

Outline Meteorological Report

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TABLE . FRONTAL PASSAGE TIMES AND INTERVENING EVENTS

CP INDICATES CONTINENTAL POLAR AIR MASS, MP INDICATES MARITIME POLAR (PACIFIC) AIR MASS, MT INDICATES MARITIME TROPICAL AIR MASS

PASSAGE TIME (GST) VALUES BEHIND SLASHES GIVE DIRECTION, IN DEGREES, FROM WHICH FRONT APPROACHED.

FOLLOWING WEATHER EVENT

	COLD FRONT	WARM FRONT	AIR MASS	
0230 1 JUNE/040			CP	
R0600 2 JUNE/240			MP	Domination by high pressure
0530 8 JUNE/330			MP	Front stalled just ^{South} of Duluth
*1230 9 JUNE/190			MP	Front moved north, then retreated
*1930 9 JUNE/360			MP	Ridging
0530 11 JUNE/020			CP	Ridging
*2200 12 JUNE/210			MP	Front stalled over C. Minn., then moved north
0530 13 JUNE/240			MP	Southwesterly flow behind, wrap-around
1830 13 JUNE/250			CP	Ridge passage
1730 17 JUNE/290			CP	Ridge passage
1230 22 JUNE/320			CP	Front stalled over Region
*1730 22 JUNE/140			CP	Strong southerly flow
*0330 25 JUNE/230			MP	Backed up as low formed over Region
*0900 25 JUNE/050			CP	Moved south, old Front 7 advanced
R0230 26 JUNE/360			CP	Old Front 7 - advanced, then retreated
*2130 26 JUNE/240			MP	Control by cold low north, then old Front 7 advanced
RR 0555 29 JUNE/030			CP	High center slowly moved in and stalled until July 6
1243 6 JULY/310			MP	Ridge passage
1030 9 JULY/220			MP	Warm sector barely caught over part of Region
01430 9 JULY/270			MP	Sector between MP, CP fronts
1830 10 JULY/330			CP	Ridge passage -- high to north
*1530 13 JULY/250			MP	Sector between MP, CP fronts
0730 15 JULY/320			CP	Ridge passage -- high to south
2030 19 JULY/320			CP	High passage over Region
*1930 21 JULY/220			CP	Weak return of old Front 16
2030 22 JULY/310			MP	Sector between MP, CP fronts
0630 24 JULY/040			CP	Front stalled over Minnesota, then retreated
*1330 25 JULY/220			MP	Warm sector
2130 25 JULY/320			MP	Ridge passed slowly
0430 4 AUG/010			CP	High passed over Region
2230 18 AUG/300			MP	Sector between MP, CP Fronts

1976			
20.	0130 12 AUG/360	CP	High passage over Region
	*0530 18 AUG/240	MP	Warm sector
21.	0530 0130 21 AUG/310	MP	Sector between CP, MP fronts
22.	1803 21 AUG/020	CP	At edge of high to NE
	*0830 22 AUG/240	MP	Warm sector
23	0825 26 AUG/280	MP	Weak ridge passage
24	0630 27 AUG/270	MP	Sector between MP, CP fronts
25	1030 28 AUG/330	CP	Ridge passage
26,	1330 31 AUG/030	CP	Ridge passage
	*1730 2 SEP/240	CP	Warm sector
27	0730 3 SEP/310	CP	High passage over region
	*0730 6 SEP/270	CP	Warm sector
28.	1940 7 SEP/290	CP	High passage to south
29.	0630 13 SEP/700	CP	High passage to north
30.	0330 19 SEP/320	CP	Joint between fronts -- high remained west
31.	1630 21 SEP/040	CP	High remained to west as new surge moved south
32.	1230 22 SEP/330	CP	Another fresh surge
33.	11230 24 SEP/360	CP	High passage over Region
34.	0730 26 SEP/370	CP	High passage to south
35.	0730 29 SEP/360	CP	High to north grazed Region
	*0630 30 SEP/270	CP	Warm sector
36.	0530 1 OCT/320	MP	High passage over Region
37.	2330 20 OCT/360	CP	High passage to northwest
38.	0530 4 OCT/280	MP	Quebec-Mexico ridge passage
39.	2330 8 OCT/290	CP	Small ridge passage
	*1130 10 OCT/250	MP	Warm sector
40	0330 12 OCT/290	MP	Ridge passage
	*1030 14 OCT/240	MP	Warm sector
41	0230 14 OCT/270	CP	Big High passed over region
42	1030 20 OCT/290	CP	Enormous continental high
43	1130 29 OCT/340	MP	Ridge passage
	*0930 1 NOV/250	MP	Warm sector
44	2230 1 NOV/300	MP	Ridge passage
45	0830 2 NOV/360	CP	Large high passed to south

