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## THE CHICAGO AREA TORNADOES

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On March 12, 1976, a strong tornado touched down in Kendall County, 3 miles southeast of Oswego. At 50 to 60 mph, the storm travelled northeast, passed Naperville and Lisle, and disappeared near Villa Park. The second tornado started in North Lake and crossed the Kennedy Expressway east of O'Hare International Airport. It left a 17-mile-long path through the northwestern suburbs before disappearing into Lake Michigan.

The next morning the Chicago Tribune and the Chicago Sun-Times reported that the tornado (assessed later at F2) crossed the Kennedy Expressway a few minutes before President Ford's motorcade. Later, the President was able to see the damage from the windows of his motel suite.

Immediately after the tornadoes, the University of Chicago survey team began aerial mapping of the tornado paths in Illinois, Indiana, and Michigan. After exhaustive flights by Cessna 172 over the tri-state areas, Greg Forbes and Tom Umenhofer confirmed 16 damage swaths.

To assess the tornado risk in Chicago and vicinity where 7.4 million people live, storm activities during the past 100 years were investigated and mapped. The color map printed on the reverse side reveals that the tornado distribution in our area is erratic. If one examines the map carefully, there are a few interesting features. They are

1. Most tornadoes near the south end of Lake Michigan moved in an easterly direction.
2. A large number of tornadoes occurred within a narrow belt between Aurora and Evanston.
3. The south suburbs of Chicago were frequently visited by tornadoes.
4. Since May 28, 1920, no tornadoes have been reported within the heart of Chicago.

So far, we have no meteorological theory to explain all of these characteristics.

Our speculation, however, is that both Lake Michigan and the City of Chicago play a key role in this tornado distribution. The lake is mostly colder than the surrounding land area during the hours and the season when tornadoes are likely to occur. The City of Chicago generates a large amount of heat by burning natural gas, gasoline, oil, and coal. Consumption of electricity always generates heat. Thus, the City acts as a giant heat island adjacent to a large cold lake.

A laboratory experiment at the University of Chicago revealed that a tornado-like funnel weakens when the surface is artificially heated. Despite such experimental evidence, we are not certain if the heat generated in Chicago is sufficient to kill all tornadoes. Existence of the tornado-free area in Chicago might be just accidental. Until more research is done, we should not simply assume a false sense of tornado security in our city. A large, violent tornado might manage to smash through the Loop, damaging skyscrapers and causing showers of window glass onto the streets.

Not all tornadoes are alike; some are weak and others are violent. Unusual ones could travel through a distance of over 100 miles. The Fujita-Pearson (FPP) tornado scale enables us to classify each tornado by its intensity, path length and width.

