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20 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 a decrease 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	12 Jan	13 Jan	14 Jan	15 Jan	16 Jan	17 Jan	18 Jan
Babesa	Tmax (°C)	17.0	15.0	11.5	12.0	13.5	12.5	13.0
	Tmin (°C)	-6.5	-3.0	-3.0	-1.0	-5.5	-6.5	-7.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dagana	Tmax (°C)	21.5	18.0	15.0	11.5	15.0	15.0	15.0
	Tmin (°C)	6.5	6.0	5.0	5.5	5.0	3.0	2.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	12.5	11.0	9.5	9.5	9.5	9.5	10.0
	Tmin (°C)	2.0	-2.5	-2.0	-0.5	-0.5	-2.0	-3.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	21.0	20.0	18.0	17.0	18.0	19.0	17.0
	Tmin (°C)	11.5	11.0	9.5	9.0	10.0	8.0	7.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	7.0	7.5	5.0	7.0	9.5	9.0	6.5
	Tmin (°C)	-3.5	-0.5	-1.5	-2.5	-5.0	-6.0	-4.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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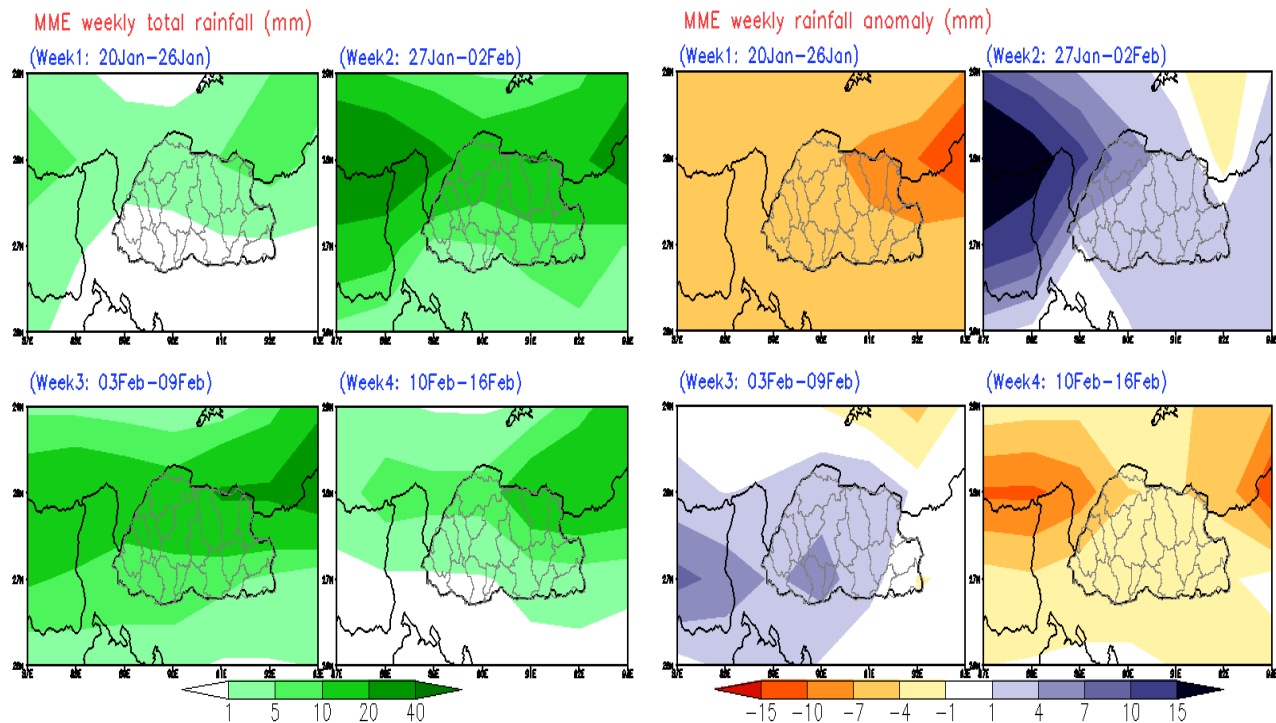
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Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (20 January - 26 January)

Below normal rainfall is expected throughout the region.

Week 2 (27 January - 02 February) and Week 3 (03 February - 09 February)

Above normal rainfall is expected throughout the region.

Week 4 (10 February - 16 February)

Below normal rainfall is expected throughout the region.



