annual probability or risk of a tornado day for each census division. Since the average tornado season is 98 days long, the daily risks can be calculated by dividing the annual frequencies by this number. The probability of recurrence periods, after Hendricks (1983), are then in days. The relative frequencies and the recurrence periods, both per 10,000 km^2 , are listed in Table 5; the relative frequencies are plotted in Figure 6. This approach assumes that each

day during the tornado season has an equal probability of being a tornado day. However, an examination of the seasonal distribution of tornado days, Figure 4, clearly reveals that this isn't true. The daily frequencies by month can be obtained by proportionally allotting each division's tornado days to the various months in accordance with the seasonal distribution for the entire region. The seasonal distributions per census division were not used due to the sparseness of the data set at that level. The probabilities of tornado days per 10,000 km² by month are given in Table 6.

The relative frequencies of tornado days were brought to a common area base of 10,000 km² to eliminate the cases where one census division had a higher risk than another just because of its larger area and vice versa. This treatment assumes that there are no preferred locations for tornadoes, but rather that all of a division's sub-areas have an equal probability of experiencing a tornado day.

An alternative division, inherent in the data, is the average damage area per tornado day. Schaefer et al, 1979, indicated that the average area damaged per tornado occurrence is 3.5 ± 1.3 km². An average of 1.3 tornadoes occurrence per tornado day across Manitoba and Saskatchewan suggests that about 4.5 km² are damaged on an average tornado day. The annual risk of damage at one location, RD_i and the periods during which there is a 50% and a 95% probability of a recurrence of tornado damage, $TD(50:50)_i$ and $TD(95:05)_i$ can now be defined as follows:

$$RD_i = (f_i \times \frac{A_i}{10,000}) / \frac{A_i}{4.5}$$

and

$$TD(50:50)_i = \frac{\ln(0.5)}{\ln(1-RD_i)} ;$$

$$TD(95:05)_i = \frac{\ln(0.05)}{\ln(1-RD_i)}$$

The annual risks of damage and recurrence periods for each census division are listed in Table 7; the risks are also plotted in Figure 7.

3. Conclusion

The frequencies of tornado days for Manitoba's census divisions (1 to 18 plus 20) and Saskatchewan's divisions (1 to 17) are relatively large, running from about 0.1 to 1.4 days per season per 10,000 km². A recurrence can be expected somewhere in the area within a few years or possibly even that same season. However, a typical tornado damages a relatively small area. Therefore, the annual risk of damage at a given location is low, ranging from 4.1×10^{-3} to $6.5 \times 10^{-2}\%$. The period during which there is a 50% chance of a recurrence of damage is generally from 1,000 to 5,000 years; the 95% probability of damage recurrence period ranges from 5,000 to 40,000 years. Nevertheless, tornadoes, nature's most locally destructive storms, pose a danger to life and property especially in built-up areas with a concentrated population. Although the danger is real and Manitoba and Saskatchewan residents should be aware of the risk, they should not be unduly alarmed.

TABLE 1

Tornado Occurrences - 1960 to 1982

<u>Year</u>	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Manitoba/Saskatchewan</u>
1960	7	3	10
1961	1	4	5
1962	3	5	8
1963	5	9	14
1964	10	10	21
1965	4	3	7
1966	6	4	10
1967	2	2	4
1968	5	8	13
1969	6	9	15
1970	5	7	12
1971	3	10	13
1972	1	4	5
1973	12	15	27
1974	2	9	11
1975	12	28	40
1976	6	10	16
1977	8	18	26
1978	15	12	27
1979	4	16	20
1980	5	11	16
1981	4	4	8
1982	8	10	18
TOTAL	134	211	345
MEAN	6.1	9.6	15.7
STANDARD DEVIATION	3.7	6.0	8.7

*Data beyond four occurrences per day was not used due to open class intervals.

TABLE 2

Tornado Days - 1960 to 1982

<u>Year</u>	<u>Manitoba</u>	<u>Saskatchewan</u>	<u>Manitoba/Saskatchewan</u>
1960	6	3	8
1961	1	4	5
1962	2	5	7
1963	5	8	11
1964	8	5	13
1965	4	3	7
1966	5	3	8
1967	2	1	3
1968	4	6	10
1969	5	6	11
1970	4	6	10
1971	3	8	11
1972	1	4	5
1973	9	12	19
1974	2	7	9
1975	8	12	18
1976	5	6	11
1977	8	8	16
1978	8	9	16
1979	4	12	16
1980	5	7	12
1981	4	4	8
1982	3	7	8
TOTAL	106	146	242
MEAN	4.8	6.6	11.0
STANDARD DEVIATION	2.3	3.0	4.3

TABLE 3

**Frequency Distribution of Tornado Occurrences
per Tornado Day, 1960-1982**

NUMBER OF OCCURRENCES PER DAY		MANITOBA	SASKATCHEWAN
1	90	105	
2	10	29	
3	3	9	
4	1	1	
5	1	0	
6	1	0	
7	0	1	
8	0	0	
9	0	0	
10	0	1	
MEAN NO. PER DAY		1.3	1.3*
STANDARD DEVIATION		0.8	0.6*

*Data beyond four occurrences per day was not used due to open class intervals.

**Areas combined due to their relatively small size.

***Return periods are not contiguous due to off-season interruptions.

TABLE 4

Start, End and Duration of Tornado Season
(Julian Days)
Manitoba-Saskatchewan - 1960 to 1982

Year	Start	End	Duration
1960*	154	249	96
1961	180	222	43
1962	118	239	122
1963	137	259	123
1964*	136	223	88
1965	125	216	92
1966	155	228	74
1967	150	212	63
1968*	102	231	130
1969	146	263	118
1970	175	243	69
1971	182	254	73
1972*	129	228	100
1973	110	239	130
1974	170	241	72
1975	144	249	106
1976*	155	239	85
1977	107	269	163
1978	130	237	108
1979	141	252	112
1980*	97	223	127
1981	155	242	88
1982	157	230	74
MEAN	142 May 22	239 Aug. 27	98 days
STANDARD DEVIATION			27.8 days
Earliest date - April 6, 1980 - Altona, Manitoba			
Latest date - September 26, 1977 - Viscount, Saskatchewan			

*Leap years.

TABLE 5

Tornado Days, Relative Frequencies and Recurrence
Periods per 10,000 km²
by Census Division

Census Divisions 1	Number of Days N ₁	Number of Days (Bias Adjusted) D ₁	Relative Frequencies (days/season) f ₁	Recurrence Periods*** (Days) T(50:50) ₁ T(95:05) ₁	
<u>Saskatchewan</u>					
1	15	24	0.70	97	420
2	17	27	0.69	98	422
3	6	10	0.24	288	1245
4	9	14	0.30	228	983
5	12	12	0.36	189	817
6	20	20	0.50	136	586
7	7	11	0.25	269	1165
8	11	18	0.34	199	862
9	9	9	0.26	262	1133
10	8	8	0.29	236	1021
11	17	27	0.70	97	420
12	7	11	0.33	202	875
13	8	13	0.33	205	887
14	14	14	0.18	375	1621
15	13	13	0.29	232	1004
16	6	10	0.19	348	1505
17	10	16	0.31	216	934
<u>Manitoba</u>					
1	9	9	0.27	255	1103
2	14	14	1.43	47	204
3	17	17	1.44	47	202
4	4	4	0.39	172	744
5	14	14	0.76	89	385
6	3	3	0.34	198	857
7	5	5	0.39	174	752
8	6	6	0.46	147	635
9	9	9	1.36	50	214
10/11/14**	9	9	0.76	89	384
12/13**	11	11	1.39	48	210
15	8	8	0.38	178	768
16	2	2	0.18	368	1589
17	5	5	0.16	417	1800
18	4	4	0.16	431	1863
20	2	2	0.09	773	3340
	311*	379			

*This total doesn't agree with Table 2, since one tornado day can effect several divisions

**Areas combined due to their relatively small size

***Return periods are not contiguous due to off-season interruptions.

TABLE 6

Daily Risk (%) of Tornado Days per 10,000 Km²
by Month and Census Division

DIV #	APR		MAY		JUN		JUL		AUG		SEPT	
	#	DAYS	RISK	#	DAYS	RISK	#	DAYS	RISK	#	DAYS	RISK
Saskatchewan												
1	0.50	0.05	2.29	0.21	5.68	0.55	8.47	0.79	6.08	0.57	1.10	0.11
2	0.57	0.05	2.58	0.21	6.39	0.55	9.52	0.79	6.83	0.57	1.23	0.11
3	0.21	0.02	0.95	0.07	2.37	0.19	3.53	0.27	2.53	0.19	0.46	0.04
4	0.30	0.02	1.34	0.09	3.31	0.23	4.94	0.34	3.54	0.24	0.64	0.05
5	0.25	0.02	1.15	0.11	2.84	0.28	4.23	0.41	3.04	0.29	0.55	0.05
6	0.42	0.03	1.91	0.15	4.73	0.39	7.05	0.57	5.06	0.41	0.91	0.08
7	0.23	0.02	1.05	0.08	2.60	0.20	3.88	0.29	2.78	0.21	0.50	0.04
8	0.37	0.02	1.72	0.10	4.26	0.27	6.35	0.39	4.56	0.28	0.82	0.05
9	0.19	0.02	0.86	0.03	2.13	0.20	3.17	0.29	2.28	0.21	0.41	0.04
10	0.17	0.02	0.76	0.09	1.89	0.23	2.82	0.33	2.03	0.23	0.37	0.04
11	0.56	0.05	2.58	0.21	6.39	0.55	9.52	0.79	6.83	0.57	1.23	0.11
12	0.23	0.02	1.05	0.10	2.60	0.26	3.88	0.38	2.78	0.27	0.50	0.05
13	0.27	0.02	1.24	0.10	3.08	0.26	4.59	0.38	3.30	0.27	0.59	0.05
14	0.29	0.01	1.34	0.06	3.31	0.14	4.94	0.21	3.54	0.15	0.64	0.03
15	0.27	0.02	1.24	0.09	3.08	0.23	4.59	0.33	3.29	0.24	0.59	0.04
16	0.21	0.01	0.95	0.06	2.37	0.15	3.53	0.22	2.53	0.16	0.46	0.03
17	0.33	0.02	1.53	0.10	3.78	0.25	5.64	0.36	4.05	0.26	0.73	0.05
Manitoba												
1	0.19	0.02	0.86	0.08	2.13	0.21	3.17	0.30	2.28	0.22	0.41	0.04
2	0.29	0.10	1.34	0.44	3.31	1.12	4.94	1.62	3.54	1.17	0.64	0.22
3	0.35	0.10	1.62	0.44	4.02	1.14	6.00	1.64	4.30	1.18	0.78	0.22
4	0.08	0.03	0.38	0.12	0.95	0.31	1.41	0.45	1.01	0.32	0.18	0.06
5	0.29	0.05	1.34	0.23	3.31	0.60	4.94	0.86	3.54	0.62	0.64	0.12
6	0.06	0.02	0.29	0.11	0.71	0.27	1.06	0.39	0.76	0.28	0.14	0.05
7	0.10	0.03	0.48	0.12	1.18	0.31	1.76	0.44	1.27	0.32	0.23	0.06
8	0.13	0.03	0.57	0.14	1.42	0.36	2.12	0.52	1.52	0.38	0.27	0.07
9	0.19	0.09	0.86	0.42	2.13	1.07	3.17	1.55	2.28	1.11	0.41	0.21
10, 11, 14	0.19	0.05	0.86	0.23	2.13	0.60	3.17	0.87	2.28	0.62	0.41	0.12
12, 13	0.23	0.10	1.05	0.43	2.60	1.10	3.88	1.58	2.78	1.14	0.50	0.21
15	0.17	0.03	0.76	0.12	1.89	0.30	2.82	0.43	2.03	0.31	0.37	0.06
16	0.04	0.01	0.19	0.06	0.47	0.15	0.71	0.21	0.51	0.15	0.09	0.03
17	0.10	0.01	0.48	0.05	1.18	0.13	1.76	0.19	1.27	0.13	0.23	0.02
18	0.08	0.01	0.38	0.05	0.95	0.12	1.41	0.18	1.01	0.13	0.18	0.02
20	0.04	0.01	0.19	0.03	0.47	0.07	0.71	0.10	0.51	0.07	0.09	0.01

