

A day in the life of a . . .

## Severe weather meteorologist



*This bank of radar screens at the Ontario Weather Centre forms the basis of most successful severe weather forecasting.*

It was a day of severe thunderstorms, hail, funnel clouds and tornadoes . . . a day the severe weather meteorologist would not soon forget.

That particular day (May 2, 1983) was chosen because it shows this severe weather expert at his busiest and allows us to zero in on the myriad meteorological and technical details he sometimes has to deal with in a single weather day.

The events took place in Ontario and centre round an anonymous severe weather meteorologist (SWM) a young, married, specially-trained meteorologist with lots of enthusiasm for the job and no mean gift as a weather raconteur.

The story also involves the SWM's colleagues, a small group of meteorologists and technicians with great esprit de corps who occupy a corner of the weather centre where the walls are plastered with charts, tephigrams, big and small weather maps and radar displays.

Normally the SWM begins his day at 9:00 am by reviewing what happened in yesterday's weather. A variety of information has piled up: from satellite imagery, weather maps to teletype print-outs. He studies all the available data, including historical and prognostic charts, and predicts the likelihood of air

mass instability in the Ontario Weather Centre's area of responsibility. At 10:00 am new data arrives from the upper air stations setting the stage for the SWM to firmly project the kind of weather his region may expect that day.

On arrival at the weather centre on this particular day conditions for spectacularly stormy weather were already evident. Two dozen tornadoes associated with a cold front had already been reported in the Mississippi Valley. For now, Southern Ontario was in bright sunshine. The SWM's analysis indicated that a squall line would develop ahead of the approaching cold front and there was the threat of a squall line moving right across the province.

Although professionals, meteorologists take great personal interest in unusual weather phenomena. At 10:30 am Detroit radar showed a rapidly developing line of thunderstorms with tops almost 10 km high. The centre began to buzz with informed opinions. At 11:00 am Exeter radar picked up the squall line and at noon the Windsor weather office phoned in a report of hail and funnel clouds west of Detroit. Momentarily centre staff left their desks to dash in and observe the Exeter screen.

"I'll bet this storm knocks out the Exeter radar," the SWM exclaimed.

Heads turned. If the severe weather person spoke this way, the storm would obviously produce considerable damage.

A SWM juggles very complicated data. The data are spread out over a large land area, but also includes a large portion of the tephigram. In so vast a volume of atmosphere, all sorts of meteorological events occur, some predictable, some ambiguous, and some unexpected. The worse the weather, the greater the complications. From all his data, the SWM must predict where and when storms will strike and issue severe weather watches and warnings to the public in advance of the storm.

On this day, the SWM issued his first weather watch at 11:30 am. It took in a broad area including Lake Huron, Lake St. Clair and Lake Erie. It added a proviso that the watch might be extended to include the whole of southern Ontario. This proved accurate. Moving fairly uniformly at 50 km an hour, the squall line moved violently across the province right to the Ottawa valley.

The SWM does not rely on technology for all his weather information. AES has recruited a large network of volunteer weather watchers. At 2:15 pm, the weather centre received its first weather watcher report — a tornado at Walpole Island. Reports of other tornadoes soon followed, as well as reports of hail and 100 km per hour winds.

At 12:55 pm the squall line appeared on the Woodbridge radar screen. AES personnel dropped in to watch the show. This was too much for the SWM. Herding them all out again, he grumbled, "We need a little elbow room around here."

At 2:30 pm the Exeter radar was knocked out of service. The SWM issued severe weather watches for all counties in the path of the oncoming storm. London Weather Office reported hail, and there were reports of hail and heavy winds west and north of Toronto. Kitchener reported a funnel cloud and another funnel cloud was reported over Lake Ontario just off Scarborough. The SWM had already issued tornado warnings for the Niagara-Toronto area — and for the Peterborough area.

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The storm moved relentlessly eastward. At 4:05 pm, it reached Kingston and Renfrew, then left the region. The SWM remained at his post. (He will be home late for supper that evening). Around 6:00 pm a second squall line with hail developed north of Toronto. This line moved rapidly into eastern Ontario and disappeared when surface temperatures declined after sunset.

As daylight began to fade, the SWM reviewed his day. There had been three strong tornadoes with great damage, three tornado touchdowns with no reported damage, and numerous violent storms. Total damage was later estimated at over \$30 000 000.

The SWM was quite pleased with his performance. Most of the areas hit by storms had received his weather watches one to three hours in advance and his weather warnings half an hour or so before damage occurred. Information phoned in from the Windsor weather office had been very timely in prompting the SWM to issue his first weather watch and a phoned-in report of funnel clouds near Windsor was a key factor in getting the SWM to mention the risk of tornadoes. This happened only half an hour ahead of the devastating Walpole Island and Reece's Corners tornadoes.

The May 2, 1983 outbreak of severe weather was the most widespread in Southern Ontario since the Sarnia tornado in May, 1953. It was a day the SWM would not soon forget.