Third Pole Climate Forum

Evaluation of TPCF-2 and TPCF-3 Outlook and Outlook for DJF Season 2025/2026

Reporter: LIU JINGPENG
Beijing Climate Center

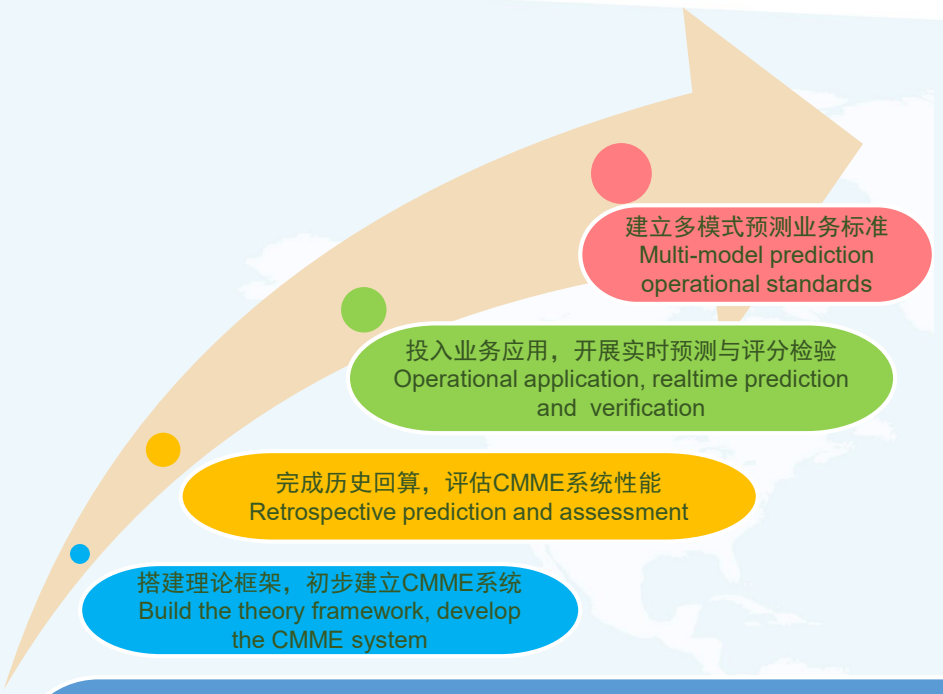
2025.12

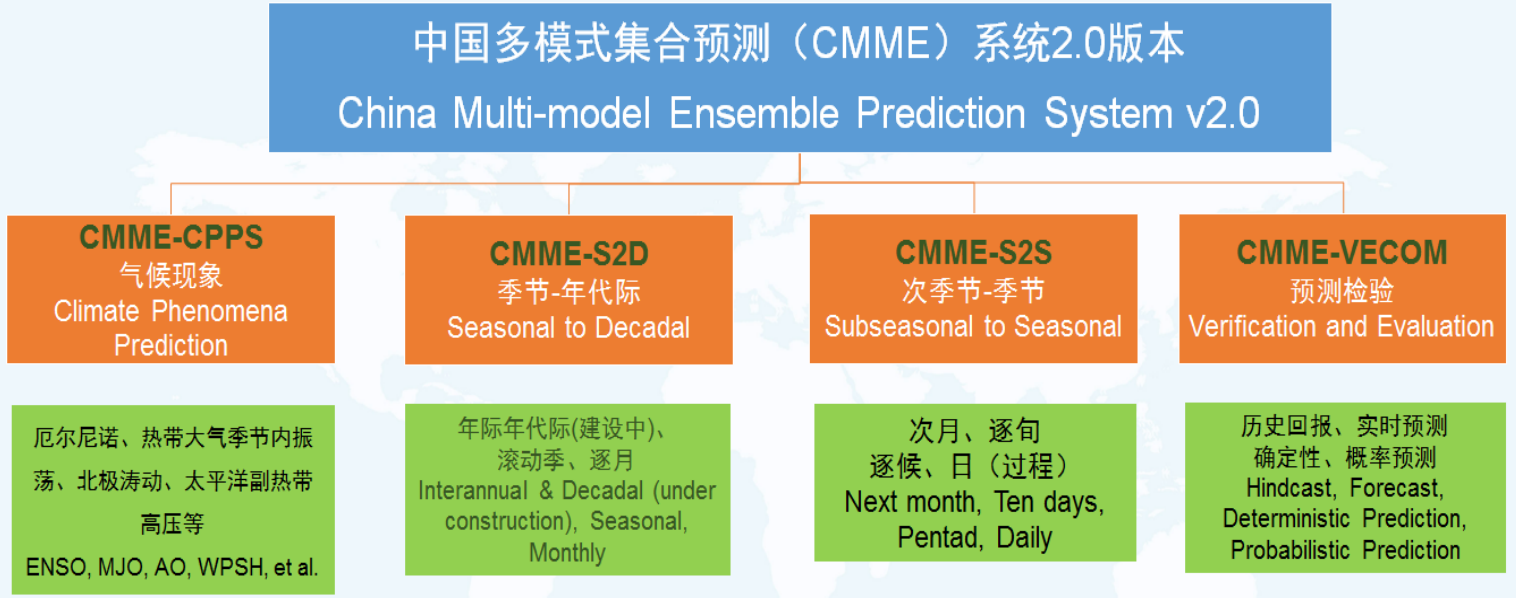
Outlines

1 Evaluation of TPCF-2 & 3

2 Outlook of DJF 2025/2026

China Multi-model Ensemble Prediction System

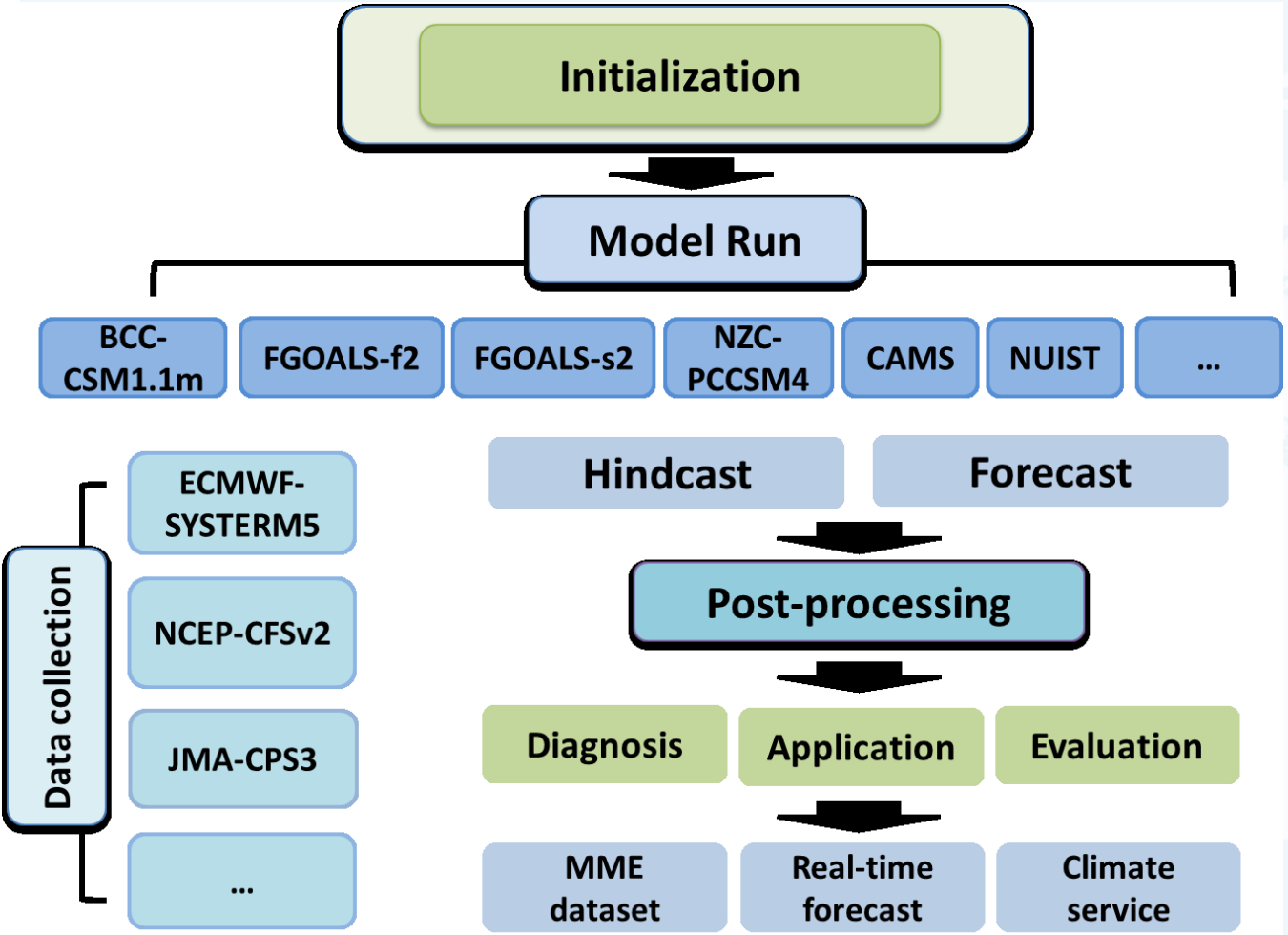




Based on several domestic operationally-run climate models and internationally imported data, Beijing Climate Centre has established the China Multi-model Ensemble Prediction System(CMME). It provides the prediction and verification products of basic climate elements such as temperature and precipitation, as well as the primary climate variability modes.

CMME-S2D Products

CMME-S2D Structure



CMME Models

Model	Nation	Institution	Release	Atms Res	Ocean Res	Ens	Fcs Len (mon)
BCCCSM1.1m	China	BCC	2015	T106, L26	1/3°~30 km, L40	24	13
FGOALS-f2	China	IAP	2017	1×1, L32	1×1, L50	35	6
FIO-CPSv2	中国	海洋一所	2020	0.9×1.25 ,L30	1.1×（0.27-0.54）, L61	10	13
ECMWF-S5	Euro	ECMWF	2017	T319, L91	ORCA 0.25, L75	15	6
NCEP-CFSv2	USA	NCEP	2011	T126, L64	1×1, L40	4	10
JMA-CPS3	Japan	JMA	2022	TL319, L100	0.25 x 0.25, L60	100	6
CAMS	China	CAMS	2020	T106, L31	1×1, L50	8	6
NUIST	China	NUIST	2019	T106, L19	2×2(赤道0.5), L40	9	24
BCCCPSv3	China	CMA	2021	T266, L56	1/4°	20	6-7

CMME-VECOM Products

The historic and real-time verification products of each model member in CMME is provided by VECOM

Verification and Evaluation system of Climate Operational products in prediction Models (VECOMv3.0)

