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Outlook for MAM-April-May (MAM), 2025

1. Current meteorological conditions

Below normal rainfall was recorded across the country during the winter season (DJF). The winter months of December and January remained mostly dry, with minimal amount of rainfall across most parts of the country. However, during the end of the season, two moderate to high-intensity rainfall spells occurred from the northern to central regions, easing the prolonged dry conditions of the season. Meanwhile, most parts of Sindh experienced significantly below-normal rainfall and continue to face soil moisture deficits. Additionally, above-normal temperatures were recorded nationwide (Table 1).

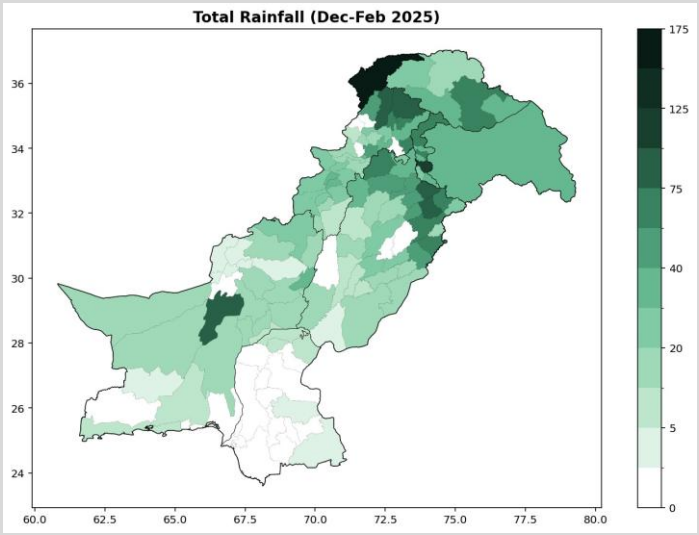

Figure 1: Observed rainfall (mm), DJF 2025

Table 1: Average / Anomaly of DJF 2025 rainfall and temperature

Region	Average Rainfall (mm)	Rainfall Departure (%)	Mean Temp (°C)	Anomaly (°C)
Pakistan	51	-48.7	12.6	0.5
AJK	33	-44.5	11.9	0.7
Balochistan	26	-53.1	13.5	0.1
Gilgit-Baltistan	38	-27.2	4.2	0.7
Khyber Pakhtunkhwa	111	-35.7	10	0.8
Punjab	45	-52	13.8	0.6
Sindh	0.5	-96.8	18	0.3

2. Seasonal Rainfall Outlook for MAM 2025:

The monthly and seasonal outlook is derived from the outputs of nine global seasonal prediction models with optimal skill. The output of the selected models is used to generate operational forecasts for monthly and seasonal rainfall and temperature through the Multi-Model Ensemble (MME) technique. The prevailing neutral phase of the El Niño Southern Oscillation (ENSO), is expected to persist, alongside a neutral phase of the Indian Ocean Dipole (IOD). Based on this analysis, overall, a tendency for **slightly below-normal*** rainfall is anticipated in northern KP, northern Punjab, and Kashmir during MAM 2025. Whereas, the southern regions are expected to experience rainfall that is closer to normal, with a reduced negative anomaly as per the region's climatological patterns. Most parts of Gilgit-Baltistan may receive near-normal rainfall during the forecast season (Figure 2).