TABLE 7

ANNUAL RISKS OF DAMAGE AND RECURRENCE PERIODS BY CENSUS DIVISION

Division		R_{Di} %	T_{Di} (50:50) Years	T_{Di} (95:05) Years
Saskatchewan	1	3.15×10^{-2}	2200	9509
	2	3.11×10^{-2}	2232	9647
	3	1.08×10^{-2}	6418	27737
	4	1.35×10^{-2}	5134	22189
	5	1.62×10^{-2}	4278	18491
	6	2.25×10^{-2}	3080	13313
	7	1.13×10^{-2}	6161	26627
	8	1.53×10^{-2}	4530	19578
	9	1.17×10^{-2}	5924	25603
	10	1.31×10^{-2}	5311	22954
	11	3.15×10^{-2}	2200	9509
	12	1.49×10^{-2}	4667	20172
	13	1.49×10^{-2}	4667	20172
	14	0.81×10^{-2}	8557	36983
	15	1.31×10^{-2}	5311	22954
	16	0.86×10^{-2}	8107	35036
	17	1.40×10^{-2}	4968	21473
Manitoba	1	1.22×10^{-2}	5705	24655
	2	6.44×10^{-2}	1077	4654
	3	6.48×10^{-2}	1069	4622
	4	1.76×10^{-2}	3949	17068
	5	3.42×10^{-2}	2026	8758
	6	1.53×10^{-2}	4530	19578
	7	1.76×10^{-2}	3949	17068
	8	2.07×10^{-2}	3348	14471
	9	6.12×10^{-2}	1132	4893
	10, 11, 14	3.42×10^{-2}	2026	8758
	12, 13	6.26×10^{-2}	1108	4788
	15	1.71×10^{-2}	4053	17517
	16	0.81×10^{-2}	8557	36983
	17	0.72×10^{-2}	9627	41606
	18	0.72×10^{-2}	9627	41606
	20	0.41×10^{-2}	17114	73967

