PRECIPITATION/ TEMPERATURE OUTLOOK FOR TP REGION (JJAS 2025)

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Outline

- Methodology of Seasonal Outlook
- PMD's Outlook for TP Region
- Outlooks Comparison
- Highlights

Methodology of Seasonal Outlook

GCMs utilized for outlook

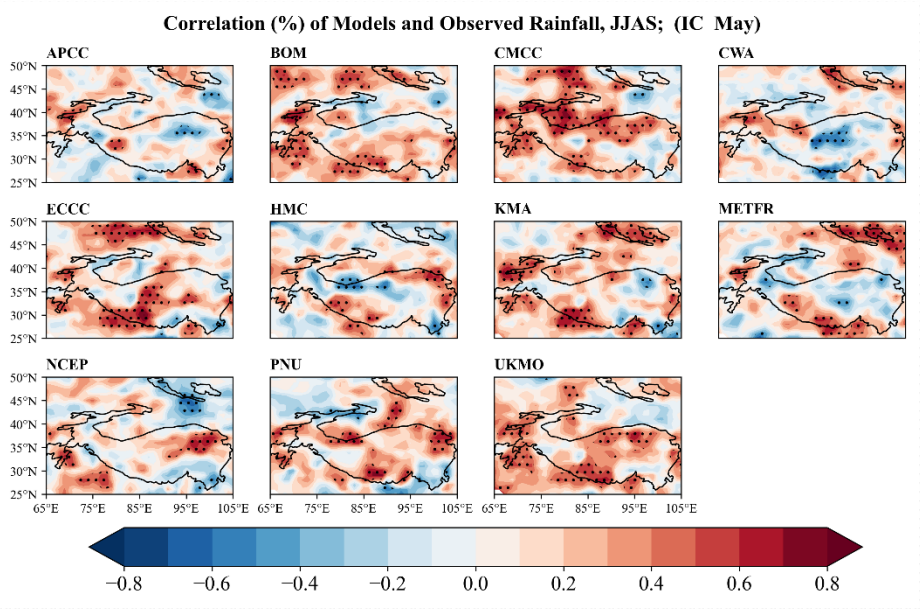
Model	Ens (Hindcast/Forecast)	Data Availability
1. APCC-SCOPS	10	1982-2013
2. BOM-ACCESS-S2	3/11	1990-2012
3. CMCC- SPS3.5	40/50	1992-2017
4. CWA-TCWB1Tv1.1	30	1982-2019
5. HMC-SL-AV	10/20	1985-2010
6. KMA-GLOSEA6GC3.2	12/42	1991-2016
7. METFR-SYS9	25/51	1991-2016
8. NCEP-CFSv2	20	1982-2010
9. PNU-CGCMv2	35	1980-2020
10. UKMO-GLOSEA6	28/42	1991-2016
11. ECCC-CANSIPSv3	20	1980-2020

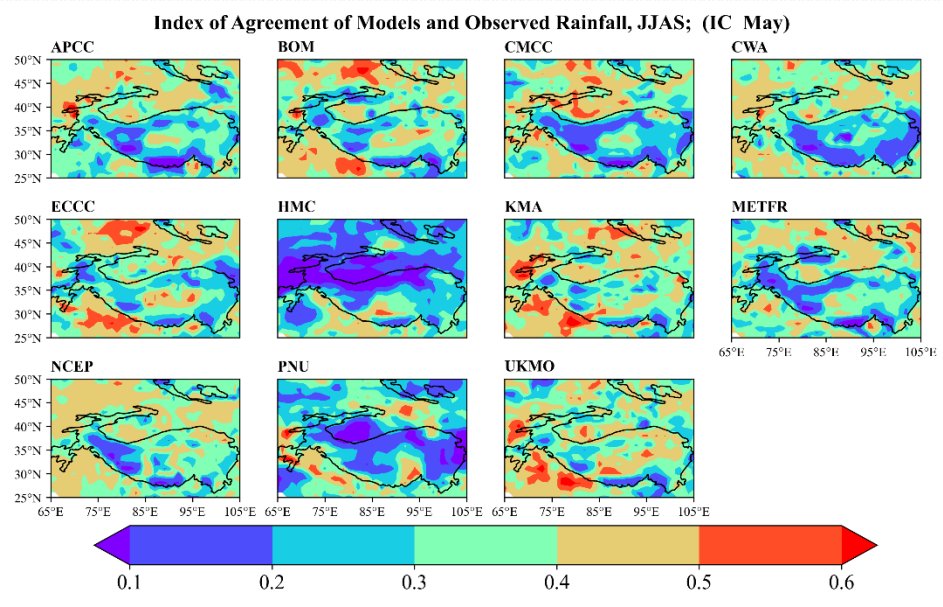
- ***Quantitative Forecast***
  - Simple Composite Method (SCM)
  - Represented as the Anomaly from the long term normal conditions.

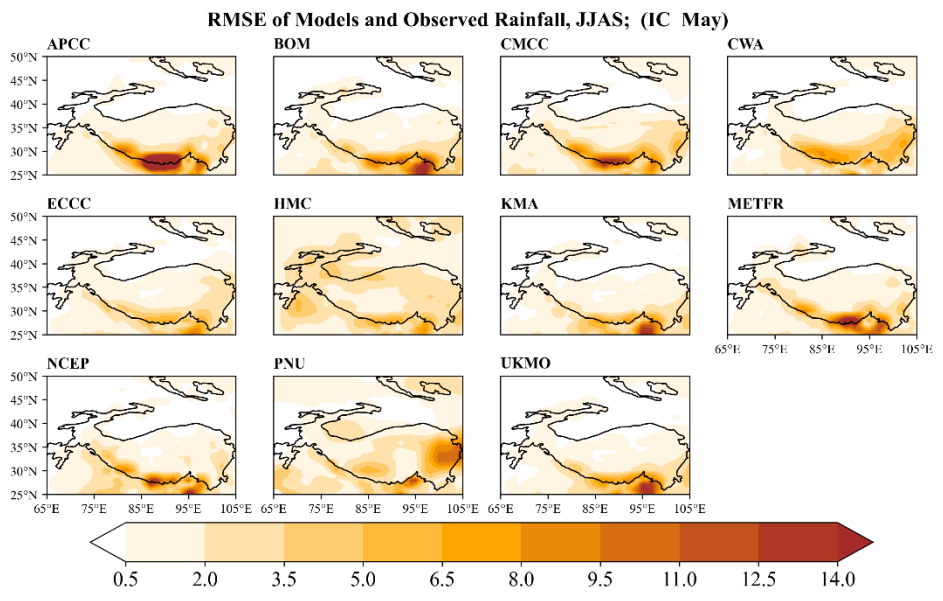
$$F_t = \frac{1}{N}\sum_{i=1}^{N}\left(F_{i,t} - \bar{F_i}\right)$$