SEASON Models: BCC_CSM1.1m\ECMWF_S5\NCEP_CFS2\FGOALS_f2\ FGOALS_s2\ JMA_CPS3\NUIST\CAMS\NZC_PCCSM4…

S2S Models: CMME-S2S

Hindcast Assessment

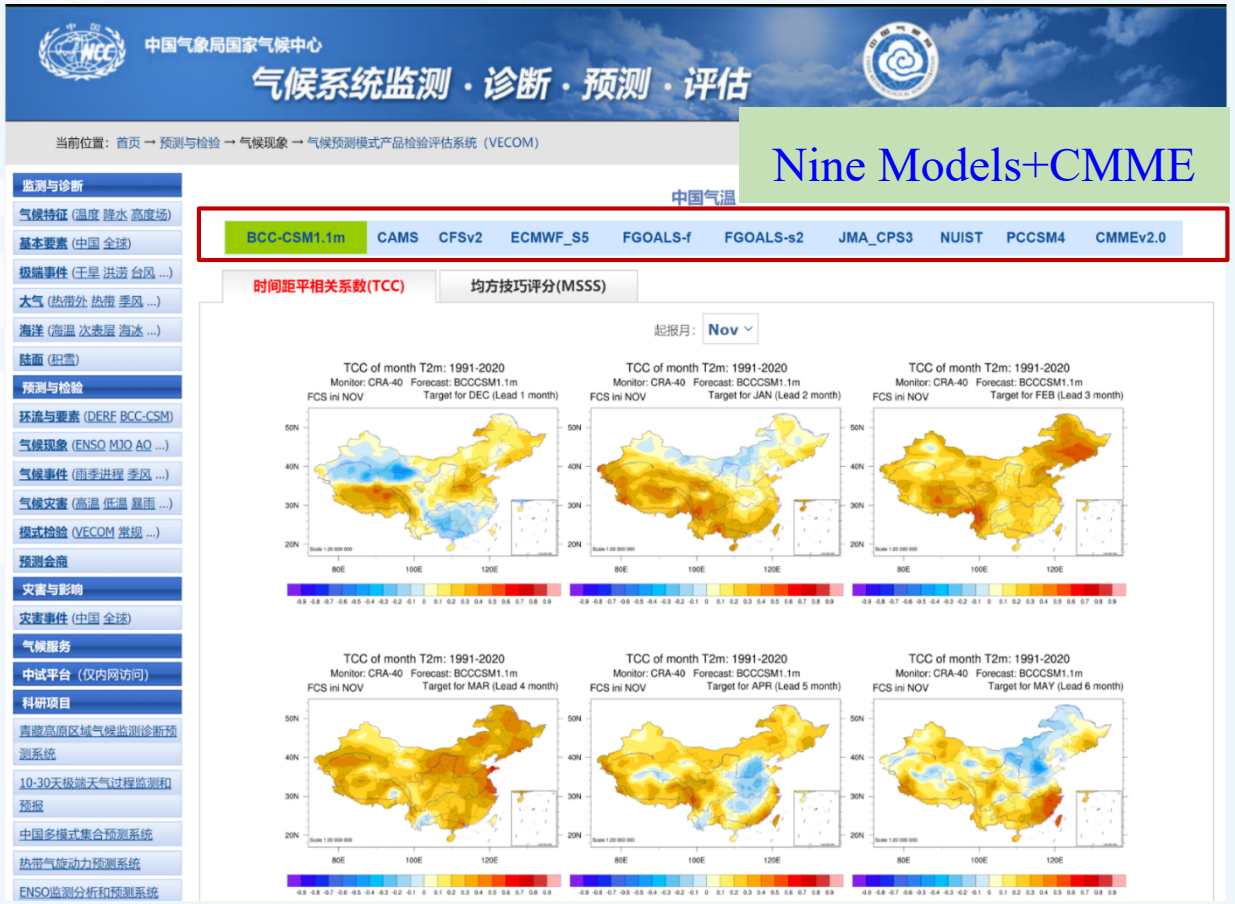
Global、Regional、China Grids+Stations

Climate variables
T2m
Pre
Circulations

Climate Phenomenons
ENSO MJO IOD NAST
WPSH
EASM

Deterministic+Probabilistic Predictions

Real-time Assessment



Verifications for TPCF-2

- **Method: TCC,ACC, et al.**

TCC is recommended for **historical verification**

ACC is recommended for **real-time verification**

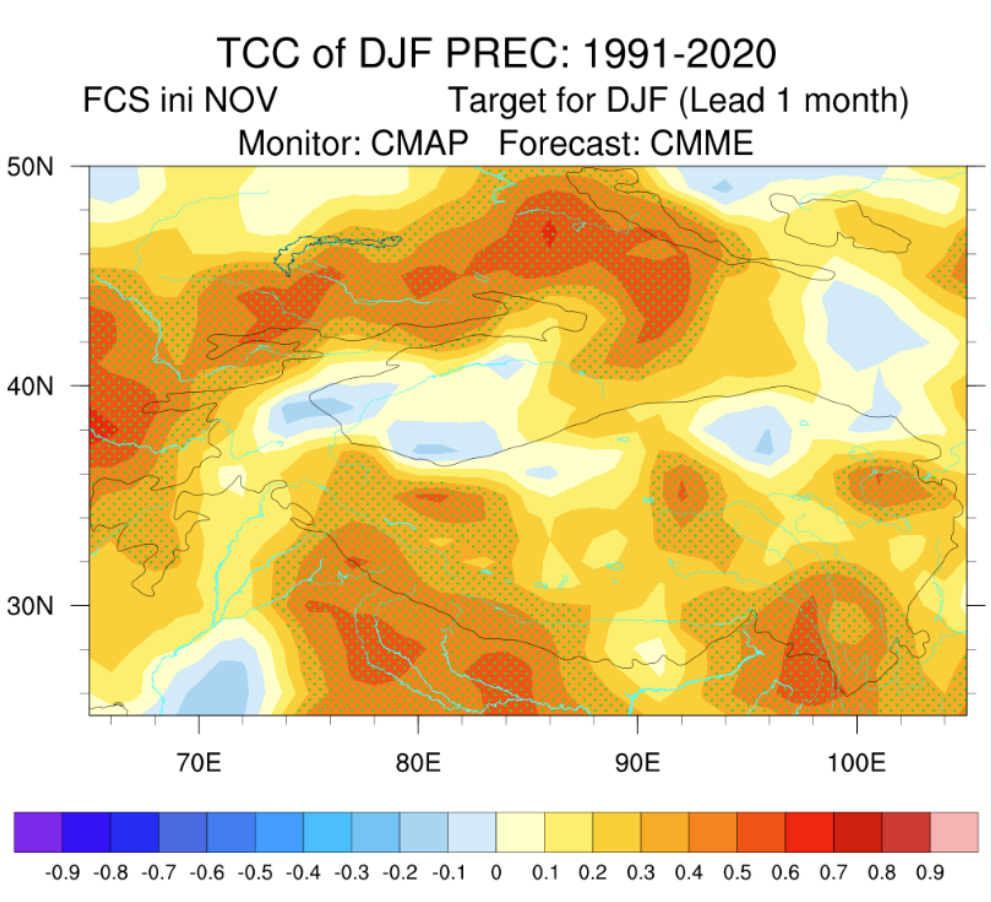
$$TCC_i = \frac{\sum_{j=1}^{N}(x_{i,j} - \bar{x}_i)(y_j - \bar{y})}{\sqrt{\sum_{j=1}^{N}(x_{i,j} - \bar{x}_i)^2}\sqrt{\sum_{j=1}^{N}(y_j - \bar{y})^2}}$$

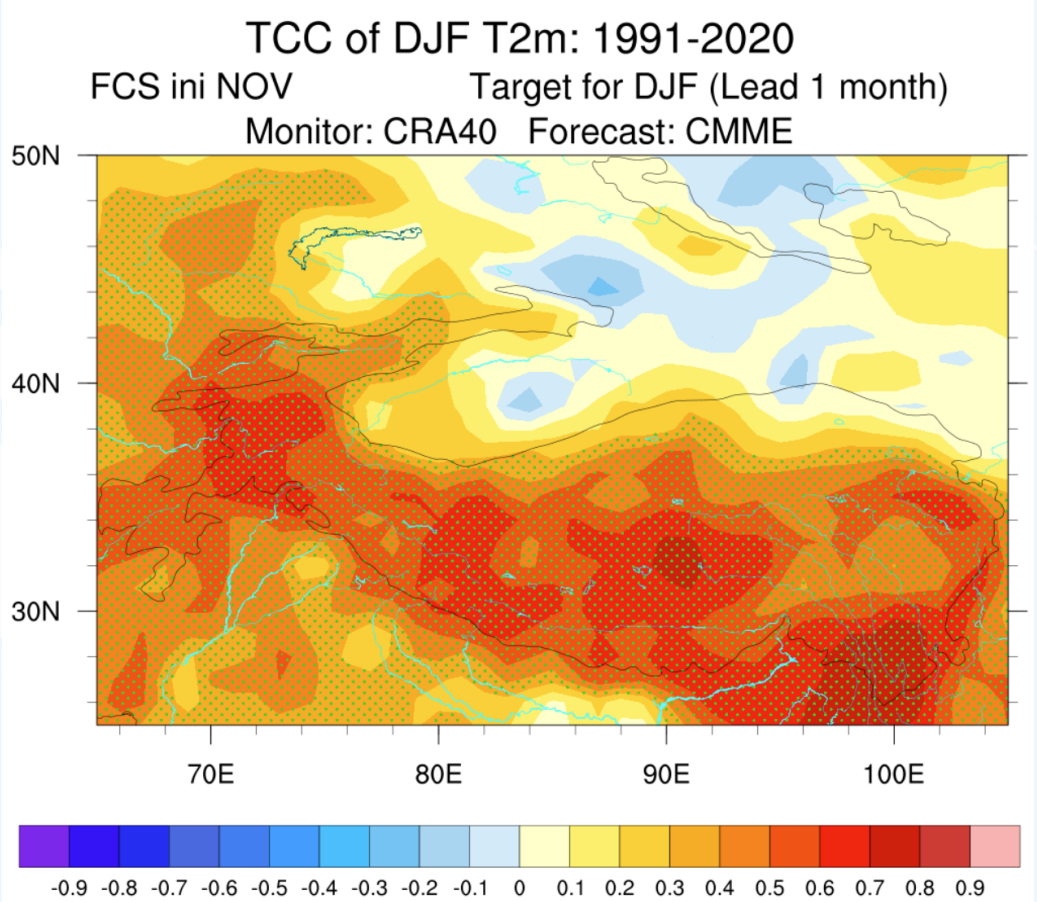
$$ACC_j = \frac{\sum_{i=1}^{M}\Delta x_{i,j}\Delta y_{i,j}}{\sqrt{\sum_{j=1}^{M}\Delta x_{i.j}^2}\sqrt{\sum_{j=1}^{M}\Delta y_{i,j}^2}}$$

