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NATIONAL CENTRE FOR HYDROLOGY AND METEOROLOGY  
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04 November 2022

## 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 decrease in minimum temperature for the last week. Very light rain was observed in some areas of the country and some stations did not observe any rain. The table below shows the observed rain and temperature data from the regional meteorological stations during last week.

Station	Parameter	27 Oct	28 Oct	29 Oct	30 Oct	31 Oct	01 Nov	02 Nov
Babesa	Tmax (°C)	21.5	20.0	21.0	22.0	23.0		21.0
	Tmin (°C)	6.5	6.0	2.0	1.0	1.0	0.0	
	Rain (mm)	0.0	0.0	0.0	0.0	0.0		0.0
Dagana	Tmax (°C)	24.0	24.5	25.5	26.0	25.5	25.0	25.5
	Tmin (°C)	12.5	13.0	11.0	11.5	11.0	12.0	11.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	18.0	16.5	18.5	19.0	19.0	19.5	18.0
	Tmin (°C)	7.5	7.5	5.0	4.0	1.0	0.5	-1.0
	Rain (mm)	2.9	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	24.0	26.0	27.0	27.0	27.0	28.0	26.5
	Tmin (°C)	16.0	16.0	16.0	18.0	15.0	15.0	15.0
	Rain (mm)	8.4	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	16.0	15.0	17.0	18.0	17.0	17.0	17.0
	Tmin (°C)	3.0	6.0	2.0	2.0	2.5	2.0	1.5
	Rain (mm)	6.2	0.0	0.0	0.0	0.0	0.0	0.0



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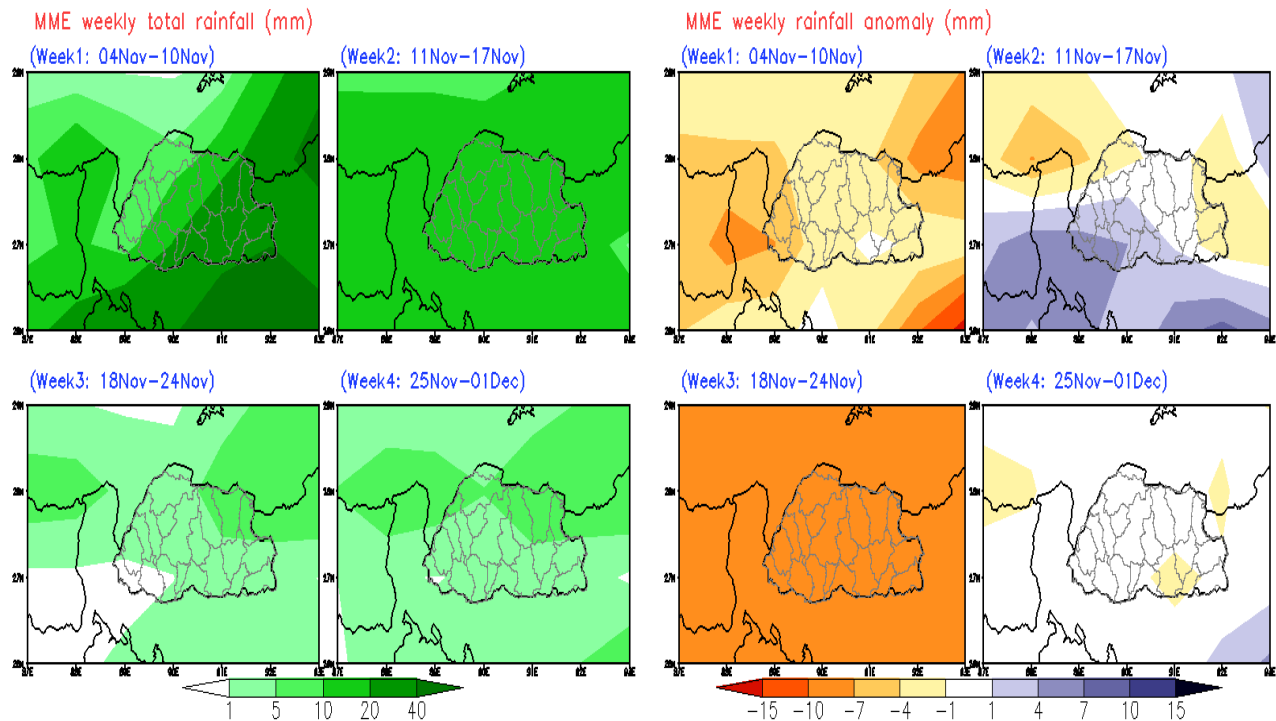
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## Weekly forecast for Bhutan

