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19 November 2020

### MULTICELL CLUSTER STORM CAUSES HAVOC IN MTHATHA ON 17 NOVEMBER 2020

On Monday, 16 November 2020, the South African Weather Service (SAWS) issued severe thunderstorm alerts for Tuesday, 17 November 2020, over the eastern half of the Eastern Cape and most of KwaZulu-Natal. SAWS maintained this alert after reassessment on Tuesday morning, following the passage of early morning showers over central areas of the Eastern Cape.

After a period of daytime heating, a cluster of thunderclouds developed at around 14:00 South African Standard Time (SAST), ranging between Graaf Reinet and Cradock in the Eastern Cape. An hour later, these storms coalesced into the relatively strong thunderstorms (multicell storms) just to the south-east of Cradock, while another notable storm was **100 km** to the north (to the south-west of Burgersdorp). Near 16:00 SAST, the multicell storms moved through Tylden (to the south of Queenstown) and were associated with at least two overshooting tops: another strong indication of an imminent severe thunderstorm. This intensification could be associated with the shortening of the distance between these multicell and another thunderstorm cell which moved south-eastwards in the direction of Dordrecht (south of Jamestown).

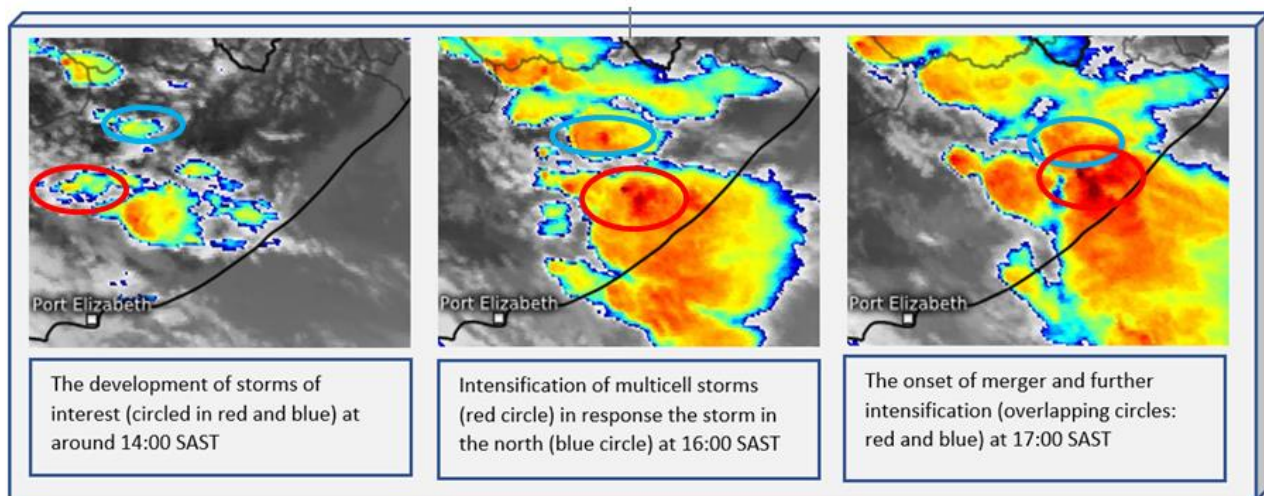


Figure 1: Gradual development of severe thunderstorms on the eastern areas of the Eastern Cape

The multicell thunderstorms travelled to the east and during the following three hours travelled almost 280 km from Graaf-Reinet to Bofolo (nearly half-way from Queenstown to Mthatha), while an intensifying storm (located south of Burgersdorp) moved for about 78 km to the south-east. At this stage, a secondary merger began to take place, further intensifying the storm. The storm in question then changed its

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direction of movement, migrating towards the north-east, moving a further 68 km to Mbolompo (north-west of Mthatha) but at a significantly lower speed of about 33 km/h (compared to an earlier average of 94 km/h). Shortly after yet another change of storm movement, very high winds from the enhanced multicell storm resulted in damage to homes, vehicles and the nearby airport, while also uprooting trees and resulting in heavy downpours which led to localized flooding. The impacts as evidenced by the photographs and the short distance travelled between 17:00 and 18:00 SAST strongly suggest that there was an EF3 tornado.