- ***Probabilistic Forecast***
  - Tercile based probabilistic forecast, incorporating the set of all the ensemble members.
  - Represented as probabilities of Above/Near/Below normal of each parameter.

Model selection criteria for precipitation outlook

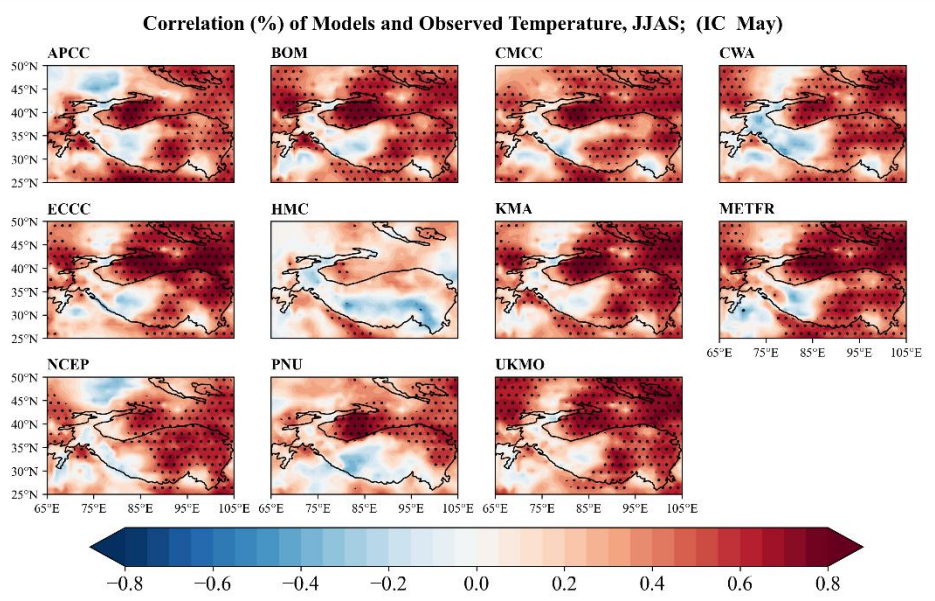


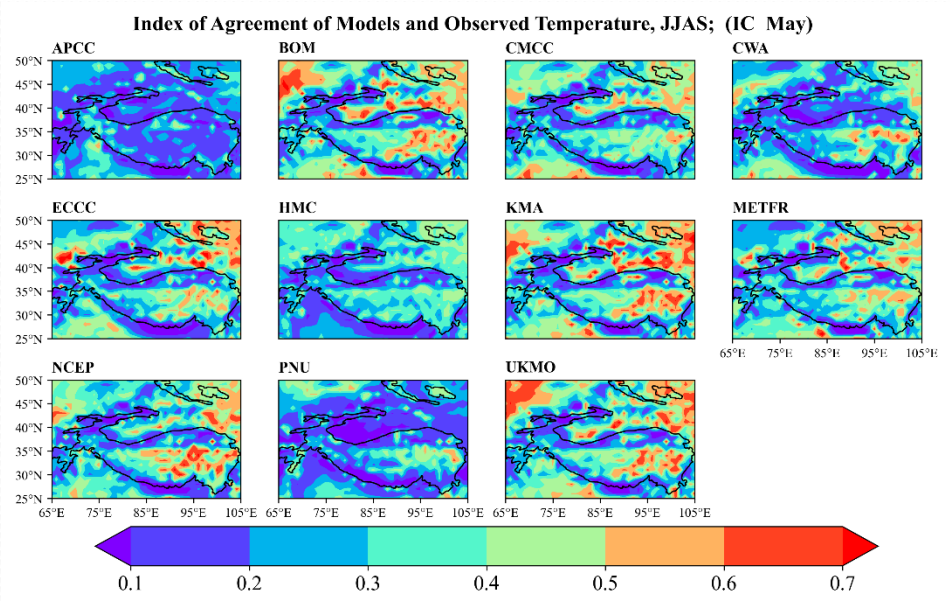


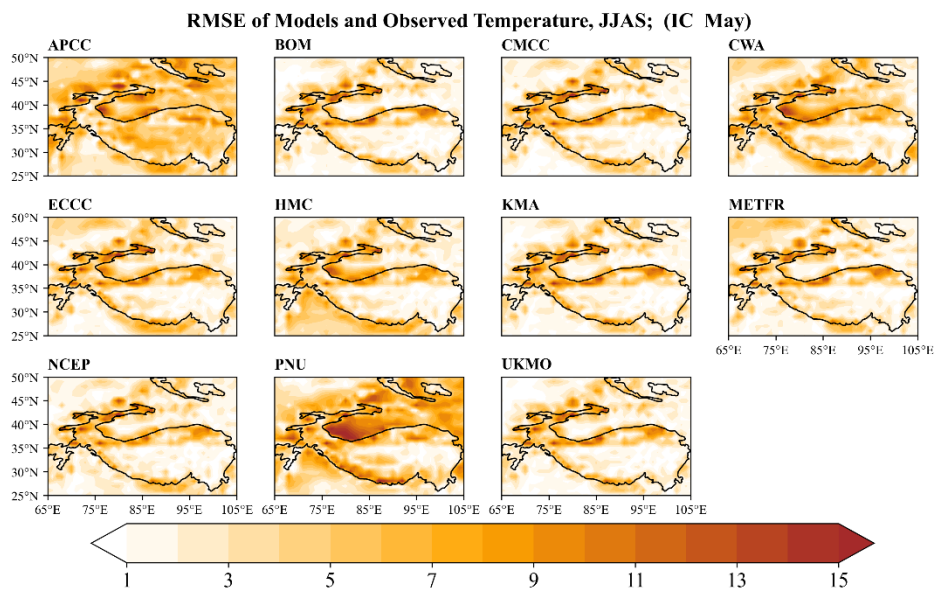


Models	Correlation	Index of Agreement	RMSE
APCC	-0.03	0.18	1.27
BOM	0.48	0.23	1.01
CMCC	0.64	0.18	1.33
CWA	-0.21	0.24	0.85
ECCC	0.71	0.31	0.70
HMC	0.39	0.13	1.99
KMA	0.48	0.26	0.86
METFR	0.59	0.20	1.17
NCEP	0.29	0.35	0.52
PNU	0.64	0.20	1.27
UKMO	0.55	0.25	0.95