### 1. Rainfall Prediction



#### Week 1 (04 November - 10 November)

Below normal rainfall is expected throughout the region.

#### Week 2 (11 November - 17 November)

Above normal rainfall is expected across the southwest region, below normal rainfall is expected across the isolated parts of northern and eastern region and the normal rainfall is expected across the remaining areas.

#### Week 3 (18 November - 24 November)

Below normal rainfall is expected throughout the region.

#### Week 4 (25 November - 01 December)

Normal rainfall is expected throughout the region.



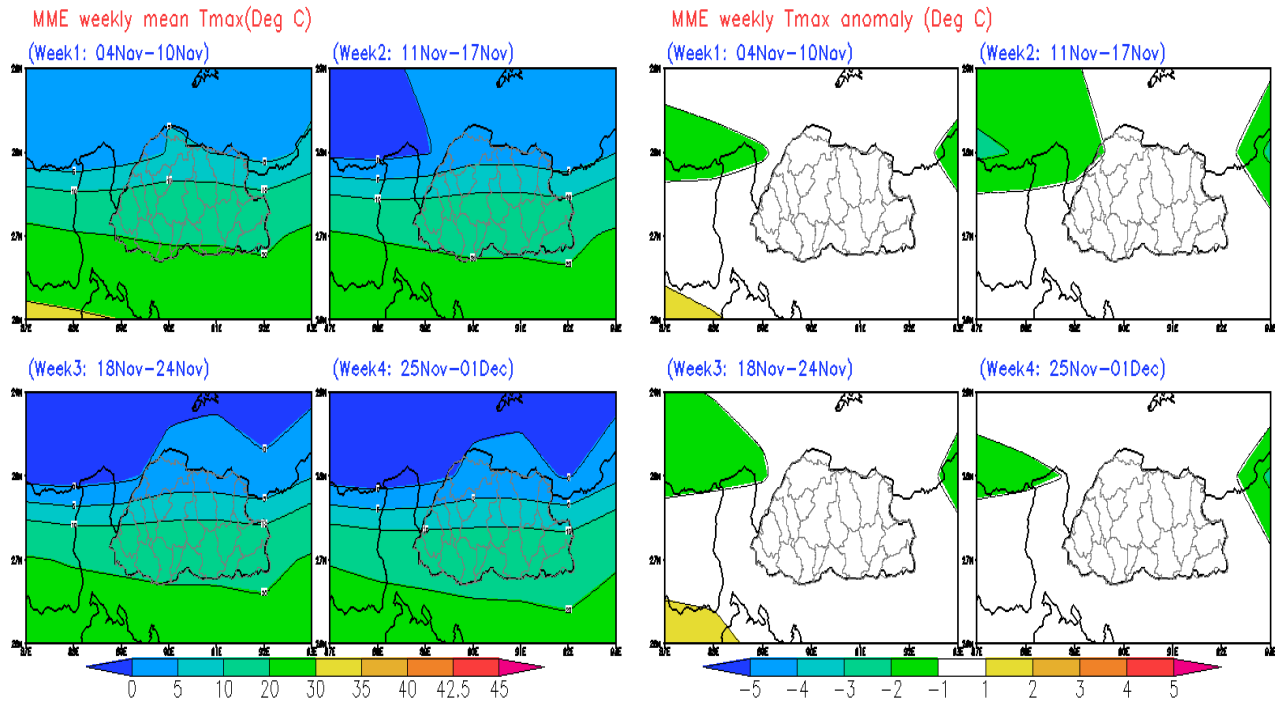
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## 2. Maximum Temperature Prediction



**Week 1 (04 November - 10 November), Week 2 (11 November - 17 November), Week 3 (18 November - 24 November) and Week 4 (25 November - 01 December)**

Normal maximum temperature is expected across the country.