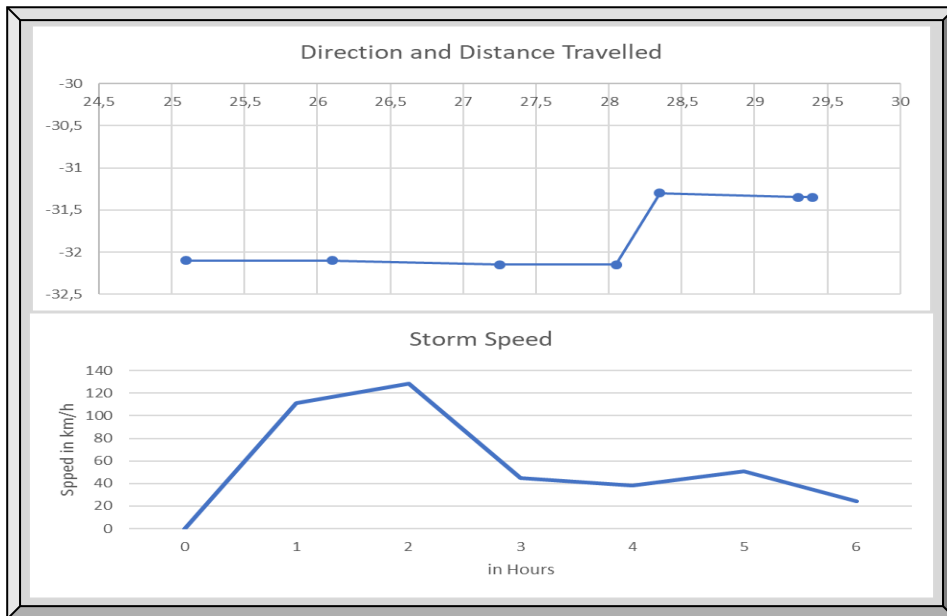


Figure 2: Storm trajectory

This storm then moved east south-eastwards, moving along the coast between 19:00 and 20:00 with minor impacts.

### Damage due to multicell cluster storms

The storm is rated as an EF2 to EF3 tornado because of the supporting damage: torn-off roofing sheets, peeling of roofs at the corners over a relatively large area as well as photographic evidence of a vehicle which appears to have been tossed into the air by the strong winds.

In the image below, roof sheeting has been torn back partially on the two houses, but in opposing directions. It is evident that the clockwise spin associated with the tornadic vortex tube resulted in the damage of the property.



Figure 3: Damage caused



Figure 4: The grass and debris in the image above are matted into a fence, pushed over, broken and eventually flat on the ground, which is a common feature of damage caused by a tornado.





Figure 5: Collapse of a well-built wall

In the images above, considering that the wall was well built and now it has also collapsed, it may be deduced that some areas of EF3 scale may be evident due to the tornado's impact. However sometimes the roof beams pull down some parts of brickwork, rather than solely the wind force on the brick wall.

There are well established spots of significant damage, while there are also nearby areas where no damage occurred at all. This type of damage is often consistent with tornadic storm damage. By contrast, non-tornadic "straight line" wind damage results in more uniform damage to all structures over a wide area.

In conclusion, the scale of the tornado damage is consistent with mostly EF2 to EF3 (Enhanced Fujita scale) tornado damage.



Figure 6: Damage to a car

On the day in question at 04h45, the South African Weather Service (SAWS) had issued a Level 2 (Yellow) warning (utilizing the new Impact-Based Warning system) valid for the eastern half of Eastern Cape as well as southern KwaZulu-Natal for the risk of *severe storms associated with damaging winds, hail and flooding*. This warning was distributed via mainstream media (radio and TV channels). Disaster Management structures at National and Provincial level were also notified accordingly.

The public are encouraged to listen out for and to heed warnings that are issued by SAWS, especially during the thunderstorm season.

#### **Precautions during thunderstorms:**

- If outdoors DO NOT seek shelter under trees
- Listen to the radio or TV for warnings.
- If possible stay indoors well clear of windows
- Shelter pets and cover vehicles
- Disconnect all electrical appliances.
- Do not take a showers or bath or use the telephone
- If driving, STOP and park well off the road clear of trees, power lines and streams.

#### **Precautions in the event of a tornado**

- In the event of seeing a tornado, move to the pre-designated building or else move into the centre of your house and get under a strong piece of furniture, such as a table.
- Get out of vehicles, caravans and mobile homes, as they can be moved, overturned and even destroyed by the strong winds and flying debris.
- Stay away from windows, as flying glass and debris cause the most deaths.

- Do not attempt to outrun a tornado in your vehicle. Leave it immediately and seek shelter.
- If caught outside in the open, lie flat in a ditch or depression but beware of flooding if there is heavy rain

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