Model selection criteria for temperature outlook



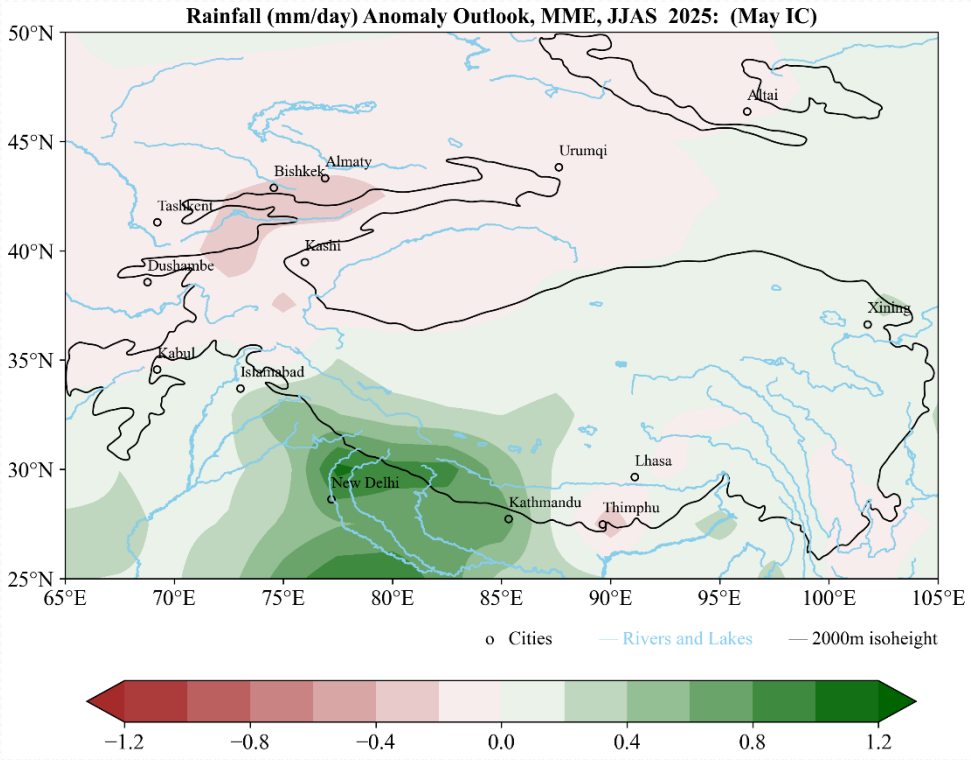


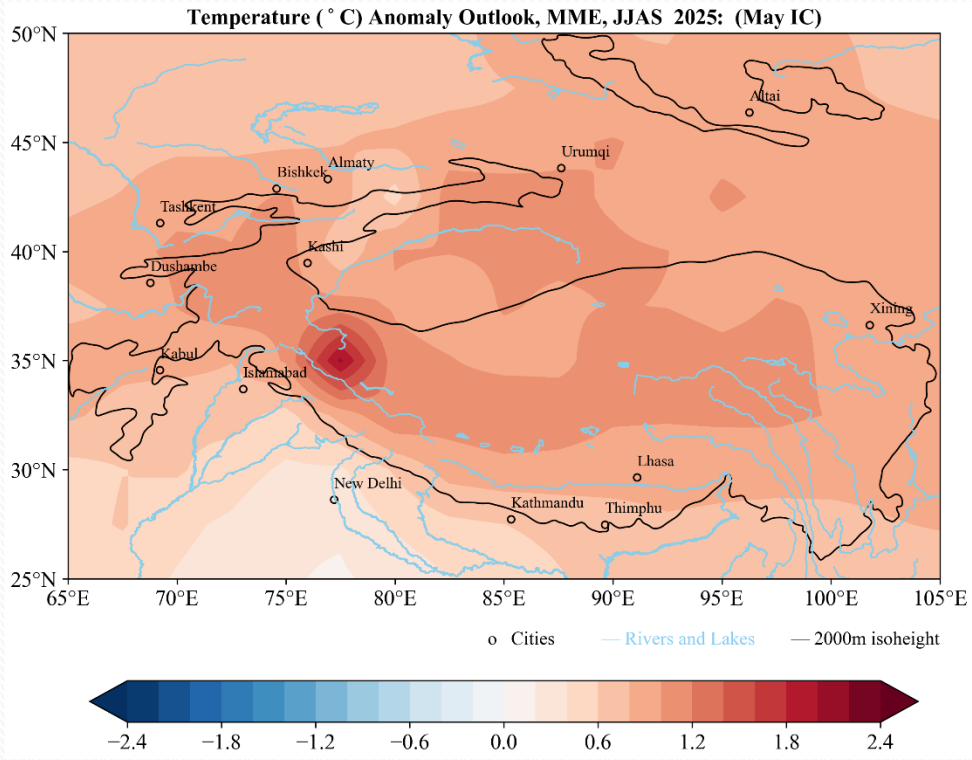


Models	Correlation	Index of Agreement	RMSE
APCC	0.63	0.12	3.96
BOM	0.75	0.53	0.59
CMCC	0.67	0.45	0.69
CWA	0.63	0.45	0.78
ECCC	0.75	0.48	0.68
HMC	0.33	0.46	0.61
KMA	0.75	0.45	0.78
METFR	0.82	0.32	1.25
NCEP	0.64	0.51	0.59
PNU	0.64	0.21	2.20
UKMO	0.81	0.59	0.50

PMD's Outlook for TP Region

Deterministic precipitation /temperature outlook (JJAS, 2025)

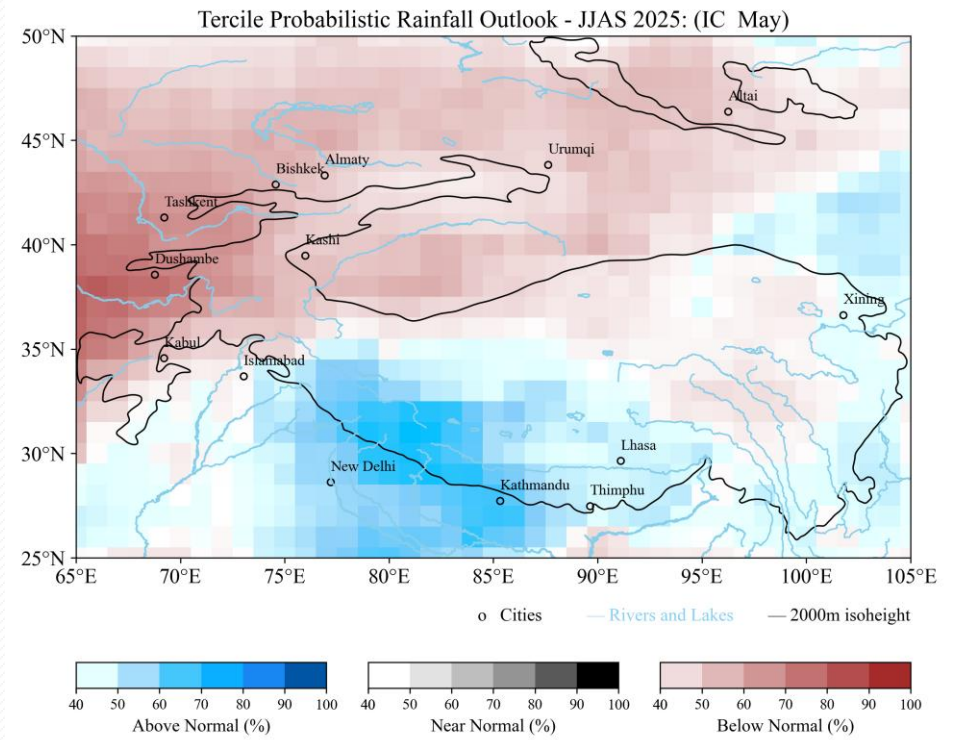


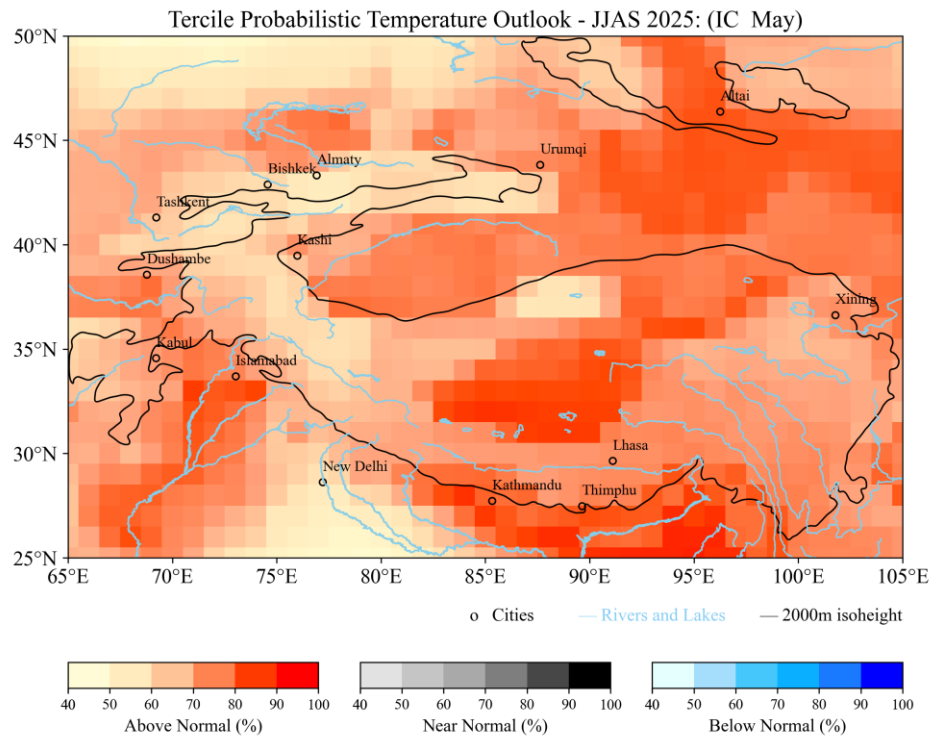


- Above normal precipitation is expected over southern and eastern TP region, with maximum anomaly over the southwestern part (northwestern part of South Asia).
- Surface temperature is expected to remain above normal across most parts of the TP region with maximum deviation over the Karakoram ranges.