Gridded CRA-40 from CMA and station observations are used for verification

Verifications for TPCF-2

- **Method: TCC, ACC scores et al.**
- **Target: DJF**





Gridded CRA-40 and in-situ observations from CMA are used for verification

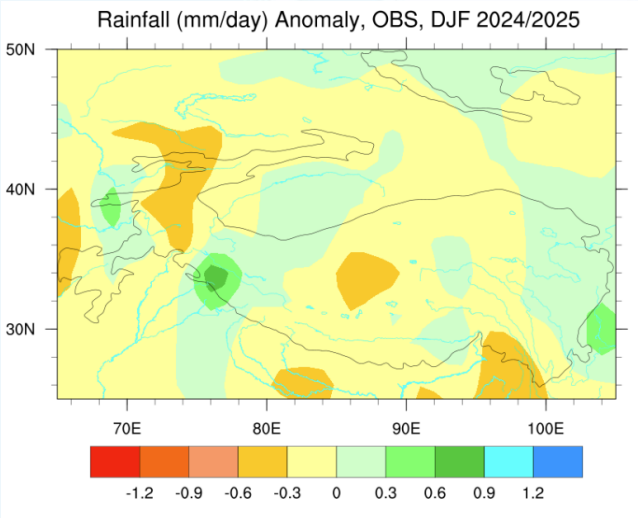
CMME-S2D Deterministic Prediction

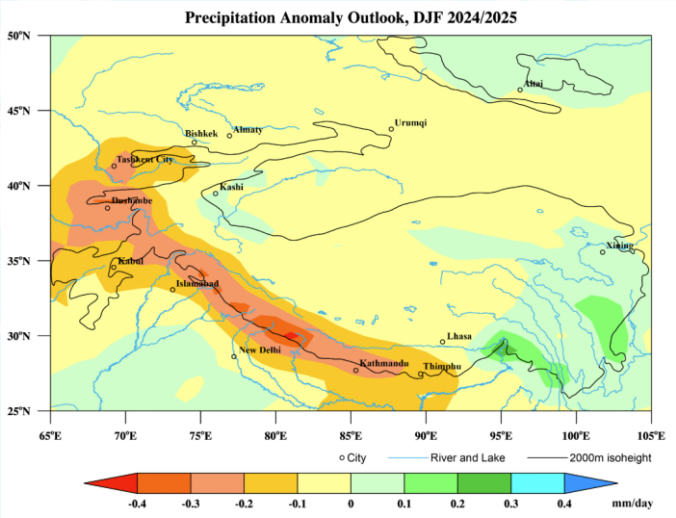
- **Variables:** Precipitation Anomaly, **Relative to:** 1991-2020 **IC: Nov**

