Cold Wave in Telangana

Mains: *GS I - Geography*

Why in News?

Recently, The India Meteorological Department (IMD) has issued a cold wave alert for four districts of Telangana.

What is a cold wave?

- **Definition** – According to *world meteorological organization*, cold wave is a period of marked and unusual cold weather characterised by a sharp and significant drop in air temperatures near the surface (maximum, minimum and daily average) over a large area and persisting below certain thresholds for at least two consecutive days during the cold season.
- **Criteria of IMD (Indian Meteorological department)**
  - **Cold Wave** – Min temp ≤ 10°C (plains) AND ≥ 4.5°C below normal.
  - **Severe Cold Wave** – Min temp ≤ 4°C (plains) OR ≥ 6.4°C below normal.
- **Season of Occurrence** – In India it primarily occurs between November to March, with December and January being the coldest months.
- **Vulnerable regions** – It hits the states of North & Central India such as: Punjab, Haryana, Delhi, Rajasthan, UP, MP, Chhattisgarh, Bihar, Jharkhand, West Bengal.
  - **Himalayan Regions** – Naturally colder, criteria focus on deviation from normal.
- **Causes**
  - **Western Disturbances** – Transient weather systems bringing moisture and cold air.
  - **Cold Air Masses** – Cold, Dry Air Masses – Movement of air from Siberia/Canada into India.
  - **Snowfall** – Heavy snow in the Himalayas triggers cold winds.
  - **Clear Skies** – Lack of cloud cover allows heat to escape rapidly.
- **Impacts**
  - **Health** – Hypothermia, frostbite, respiratory issues, increased mortality (infants, elderly).
  - **Agriculture** – Damage to Rabi crops (wheat, coffee, tea).
  - **Energy** – Spike in demand for heating fuels/electricity.
  - **Transport** – Reduced visibility, accidents.
- **Management**
  - **Warnings and guidelines** – Issued by IMD & NDMA (National disaster

management authority)
    - **Preparedness** – Emergency shelters, public awareness, heat retention tips (dry clothes, hot fluids).
    - **Agriculture** – Shielding crops, animal care.

Why there is a persistent cold wave over Telangana recently?

- **Combination of factors** – Over Telangana right now, the India Meteorological Department (IMD) has pointed to a combination familiar in winter:
    - Dry air,
    - Clear skies,
    - Continental winds.
- **Unusual dry air mass** - The air mass over Telangana State has been unusually dry of late.
    - When humidity is low, the atmosphere holds less water vapour, which is one of the main greenhouse gases near the surface.
    - With less water vapour to trap heat, the ground loses energy more efficiently after sunset.
    - Clear skies strengthen this effect because clouds that might otherwise absorb and re-radiate some of the outgoing heat are absent.
    - Meteorologists have already said the ongoing cold wave is partly linked to dry winds blowing north and northeast and clear skies at night.
- **Influence of surface winds** – The northerly and northeasterly surface winds bring cooler, drier air from inland parts of India rather than air from the Bay of Bengal, which is more moist.
    - This steady cooling keeps the daily minimum temperature down even when the daytime temperature is 'ordinary' since each night begins with a cooler starting point.
    - Telangana had a cold wave warning in mid-November but it has seemed to go on because these low-level winds haven't shifted, thus the local air mass has remained cool and dry.
- **Impact of weak disturbance** – A weak western disturbance is expected to influence the western Himalaya the IMD has said there could be a 2-4ºC rise in the minimum temperature as the larger pattern evolves with the lower-level easterlies.

What lies ahead?

- In a press release issued by the IMD it has been said that cold-wave conditions had occurred at isolated places over Telangana and warned that such conditions were "very likely" over the State, as well as in north interior Karnataka.
- The bulletin also said there would be "no significant change" in minimum temperatures over "remaining parts of the country" during the next week.
- That is, the cold patterns won't break in a sudden way.

Reference

[The Hindu| Cold Waves]



SHANKAR
IAS PARLIAMENT
Information is Empowering