Parameter	R	IA	RMSE
Precipitation	0.63	0.24	0.97
Temperature	0.78	0.73	0.32

Probabilistic precipitation/temperature outlook (JJAS, 2025)





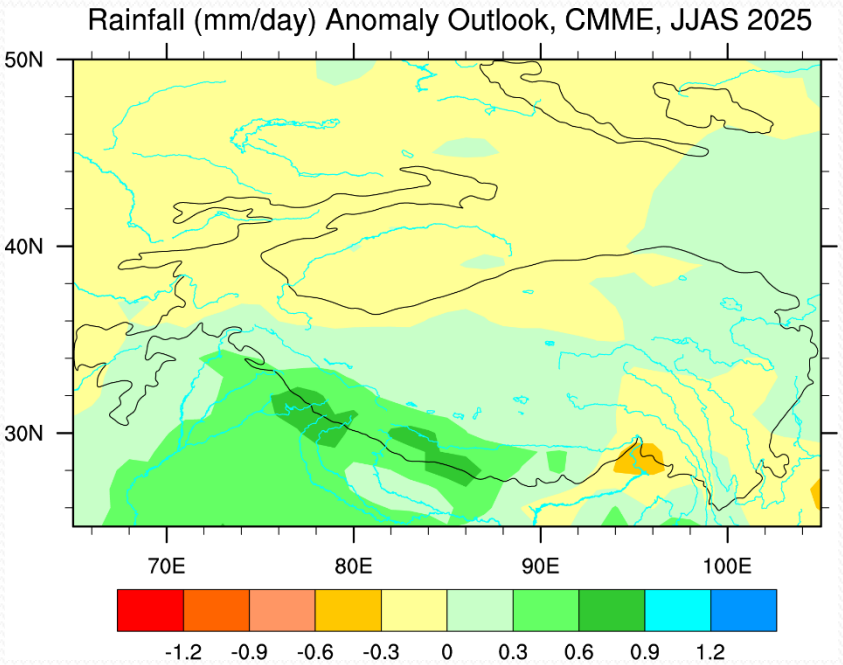
- Tercile probability map predicts the likelihood of above normal precipitation over eastern and southwestern parts of TP region. Below normal precipitation is more likely over the northern/northwestern parts.

- The likelihood of above normal temperature over most of the TP region with maximum departure over the southwestern part (Pakistan) the southern part (Nepal and Bhutan), the central Tibetan Plateau and the northeastern parts (Mongolia and adjoining parts of China).