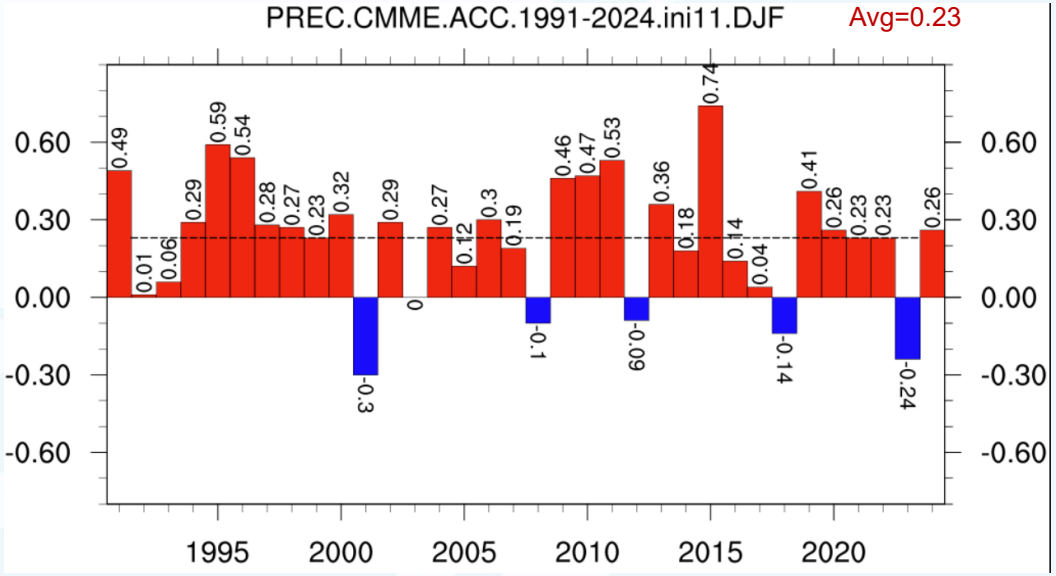
OBS

Outlook

ACC=0.263



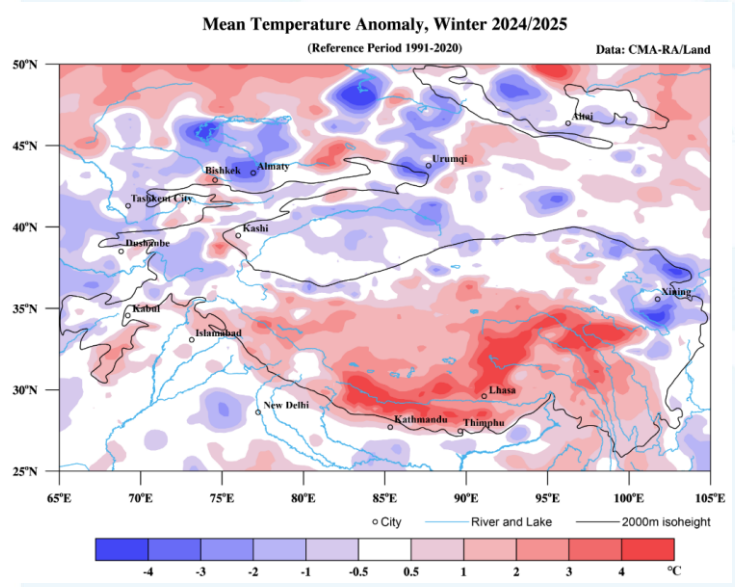




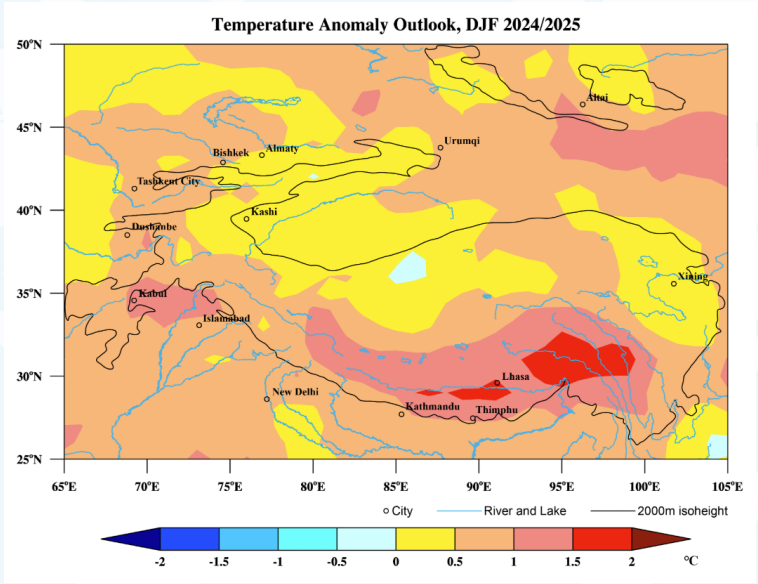
CMME-S2D Deterministic Prediction

- **Variables:** T2m anomaly **Relative to:** 1991-2020 **IC: Nov**

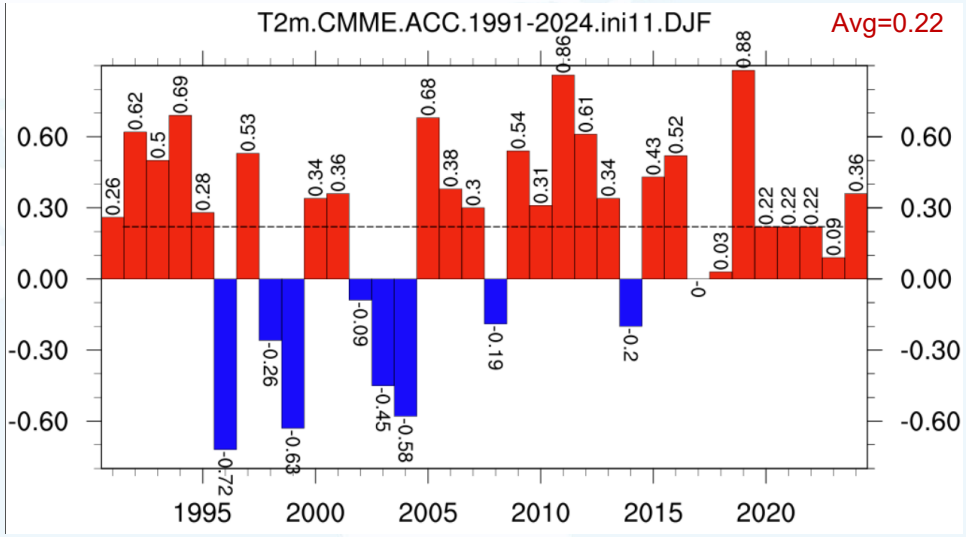
OBS



Outlook

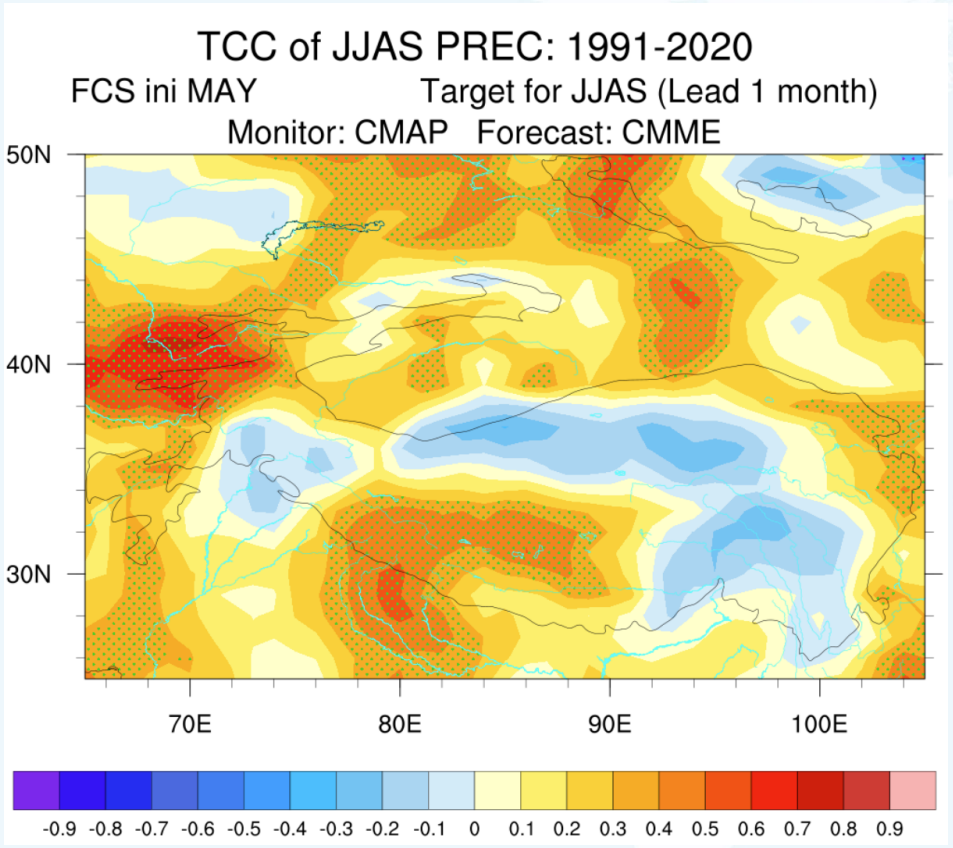