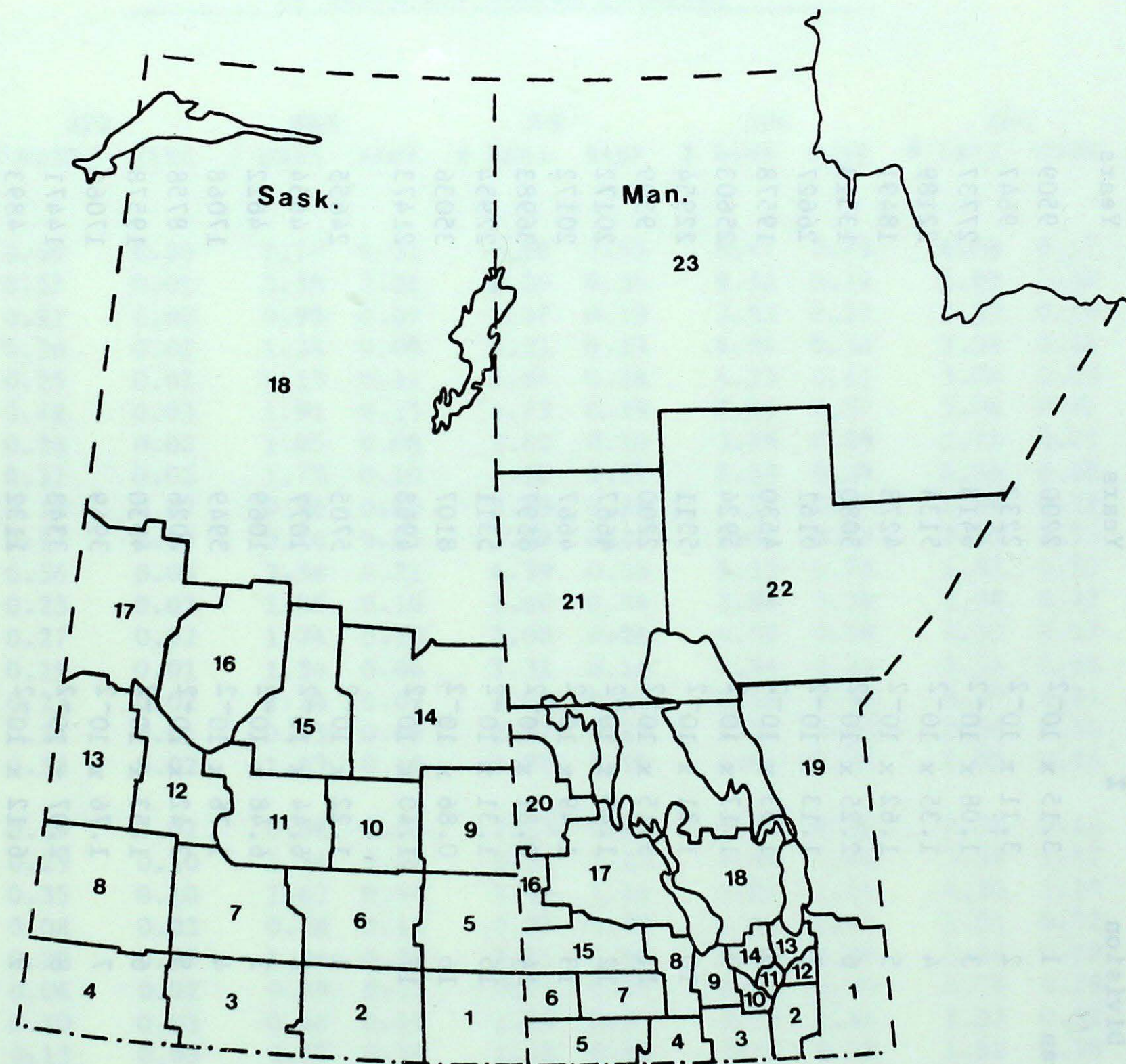


FIG. 1 Saskatchewan and Manitoba Census Divisions

FIG. 2

ANNUAL TORNADO DAYS & TREND: 1960 - 1982

Manitoba

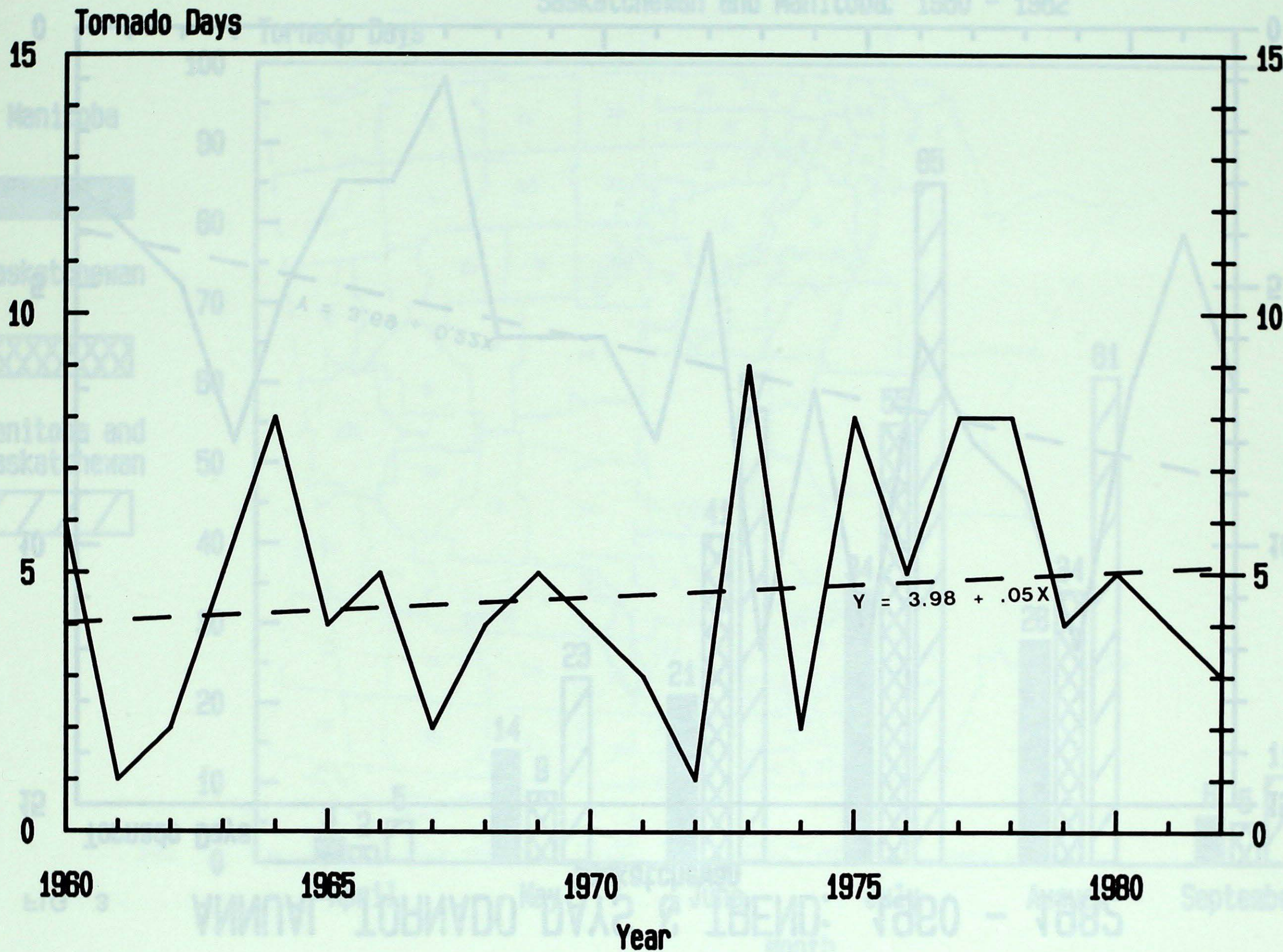


FIG. 3

ANNUAL TORNADO DAYS & TREND: 1960 - 1982 Saskatchewan

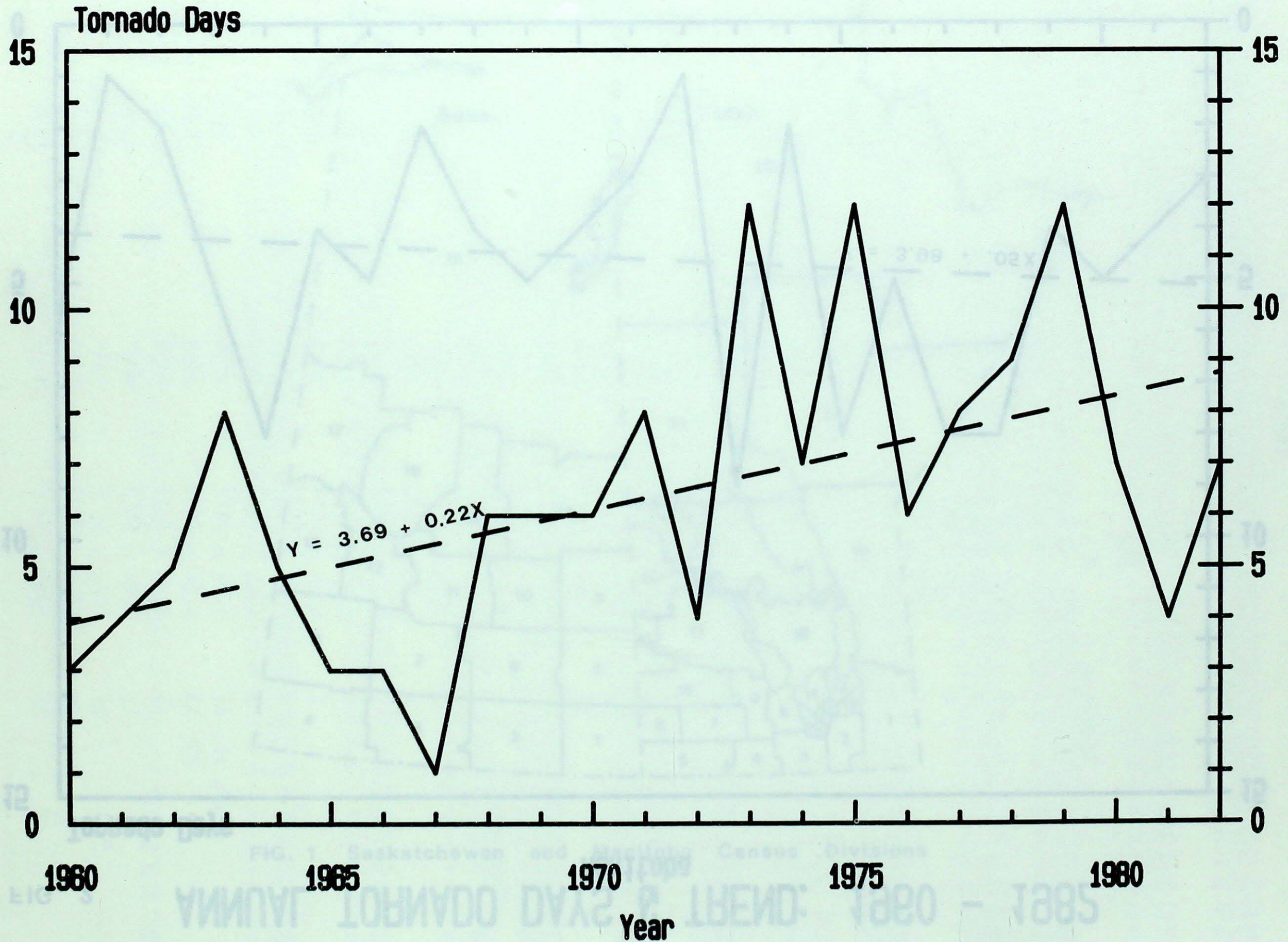
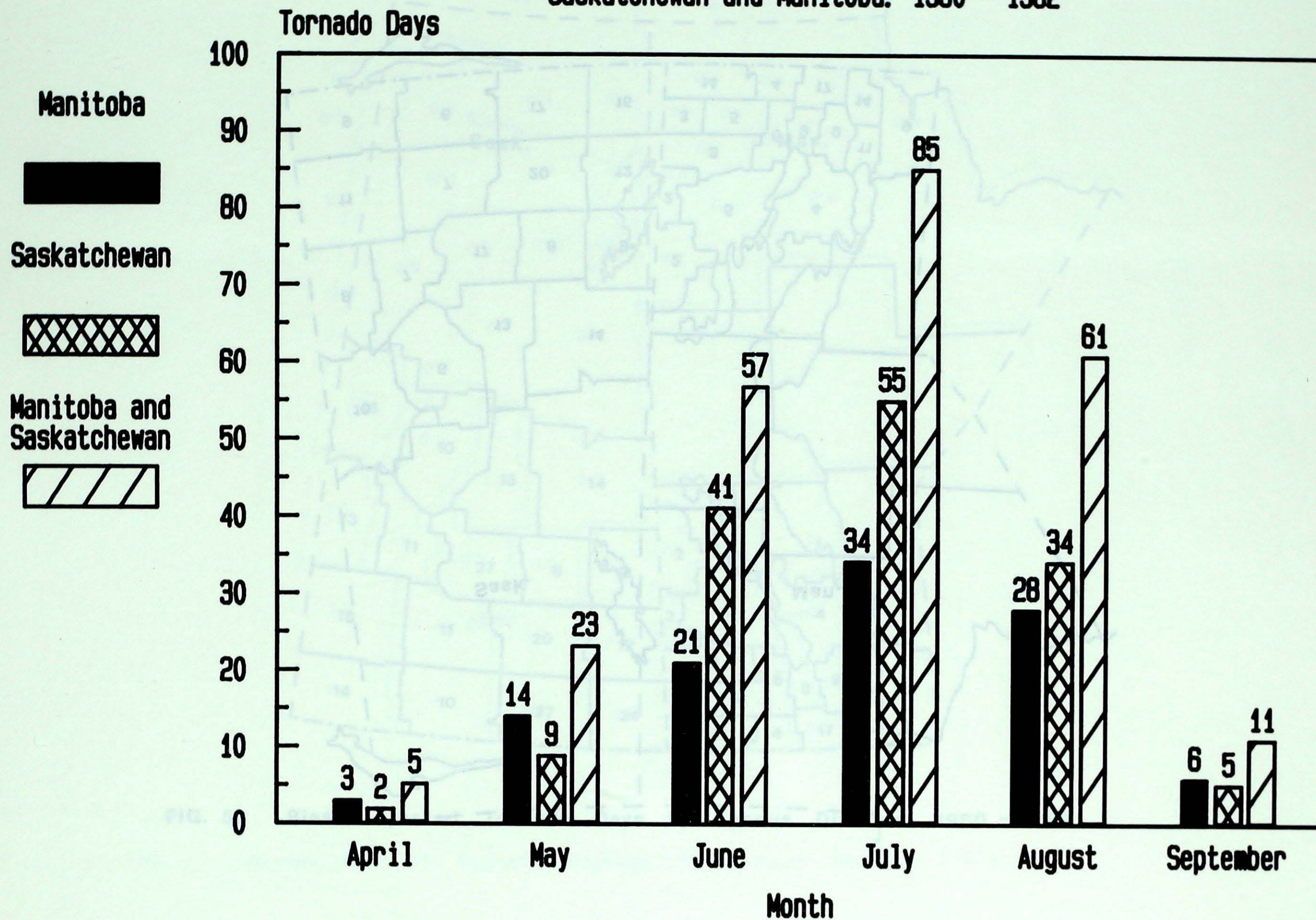


