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18 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

For the past week, the maximum and minimum temperatures at most stations across the country have decreased. Very light rain was observed in northern and some parts of the central region 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	10 Nov	11 Nov	12 Nov	13 Nov	14 Nov	15 Nov	16 Nov
Babesa	Tmax (°C)	20.0	19.5	16.0	18.0	18.5	19.0	19.0
	Tmin (°C)	0.0	2.0	4.0	2.0	0.0	3.0	2.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dagana	Tmax (°C)	24.0	22.5	22.0	20.5	22.0	22.5	22.5
	Tmin (°C)	11.0	10.5	10.5	9.0	10.0	10.5	9.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	16.0	16.5	12.5	15.0	15.0	16.0	15.0
	Tmin (°C)	3.0	3.0	3.0	5.0	3.0	2.5	3.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	25.5	25.5	25.0	24.0	25.0	25.0	24.5
	Tmin (°C)	14.0	13.5	15.0	14.0	13.0	14.5	13.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	15.5	12.5	11.0	11.5	12.0	12.0	12.0
	Tmin (°C)	0.5	1.0	3.0	0.0	1.0	1.5	2.5
	Rain (mm)	0.0	2.6	0.0	0.0	0.0	0.0	1.0



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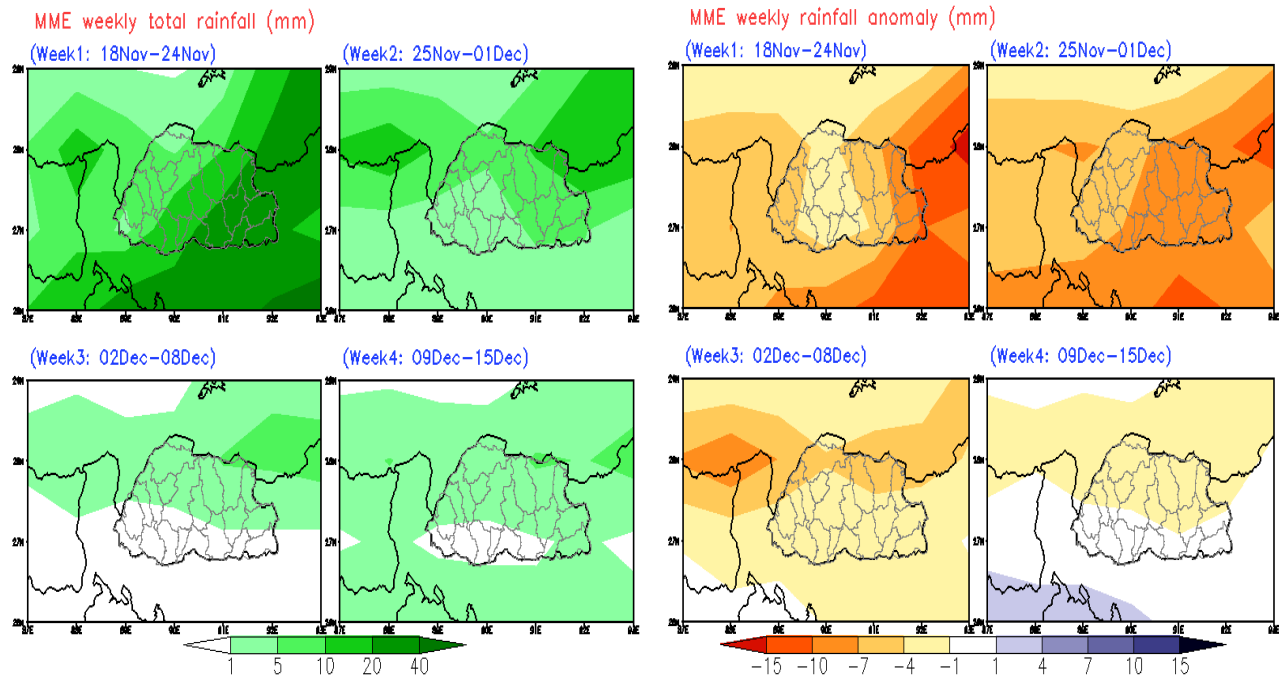
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Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (18 November - 24 November), Week 2 (25 November - 01 December) and Week 3 (02 December - 08 December)

Below normal rainfall is expected throughout the region.

Week 4 (09 December - 15 December)

Normal rainfall is expected across the southern region and the below normal rainfall is expected across the remaining areas.