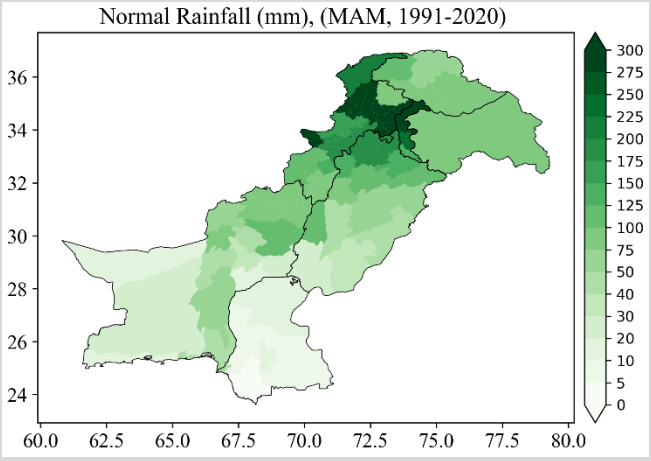

Figure 2 Normal (1991-2020) rainfall for MAM

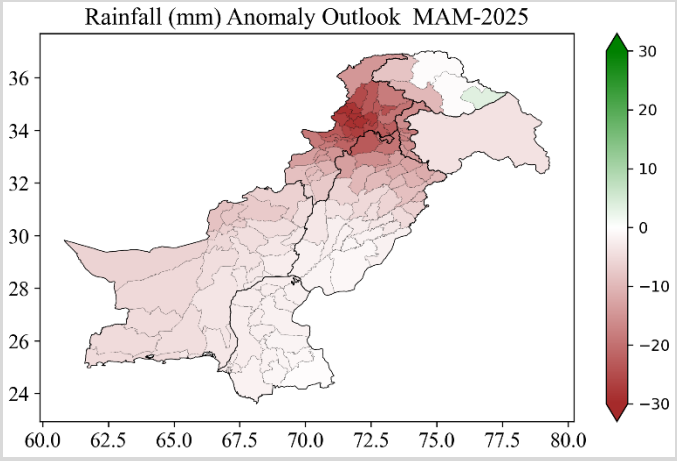

Figure 3 Monthly rainfall anomaly for MAM 2025

The probabilistic rainfall outlook reflects a consensus among all models used as ensembles. The tercile probability map (Figure 4) indicates that most ensemble members predict the likelihood of below-normal rainfall in northern Khyber Pakhtunkhwa and adjoining parts of Kashmir, while Punjab, Sindh and Balochistan are likely to receive near-normal rainfall during the forecast month.

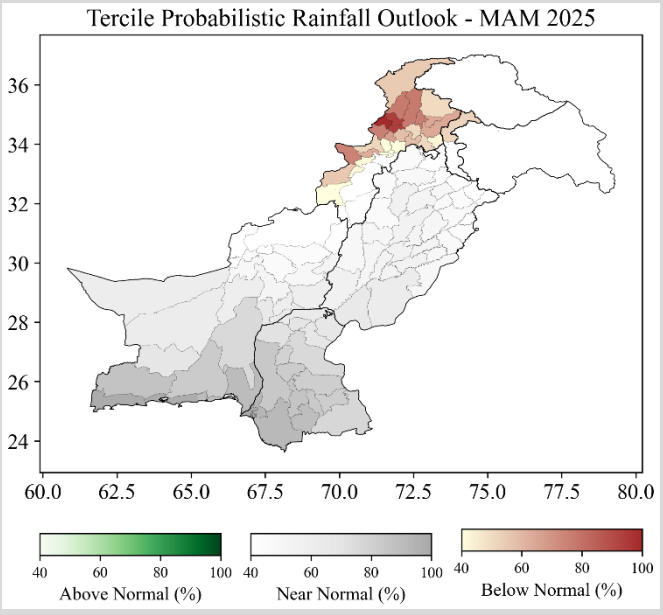

Figure 4 Probabilistic rainfall outlook for MAM 2025

* Normal = 30-years average climatology

3. Seasonal Temperature Outlook:

Mean temperatures are expected to remain **above normal*** throughout the country, with maximum departure over Kashmir, Gilgit Baltistan and adjoining areas of Khyber Pakhtunkhwa (Figure 6).