1976

46. 1030 5 NOV/300

CP Ridge passage

47. 2130 5 NOV/350

CP Large high passage to south

* 0030 9 NOV/250

MP Warm sector

48. 1230 9 NOV/360

CP Large high mound south of region

49. 1130 16 NOV/270

MP Ridge passage

50. 0830 18 NOV/280

MP Ridge passage

51. 1330 20 NOV/270

MP Ridge passage

52. 1730 20 NOV/350

CP Ridge passage

* 0930 25 NOV/270

MP Warm sector

53. 1430 25 NOV/330

CP High passage over Region

* 1151 4 DEC/270

MP Warm sector

54. 1630 4 DEC/320

CP Large ridge passage

* 1430 9 DEC/220

MP Warm sector

55. 2130 9 DEC/310

CP Ridge passage

* 1230 11 DEC/220

MP Warm sector

56. 1830 11 DEC/310

CP High passage

* 2130 13 DEC/220

MP Warm sector

57. 2330 14 DEC/360

CP Ridge passage

* 1030 15 DEC/220

MP Retreat, then readvanced Front 57

58. 1930 16 DEC/040

CP Ridge passage

* 2030 17 DEC/220

MP Warm sector

59. 2130 18 DEC/320

CP High passage to south

* 1730 21 DEC/270

MP Warm sector

60. 0230 22 DEC/290

CP Ridge passage to south

* 0930 24 DEC/290

MP Warm sector

61. 1230 24 DEC/330

CP Ridge domination

1977

	*2100 SJAN/270	AIR MASS MP	Warm sector
1	08126JAN/320	CP	Ridge passage to south
2	1930 7JAN/270	CP	High pressure passage to south; slow movement; followed by wave passage to south of Region on 15th; then ridge domination to 19th
	*1800 19JAN/270	MP	Warm sector
3	1025 20JAN/360	CP	High pressure domination
4	0630 23JAN/270	MP	No ridge movement -- ridge stationary to west
5	022826JAN/330	CP	High pressure passage over Region
	*121227JAN	MP	Warm sector
6	1630 27JAN/320	CP	Stagnant w. Canada - Gulf of Mexico ridge
	*0230 2FEB/270	MP	Warm sector
7	1230 2FEB/320	CP	Passage of high near region on Feb 7th
	*1330 8FEB/270	MP	Warm sector with ridging
8	0530 9FEB/360	CP	Front just edged over
	*1230 9FEB/270	MP	Warm sector
9	*0430 12FEB/260	MP	Ridging
10	1330 13FEB/040	CP	High pressure moved over region
	*1130 1400 16FEB/270	MP	Warm sector
11	1430 17FEB/360	CP	Ridging
	*1430 19FEB/270	MP	Warm sector
	1430 19FEB/320	CP	Ridge passage
12	1830 21FEB/330	CP	Ridging, then wave passage to south; then high passage to the south on March 1st, then another wave passage to south on 4th; then ridge passage on 6th
	*1630 6MAR/220	MP	Warm sector
13	0449 9MAR/270	MP	Ridging
	*0600 12MAR/140	MP	wave passed along front over general area
14	2030 14MAR/270	MP	Ridge passage
15	2145 15MAR/330	CP	Ridging
	*0100 17MAR/200	MP	Ridging
16	0430 17MAR/360	CP	Ridging
	*1330 18MAR/200	MP	Warm sector