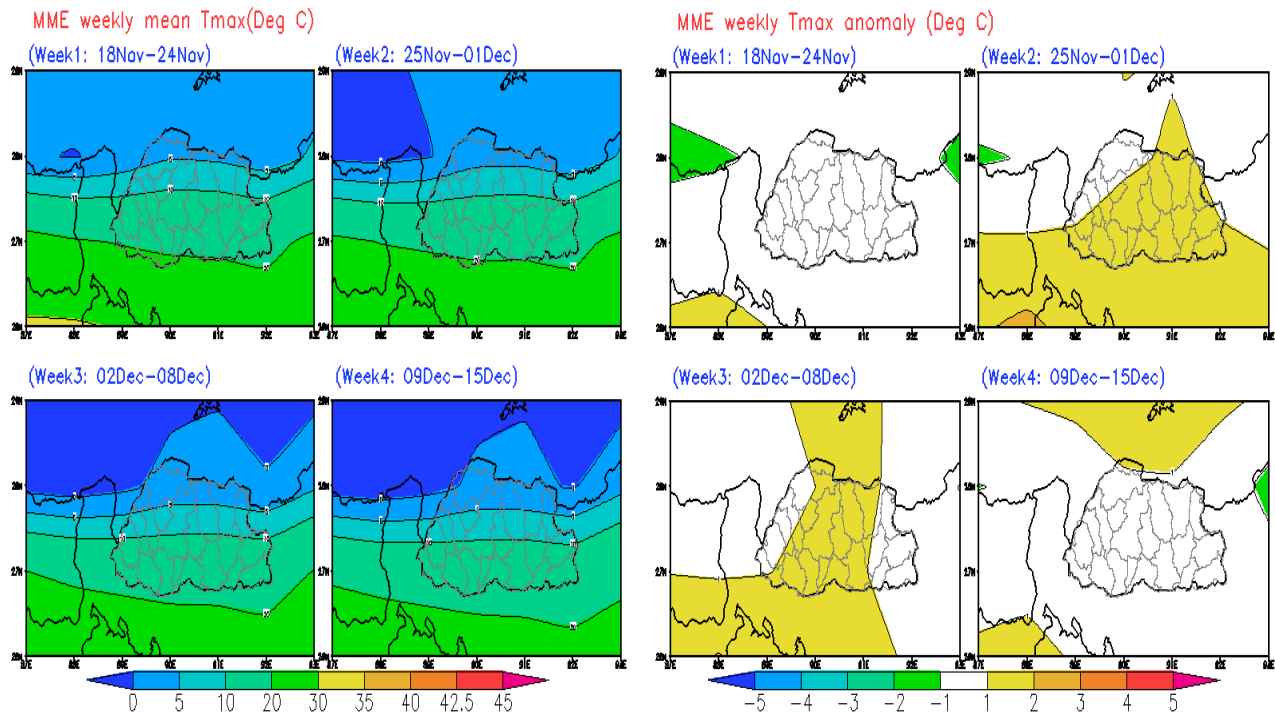
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2. Maximum Temperature Prediction



Week 1 (18 November - 24 November)

Normal maximum temperature is expected across the country.

Week 2 (25 November - 01 December)

Normal maximum temperature is expected across the western region and the rest of the region can observe above normal maximum temperature.

Week 3 (02 December - 08 December)

Normal maximum temperature is expected across the western and eastern region and the remaining region can observe above normal maximum temperature.

Week 4 (09 December - 15 December)

Normal maximum temperature is expected across the country.



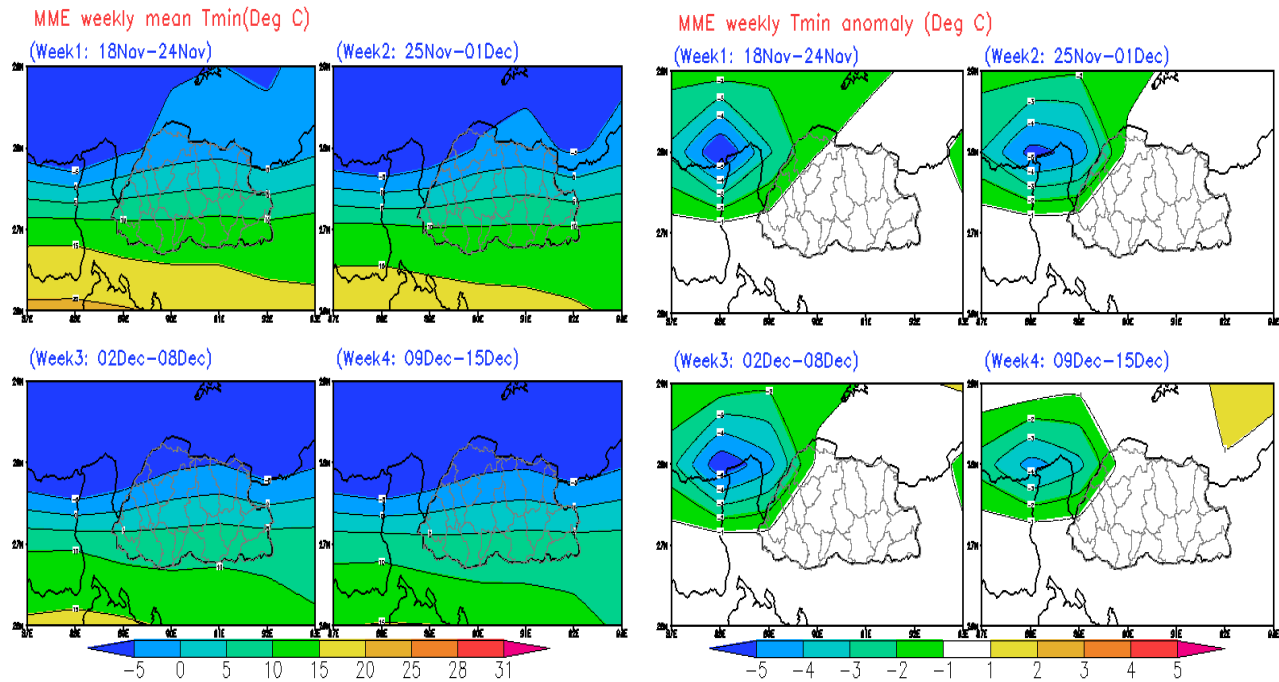
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3. Minimum Temperature Prediction



Week 1 (18 November - 24 November), Week 2 (25 November - 01 December), Week 3 (02 December - 08 December) and Week 4 (09 December - 15 December)

Normal minimum temperature is expected across the region.

Summary

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