

UNUSUAL OCCURRENCE OF A TORNADO IN GUNTUR DISTRICT OF COASTAL ANDHRA PRADESH

A tornado occurred in Repalle and Tenali taluks of Guntur district of coastal Andhra Pradesh on 6 April 1980 at about 1500 IST. According to press reports "two metre wide dark cloud with an embedded white streak, looking like the trunk of an elephant, followed a serpentine course had lifted to the skies whatever came in the way". The report also says that a calf and a dog which were hurtled into space came down dead. A transformer of the State Electricity Board was blown off and the M-shaped thick iron poles supporting it were bent to the ground. A wooden bridge of about 25 feet wide and 6 feet away from the transformer was partially blown off. A cart near the transformer was pulled up and thrown far away. As per the eye witness report of the villagers of Tadigiripadu a dark patch of cloud in the shape of an elephant's trunk descended from the sky. The top of the trunk was not visible as it was within the clouds. It whirled with a lot of sound before it struck the transformer.

Track of the tornado—According to an officer who went on tour to gather information regarding the damages due to this tornado and the path it had taken, the tornado originated from the outskirts of Tadigiripadu village and moved in a northerly direction to Musalampadu village.

It dissipated immediately after crossing Musalampadu village. The total distance traversed by the tornado is about 8 km.

Classification of the tornado—Fujita (1973) proposed Fujita-Pearson (FPP) tornado scale for the classification of tornadoes based on the three parameters, namely, estimated wind speed, the path length and the width of the tornado. This scale has been designed to be coarse enough for an easy assessment of all tornadoes.

Breaking of a number of branches of a banyan tree which withstood the hurricane winds of the Andhra cyclone of November 1977, as well as the bending of the transformer poles, constructed to withstand a pressure of 30 lbs per square inch, suggests that the winds of the tornado were of the order of 150-180 kmph. This permits assigning F_1 in the Fujita-Pearson scale corresponding to the wind speed range of 73-112 mph (*i.e.*, 117 to 180 kmph).

From its place of origin at the outskirts of Tadigiripadu village to the place of its dissipation near Musalampadu village, the total path length of the tornado is about 8 km. This will classify the system in the Pearson scale to P_2 corresponding to a path length of 3.2-9.9 miles (or 5-16 km).

The tornado blew off a portion of a wooden bridge of about 8 metres long and wooden planks on the bridge were blown off upto a length of 3 metres. About a mile from this spot there was

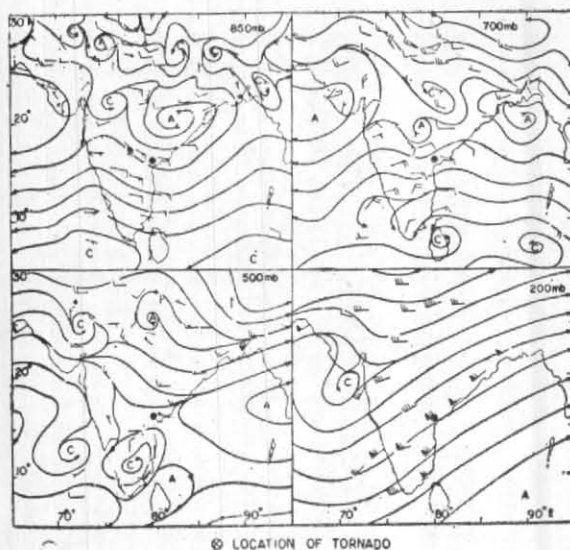


Fig. 1. Upper air charts of 6 April 1980

a row of palm trees which were separated by about $1\frac{1}{2}$ metres. The trunks of only 2 neighbouring palm trees were sheared off from a height about $2\frac{1}{2}$ metres from the ground, the other trees being unaffected. These indicate that the width of the tornado is about 3 metres, and it descended to a height of about $2\frac{1}{2}$ metres from the ground. Reports also say that at Musalampadu village the tornado, during its northward movement, had broken only one palm tree from among a row of trees from a height of about $2\frac{1}{2}$ metres from the ground. This suggests that by the time the tornado had reached Musalampadu village, its width had decreased to about a metre.

As the width of the tornado was never more than 3 metres the same can be classified as P_0 corresponding to an average width of less than 18 yards or about 17 metres.

Thus the present tornado can be classified as $F_1 P_2 P_0$ in the Fujita-Pearson tornado scale. It may be mentioned that the north Delhi tornado of 17 March 1978 was classified as $F_2 P_2 P_2$ (Gupta and Ghosh 1980).

Synoptic situation—Examination of upper air charts of 6 April 1980 (Fig. 1) revealed three noteworthy features of synoptic conditions in association with this tornado :

- (1) Relatively moist air extending atleast upto about 3.1 km above mean sea level over the tornado area.
- (2) the presence of a cyclonic circulation at 500 mb level just to the south of the area of tornado occurrence in place of a normal field of anticyclonic flow and
- (3) the presence of a strong southwesterly flow in the forward sector of a westerly trough with an embedded jet over the Peninsula.

A combination of the above three synoptic events favoured the most unusual occurrence of the tornado in this part of the country.

References

- Fujita, T.T., 1973, *Weatherwise*, **26**, 2, pp. 56-62.
 Gupta, H.N. and Ghosh, S.K., 1980, *Mausam*, **31**, 1, pp. 93-100.

K. VEERARAGHAVAN
 S. K. SUBRAMANIAN
 V. VENKATESWARLU
 N. S. BHASKARA RAO

Regional Meteorological Centre, Madras
 2 December 1980