FIG. 4

TOTAL TORNADO DAYS / MONTH

Saskatchewan and Manitoba: 1960 - 1982



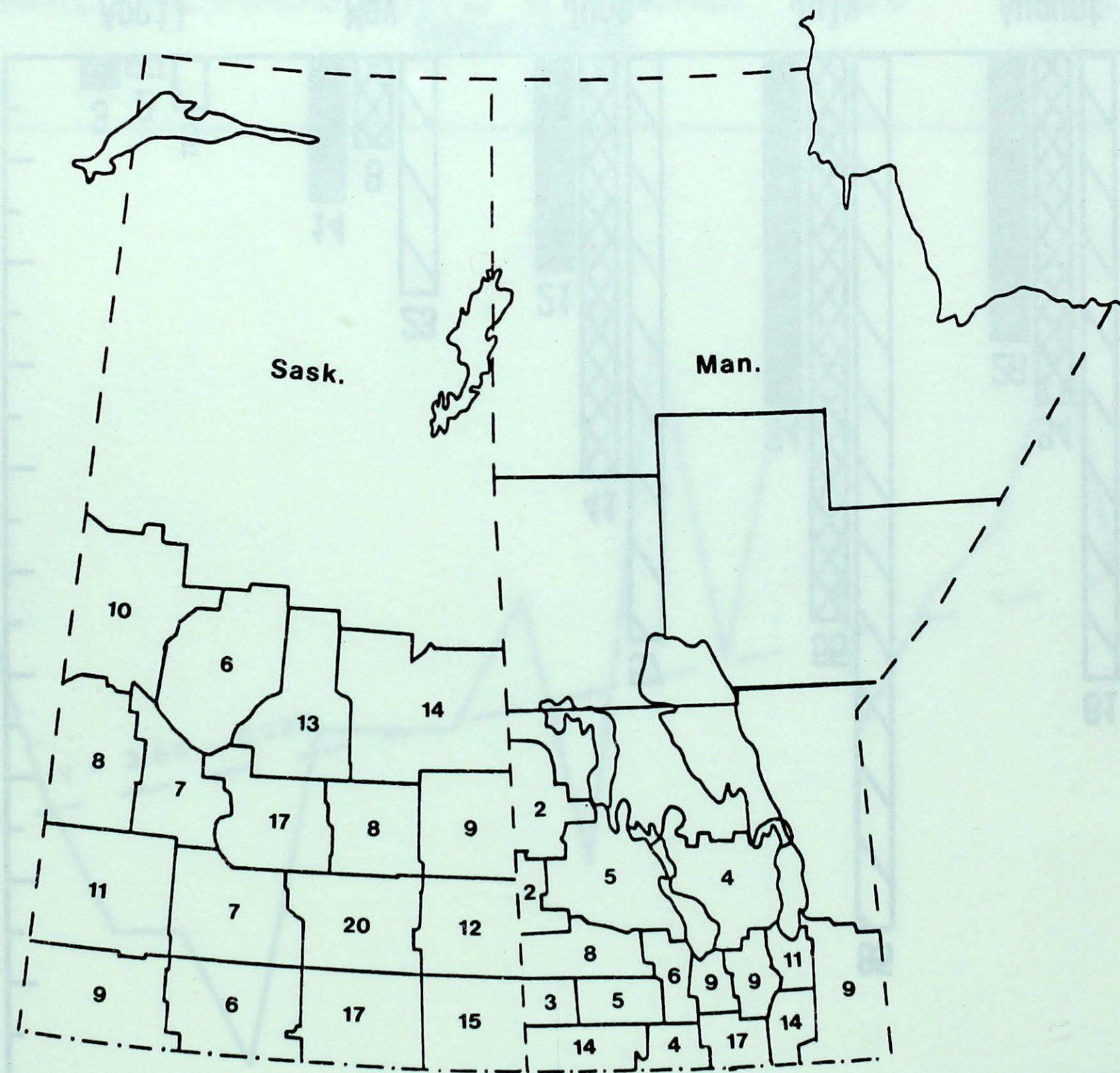


FIG. 5a Observed Tornado Days by Census Division: 1960 - 1982

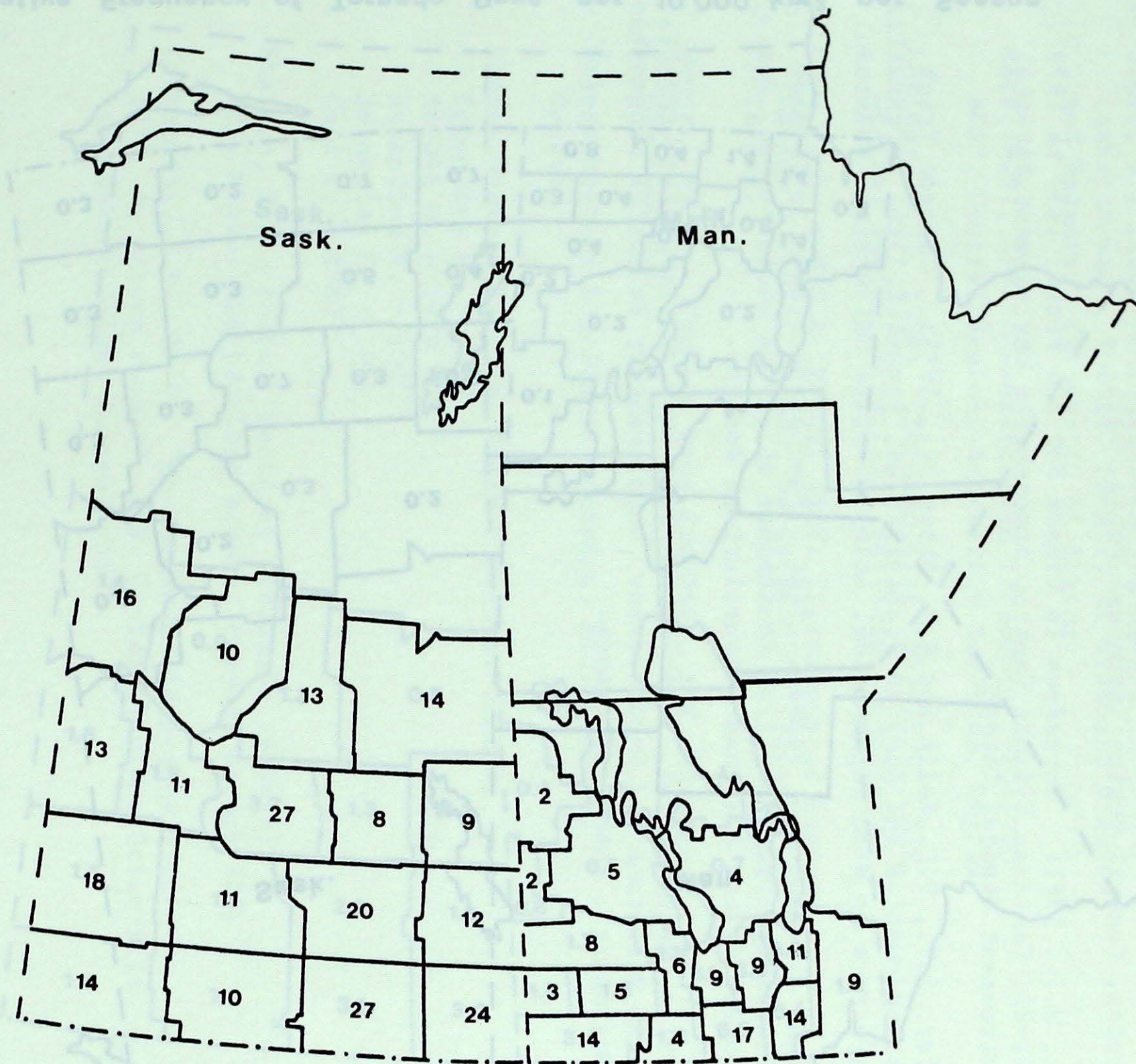


FIG. 5b Bias Adjusted Tornado Days by Census Division: 1960 - 1982

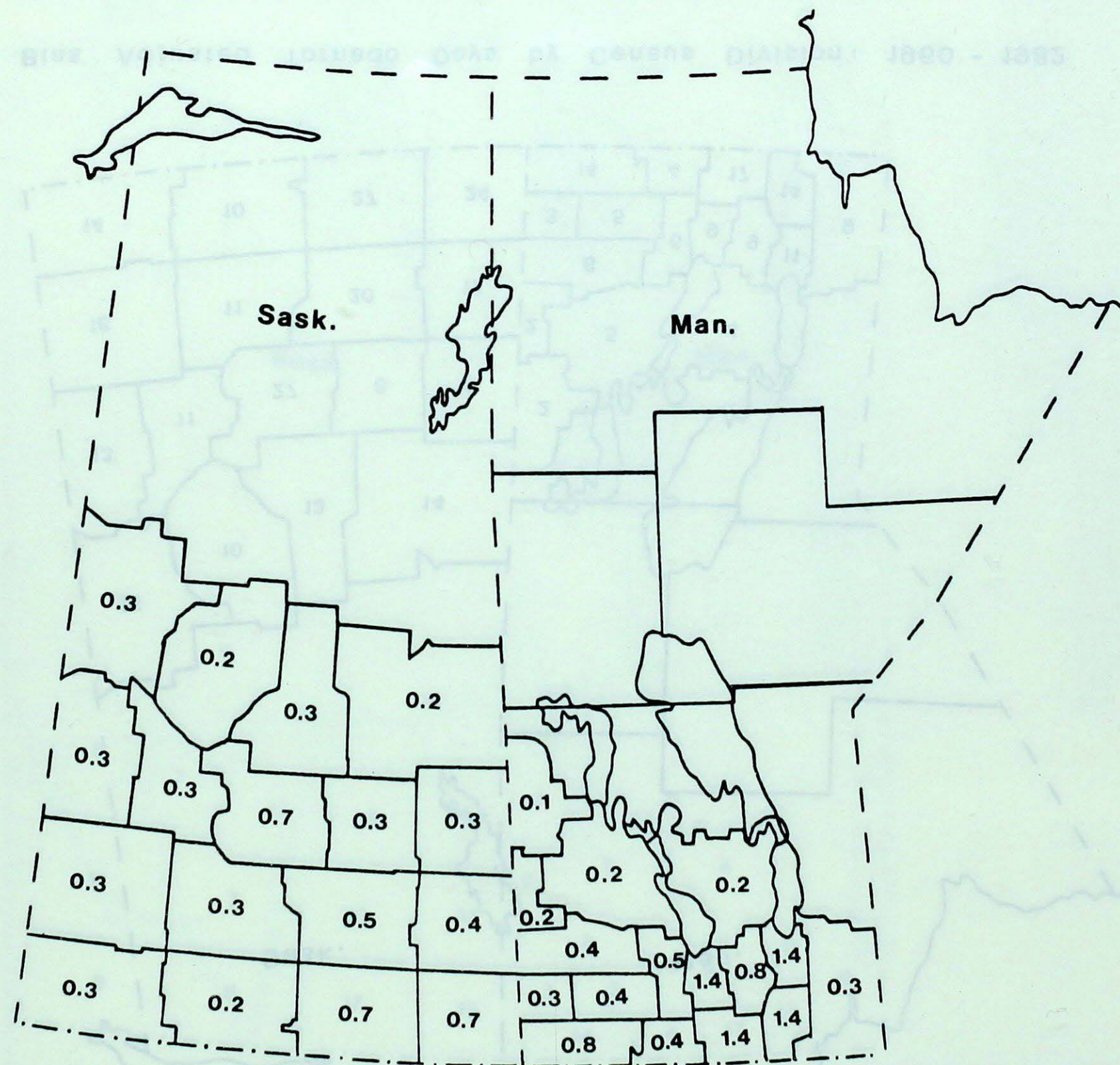


FIG. 6 Relative Frequency of Tornado Days per 10,000 km² per Season
by Census Division

