CYCLONE LANDFALL: GEOGRAPHY

NEWS: What is landfall?

WHAT'S IN THE NEWS?

Cyclone landfall occurs when the eye of the storm crosses over land, cutting off its moisture supply and weakening the cyclone. It causes severe impacts like **storm surges**, **coastal flooding**, **and strong winds**, though some cyclones may re-intensify over water.

Definition of Landfall:

• Landfall happens when the **eye of a tropical cyclone** crosses over land, marking a critical phase where the storm transitions from ocean to land.

Structure of a Cyclone:

• Cyclones have a calm eye at the center, surrounded by the eyewall, which is the most intense part of the cyclone with heavy rains, strong winds, and lightning.

Role of Moisture:

- Over oceans, cyclones draw moisture from warm water, fueling their intensity.
- After landfall, the cyclone loses its **moisture source**, leading to weakening due to reduced evaporation and cooling.

Impacts During Landfall:

- Storm Surges: A sudden rise in sea level causes severe coastal flooding, damaging infrastructure and affecting livelihoods.
- Strong Winds and Rain: These can uproot trees, damage buildings, and lead to landslides in hilly areas.

Post-Landfall Behavior:

- Cyclones typically weaken over land but can persist as low-pressure systems or dissipate.
- In some cases, cyclones may re-emerge over warm ocean waters, regaining strength.
- Example: **Cyclone Gulab** weakened after landfall in 2021 but re-strengthened over the Arabian Sea as **Cyclone Shaheen**.



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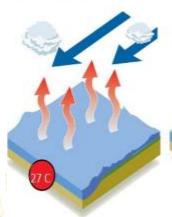
How tropical storms are formed

High humidity and ocean temperatures of over 27 °C are major contributing factors

Water evaporates from the ocean surface and comes into contact with a mass of cold air, forming clouds

A column of low pressure develops at the centre. Winds form around the column

As pressure in the central column (the eye) weakens, the speed of the wind around it increases







Saffir-Simpson hurricane wind scale



119-153 kph

Winds



154-177 kph



Winds 178-208 kph



Winds 209-251 kph



Winds

252 kph and more

Source: https://www.thehindu.com/sci-tech/science/cyclone-fengal-what-islandfall/article68931261.ece#:~:text=Landfall%20is%20the%20moment%20in,strong%20win ds%20and%20heavy%20rain.