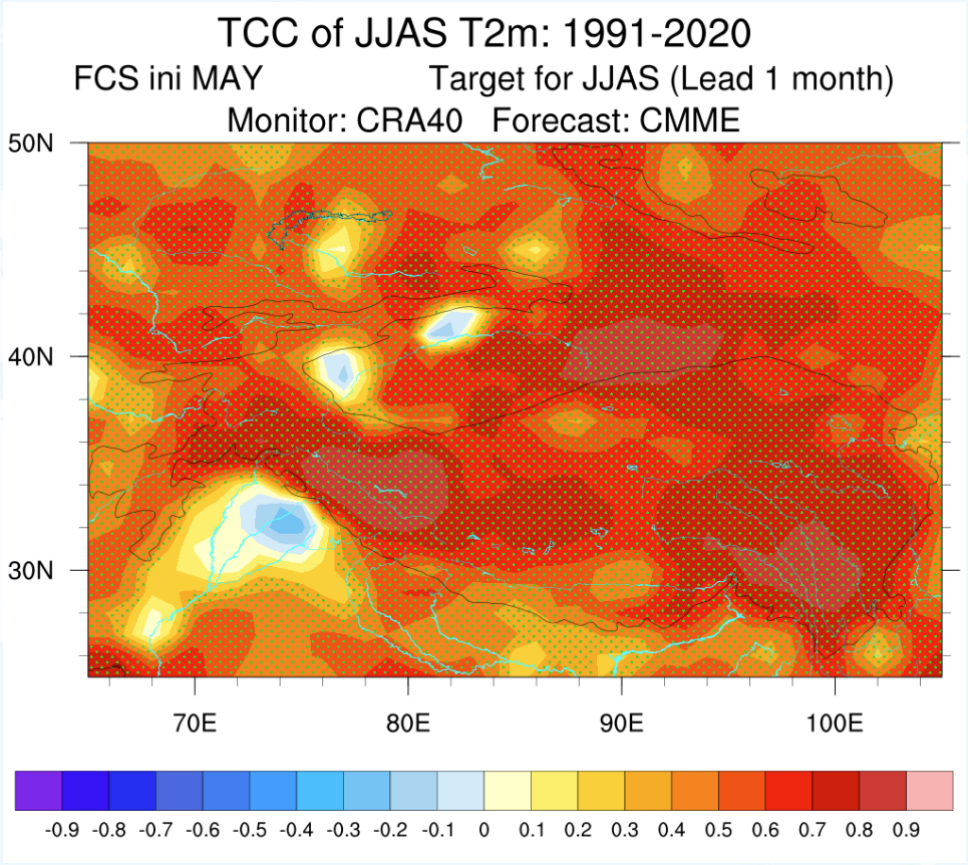
ACC=0.36



Verifications for TPCF-3

- **Method: TCC, ACC, Ps scores et al.**



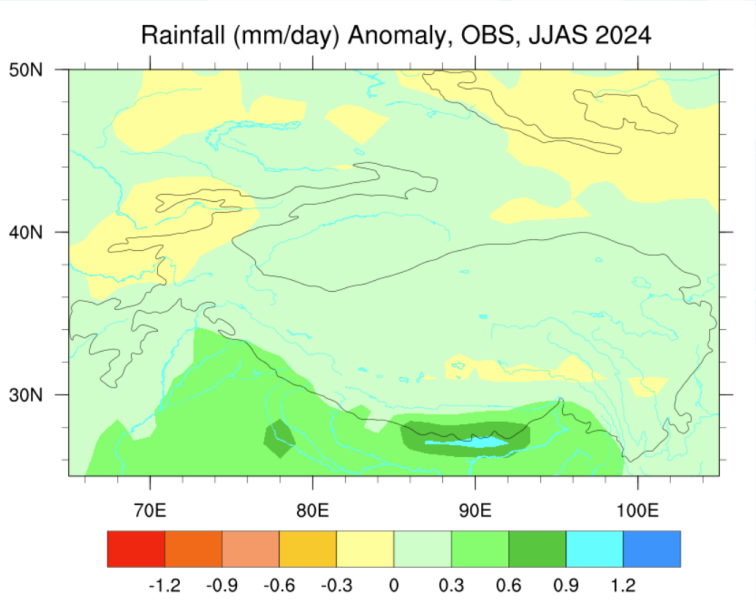


Verification products for TPCF3

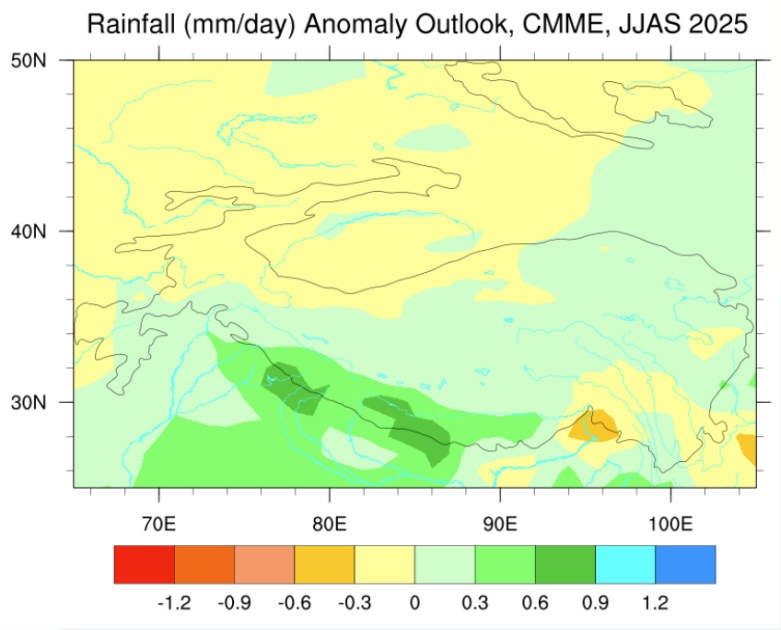
CMA Deterministic Prediction

- **Variables:** Precipitation Anomaly, **Relative to:** 1991-2020 **IC:** May