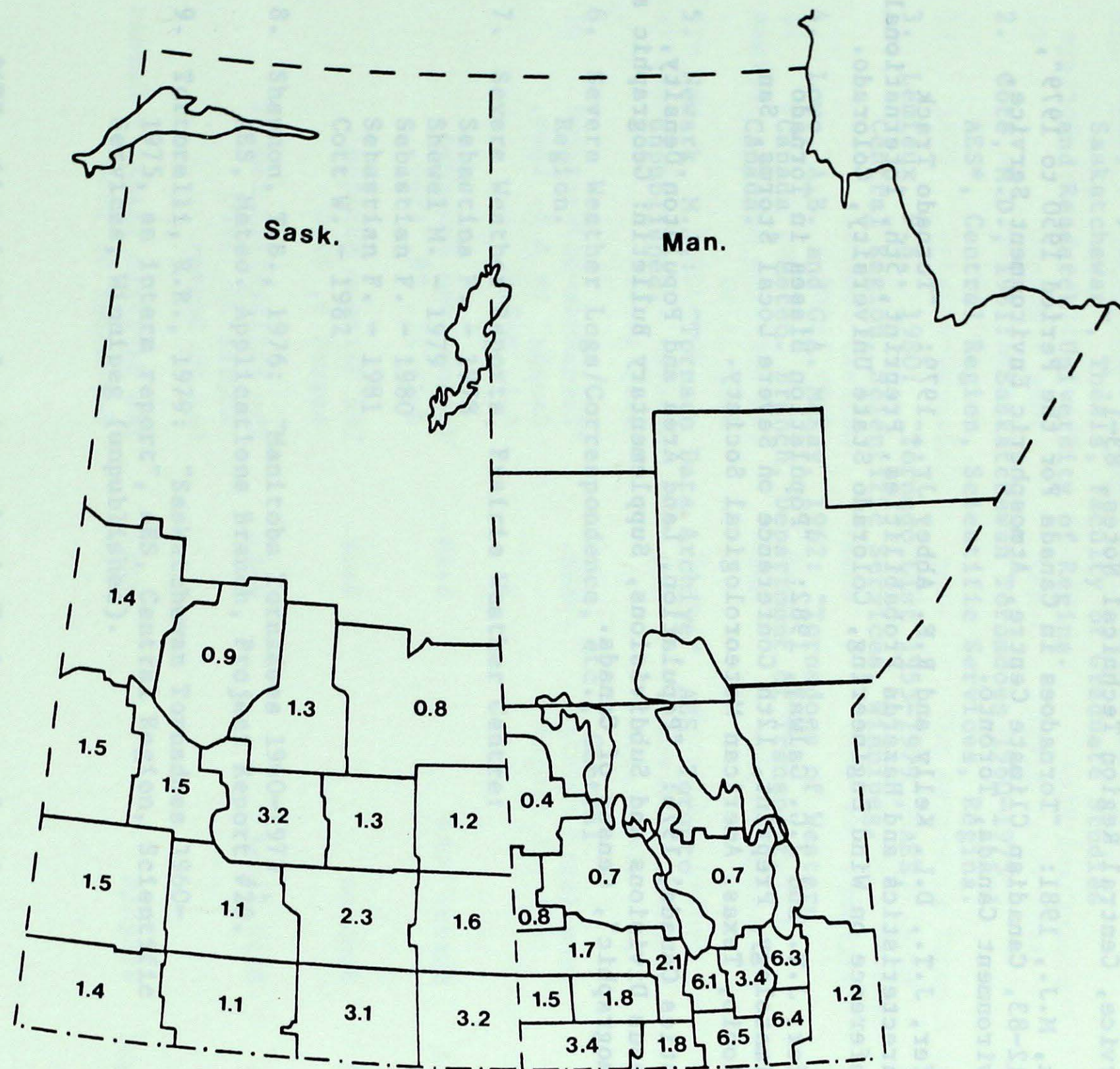


FIG. 7 Annual Risk of Tornado Damage by Census Division ($\% \times 10^{-2}$)

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APPENDIX

<u>Ennumerator</u>	<u>Abbreviation</u>
1. Blair, D., 1983: "The Thunderstorm Hazard in Saskatchewan", Thesis, Faculty of Graduate Studies and Research, University of Regina.	D.B.
2. Coté, M.D., 1981: "Saskatchewan Tornadoes 1960-1975", AES*, Central Region, Scientific Services, Regina.	M.D.C.
3. Lemieux, P.B., 1980: "Tornado List 1955-1979", AES, Central Region, Scientific Services, Winnipeg.	P.B.L.
4. Lowe, A.B. and G.A. McKay, 1962: "Tornadoes of Western Canada", Meteo. Branch, Department of Transport, Canada.	L&M
5. Newark, M.J.: "Tornado Data Archive", AES, Toronto, unpublished.	M.J.N.
6. Severe Weather Logs/Correspondence, etc., Central Region.	
7. Severe Weather Reports, Prairie Weather Centre: Sebastina F. - 1978 Shewel M. - 1979 Sebastian F. - 1980 Sebastian F. - 1981 Cott W. - 1982	
8. Shannon, T.B., 1976: "Manitoba Tornadoes 1960-1973", AES, Meteo. Applications Branch, Project Report #29.	T.B.S.
9. Tortorelli, R.R., 1979: "Saskatchewan Tornadoes 1960-1975, an interm report", AES, Central Region, Scientific Services, Winnipeg (unpublished).	R.R.T.

*AES, abbreviation for Atmospheric Environment Service.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1960

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumeration</u>
June	2	Aft.	Stuartburn-Vita	Man.	The Manitoba Leader Portage June 9/60 Steinbach Carrillon News June 10/60	T.B.S.
June	6	Noon	Vita	Man.		P.B.I.
July	9	2000	Melfort	Sask.	Melfort Journal July 14/60	M.D.C.
July	10	Eve.	N.W. of Elm Creek	Man.	The Dufferin Leader - Carman July 14/60	T.B.S.
July	10	1930	South of La Riviere	Man.	Manitou Western Canadian July 14/60	T.B.S.
July	18		Brookdale	Man.	"Tornadoes of Western Canada" by A.B. Lowe, G.A. McKay	L&M
July	18	Night	Meadow Lake	Sask.	Meadow Lake Progress July 21, 28, 1960	M.D.
August	2	1800	Simpson	Sask.	The Watrous Manitou August 4, 1960	M.D.
August	21	Eve.	Bird River	Man.	The Springfield Leader August 23, 1960 Lac Du Bonnet	T.B.
Sept.	5	Midnight	Wingham	Man.	The Dufferin Leader - Carman September 8, 1960	T.B.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	29		Consul	Sask.	Maple Creek News July 1, 1961	M.D.C.
July	17	1800	Lyleton-Waskada	Man.	The Deloraine Times & Star July 20, 1961 The New Era - Melita July 20, 1961	T.B.S.
July	24	Night	Beatty	Sask.	Watrous Manitou July 27, 1961	M.D.C.
Aug.	(Date uncertain)		Langmeade	Sask.	North Battleford News-Optimist August 30, 1961	M.D.C.
Aug.	10	Night	Cudworth	Sask.	Watrous Manitou August 31, 1961	M.D.C.
Aug.	19				Winnipeg Post-Journal August 19, 1961	B.K.T. M.D.C.
Aug.	20			Sask.	The Outlook - Outlook July 4, 1961	M.D.C.
July	1		Ventallan	Sask.	Rapine Leader-Post July 2, 1961 Moosemin World-Spectator July 3, 1961	M.D.C.
July	5		Frontier	Sask.	Winnipeg Post-Journal	B.K.T. M.D.C.
Aug.	4-10 (Date uncertain)		Kimbball and Greig Lakes	Sask.	Meadow Lake Progress August 11, 1961	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1962

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
April	28	Aft.	Admiral	Sask.	Shaunavon Standard May 4, 1962	M.D.C.
July	9	Night	Canora	Sask.	Canora Courier July 18, 1962	M.D.C.
July	28		Maple Creek	Sask.	Maple Creek News August 1, 1962	
Aug.	7	1730	Hartney-Elgin- Fairfax-Minto- Ninga-Boissevain- Killarney	Man.	The Souris Plaindealer August 15, 1962 The Boissevain Recorder August 16, 1962 The New Era-Melita August 16, 1962	T.B.S.
Aug.	7	Eve.	Souris-Wawanesa	Man.	Ibid.	T.B.S.
Aug.	14	1630	Fleming	Sask.	Regina Leader Post August 15, 16, 1962 Moosomin World-Spectator August 22, 1962	R.R.T. M.D.C.
Aug.	22	Eve.	Grandview	Man.	The Grandview Exponent August 30, 1962	T.B.S.
Aug.	27	0150	Earl Grey Southey - Markinch	Sask.	Regina Leader Post August 28, 29, 1962 Craik Weekly News August 30, 1962	R.R.T.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1963

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	17	Noon	Beausejour	Man.	Beausejour Beaver May 23, 1963	T.B.S.
May	31	2045	Altona	Man.	Altona Echo June 5, 1963	T.B.S.
June	12		Maryfield Butler	Sask. Man.	Moosomin World-Spectator June 26, 1963 Maryfield News June 13, 1963 Reston Recorder June 20, 1963 Virden Empire Advance June 19, 1963	R.R.T. M.D.C. T.B.S.
June	28		Shaunavon	Sask.	The Shaunavon Standard July 3, 1963	M.D.C.
June	29	1900	Spy Hill- Ellice R.M.	Sask. Man.	Moosomin World Spectator July 3, 1963 Birtle Eye-Witness July 2, 1963 Esterhazy Miner July 4, 1963 Winnipeg Tribune July 4, 1963 Regina Leader-Post July 2, 1963	R.R.T. M.D.C. T.B.S.
June	29	1930	Glenside	Sask.	The Outlook - Outlook July 4, 1963	M.D.C.
July	1		Tantallon	Sask.	Regina Leader-Post July 2, 1963 Moosomin World-Spectator July 3, 1963	M.D.C.
July	5		Frontier	Sask.	Winnipeg Fcstr notes	R.R.T. M.D.C.
Aug.	4-10 (Date un- certain)		Kimball and Greig Lakes	Sask.	Meadow Lake Progress August 11, 1963	M.D.C.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
Aug.	26	Aft.	Porter	Sask.	The Independent - Biggar August 29, 1963	M.D.C.
Aug.	27	1815	Rose Valley	Sask.	Wadena News August 28, September 5, 1963 Tisdale Recorder August 28, 1963 Winnipeg Free Press August 28, 1963	M.D.C.
Sept.	16	1630	Onanole	Man.	Winnipeg Fcstr notes Minnedosa Tribune	

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1964

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	15	1515	Wawanesa-Nesbitt	Man.	Winnipeg Fcst notes	
May	26	1540	Winnipeg (St. James)	Man.	Winnipeg Free Press May 27, 1964	
June	4		Elma	Man.	Beausejour Beaver (Date not certain)	T.B.S.
June	25	1900	Elma	Man.	The Springfield Leader Lac Du Bonnet June 30, 1964	T.B.S.
June	26	2030	Biggar	Sask.	The Independent Biggar July 2, 1964	M.D.C.
June	26	Eve.	Luseland	Sask.	The Northwest Herald Unity July 1, 1964	M.D.C.
June	27		Davidson	Sask.	Davidson Leader July 1, 1964	M.D.C.
June	27	Late Night	Waldron	Sask.	Melville Advance July 1, 1964	R.R.T. M.D.C.
July	16	Eve.	Winkler	Man.	The Pembina Triangle Progress July 22, 1964	T.B.S.
July	18	Eve.	Nadeauville	Sask.	Swift Current Sun July 29, 1964	M.D.C.
July	18		Tompkins	Sask.	Maple Creek News July 29, 1964	M.D.C.
July	25	2000	Rosetown, Glamis Sovereign, Milden	Sask.	Rosetown Eagle July 30, 1964	M.D.C.
Aug.	1		Canora	Sask.	Canora Courier August 19, 1964	M.D.C.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
Aug.	1		Weyburn	Sask.	Regina Leader-Post August 3, 1964 Weyburn Review August 6, 1964	R.R.T.
Aug.	1		Wilcox, Estlin	Sask.	Regina Leader-Post August 3, 1964	M.D.C.
Aug.	2	0300	MacGregor-Portage	Man.	The Portage Leader August 6, 1964	T.B.S.
Aug.	2	0430	Winnipeg	Man.	The MacGregor Herald August 6, 1964	M.J.N.
Aug.	2		Ile Des Chenes	Man.	National Tornado Archive	M.J.N.
Aug.	5	Eve.	Morden	Man.	The Morden Times August 12, 1964	T.B.S.
Aug.	10	0530	Beausejour	Man.	The Beausejour Beaver August 11, 1964	T.B.S.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1965