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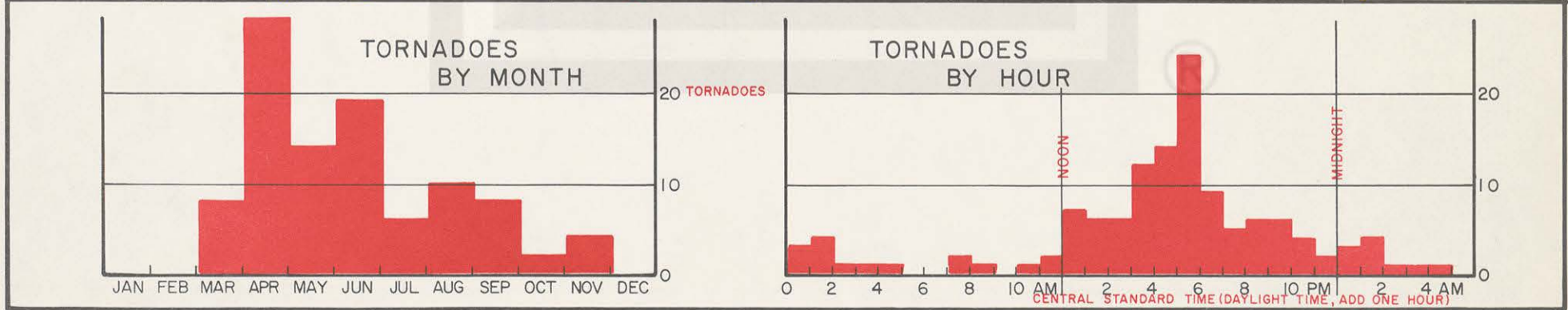
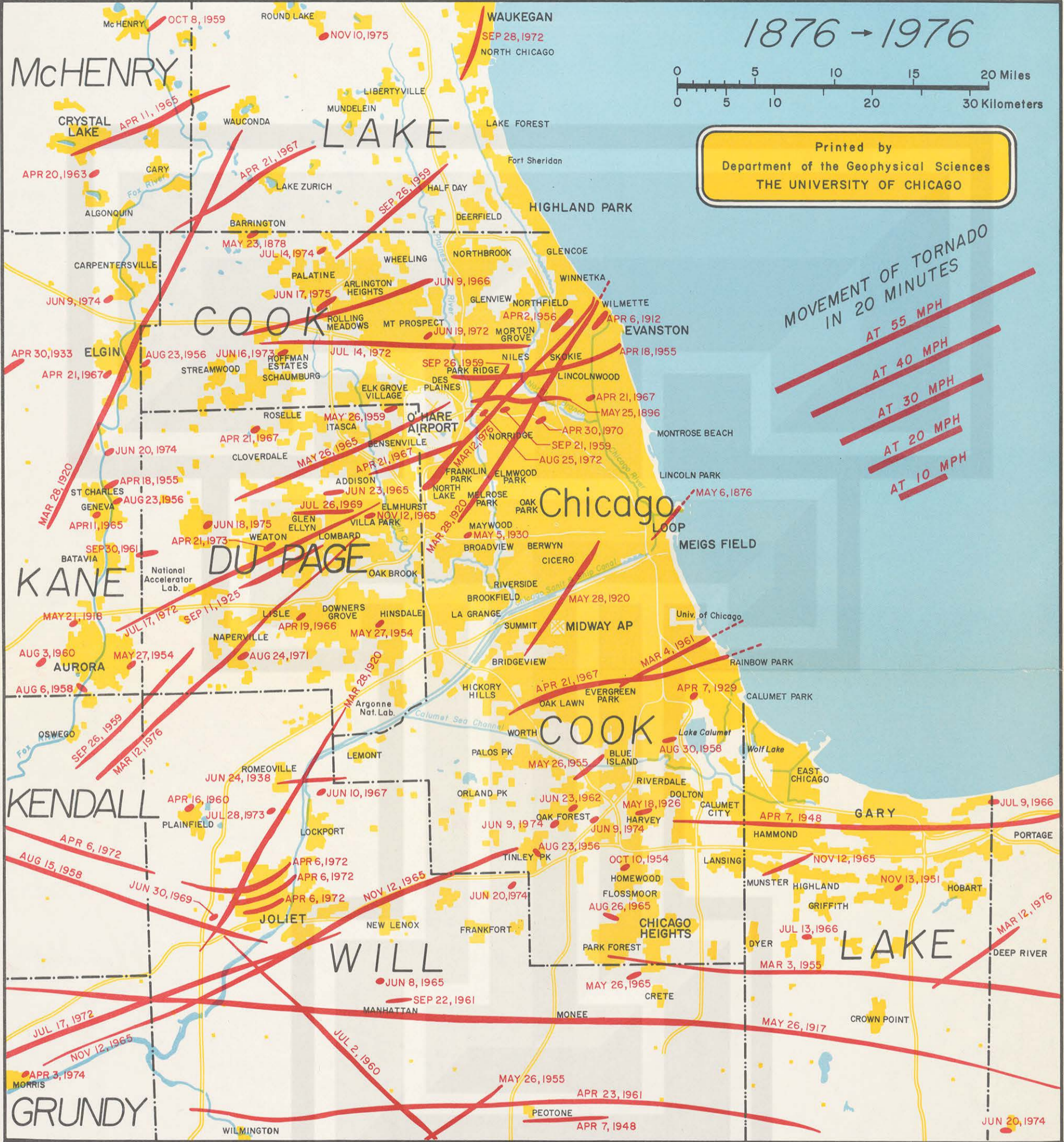
### F-Scale Tornado Intensity

