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NATIONAL CENTRE FOR HYDROLOGY AND METEOROLOGY  
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*"Centre of Excellence in Hydrology, Meteorology and Cryosphere Science and Services"*



27 January 2023

## Extended Range Prediction for Bhutan

### Background

Extended Range Prediction (ERP) for Bhutan is prepared with the support from the Indian Meteorological Department (IMD), Government of India. The model used for the system is CFSv2 coupled model (Atmospheric and Ocean model) which runs once every week (Wednesday), with the 16 Ensemble Members at the horizontal resolution of around 25 km, and the products are made available the next day (Thursday). Therefore, the ERP products for Bhutan will be generated every Friday. ERP for Bhutan is carried out for two climate variables, rainfall and temperature.

Generally, the forecast output is produced on a weekly basis for a period of a month for both the variables. The current products available from NCHM are on pilot basis which needs further studies and validation with the ground observations until the product is fully operationalized.



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## Observed weather over last week

Most of the stations across the country showed an increase in maximum and minimum temperature for the last week. No rain was observed in the country for the last week. The table below displays observed real time rain and temperature data from regional meteorological stations over the last week.

Station	Parameter	19 Jan	20 Jan	21 Jan	22 Jan	23 Jan	24 Jan	25 Jan
Babesa	Tmax (°C)	11.5	12.5	14.0	14.5	15.5	16.0	15.0
	Tmin (°C)	-4.5	-4.5	-5.5	-3.0	-6.0	-5.0	-4.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dagana	Tmax (°C)	15.0	19.0	19.0	19.5	19.0	20.0	21.5
	Tmin (°C)	4.0	4.0	5.0	5.0	6.0	6.0	6.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	9.5	10.5	12.0	11.5	11.5	12.5	14.0
	Tmin (°C)	1.5	-2.5	1.0	1.5	0.0	2.0	2.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	19.0	20.5	20.0	20.5	20.5	21.5	23.0
	Tmin (°C)	7.0	9.0	9.0	9.0	10.0	10.0	10.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	6.0	5.5	10.0	10.0	10.0	11.5	11.5
	Tmin (°C)	-3.5	-2.5	-4.5	-5.0	-4.5	-3.5	-3.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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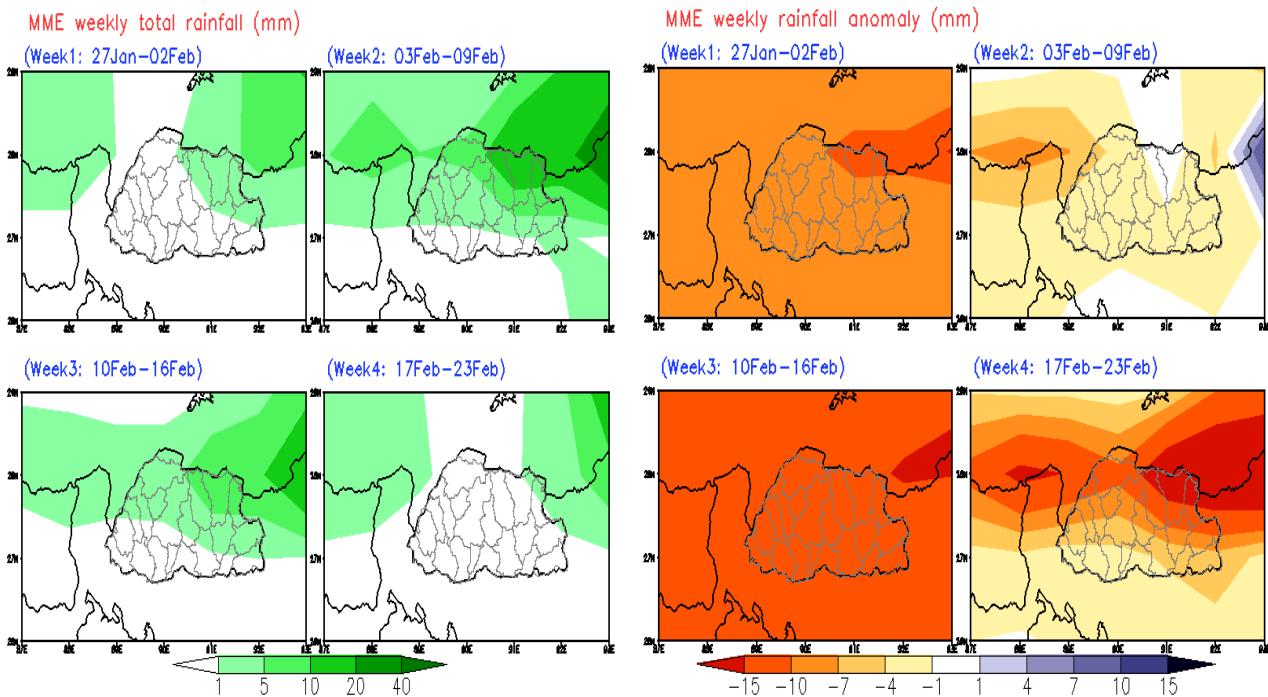
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## Weekly forecast for Bhutan