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	5	0130	Neepawa	Man.	Neepawa Press May 7, 1965	T.B.S.
June	13		Canoe Lake, La Ronge, Nipawin Park	Sask.	Office correspondence December 21, 1965	R.R.T.
July	1	1745	Ridgeville	Man.	Carillon News - Steinbach July 9, 1965 Altona Echoe July 1965 Winnipeg Fcst notes Winnipeg Free Press July 2, 3, 1965	T.B.S.
July	11	1600	Disley	Sask.	Winnipeg Fcst notes Regina Leader-Post July 12, 1965	M.D.C. R.R.T.
July	19	Aft.	Pipestone-Minto	Man.	The Boissevain Recorder July 22, 1965	T.B.S.
July	31	Eve.	Steinbach	Man.	Carillon News - Steinbach August 6, 1965	T.B.S.
Aug.	4	Aft.	Connell Creek	Sask.	Tisdale Recorder August 11, 1965	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1966

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	4	Aft.	Holdfast	Sask.	Craik Weekly News June 9, 1966	R.R.T.
June	17	1600	Beausejour	Man.	Beausejour Beaver June 21, 1966	T.B.S.
June	18	Eve.	Plum Coulee	Man.	Altona Echo June 22, 1966	T.B.S.
July	4	Aft.	Dauphin	Man.	Dauphin Herald July 7, 1966	T.B.S.
July	4-10 (Date uncertain)		Dauphin area	Man.	Dauphin Herald July 11, 1966	T.B.S.
July	17	0300	Duck Mtn. (Wellman L.)	Man.	Dauphin Herald July 21, 1966	T.B.S.
July	17	Early A.M.	Neepawa-Eden	Man.	Neepawa Press July 19, 1966	T.B.S.
July	20	Eve.	Talmage-Creelman	Sask.	Weyburn Review July 28, 1966	R.R.T. M.D.C.
July	20	Night	Estevan	Sask.	Estevan Mercury July 27, 1966	R.R.T. M.D.C.
Aug.	16	1940	Dalmeny	Sask.	Saskatoon Star-Pheonix August 17, 1966 Saskatchewan Valley News - Rosthern August 18, 25, 1966	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1967

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	30	160	Rosburn	Man.	Rosburn Review June 1, 1967	T.B.S.
July	22	1500	MacGregor	Man.	MacGregor Herald July 27, 1967	T.B.S.
July	31	2400	Zenon Park	Sask.	Saskatoon Star-Pheonix August 2, 1967	M.D.C.
July	31	1830	Fulda	Sask.	Humboldt Journal August 3, 1967	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1968

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
April	11	Aft.	Watson	Sask.	Forecasters Notes Watson Witness	R.R.T. M.D.C.
May	30	1050	Moose Jaw	Sask.	Forecasters Notes Moose Jaw 'A' official observations	R.R.T.
May	30		Kuroki	Sask.	Wadena News June 6, 1968	M.D.C.
June	3		Roland-Miami	Man.	Pembina Triangle Progress - Winkler June 5, 1968	T.B.S.
June	12	Aft.	North Battleford	Sask.	North Battleford News June 14, 1968	M.D.C.
June	12	Aft.	Colfax	Sask.	Weyburn Review June 20, 1968	R.R.T. M.D.C.
June	20	Late Day	Rosthern	Sask.	Saskatchewan Valley News - Rosthern June 27, 1968	M.D.C.
June	28	Aft.	Petersfield	Man.	Forecasters Notes Arborg Lake Centre News July 5, 1968	T.B.S.
June	28	1615	Ostenfeld-Anola	Man.	Forecasters Notes	
July	(Date uncertain)		Kyle	Sask.	Swift Current Sun July 17, 1968	M.D.C.
July	20	1930	La Riviere	Man.	Pembina Triangle Progress - Winkler July 26, 1965 Dauphin Herald July 22, 1968 Southern Manitou Review - Cartwright July 25, 1968 Dufferin Leader - Carman July 25, 1968	T.B.S.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	20	1930	La Riviere	Man.	Killarney Guide July 25, 1968 Western Canadian July 25, 1968	T.B.S.
Aug.	5	2000 2100	Weyburn-Midale	Sask.	Weyburn Review August 8, 1968	R.R.T. M.D.C.
Aug.	18	Eve.	Cavalier-Emerson	Man.	Red River Valley Echo August 21, 1968	T.B.S.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1969

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	26	Eve.	Horton	Man.	Boissevain Recorder May 29, 1969	T.B.S.
June	4	Early Eve.	Chelan	Sask.	Hudson Bay Post-Review June 11, 1969	M.D.C.
June	4	Eve.	Ridgedale	Sask.	Tisdale Recorder June 11, 1969	M.D.C.
June	9	1600-1700	Melfort	Sask.	Melfort Journal June 18, 1969	M.D.C.
June	9	Mid Aft.	Mistatim	Sask.	Hudson Bay Post-Review June 18, 1969	M.D.C.
June	9		Sylvania	Sask.	Tisdale Recorder June 18, 1969	M.D.C.
July	25		Luseland	Sask.	Kindersley Clarion July 30, 1969	M.D.C.
Aug.	2	1630	Sharncliffe	Man.	Lake Centre News Arborg August 29, 1969	M.J.N.
Aug.	3	1927	Rosser-Wpg.	Man.	Winnipeg Tribune August 5, 1969 Winnipeg Free Press August 5, 1969 Stonewall Argus August 6, 1969	T.B.S. P.B.L.
Aug.	3	Eve.	Winnipeg (Assiniboia)	Man.	Ibid.	P.B.L.
Aug.	5	Eve.	North Portal-Oxbow	Sask.	Oxbow Herald August 21, 1969 Estevan Mercury August 13, 1969	R.R.T. M.D.L.
Aug.	25	1735	Lewvan	Sask.	Regina Leader-Post August 26, 1969 Swift Current Sun August 27, 1969	R.R.T.
Aug.	27	1630	Vista	Man.	Rosburn Review September 4, 1969	T.B.S.
Sept.	6	Eve.	Treherne	Man.	Treherne Times September 11, 1969	T.B.S.
Sept.	20	Night	Drake	Sask.	Humboldt Journal	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1970

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	24	1900	Krydor	Sask.	Saskatoon Star-Pheonix June 25, 1970 Swift Current Sun June 26, 1970	R.R.T. M.D.C.
June	27	1600	Buchanan	Sask.	Canora Courier July 15, 1970	M.D.C.
July	5	Eve.	Canora Gorlitz	Sask.	Canora Courier July 8, 15, 1970 Yorkton Enterprise July 8, 1970	R.R.T. M.D.C.
July	6		Portreeve	Sask.	Swift Current Sun July 10, 1970	R.R.T.
July	6	Late Day	Rosthern	Sask.	Saskatchewan Valley News - Rosthern July 9, 1970	M.D.C.
July	9	1800	Woodnorth	Man.	Reston Recorder July 16, 1970	T.B.S.
July	13-14	Late Eve. Early A.M.	Outram	Sask.	Estevan Mercury July 15, 1970	R.R.T. M.D.C.
July	26	0030	Ladywood - Brokenhead	Man.	Beausejour Beaver August 4, 1970	T.B.S.
July	26	2300	Morden-Carman	Man.	Red River Valley Echo July 29, 1970 Dufferin Leader - Carman July 30, 1970 Pembina Triangle Progress July 29, 1970	T.B.S.
July	27		Wilcox	Sask.	Regina Leader-Post July 28, 1970	M.D.C.
Aug.	18	2200	Holland	Man.	Severe Weather Log - 1970	
Aug.	31	1930	Stephenfield (near Carman)	Man.	The Dufferin Leader - Carman September 3, 1970	T.B.S.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1971

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	1	Eve.	Robsart	Sask.	Maple Creek News July 6, 1971	M.D.C.
July	6	1600	Khedive	Sask.	Weyburn Review July 8, 1971	R.R.T. M.D.C.
July	20		Choiceland	Sask.	Saskatoon Star-Pheonix July 21, 1971	D.B.
July	21		Portage La Prairie	Man.	National Tornado Archive	M.J.N.
July	23	2030	Luseland	Sask.	Meadow Lake Progress - Unity July 28, 1971	M.D.C.
Aug.	2		Onion Lake	Sask.	Lloydminster Times August 18, 1971	D.B.
Aug.	8	0400	Barthel-Makwa-Morin Creek - Meadow Lake Goodsoil	Sask.	Meadow Lake Progress August 11, 1971	D.B. M.D.C.
Aug.	8		Loon Lake	Sask.	Lloydminster Daily Times Meadow Lake Progress August 11, 1971	D.B.
Aug.	14	2330	Rocanville	Sask.	Climat Observers Notes	M.D.C.
Aug.	16	2330	Grunthal	Man.	Severe Weather Notes	
Sept.	3	2100	Tilston-Scarth	Man.	Reston Recorder September 9, 1971	T.B.S.
Sept.	11	2030	Fertile	Sask.	The Redvers Optimist September 15, 1971	R.R.T.
Sept.	11		Creelman	Sask.	Weyburn Review September 16, 1971	D.B.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1972

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	8		Turtleford	Sask.	North Battleford News - Optimist May 19, 1972	D.B.
June	4		Carnduff	Sask.	Carnduff Gazette Post - News June 8, 1972 Oxbow Herald June 7, 1972	R.R.T. M.D.C.
July	25	1800	Assiniboia Davyroyd	Sask.	Assiniboia Times August 2, 1972	R.R.T. M.D.C.
Aug.	5		Yellow Grass	Sask.	Weyburn Review August 10, 1972	M.D.C.
Aug.	15	Aft.	Killarney	Man.	Killarney Guide August 23, 1972	T.B.S.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1973

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
Apr.	20	1540	Winnipeg (Westwood)	Man.	Office Correspondence January 14, 1974	T.B.S.
May	5	Night	Deloraine	Man.	Deloraine Times & Star May 9, 1973	T.B.S.
May	19-26 (Date uncertain)		Beausejour	Man.	Beausejour Beaver May 29, 1973	T.B.S.
June	2		Carlyle-Oxbow	Sask.	Oxbow Herald June 6, 1973 Carlyle Observer June 7, 1973	R.R.T. M.D.C.
June	8		Frenchville	Sask.	Leader News June 8, 1973	M.D.C.
June	10		Foam Lake	Sask.	Saskatoon Star-Pheonix June 12, 1973	D.B.
June	12		Foam Lake	Sask.	Canora Courier June 13, 1973	M.D.C.
June	14	1800	Landmark-Lorette	Man.	The Carillon Steinbach June 20, 1973	T.B.S.
June	14	Night	Pinkham	Sask.	Kindersley Clarion June 20, 1973	M.D.C.
June	14		Winnipeg (St. Boniface)	Man.	Office Correspondence June, 14, 1973	P.B.L.
June	15	2000	Cypress River	Man.	Office Correspondence June 14, 1973 Glenboro Gazette June 20, 1973	T.B.S.
June	30		Salter	Sask.	The Independent Biggar July 4, 1973	M.D.C.
July	1	1200	Pierson	Man.	The New Era - Melita July 5, 1973	T.B.S.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	1	Aft.	Yorkton	Sask.	Office Correspondence	M.D.C.
July	5	0200	Kelvington	Sask.	Hudson Bay Post-Review July 11, 1973 Kelvington Radio July 12, 1973	M.D.C.
July	5		Bulyea	Sask.	SHARP (Sask. Hail Research Proj.)	D.B.
July	6		Watson	Sask.	Watson Witness July 11, 1973	D.B.
July	6		Yellow Grass	Sask.	Weyburn Review July 12, 1973	M.D.C.
July	7	0400	Halbstadt Steinbach Hadashville	Man.	Steinbach Carillion July 11, 1973 Red River Valley Echo July 11, 1973	T.B.S.
July	7	0210	Winnipeg (Assiniboia) Niverville	Man.	Office Correspondence January 14, 1974	P.B.L.
July	28		Gilbert Plains	Man.	Office Correspondence	P.B.L.
July	28	1800	Dauphin	Man.	Office Correspondence	P.B.L.
Aug.	4		Highgate	Sask.	Lloydminster Times August 15, 1973	M.D.C.
Aug.	18		Weyburn	Sask.	Weyburn Review August 23, 1973	R.R.T. M.D.C.
Aug.	19	2330	Winnipeg (Ft. Garry, St. Vital) Winnipeg Beach	Man.	Office Correspondence Jan. 14, 1974	P.B.L.
Aug.	27	Aft.	Yorkton	Sask.	Yorkton Enterprise August 27, 1973	R.R.T. M.D.C.
Aug.	27	Noon	40 Mi. N. Regina	Sask.	Severe Wx. Log - 1973	M.D.C.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1974