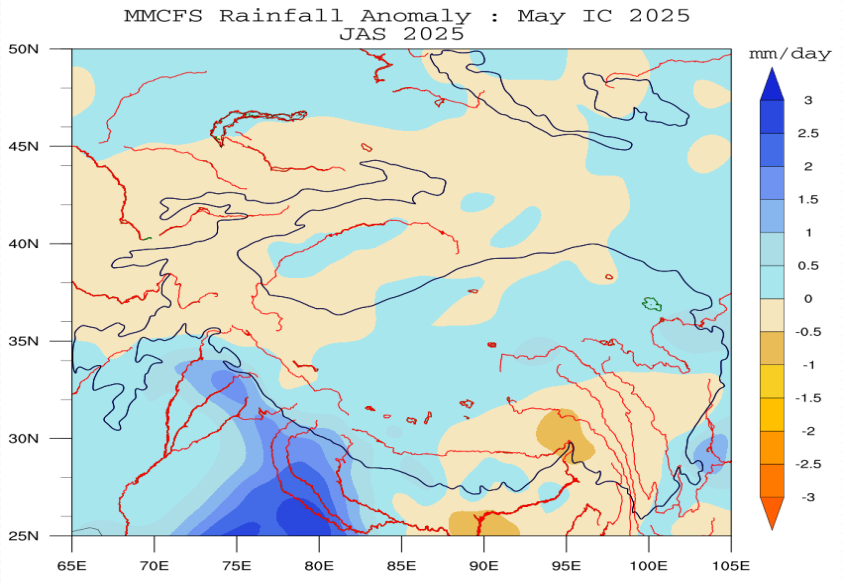
Outlooks Comparison

Anomalies/Deterministic Forecast Precipitation

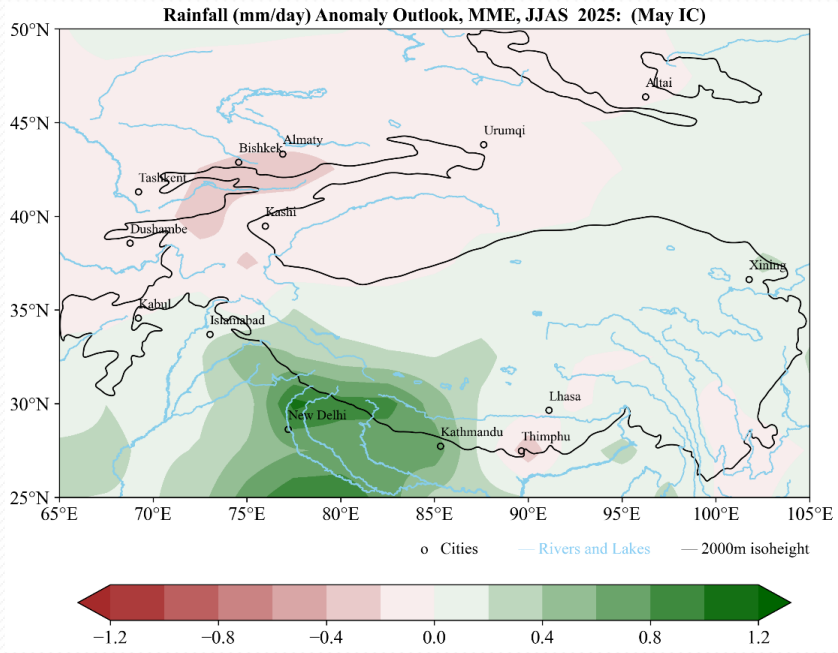
CMA



IMD

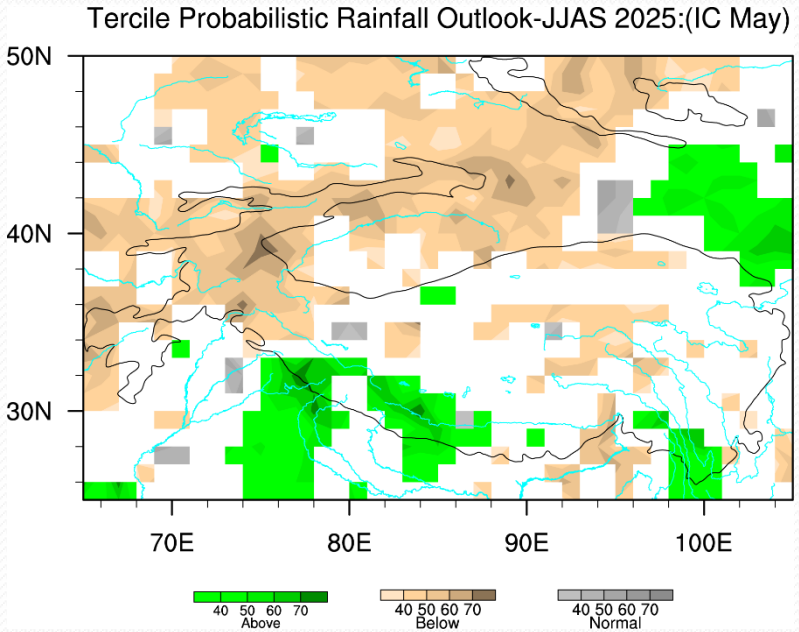


PMD



Probabilistic Precipitation Forecast