### 1. Rainfall Prediction



**Week 1 (27 January - 02 February), Week 2 (03 February - 09 February), Week 3 (10 February - 16 February) and Week 4 (17 February - 23 February)**

Below normal rainfall is expected throughout the region.



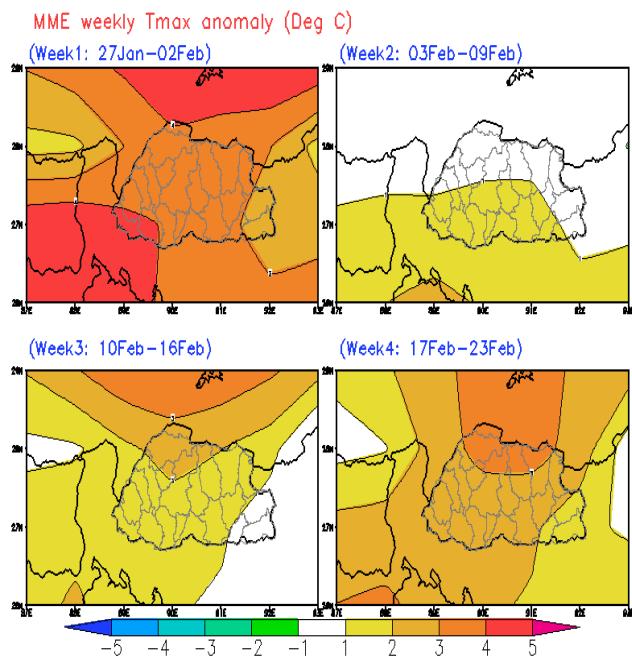
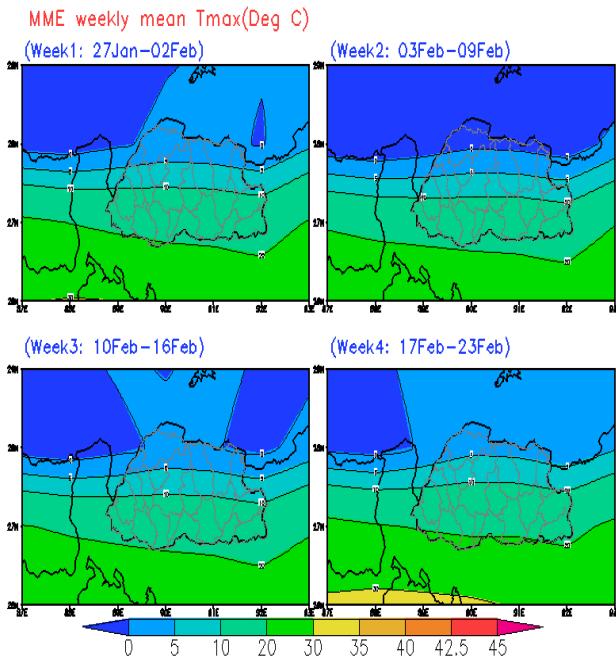
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## 2. Maximum Temperature Prediction



### Week 1 (27 January - 02 February)

Above normal maximum temperature is expected throughout the region.

### Week 2 (03 February - 09 February)

Above normal maximum temperature is expected across the southern and parts of the central region and normal maximum temperature is expected for the remaining region.

