Government of Pakistan
Ministry of Aviation (Aviation Division)
Pakistan Meteorological Department
Sector: H-8/2, Islamabad.

Tel:051-9250364
Fax:051-9250368

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Outlook for November-December-January (NDJ), 2024-25

1. Synoptic Situation:

During the season NDJ, 2024-25, La Niña is favored to emerge in November and is expected to persist through Nov-Jan 2025, whereas the Indian Ocean Dipole (IOD) index is predicted to return to near normal during November–December 2024. Based on the current atmospheric conditions, the climatic outlook for Pakistan for NDJ, 2024-25 is as follows:

2. Seasonal Outlook (Rainfall):

Below normal* rainfall is expected in the country with maximum negative departure over Upper Khyber Pakhtunkhwa and adjoining areas of Kashmir and GB. However, in lower parts near **normal rainfall** is anticipated.

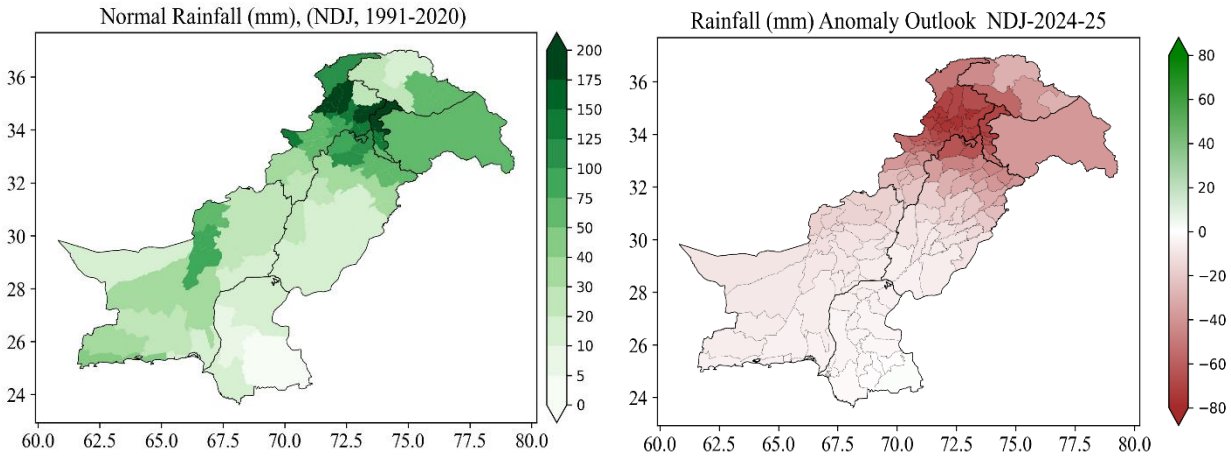

Figure 1: Normal (1991-2020) rainfall and monthly anomaly outlook for NDJ 2024-25.

3. Seasonal Temperature Outlook:

Temperatures are forecasted to remain **above normal*** nationwide with maximum departure over Upper Khyber Pakhtunkhwa and Gilgit-Baltistan.

*Normal = 30-years (period) average climatology

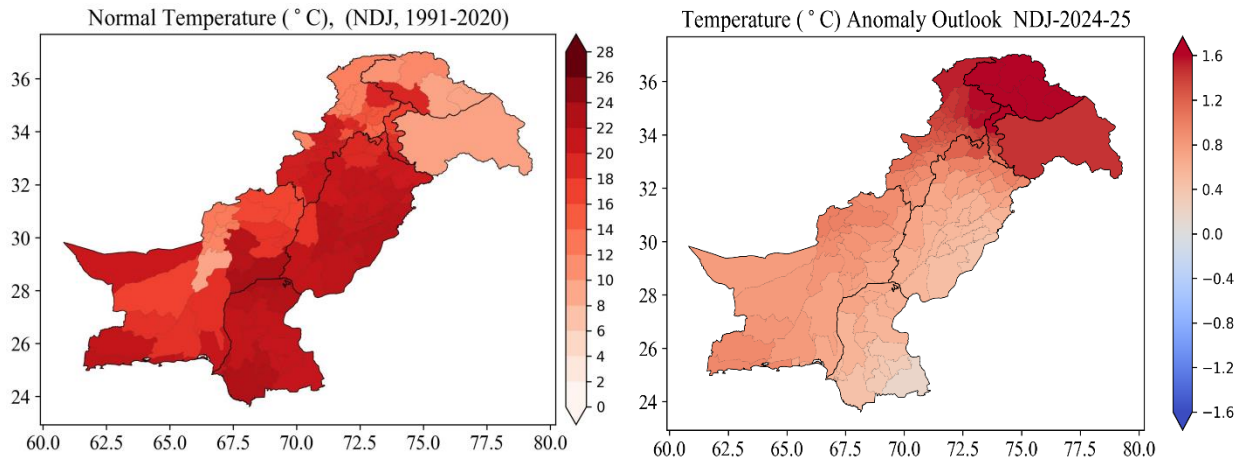

Figure 2: Normal (1991-2020) temperature and monthly anomaly outlook for NDJ 2024_25.

4. Impacts:

Agriculture

- **Soil Moisture for Rabi Crop Sowing**: Below-normal rainfall will likely lead to reduced soil moisture in KP, Kashmir, and Gilgit-Baltistan, potentially impacting early Rabi crop sowing (e.g., wheat, barley) in these areas. Farmers may need to rely more on other means of irrigation where available.
- **Water Supply for Agriculture**: The forecasted dry conditions could result in lower water availability for irrigation, especially in rain-fed areas. Near-normal rainfall in southern regions may provide more favorable conditions for crop growth in Sindh and southern Punjab.
- **Pest and Disease**: The above-normal temperatures may promote pest and diseases in winter crops, necessitating proactive pest and weed management in regions where warmer, dry conditions could stress crops.

Health

- **Smog and Air Quality**: Warmer and drier conditions may result in poor air quality, especially in plain and low lying areas (especially urban areas), increasing smog formation. This can exacerbate respiratory issues, impacting vulnerable groups including asthma and pulmonary disease patients.
- **Transportation and Fog**

- **Fog Formation**: Night time considitons are favpourable for fog formation in plains and valleys, particularly in central and northern Punjab, lower KP and upper Sindh, affecting visibility on highways and potentially disrupting road and air travel. Travelers should be prepared for delays during morning hours due to fog.

Water Resources

- **Reservoir and Irrigation Levels**: The below-normal rainfall may reduce water replenishment in reservoirs, impacting water availability for agriculture and the power sector. Water management

*Normal = 30-years (period) average climatology

authorities may need to monitor reservoir levels and manage distribution accordingly to ensure sustained supplies during the season.

Energy Sector

- **Hydro-power Generation**: Reduced inflow from below-normal rainfall could affect hydropower production, especially in northern areas reliant on seasonal water availability. Alternative energy sources may need to be prioritized to meet energy demands.

Note: Considering the dynamic nature of the climate system the outlook is updated monthly during the last week of each month.

*Normal = 30-years (period) average climatology