CMA



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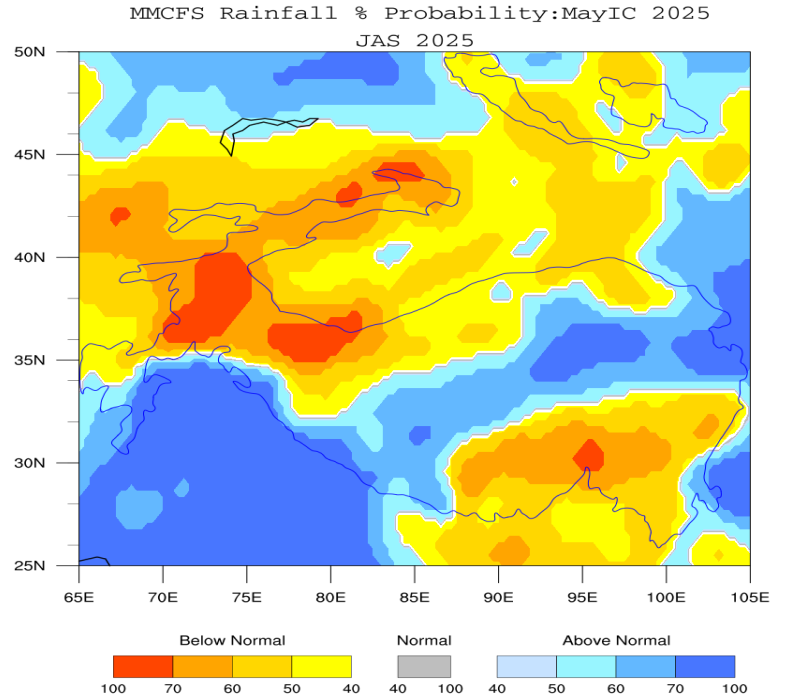

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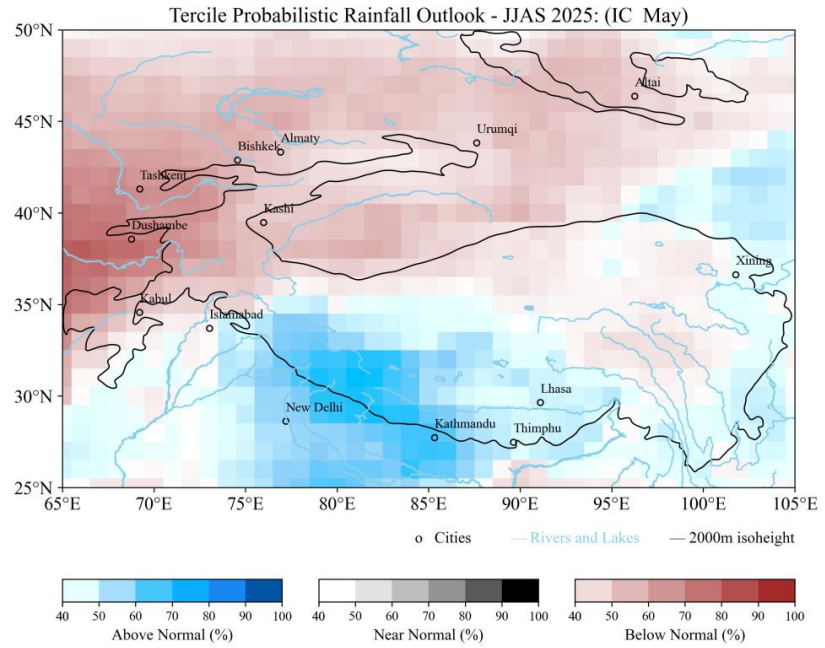
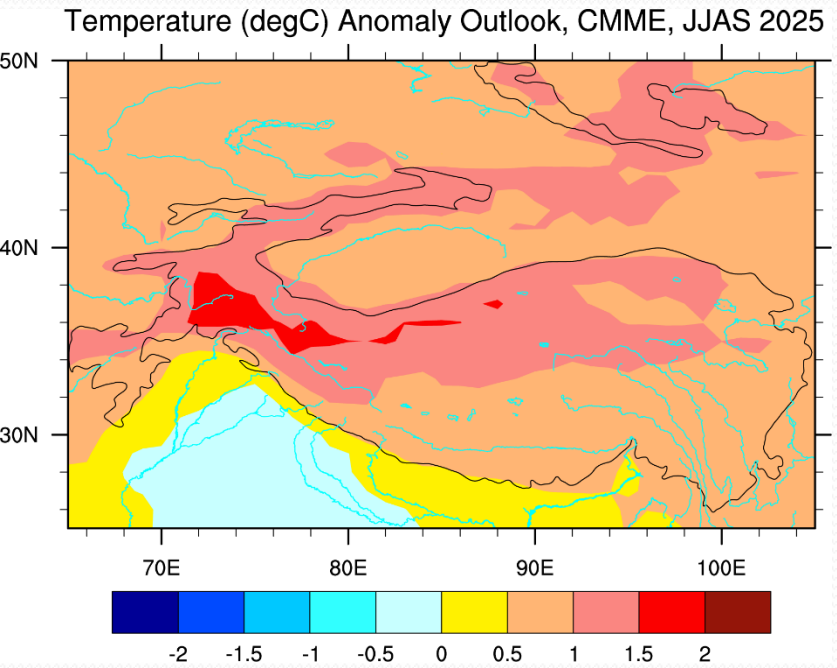