### Week 3 (10 February - 16 February) and Week 4 (17 February - 23 February)

Above normal maximum temperature is expected across the country.



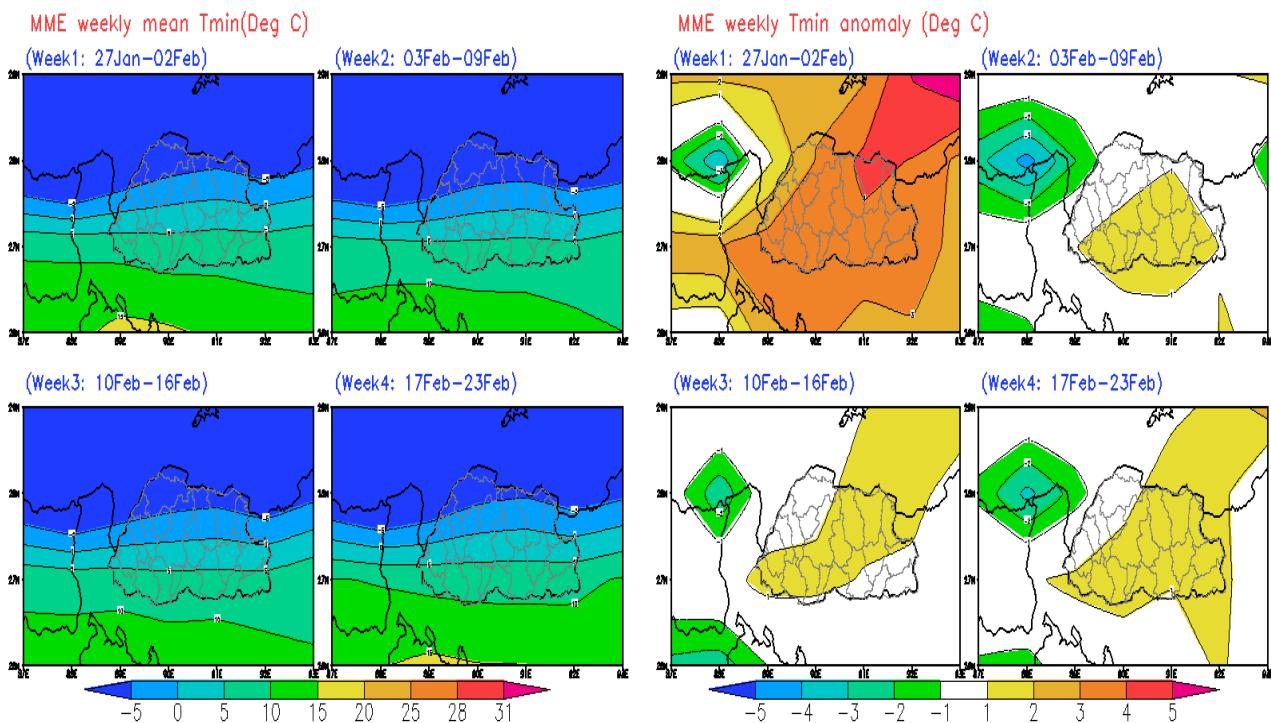
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### 3. Minimum Temperature Prediction



#### Week 1 (27 January - 02 February)

Above normal minimum temperature is expected across the country.

#### Week 2 (03 February - 09 February) and Week 3 (10 February - 16 February)

Above normal minimum temperature is expected across the southern and parts of the central and eastern region however, the remaining region can expect normal minimum temperature.

#### Week 4 (17 February - 23 February)

Normal minimum temperature is expected across the western region and the rest of the region can expect above normal minimum temperature.

#### Summary

- The rainfall is likely to be below normal for all the weeks.
- The maximum temperature is likely to be above normal for all the weeks.
- The minimum temperature is likely to be above normal for all the weeks.



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## Classification of rainfall for 24 Hours

No rainfall	0.0 mm
Very light rainfall	0.1 to 0.9 mm
Light rainfall	1.0 to 10.0 mm
Moderate rainfall	11.0 to 30.0 mm
Heavy rainfall	31.0 to 70.0 mm
Very heavy rainfall	71.0 to 150.0 mm
Extremely heavy rainfall	Equal or more than 151.0 mm