1977		
6. 2030 19 MAR/320	CP	High passage over Region
7. 0600 22 MAR/330)	CP	Ridging
* 1030 22 MAR/190	CP	Front 17 retreated then readvanced
17) 1745 22 MAR/360	CP	Large ridge passage
8. 2130 26 MAR/290		Ridging; then wave passage to south on 28th-30th then high passage to south
9. * 0030 2 APR/270	CP	Ridging; then low passage to south
10. 0247 7 APRIL/020	CP	High passage over Region following low center passage over Region
* 0600 10 APR/220	MP	Warm sector
11. 2230 10 APRIL/320	MP	Ridging
12. 1530 12 APR/300	MP	High passage over Region
13. 1045 16 APR/290	MP	Ridging
14. 0930 18 APR/290	MP	Front stalled over Wisconsin, Lake Superior until 21st; then, on 22nd, high passage over Region
15. 0630 23 APR/320	CP	Passage of large high to south
16. 0730 27 APR/360	CP	Passage of high to north
17. 0448 1 MAY/320	CP	High passage over Region, then wave to south on 5th
18. 1130 5 MAY/020	CP	High passage over Region
19. 2230 8 MAY/020	CP	Ridging from High passing to northeast
* 0230 10 MAY/290	CP	Strong domination by deep ridge of high pressure
20. 0113 20 MAY/270	MP	Ridging
* 0830 22 MAY/150	MP	Warm sector
21. 1121 23 MAY/220	MP	Ridging
* 0600 (w) 25 MAY/220	MP	Long stay in warm sector due to deep high over Lake Superior, followed by wave passage to south on 31st
22. 0430 1 JUNE/020	CP	High passage over Region
0730 3 JUNE/280	MP	Short warm sector stay
23. 1430 3 JUNE	MP	Small high passage over Region
24. 1530 5 JUNE	CP	High passage to south; then wave passage to south; then high passage over Region

35. *0230 11 JUNE / 320

CP

High passage to north; then stall, rid low to north, then ridge passage

36. 0917 16 JUNE / 280

MP

Ridge passage

37. 0730 17 JUNE / 310

CP

slow high passage

*1030 23 JUNE

MP

warm sector

38. 0530 24 JUNE / 310

CP

High passage over Region

39. 1530 26 JUNE / 320

CP

High passage to south

40. *0330 30 JUNE / 290

CP

High passage to south

41. 1130 3 JULY / 300

MP

Front stalled over central Minnesota, Wisconsin until 6th,

42. 0630 7 JULY / 280

CP

High passage over Region

43. 1130 11 JULY / 260

CP

High passage to south

*0330 14 JULY / 220

MT

warm sector

44. 0730 14 JULY / 290

CP

High passage over Region followed by several small systems.

45. 1930 16 JULY / 300

CP

Ridging

*1000 17 JULY / 180

MT

Warm Sector

46. 0149 20 JULY / 320

CP

High passage over Region

47. 1330 24 JULY / 320

CP

High passage over Region

48. 0330 28 JULY / 320

MP

Ridging

49. 0545 29 JULY / 350

CP

High passage to north; front stalled over Iowa

50. *2230 30 JULY / 240

MP

Ridging

51. 0625 31 JULY / 300

CP

Ridging

1977
 52.0530 1 AUG/030
 53.0030 5 AUG/120
 54.0830 7 AUG/330
 55.0330 10 AUG/270
 56.0400 12 AUG/300
 57.0100 21 AUG/330
 58.0830 22 AUG/310
 *1100 26 AUG
 59.1230 27 AUG/300
 60.0430 31 AUG/310
 61.0730 4 SEP/320
 Bbl *1800 8 SEP/220
 62.0830 9 SEP/230
 63.1558 17 SEP/290
 64.0030 19 SEP/040
 65.0630 25 SEP/180
 66.1230 4 OCT/280
 67.0330 10 OCT/290
 68.0030 14 OCT/300
 69.0830 17 OCT/280
 70.1100 20 OCT/360
 71.0200 26 OCT/310
 72.1230 31 OCT/260
 73.0400 3 NOV/300