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F 0	40- 72 mph	Breaks branches off trees; signboards damaged.
F 1	73-112	Peels surface off roofs; trailer houses pushed or damaged.
F 2	113-157	Roofs torn off frame houses and outbuildings smashed; cars blown off highways.
F 3	158-206	Windows of skyscrapers smashed; frame houses destroyed; cars lifted off the ground.
F 4	207-260	Skyscrapers twisted; frame houses leveled; cars blown some distances.
F 5	261 and higher	One or two tornadoes of this category occur in U.S. each year.

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# A CENTENNIAL LOOK AT CHICAGO AREA TORNADOES



P-Scale Path Length	
P0	Length less than 1 mile
P1	1.0 - 3.1
P2	3.2 - 9.9
P3	10 - 31
P4	32 - 99
P5	100 and longer

P-Scale Path Width	
P0	Width less than 18 yds.
P1	18 - 55
P2	56 - 175
P3	176 - 556
P4	0.3 - 0.9 mile
P5	1.0 and wider

Using the above-mentioned FPP scale, the 101 tornadoes shown in the color map were classified. Results show that there were no F5 tornadoes, but we had three F4 tornadoes. The number of tornadoes for each of the FPP scales are tabulated below.

Intensity		Path Length		Path Width	
F0	25	P0	39	P0	27
F1	32	P1	22	P1	23
F2	31	P2	10	P2	27
F3	10	P3	22	P3	11
F4	3	P4	4	P4	3
F5	0	P5	2	P5	3
Unknown	0	Unknown	2	Unknown	7
Total	101	Total	101	Total	101

The first F4 tornado in the Chicago area occurred on Sunday, March 28, 1920. A forerunner tornado touched down southwest of Joliet and lifted near Lemont. Then, at 12:15 PM, a powerful funnel smashed through Melrose Park killing 20 persons and injuring 70 others. The tornado moved at 50 mph.

The second F4 tornado occurred on Palm Sunday, April 11, 1965. It was 3:27 PM when the storm smashed into Crystal Lake in McHenry County, killing 6 and injuring 75 persons.

The third F4 tornado caused greatest damage in Oak Lawn on April 21, 1967. It travelled from Palos Hills to Lake Michigan at 60 mph, leaving behind 33 deaths and 500 injuries. Many died when cars were struck while stopped at traffic lights.

Like in other parts of the United States, the annual frequency of tornadoes in the Chicago area has been increasing. It is because the population is growing and spreading outward from Chicago proper. Meanwhile, people are becoming more tornado conscious. The number of reported tornadoes and population (in millions) within the area of this map are tabulated below.

Periods	1876-99	1900-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-76
Population	0.60	2.09	2.75	3.52	4.68	4.83	5.50	6.65	7.41
F0	0	0	0	1	1	0	8	6	9
F1	1	0	1	0	0	0	10	16	5
F2	1	0	1	3	2	2	3	6	12
F3	1	0	1	2	0	0	1	2	3
F4	0	0	0	1	0	0	0	2	0
Total	3	0	3	7	3	2	22	32	29

We sincerely hope that the publication of this map will assist in alerting Chicago area residents to the tornado risk in their area. This map may be obtained free from our Department Office. To request by mail, send a large, self-addressed, stamped (25¢) envelope to

CENTENNIAL TORNADO MAP  
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