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	19	1330	Melita	Man.	Paper name unknown Melita, June 27, 1974	M.J.N.
June	25		Veregin	Sask.	Canora Courier July 3, 1974	M.D.C.
June	25	2000	Cana	Sask.	Melville Advance July 3, 1974	R.R.T. M.D.C.
June	25		Melfort	Sask.	Saskatoon Star-Pheonix July 10, 1974 Kinistino Post July 3, 1974	D.B.
June	26		Lemsford	Sask.	Leader News August 21, 1974	M.D.C.
July	10		Deschambault Lake	Sask.	Hydrology Report (Sask. Env.) HYD 8-12	M.D.C.
July	11	Aft.	Estevan	Sask.	Estevan Mercury July 17, 1974 Regina Leader-Post July 12, 1974 Moose Jaw Times-Herald July 17, 1974	M.D.C.
July	30		Marengo	Sask.	Kindersley Clarion August 14, 1974	M.D.C.
Aug.	11		Francis	Sask.	SHARP Report	M.D.C.
Aug.	23		Goodsoil	Sask.	Meadow Lake Progress August 28, 1974	D.B.
Aug.	29	1400- 1500	Dominion City	Man.	Office correspondence August 30, 1974	R.R.T.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1975

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	24	1530	Carrot River	Sask.	Carrot River Observer June 4, 1975	R.R.T. D.B.
June	20	Aft.	Willowbrook Birmingham	Sask.	Yorkton Enterprise June 25, 1975 Melville Advance July 2, 1975	R.R.T. M.D.C.
June	20	1800	Morden Myrtle	Man.	Dufferin Leader - Carman June 26, 1975 Pembina Times - Morden June 25, 1975 Red River Valley Echo July 25, 1975	P.B.L.
June	20	1900	Winnipeg	Man.	Office correspondence June 20, 1975	P.B.L.
June	20	Eve.	N. Lk. Wpg.	Man.	Pilot (Transair) Report	P.B.L.
June	20		Ituna	Sask.	Ituna News June 26, 1975	D.B.
June	24	1630	Meota	Sask.	North Battleford News- Optimist June 27, 1975 Maidstone Mirror July 10, 1975	M.D.L.
June	24	1730	Fielding	Sask.	North Battleford News- Optimist July 1, 1975	M.D.C.
June	25	1700	Regina	Sask.	Regina Weather Observations	R.R.T. M.D.C.
June	25		Rockglen	Sask.	Regina Leader-Post June 26, 1975	D.B.
June	27	2230	Carlyle	Sask.	Carlyle Climat Observer July 3, 1975	R.R.T. M.D.C.
June	27	Eve.	Weyburn-Midale	Sask.	Weyburn Review July 3, 1975	R.R.T.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	27		Neudorf	Sask.	Melville Advance July 16, 1975	M.D.C.
June	27	Eve.	Stockholm	Sask.	Melville Advance July 9, 1975	M.D.C.
June	27	2230	Dubuc	Sask.	Melville Advance July 9, 1975	M.D.C.
June	27		Kennedy	Sask.	Whitewood Herald July 2, 1982	D.B.
June	27		Viewfield-Benson	Sask.	Weyburn Review July 3, 1975	D.B.
June	27		Melville	Sask.	Melville Advance July 2, 1975	D.B.
June	27		Rocanville- Tantallon	Sask.	Moosomin World-Spectator July 9, 23, 1975	D.B.
June	27		Oxbow	Sask.	Oxbow Herald July 9, 1975	D.B.
July	4	Morn.	Primate	Sask.	Saskatoon Star-Pheonix July 5, 1975 Unity Northwest Herald July 9, 1975	M.D.C.
July	5		Fork River	Man.	Paper and dateline unknown	M.J.N.
July	13		Prelate	Sask.	Leader News July 30, 1975	M.D.C.
July	15	2020	Swift Current	Sask.	Swift Current Sun. July 17, 1975	R.R.T. M.D.C.
July	16	Night	Rivers	Man.	Brandon Sun July 18, 1975	P.B.L.
July	16		Canora	Sask.	Canora Courier August 6, 1975	M.D.C.
July	16		Oxbow	Sask.	SHARP Report	D.B.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	29		Englefeld	Sask.	Watson Witness August 13, 1975	D.B.
July	29		Moose Jaw	Sask.	Moose Jaw Times-Herald August 1, 1975	D.B.
July	30		Oak Ridge	Man.	Killarney Guide August 6, 1975	
Aug.	2	1700	Dundurn	Sask.	Davidson Leader August 13, 1975	M.D.C.
Aug.	2	1700	Perdue	Sask.	The Independent Biggar August 6, 1975	M.D.C.
Aug.	2	1800	Laura	Sask.	The Outlook August 14, 1975	M.D.C.
Aug.	8		Estuary	Sask.	Leader News August 13, 1975	M.D.C.
Aug.	11	Morning	Neepawa	Man.	Neepawa Press August 14/27, 1975	M.J.N.
Aug.	24	Aft.	South of Birtle	Man.	Newspaper report (Source Unknown)	R.R.T.
Aug.	24	1600	Hazelbrige-Beausejour	Man.	Winnipeg Free Press (Dateline unknown)	M.J.N.
Aug.	24		Winnipeg	Man.	Winnipeg Free Press (Dateline unknown)	M.J.N.
Aug.	31	1330	Sprague Middleboro	Man.	Newspaper report (Source Unknown)	R.R.T.
Sept.	6	Aft.	Winnipeg (St. Vital)	Man.	Newspaper Report (Source Unknown)	R.R.T.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1976

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	3	2130	Swift Current	Sask.	Regina Leader-Post June 4, 1976 Swift Current Sun June 9, 1976	R.R.T. P.B.L.
June	3		Grenfell	Sask.	Grenfell Sun June 9, 1976	D.B.
June	3		Davidson-Girvin	Sask.	Craik Weekly News June 10, 1976 Davidson Leader June 9, 1976	D.B.
June	4	Early A.M.	Watrous	Sask.	Regina Leader-Post June 4, 1976 Saskatoon Star-Pheonix June 5, 1976	R.R.T. P.B.L.
June	5		North Battleford	Sask.	North Battleford News-Optimist June 8, 1976	D.B.
June	6	1630	Winnipeg (Assiniboia Downs and Charleswood)	Man.	Winnipeg Free Press June 7, 1976	P.B.L.
July	4		Saskatoon	Sask.		P.B.L.
July	4		Hodgeville	Sask.	Regina Leader-Post July 5, 1976	D.B.
July	8	Eve.	NE Melita	Man.	Melita Paper July 15, 1976	
July	10		Summerberry	Sask.	SHARP Report	D.B.
July	19	1800	Graysville	Man.	Carman Paper July 21, 1976	P.B.L.
Aug.	7		Melita	Man.	Newspaper article (Source Unknown)	

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1977

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
Aug.	16		Fosston	Sask.	Kelvington Radio August 19, 1976 Wadena News August 19, 1976	D.B.
Aug.	16		Carnduff	Sask.	Carnduff Gazette- Post News August 29, 1976	D.B.
Aug.	26		Baldur - Elm Creek	Man.	Newspaper article (Source Unknown)	P.B.L.
Aug.	26	Early Eve.	Macdonald - Portage La Prairie	Man.	Newspaper article (Source Unknown)	P.B.L.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1977

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
April	17		Dorothy Lake	Man.	Office Correspondence	
May	15	1830-1900	Solsgirth-Rosburn	Man.	Public Report of 2 torn. (Office Correspondence)	
May	18	2000	Pilot Mound	Man.		P.B.L.
May	24	1700-1730	Briercrest	Sask.	(Office Correspondence) Regina Leader-Post May 25, 1977 Moose Jaw Times-Herald May 26, 1977	
May	24	1800	Moose Jaw	Sask.	Report from CFB Moose Jaw (Office Correspondence)	
May	24	Late Eve.	Lafleche	Sask.	Assiniboia Times June 1, 1977	D.B. P.B.L.
May	24		McCord	Sask.	Assiniboia Times June 1, 1977	D.B.
May	25	0145	45 Mi. NW Regina	Sask.	Office Correspondence	R.R.T.
May	25	1715-	Zehner	Sask.	Regina Leader-Post May 26, 1977	
May	25	1730	Southey	Sask.	Regina Leader-Post May 26, 1977 Office Correspondence	
May	25	1800	Govan	Sask.	Regina Leader-Post May 26, 1977	
May	25	0145	Bethune-Findlater	Sask.	Regina Leader-Post May 25-26, 1977 Office Correspondence	
May	25	1700-1800	25 Mi. SE of Moose Jaw	Sask.	Office Correspondence Regina Leader-Post May 27, 1977	D.B.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	25		Mikado	Sask.	Canora Courier June , 1977	D.B.
June	28	1905	Portage La Prairie	Man.	Helicopter pilot CFB Moose Jaw YPG Official Obs. 290048Z Office Correspondence	
July	6		Prince Albert	Sask.	Prince Albert Herald	D.B.
July	9		Birsay	Sask.	Regina Leader-Post July 11, 1977 The Outlook July 21, 1977	D.B.
July	10		Glen Ewen	Sask.	Carnduff Gazette - Post and News July 20, 1977	D.B.
July	10		Frankslake	Sask.	Regina Leader-Post July 11, 1977	D.B.
July	13	1330	St. Adolphe	Man.	Newspaper article (Source Unknown)	P.B.L.
July	17		Nipawin-White Fox	Sask.	Nipawin Journal August 3, 1977	D.B.
July	18	2000	St. Malo-Rosa	Man.	Major tornado 3 killed	
July	27		Radville	Sask.	Weyburn Review July 28, 1977	D.B.
Aug.	4	0745	15-20 Mi. NW George Is.	Man.	Office Correspondence	
Aug.	23	0900 1000	40 NW Winnipeg (Lake Manitoba)	Man.	Office Correspondence Pilot report	
Sept.	26	1630	Viscount	Sask.		P.B.L.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1978