Anomalies/Deterministic Forecast Temperature

CMA



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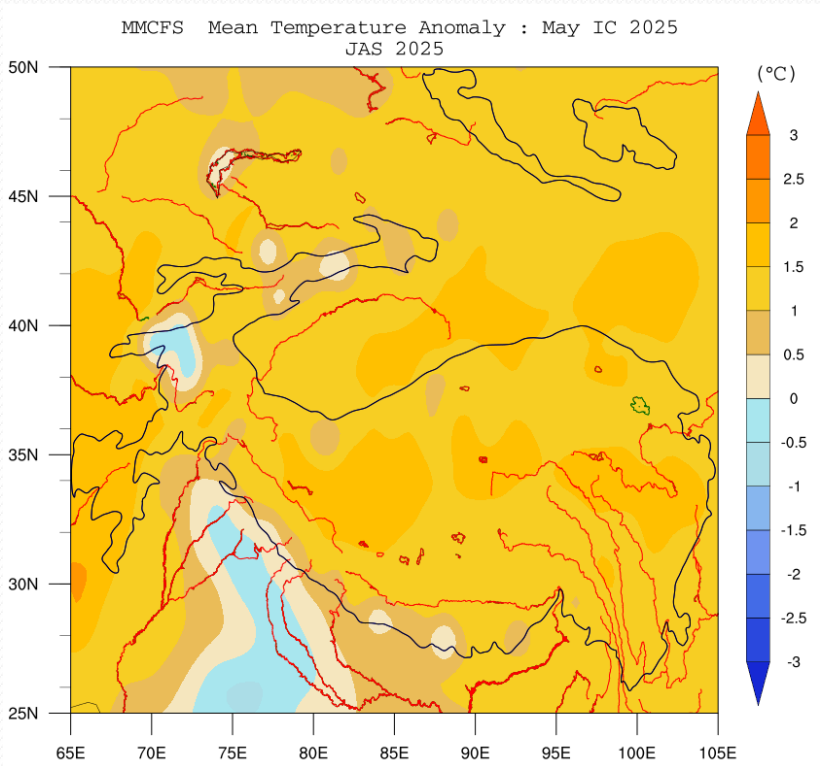

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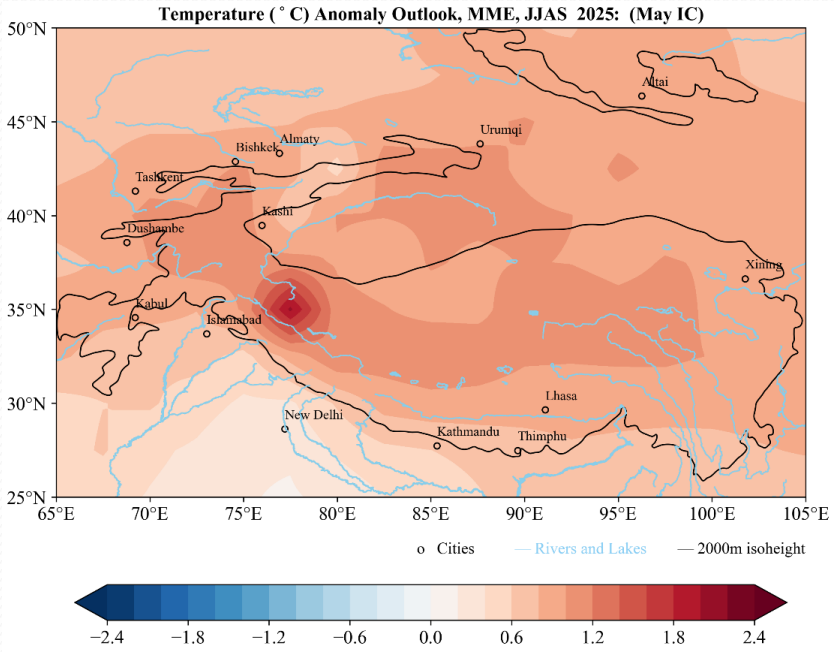
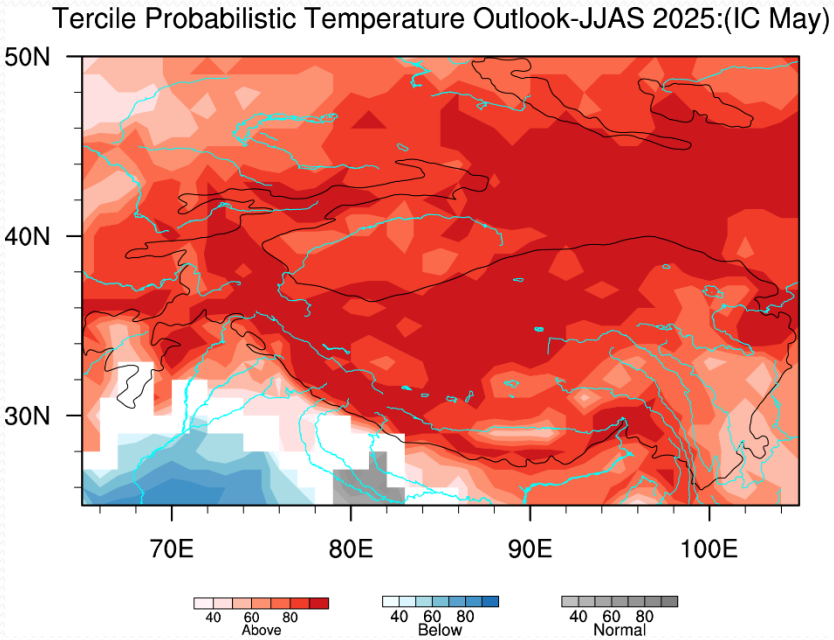