CP Small systems
 CP High passage over Region
 CP High passage over Region
 CP High passage to south
 CP High passage to south, followed by wave to south on 15th;
 then ^{slow} high passage to south
 CP Ridging
 CP Large high passage over Region
 MT Warm sector
 CP High passage to south
 CP High passage over Region
 CP High passage to north, followed by wave passage to south on 6th
 CP warm sector
 CP High passage to south when then lingered to east
 MP Front stalled over Lake Superior for a day, then moved east
 CP High passage over Region, which stalled to east
 CP very slow mover. Trush over Region until 29th, finally
 followed by high passage to south on October 3rd
 CP High pressure ridge moved over Region, followed by
 wave to south on 8th; then ridge moved to south
 CP Cold low aloft moved over surface low over Lake
 Superior, causing intense deeping, cold flow from north.
 Followed by high passage to south
 CP High passage to south
 CP High passage to south
 CP High passage over Region
 MP High passage over Region
 MP Ridging
 MP High passage over Region followed by formation
 of huge low over southeastern U.S.

74 - 0030 9 NOV / 280

CP

Front stalled over Region as low center crept northward along the front. Then slow-moving high crossed Region on 12th.

5. 1330 12 NOV / 290

MP

Ridging

6. 0930 15 NOV / 220

MP

Ridging

Deep low formed over Lake Superior under cold low aloft

7. 1530 15 NOV / 270

MP

8. 1730 16 NOV / 270

CP

Deep low lingered a day, then moved out, followed by ridging on 19th. Then deep wave moved from south of Region to northeast of Region. Followed by another low moving south on 23rd, then high passage to south on 26th; low passage to south on 27th; high passage to south on 28th

* 1330 29 NOV / 200 MP

Warm sector

9. 683030 30 NOV / 290

MP

Ridging

10. 0430 1 DEC / 320

CP

Ridge passage; then low center passage over south part of Region on 13th, followed by ridging on 14th

* 1030 15 DEC

MP

Warm sector

11. 0210 19 DEC / 220

MP

Low stalled over Upper Great Lakes until 21st; followed by ridging on 22nd

12. 1730 22 DEC / 300

CP

Ridging followed by low center passage to south on 24th, followed by high center passage to south on 27th; then east-west ridge dominated Region for rest of year.

1978

1. 1100 2 JAN / 020 CP Ridging
2. ± 0100 3 JAN / 270 CP East-west ridge dominated to 7th, when wave moved to south; then strong high passed to south on 11th and stalled
3. 0800 15 JAN / 280 CP Strong high center passage over Region, followed by a second pulse on 19th
- * 1400 22 JAN / 210 MP Warm sector
4. 1200 23 JAN / 290 CP Ridging
5. 1100 25 JAN / 220 CP Deep low center moved over Region; then ant. Yukon-Gulf ridge dominated until February 3, then main east. Followed by row pulse moving north of Region on Feb 6th, becoming quasi-stationary over Region until February 22nd
- * 1100 22 FEB / 270 MP Warm sector
6. 1700 22 FEB / 290 CP Ridging
7. 1000 24 FEB / 260 CP High passage to south; then small low; then new high pulse on March 1, and another on March 4th; and again on 6th
8. 0300 10 MAR / 020 CP Ridging
- * 0800 10 MAR / 240 CP Warm sector
9. 1200 12 MAR / 020 CP Lingered in south part of Region through much of 13th; followed by ridging on 14th
10. 0700 15 MAR / 270 CP Ridge passage on 17th
11. ± 1300 18 MAR / 290 CP High passage to south
12. ± 1100 20 MAR / 280 CP Ridging
13. ± 0300 22 MAR / 290 MP Ridging
14. 1000 22 MAR / 260 CP High passage over Region