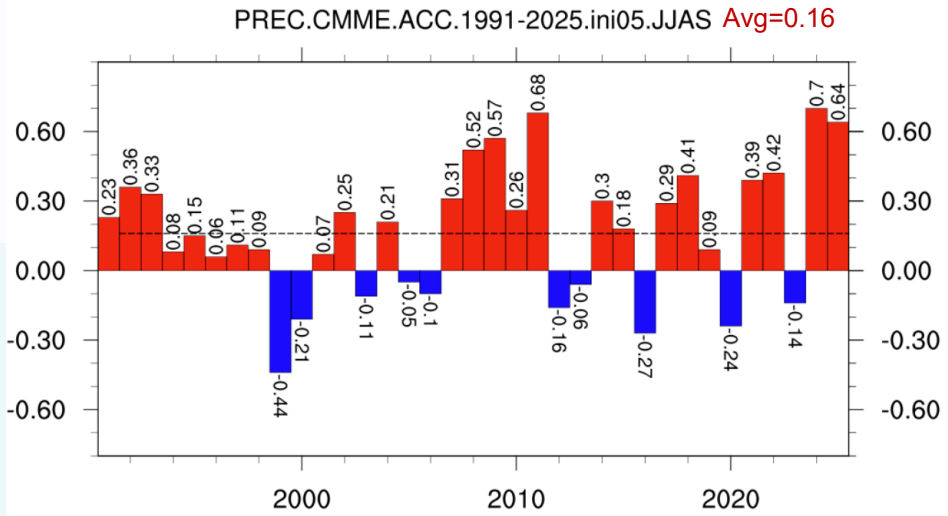
OBS



Outlook ACC=0.64



Record 3rd of ACC since 1991

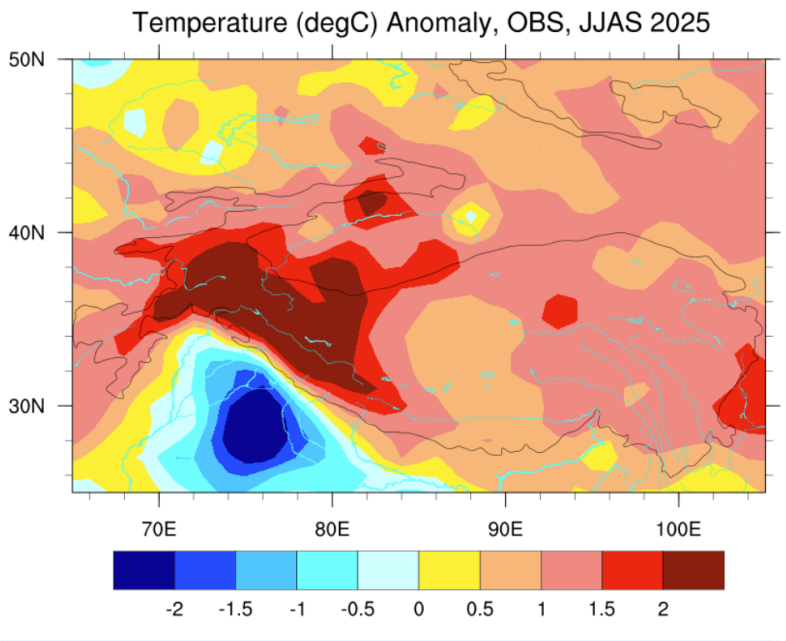


Verification products for TPCF3

CMA Deterministic Prediction

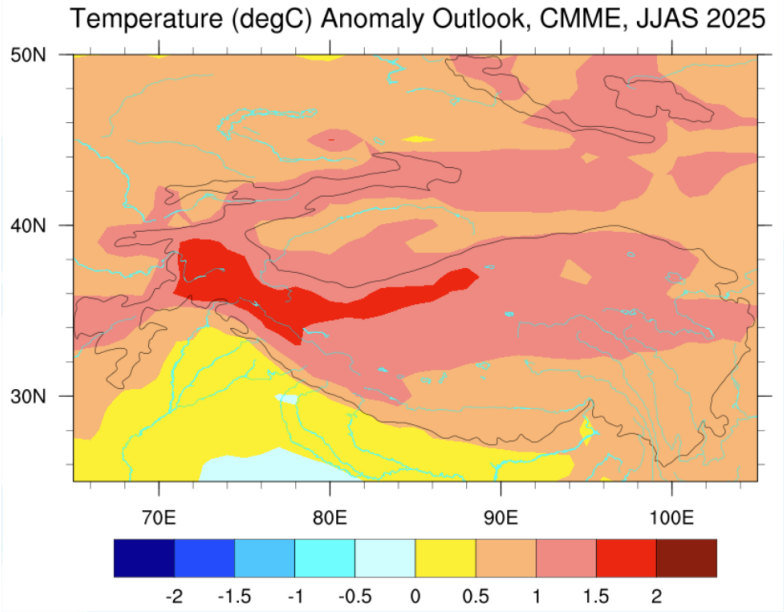
- **Variables:** Precipitation Anomaly, **Relative to:** 1991-2020 **IC:** May

