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Conference on European Tornadoes and Severe Storms

Super cells in the Netherlands

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Severe thunder storms occur in the Netherlands every year, especially in the period between May and September. Most of these storms are either single cells or multi cells. On a few occasions a year, squall lines develop. Super cells are not very common, with one or two cases every year. Three cases are presented. Two recent cases where super cells developed through the split-cell process. In the third case, the southern most member of a squall developed into a super cell with two F3-tornadoes.

On July 21st, 1995 severe storms developed over the western part of the country. Many of these storms split with the right movers being the most severe storms. Hail 5 cm in diameter was observed and storms that split were observed to split a second time. The storms traveled at 60 km/hour. Vertical wind shear was unidirectional with a magnitude of around 7.10-3 s-1. Storm relative helicity of the right moving cells was around 130 m2s-2 and CAPE values of 1400 J/kg.

About a year later, on July 23rd, 1996 a super cell developed across the center of the country and later moved at around 40 km/hour across the east accompanied by very large hail up to 8 cm in diameter and a brief tornado near Dieren. The tornado remained over wooded area with little damage. This storm had helicity of 160 m2s-2 and CAPE values of 1800 J/kg. In 1968, on June 26th, two F3 tornadoes struck the central and southern part of the Netherlands. Both tornadoes developed with the same storm which was the most southern member of a squall line. Storm relative helcities were around 250 m2s-2 with CAPE values of 1500 J/kg. The squall line was also accompanied by strong wind gusts over 100 km/hour and large hail up to 8 cm. A number of people were killed with these two tornadoes and hundreds of houses were destroyed.

Forecasting tornadoes is probably very difficult in the Netherlands. However, if winds are veering with height in the lower atmosphere and CAPE values are high, super cells are possible which always bring severe weather like strong winds and large hail.