Probabilistic Temperature Forecast

CMA



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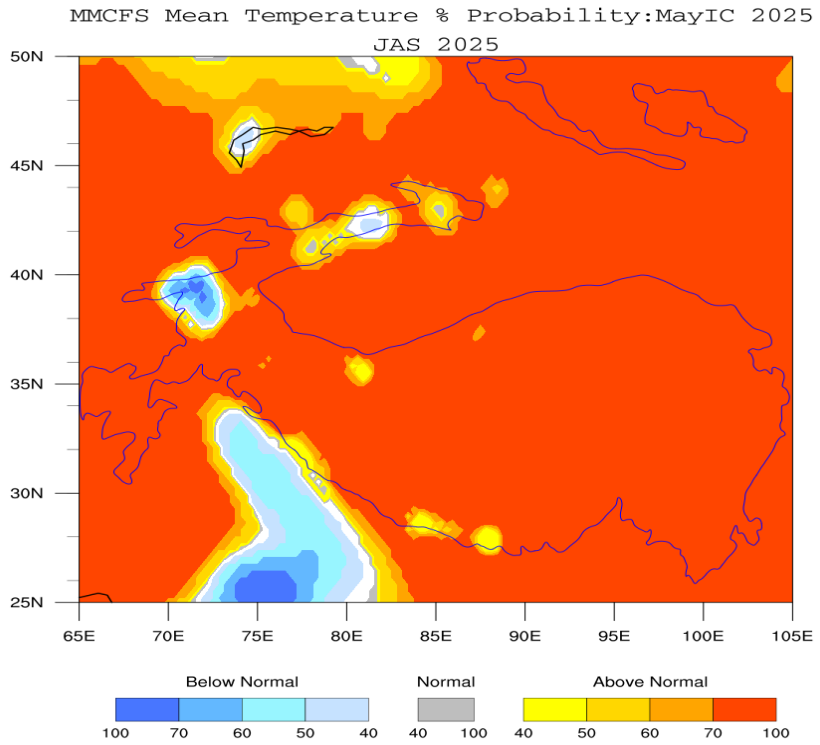

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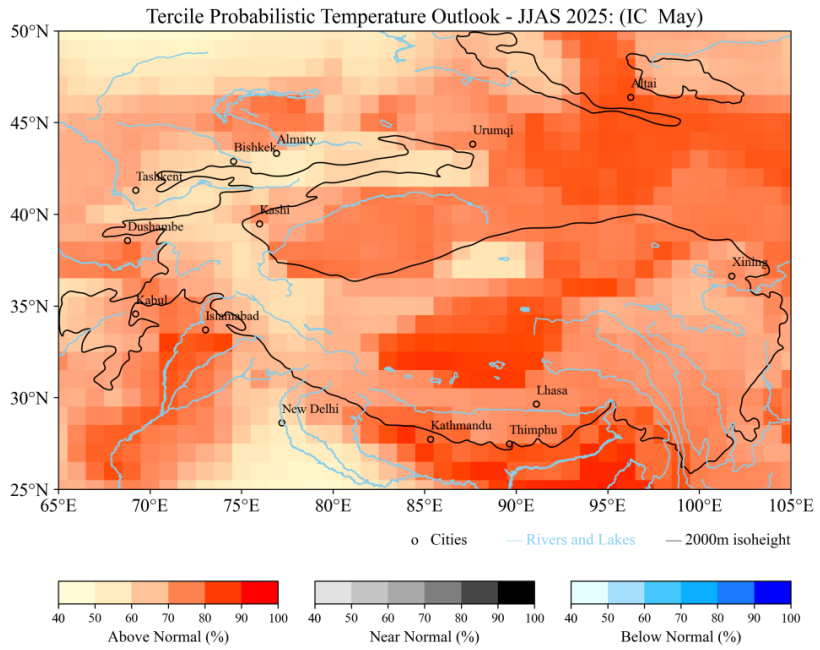

Highlights

- It is likely to have above-normal precipitation over the southwestern TP region, particularly along the Hindu Kush Himalayan (HKH) region, as well as across the eastern parts of the region.
- Below-normal precipitation is anticipated over much of the northwestern TP region and in isolated areas of the southeastern region during the forecast season.
- Above normal temperatures are most likely over most parts of the TP region with strongest warming, exceeding 2°C, is expected over the Karakoram region, as projected by CMA and PMD outlook. Below normal temperatures are likely over the southwestern regions, as projected by CMA and IMD outlooks, the anomaly over this region in PMD outlook is slightly above normal.
- The highest probabilities are centered over the southern areas (Nepal and Bhutan), the central Tibetan plateau, and the northeastern region, including Mongolia and adjacent parts of China.

Thank You