OBS

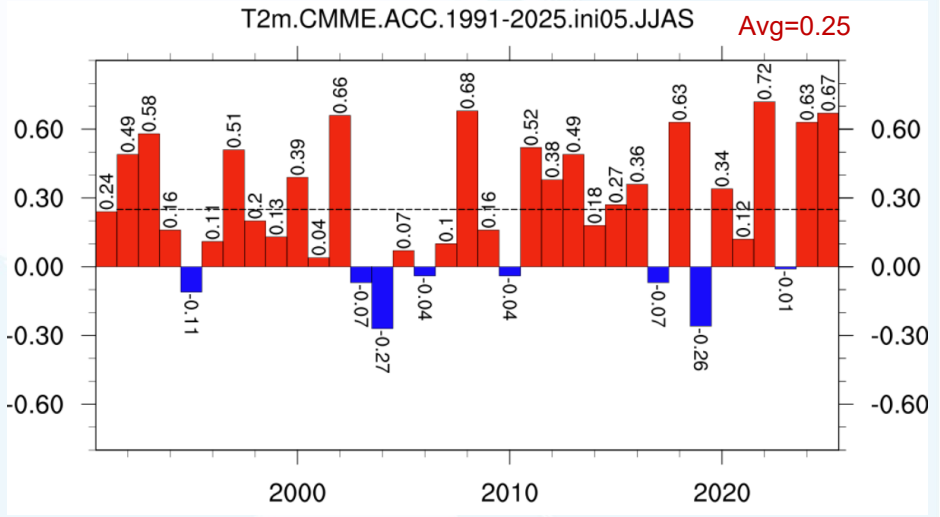


Outlook

ACC=0.664



Record 3rd of ACC since 1991



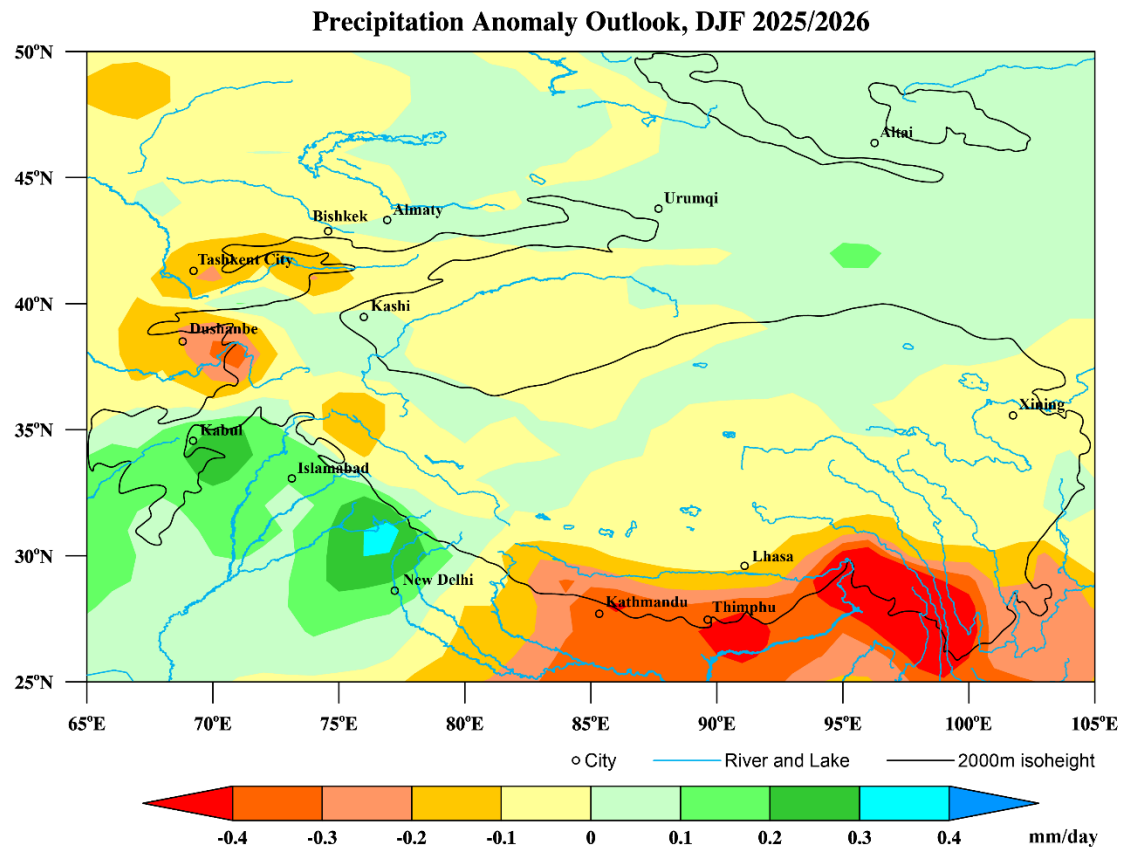
Outlines

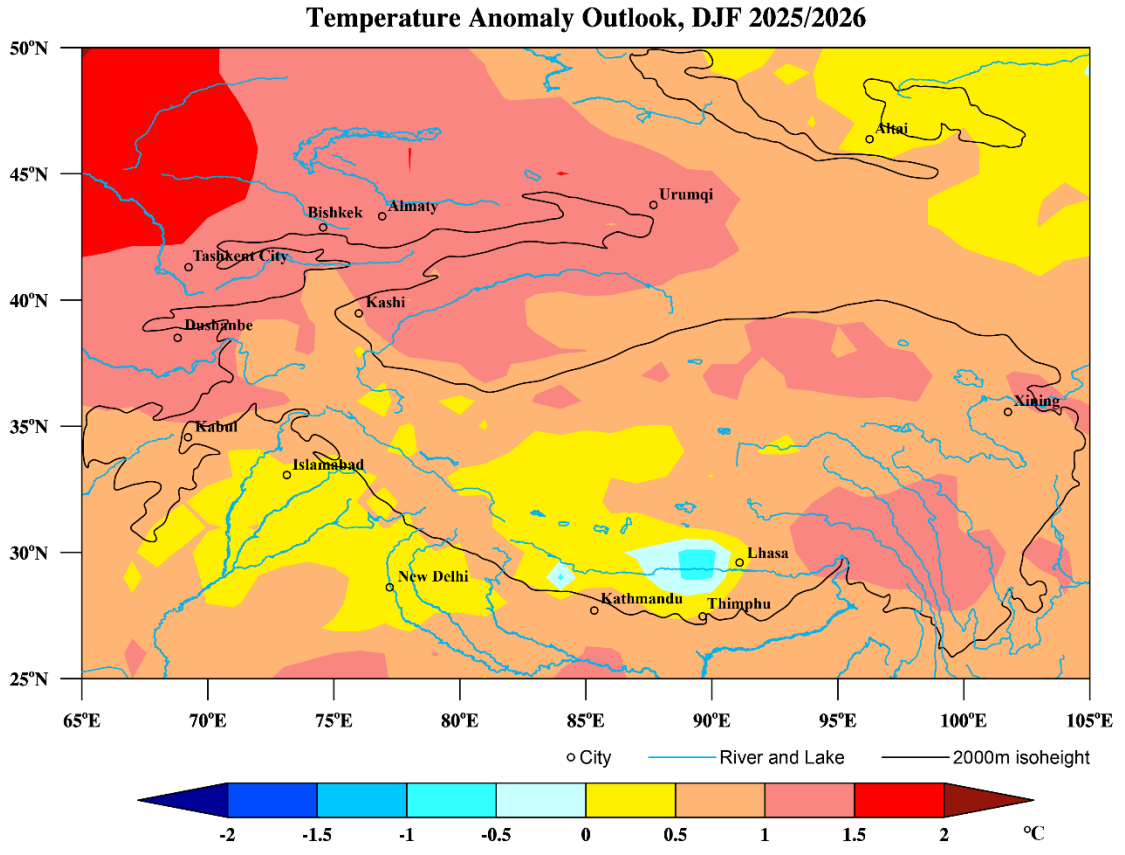
1 Evaluation of TPCF-2 & 3

2 Outlook of DJF 2025/2026

CMME-S2D Deterministic Prediction

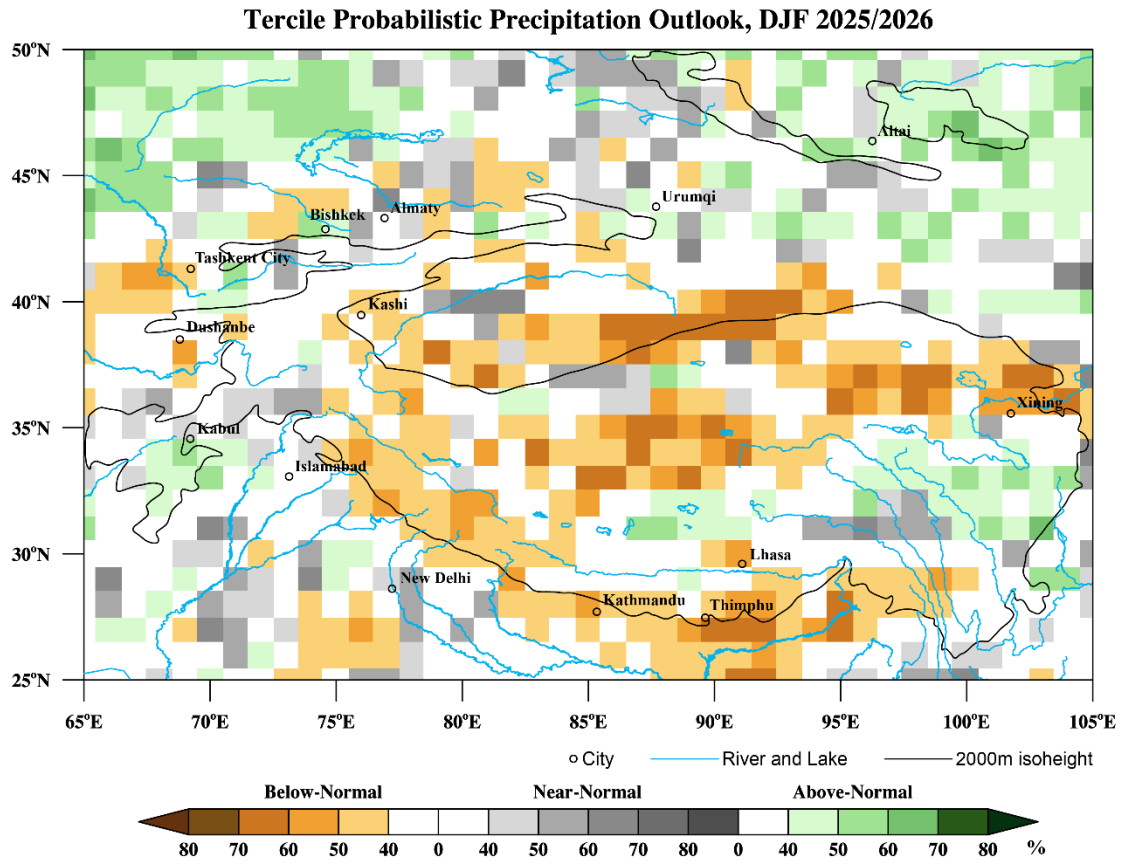
- **Variables:** Precipitation Anomaly, T2m anomaly **Relative to:** 1991-2020 **IC:** Nov

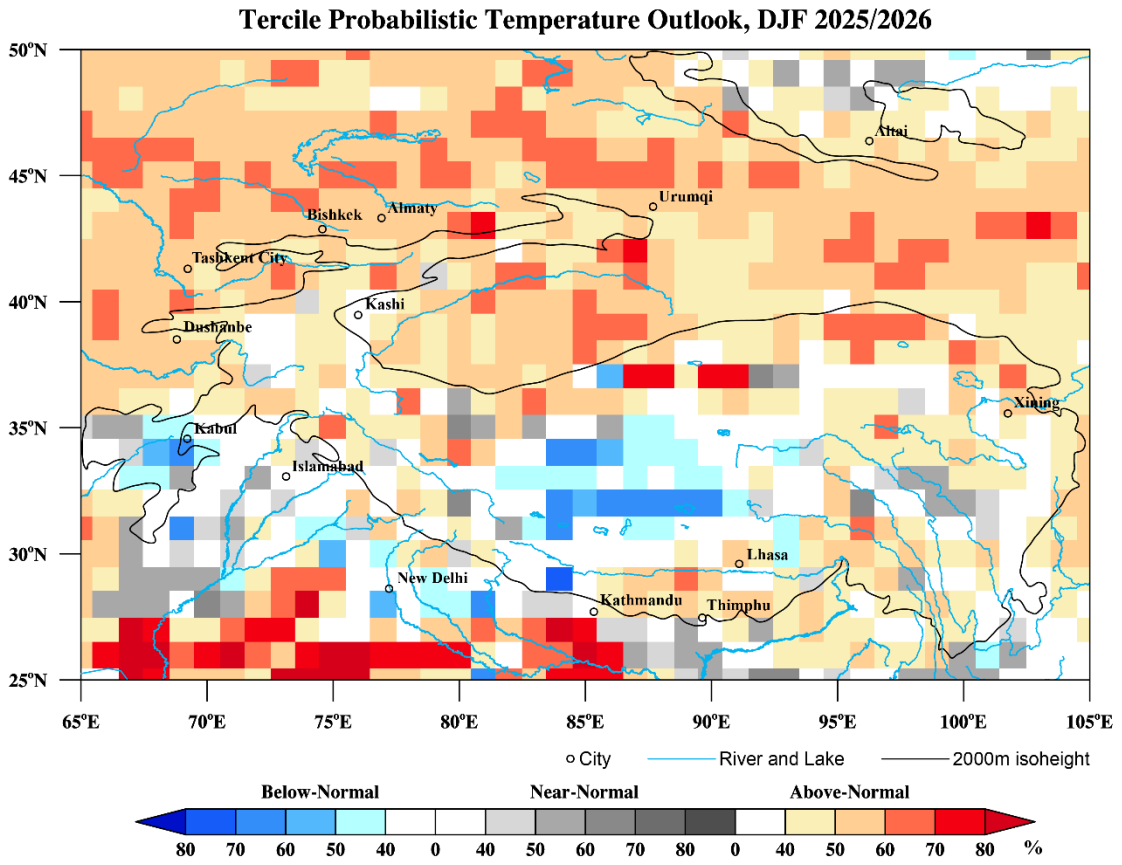




CMME-S2D Probabilistic Prediction

- **Variables:** Precipitation, T2m **Relative to:** 1991-2020 **IC: Nov**





Take-home Messages

Evaluation

- 1. CMME shows stable predictability in JJAS and DJF seasons.
- 2. The TCC of precipitation is relatively higher in DJF than in JJAS. But the TCC of SAT is higher in JJAS than in DJF.
- 3. CMME showed very high skills for TPCF-3 and higher than climatic mean ACC for TPCF-2.

Outlook

- Above-normal precipitation is expected over the southwestern and northeastern TP region. Normal to below-normal precipitation is predicted in the northwestern and southeastern TP region.
- SAT during DJF 2025/2026 is expected to remain above normal across most parts of the TP region, with the highest anomalies anticipated over the northwestern TP region.


Thanks