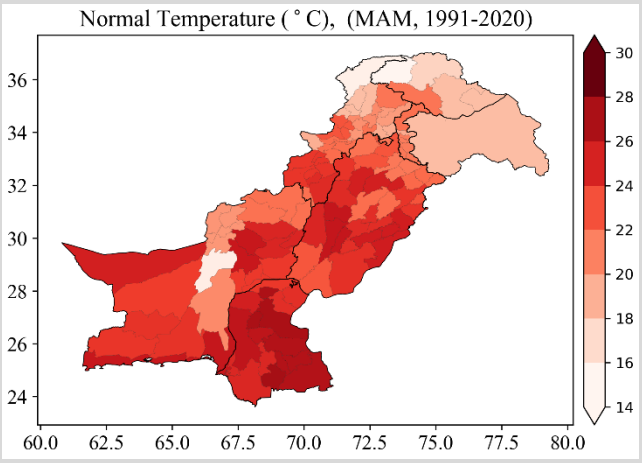

Figure 5 Normal (1991 - 2020) temperature for MAM

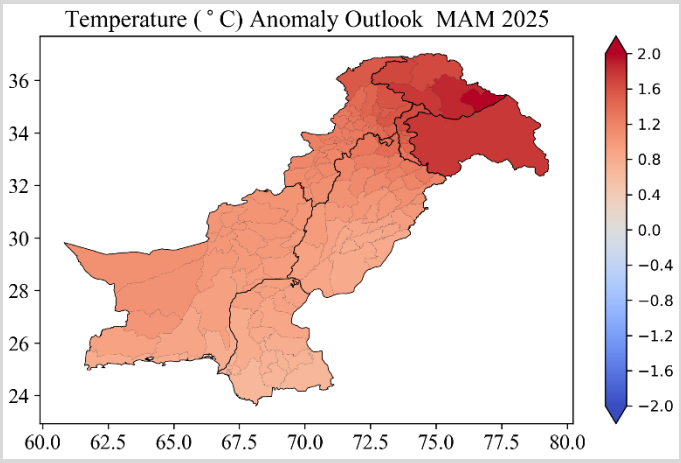

Figure 6 Monthly temperature anomaly outlook for MAM 2025

The tercile probabilistic temperature outlook (Figure 7) indicates that the majority of models predict above-normal temperatures across the country.

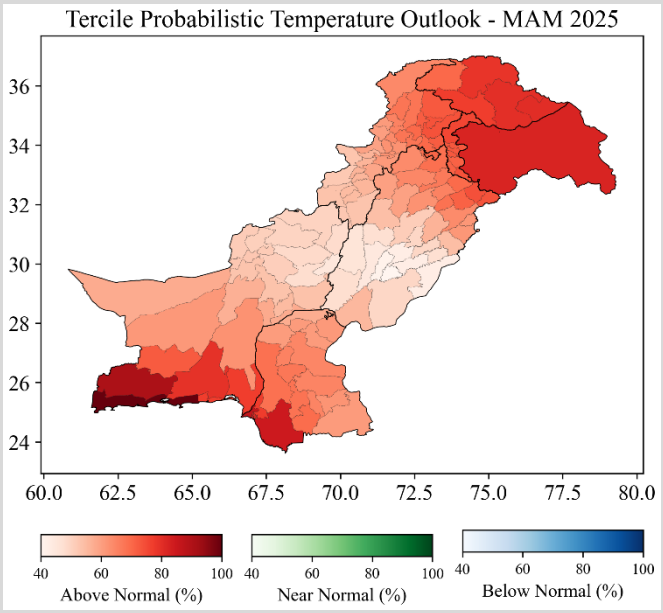

Figure 7 Probabilistic temperature outlook for MAM 2025

4. Impacts:

- Below-normal rainfall may intensify the soil moisture deficiency especially in already affected areas.
- Temperatures would increase with the season throughout the country. Accordingly, irrigation at regular intervals would be required for standing crops.
- Higher temperatures could shorten the seasonal length of Rabi crop in plains of Punjab and KP.
- High temperatures may facilitate an early pollen peak episode during the season in major cities (e.g. Islamabad/Rawalpindi and Lahore).
- The atmospheric conditions are suggestive for the likelihood of heat wave development during the season; especially over the plain areas of southern Punjab and Sindh.
- Strong winds, dust storms, and hailstorms may arise as a result of the temperature gradients.

Note: The Seasonal Outlook is updated monthly in the first week of the month. The forecast reliability varies with location, time of year, and global ocean/atmospheric conditions. It provides general trends using probabilities rather than precise predictions and compares expected conditions to historical averages. For better decision-making, it should be used alongside short-term forecasts and other climate data.