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	10	1900	Alsask	Sask.	Climate Observer	P.B.L./ R.R.T.
May	25	1930	Winnipeg (Transcona)	Man.	Severe Weather Report 1978 Winnipeg Tribune May 26, 1978	P.B.L.
June	5	2030	Warman	Sask.	Saskatoon Star-Pheonix June 6, 1978	R.R.T. P.B.L.
June	5	2200	Brandon	Man.	Severe Weather Log 1978	
June	9	1815	Saskatoon	Sask.	Saskatoon Weather Observer	R.R.T. P.B.L.
June	9	Eve.	Craven	Sask.		P.B.L./ R.R.T.
June	11		Kylemore- Fishing Lake	Sask.	Foam Lake Review June 21, July 5, 1978	D.B.
June	19	1740	Niverville	Man.	Severe Weather Log 1978	
		1755-	St. Pierre -	Man.	" " " "	
		1855	St. Anne - Ostenfeld			
		1800-	Aubigny -	Man.	" " " "	
		1821	Niverville			
		2000	Seven Sisters	Man.	" " " "	
		1800	Balmoral	Man.	" " " "	
June	24	1835	Carman-Roland	Man.	" " " "	
June	27	2115	St. Ambroise	Man.	" " " "	
July	5		Rosengart-Gretna New Bergthal	Man.		
July	10	1225	Nemeiben Lake	Sask.	Teletype Message UACN10 CYQR 101825Z	P.B.L.
July	10		Eastend	Sask.	Eastend Enterprise July 13, 1978	D.B.
July	11	1610	Meadow Lake	Sask.	YLJ Observations and PIREP Saskatchewan Agric. - J. Brown	R.R.T.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1979

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	13		Molson	Man.	Severe Weather Log-1978	
July	14		Dundurn	Sask.	Davidson Leader July 19, 1978	D.B.
July	14		Lacadena	Sask.	Swift Current Sun July 25, 1978	D.B.
July	15		Bethlehem	Sask.	The Outlook August 17, 1978	D.B.
July	17	1409	St. Ambroise	Man.	Severe Weather Log-1978	
		1611	Polar Pt.		" " " "	
		1615	Myrtle		" " " "	
		1830	Whitemouth		" " " "	
			Oasis Resort (between Cooks Creek and Dencroft)		" " " "	
Aug.	25		Carnduff	Sask.	Carnduff Gazette-Post News September 6, 1978	

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1979

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
May	21	1745	Regina	Sask.	Severe Weather Log 1979 Regina Leader-Post May 22, 1979	
May	25	Eve.	Rathwell	Man.	The Times Treherene May 31, 1979	
June	13		Prince Albert	Sask.	Severe Weather Log 1979 July 3, 1979	
June	13		Nipawin	Sask.	Nipawin Journal June 20, 1979	D.B.
June	21		Regina	Sask.	Severe Weather Log 1979 Official Weather Obs, YQR Regina Leader-Post June 22, 1979	
June	24		Saskatoon (40 Km W) Radisson	Sask.	Severe Weather Log - 1979 Saskatoon Star-Pheonix June 25, 1979 North Battleford News-Optimist July 27, 1979	
June	30		Robsart	Sask.	Severe Weather Log - 1979 Climate Observations Robsart	
June	30		Lafleche	Sask.	Moose Jaw Times-Herald July 3, 1979	D.B.
June	30		Gull Lake	Sask.	Gull Lake Advance July 4, 1979	D.B.
July	2		Spruce Home	Sask.	Prince Albert Herald July 3, 1979	D.B.
July	3		Killdeer	Sask.	Assiniboia Times July 11, 1979 Moose Jaw Times-Herald July 10, 1979	D.B.
July	3		Glentworth	Sask.	Assiniboia Times July 11, 1979	D.B.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	10		Glasnevin	Sask.	Assiniboia Times July 18, 1979 Hudson Bay Post-Review August 1, 1979	D.B.
July	11	2020	The Pas	Man.	Severe Weather Log - 1979 Winnipeg Free Press June 12, 1979 Opasquia Times July 13, 1979	
Aug.	1	1935	St. Francois Xavier	Man.	Severe Weather Log - 1979 Winnipeg Free Press August 2-3, 1979	
Aug.	8	1705	Regina	Sask.	Severe Weather Log - 1979 Regina Leader-Post Aug. 9-10, 1979	
Aug.	28	1645	Lumsden - Regina - Pilot Butte - White City	Sask.	Severe Weather Log - 1979 Office Correspondence August 30, 1979 Regina Leader-Post August 29, 1979	
Sept.	1		Fairford	Man.	Severe Weather Log - 1979	
Sept.	4		Emma Lake	Sask.	Prince Albert Herald September 5, 1979	D.B.
Sept.	9	1230	Carlyle (Manor-Wauchope)	Sask.	Severe Weather Log - 1979 Carlyle Climat Obs. Saskatoon Star-Pheonix September 10, 1979 Regina Leader-Post August 29, 1979	

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1980

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
April	6	1920	Altona	Man.	Winnipeg Tribune April 8, 1980	
May	25	1750	Creelman	Sask.	Severe Weather Log - 1980 Regina Leader-Post May 27, 1980 Weyburn Review May 29, 1980	D.B.
May	25		Carnduff	Sask.	Regina Leader-Post May 26, 1980 Swift Current Sun May 27, 1980	D.B.
May	25		Dubuc	Sask.	Melville Advance June 4, 1980 Esterhazy Potashville Miner-Journal June 4, 1980	D.B.
May	26		Quill Lake	Sask.	Wadena News June 5, 1980	D.B.
May	28	1200	Morden	Man.	Severe Weather Log - 1980	
June	11		South of Estevan	Sask.	Severe Weather Log - 1980	
June	23		Ebenezer	Sask.	Canora Courier July 9, 1980	D.B.
June	23		Invermay	Sask.	Canora Courier July 9, 1980	D.B.
June	23		Francis	Sask.	Regina Leader-Post June 24, 1980 Weyburn Review June 26, 1980	D.B.
July	6	1505	Prince Albert	Sask.	Star Pheonix Prince Albert Herald July 7, 1980	M.J.N.
July	10	2230	Fairy Glen	Sask.	Melfort Journal July 16, 1980	D.B.

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
July	26	1855	Fairford Indian Res.	Man.	Severe Weather Log - 1980	
July	28		N. Battleford	Sask.	North Battleford News-Optimist July 29, 1980	D.B.
July	29	2245	Bowman	Man.	Severe Weather Log - 1980	
Aug.	10	1230	20 Mi N Gimli (Lake Winnipeg)	Man.	Severe Weather Log - 1980 Gimli Weather Station Staff	
Aug.	11	1800	Portale	Sask.	Severe Weather Log - 1982	
		1800	Lloydminster	Sask.		
		2042	Prince Albert	Sask.		
Aug.	14	1900	Decker	Man.	Severe Weather Log - 1982	
Aug.	14		Danholm-Ruddell	Sask.	New Optimist, N. Battleford August 17, 1982	H.J.B.
Aug.	14		Battleford	Sask.	Moore Jaw Times Herald August 17, 1982	H.J.B.
Aug.	15	1500	Chamattawa	Man.	Severe Weather Log - 1982	
Aug.	18	2030	Hardy-Weyburn	Sask.	Weyburn Review August 23, 1982 Leader Post Review August 19, 1982	H.J.B.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1981

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	4	Late Aft.	Melita	Man.	Melita News June 11, 1981	M.J.N.
July	2	2000	Grandview	Man.	Severe Weather Log - 1980	
July	14		Govan	Sask.	Globe and Mail - Toronto July 16, 1981	M.J.N.
July	15		Notre Dame - Des Lourdes	Man.	July Climate Summary Winnipeg	Monthly Summary
July	29	2100	Regina	Sask.	Surface Weather Observations	
Aug.	5	1600	Kronau	Sask.	Severe Weather Log - 1981	
Aug.	16	2015	Pense	Sask.	Severe Weather Log - 1981	
Aug.	30	1800	Plumas	Man.	Aug. Climate Report, Plumas	
May	26		Quill Lake	Sask.	Wadena News June 5, 1980	D.B.
May	28	1200	Morden	Man.	Severe Weather Log - 1980	
June	11		South of Estevan	Sask.	Severe Weather Log - 1980	
June	23		Ebenau	Sask.	Canora Courier July 9, 1980	D.B.
June	23		Invermay	Sask.	Canora Courier July 9, 1980	D.B.
June	23		Francis	Sask.	Regina Leader-Post June 24, 1980 Weyburn Review June 26, 1980	D.B.
July	6	1503	Prince Albert	Sask.	Star Phoenix Prince Albert Herald July 7, 1980	M.J.N.
July	18	2130	Poplar Glen	Sask.	Walford Journal July 16, 1980	D.B.

CHRONOLOGICAL TORNADO LISTINGS
MANITOBA AND SASKATCHEWAN
1982

<u>Month</u>	<u>Day</u>	<u>Local Time</u>	<u>Reference Town(s)</u>	<u>Province</u>	<u>Source</u>	<u>Enumerator</u>
June	6	1840	Prince Albert	Sask.	Severe Weather Log - 1982	
June	15		Parkbeg	Sask.	AES Climat Observer Report For June 1982	M.J.N.
July	1		Golden Prairie	Sask.	Maple Creek News July 13, 1982	M.J.N.
July	16	2330	Morden	Man.	" " " "	
		2223	Portage La Prairie	Man.	" " " "	
		2230	St. Alphonse	Man.	" " " "	
		1956	Melita	Man.	" " " "	
		Late Eve.	Emerson	Man.	" " " "	
		Late Eve.	Sandilands Forest - Hadashville	Man.	" " " " Manitoba Forestry	
July	16	1530	Colgate	Sask.	Weyburn Review July 21, 1982	M.J.N.
Aug.	11	1800	Ponteix	Sask.	Severe Weather Log - 1982	
		1800	Lloydminster	Sask.	" " " "	
		2042	Prince Albert	Sask.	" " " "	
Aug.	14	1900	Decker	Man.	Severe Weather Log - 1982	
Aug.	14		Denholm-Ruddell	Sask.	New Optomist, N. Battleford August 17, 1982	M.J.N.
Aug.	14		Battleford	Sask.	Moose Jaw Times Herald August 17, 1982	M.J.N.
Aug.	15	1500	Shamattawa	Man.	Severe Weather Log - 1982	
Aug.	18	0030	Hardy-Weyburn	Sask.	Weyburn Review August 25, 1982 Leader Post Regina August 19, 1982	M.J.N.