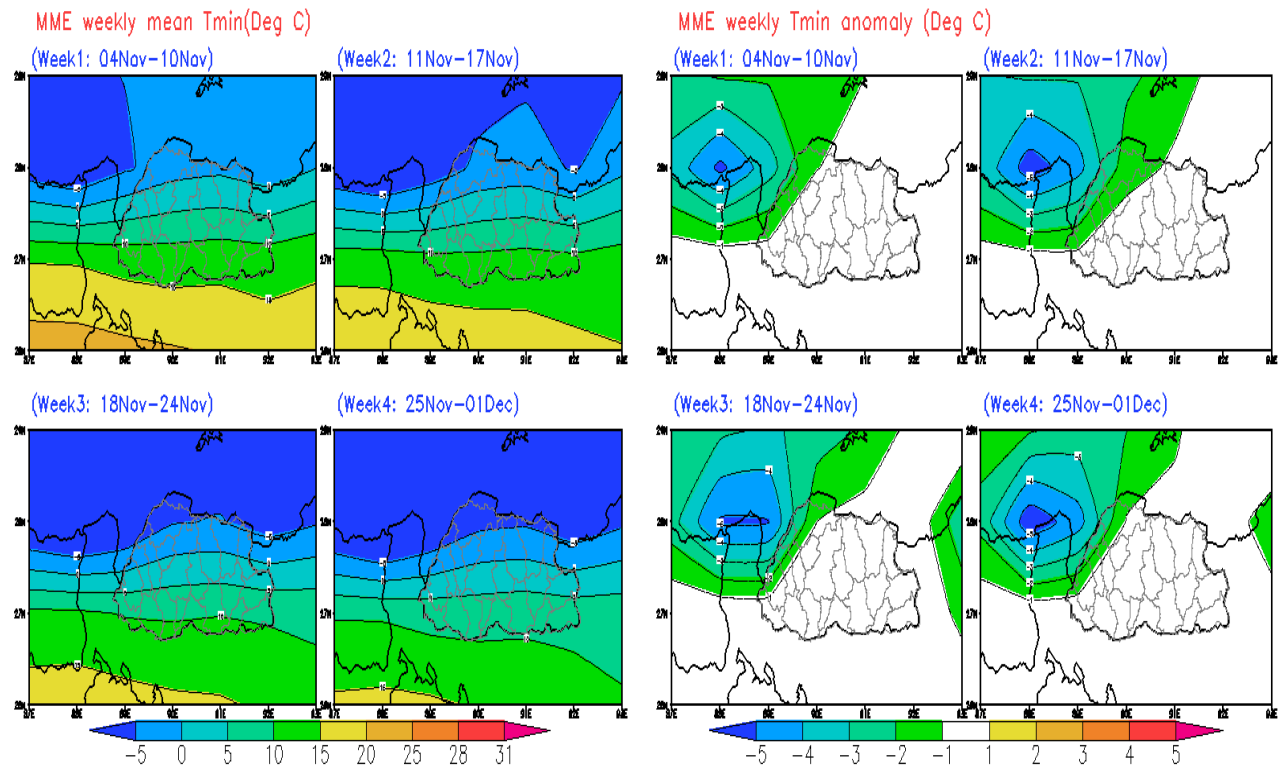
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### 3. Minimum Temperature Prediction



**Week 1 (04 November - 10 November), Week 2 (11 November - 17 November), Week 3 (18 November - 24 November) and Week 4 (25 November - 01 December)**

Below normal minimum temperature is expected across the western region while the remaining region can observe normal minimum temperature.

#### Summary

- The rainfall is likely to be below normal for week 1, 3 and normal for week 2, 4.
- The maximum temperature is likely to be normal for all the weeks.
- The minimum temperature is likely to be 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