

# CYCLONE FANI: HOW 2019 WAS DIFFERENT FROM 1999 SUPER CYCLONE

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As Odisha stares at the devastation caused by Cyclone Fani, comparisons are being drawn with the tragedy the state suffered 20 years ago at the hands of one of the most powerful cyclones of the 20th century. The 1999 super cyclone had claimed almost 10,000 lives (unofficial accounts say this was a huge underestimate), damaged nearly 20 lakh houses, killed about two lakh livestock, and affected about 2.5 to 3 million people, leaving large tracts of agricultural land unfit for cultivation for a long time due to salinity.

India has come a long way since then, as is evident from the much lesser number of deaths caused by Fani, and some similar cyclones in other parts of the country in the recent past, but the devastation, sufferings of people, and challenges faced in relief and reconstruction are not very different from those in 1999.

The super cyclone that had hit the Odisha coast, near Paradip, on October 29 remains the most powerful ever recorded in India, and one of the strongest anywhere in the world in the 20th century. One good measure of the strength of a cyclone is the 'pressure drop' that creates and sustains it. The average atmospheric pressure at mean sea-level is 1013 milibar. When the super cyclone was at its strongest, a few hours before it made landfall, the air pressure at its centre was 912 milibar.

"A pressure drop of 100 milibars is very big, and provides tremendous strength to the cyclone. The bigger the pressure drop, the stronger the cyclone, and greater the wind speed associated with it," says U C Mohanty of IIT Bhubaneswar. The super cyclone was accompanied with winds of speeds 250-260 km per hour or more. In comparison, Cyclone Fani had a pressure drop of 63 milibars (atmospheric pressure of 950 at its strongest) and wind speeds of about 210-215 km per hour.

To put it in context, the super cyclone carried energy equivalent to 1,600 atomic bombs, similar to the ones dropped over Hiroshima. Almost the entire coastline of Odisha was affected, with the districts of Kendrapara and Jagatsinghpur worst off. Entire villages were washed off. One former official involved in rescue and relief claims that waves as high as 40 feet were witnessed, and villages as far away as 40 km from the coast submerged. Most documented accounts talk of waves 25 to 30 feet high.

What added to the destructive capability of the super cyclone was that it stayed on for unusually long even after making landfall. Usually, cyclones dissipate in strength very fast after making contact with land. This is mainly because of the lack of moisture that feeds it over the ocean, and the friction provided by land and other structures on it. The super cyclone, however,

continued to retain the strength of a cyclonic storm even 36 hours after landfall. Heavy rain continued for two days along the coastline.

What also made the 1999 super cyclone such a huge tragedy was India's ill-preparedness. The India Meteorological Department (IMD) had put up its first cyclone detection, tracking and warning system in the 1970s, thanks mainly to its then director general P Koteswaram, who got 10 cyclone detection radars installed along the coastline. But even in 1999, the IMD's ability to forecast cyclones was pretty rudimentary. The computing resources were severely limited, the models were crude and weak, Internet access was just beginning so communication with other global agencies took time, and the sort of international collaborations that we have now were sorely missing.

According to an account published by S R Kalsi in the IMD's quarterly journal Mausam, the IMD had detected the cyclone when it formed on October 25, near the Andaman and Nicobar Islands. By the next day, the IMD had alerted the coastal states of Andhra Pradesh, Odisha and West Bengal. But it did not have the capability to predict the exact trajectory of the cyclone. Even a day before landfall, All India Radio bulletins were saying that the cyclone could be headed to West Bengal. The super cyclone also took meteorologists by surprise. It gained strength quite suddenly a day before landfall. In that same account, Kalsi mentions that the air pressure at the centre of the cyclone fell by 66 milibars in the 24 hours preceding landfall. "This indicates it was a case of rapid development," he says.

And of course, the state did not have the infrastructure or the resources to evacuate people, the most crucial difference between then and now. One study of the 1999 super cyclone says there were barely 75 cyclone shelters in the entire coastline of Odisha, all built by the Red Cross at that time. Barely any evacuations were made. In contrast, thanks to standard operating procedures for evacuation now, almost 1.2 million people were evacuated during Cyclone Fani.

However, even as human deaths have been averted to a very large extent, there is no running away from the destruction caused by a cyclone. Almost a week later, many areas in Odisha, including Bhubaneswar and other cities, are without power, there is a drinking water crisis, livelihoods and assets lost forever, possible outbreak of diseases and post-traumatic stress, and major reconstruction works ahead.

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