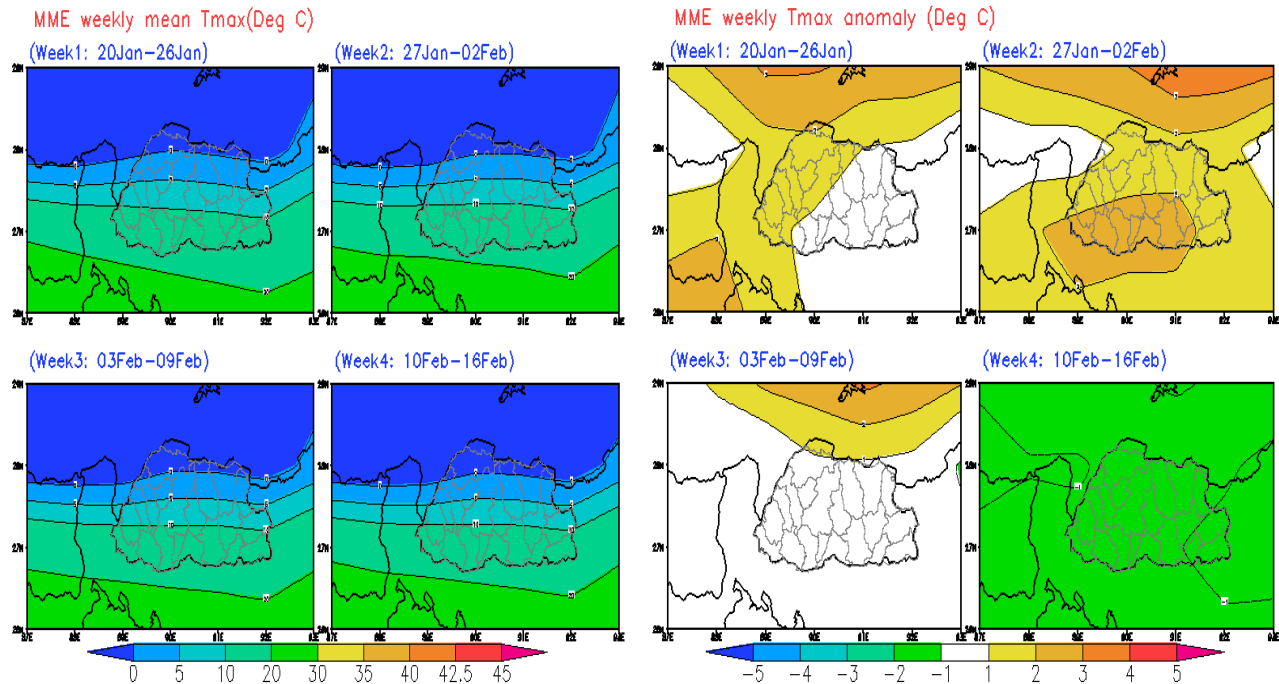
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2. Maximum Temperature Prediction



Week 1 (20 January - 26 January)

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

Week 2 (27 January - 02 February)

Above normal maximum temperature is expected throughout the region.

Week 3 (03 February - 09 February)

Normal maximum temperature is expected across the country.

Week 4 (10 February - 16 February)

Below normal maximum temperature is expected throughout the region.



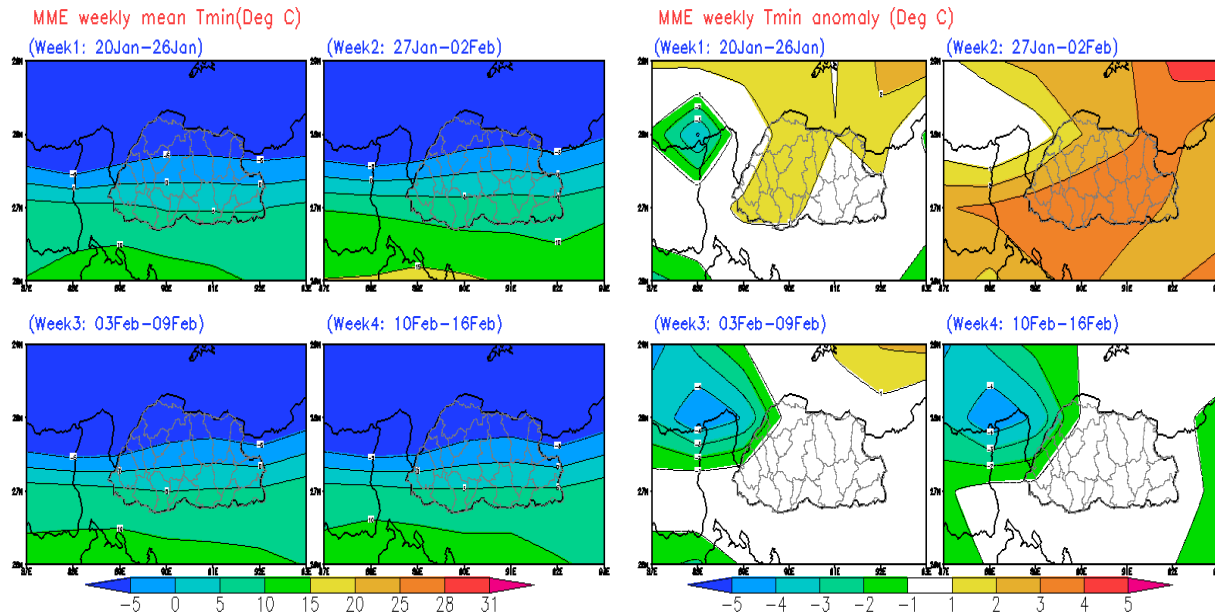
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3. Minimum Temperature Prediction



Week 1 (20 January - 26 January)

The eastern and parts of the central region can expect normal minimum temperature however, the remaining region can expect above normal minimum temperature.

Week 2 (27 January - 02 February)

Above normal minimum temperature is expected across the country.

Week 3 (03 February - 09 February) and Week 4 (10 February - 16 February)

Normal minimum temperature is expected across the country.

Summary

- The rainfall is likely to be below normal for week 1, 4 and above normal for week 2, 3.
- The maximum temperature is likely to be above normal for the first and second week, normal for the third week and below normal for the last week.
- The minimum temperature is likely to be above normal for the first two weeks and normal for the last two 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