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NATIONAL CENTER FOR HYDROLOGY AND METEOROLOGY
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07 January 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 a decrease in maximum and minimum temperature for the last week. Light snowfall was expected over high passes of western, central and northern parts of the country. The table below shows the observed rain and temperature data from the regional meteorological stations during last week.

Station	Parameter	30 Dec	31 Dec	01 Jan	02 Jan	03 Jan	04 Jan	05 Jan
Babesa	Tmax (°C)	2.0	12.0	12.0	11.0	12.0	14.0	10.0
	Tmin (°C)	-1.0	-2.0	-5.5	-4.0	-3.0	-0.5	0.0
	Rain (mm)	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Bhur	Tmax (°C)	21.5	24.0	24.0	24.0	24.0	24.0	24.0
	Tmin (°C)	15.0	13.0	15.0	14.0	14.0	15.0	14.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	5.5	9.0	10.0	13.0	8.5	12.5	13.0
	Tmin (°C)	0.0	-3.5	-2.5	-1.0	-1.0	-4.0	2.0
	Rain (mm)	3.1 SWE	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	18.0	20.5	21.5	21.5	22.0	21.5	21.0
	Tmin (°C)	12.0	11.5	11.5	11.5	11.0	12.0	11.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	4.0	7.0	5.5	9.5	6.0	10.5	11.0
	Tmin (°C)	-3.0	-7.0	-5.5	-5.0	-2.0	-5.5	-3.5
	Rain (mm)	1.0	0.0	0.0	0.0	0.0	0.0	0.0



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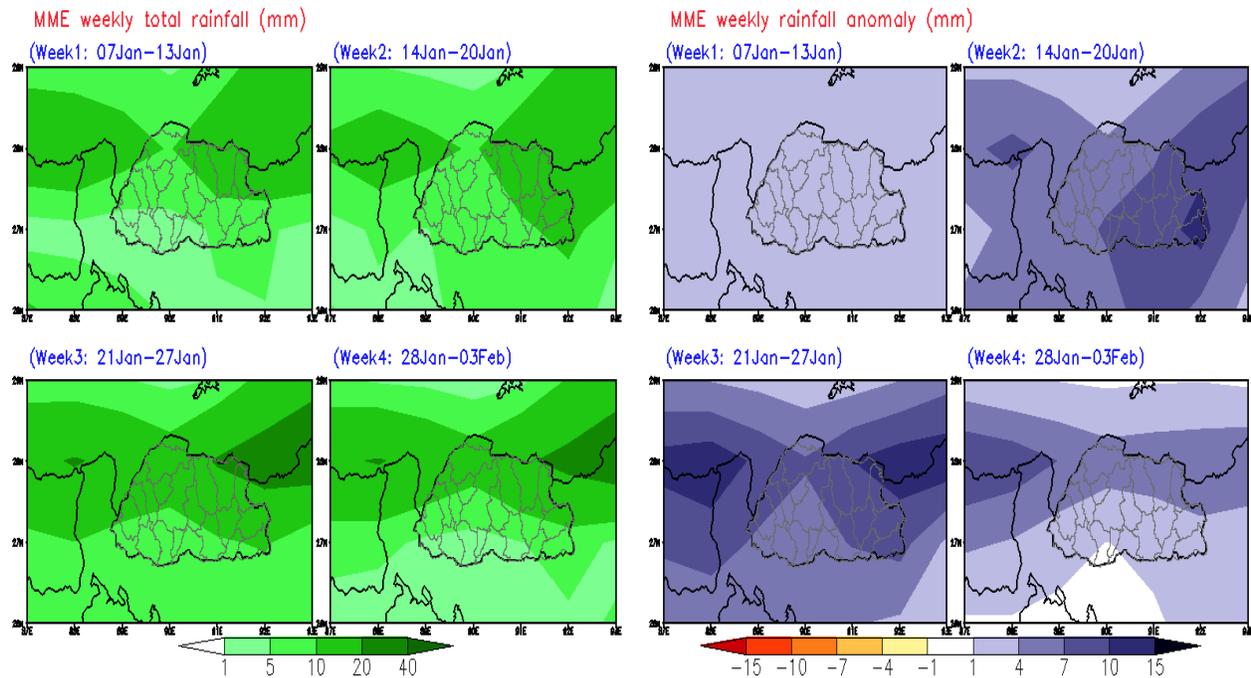
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Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (07 January - 13 January), Week 2 (14 January - 20 January) and Week 3 (21 January - 27 January) and Week 4 (28 January - 03 February)

Above normal rainfall is expected across the country.



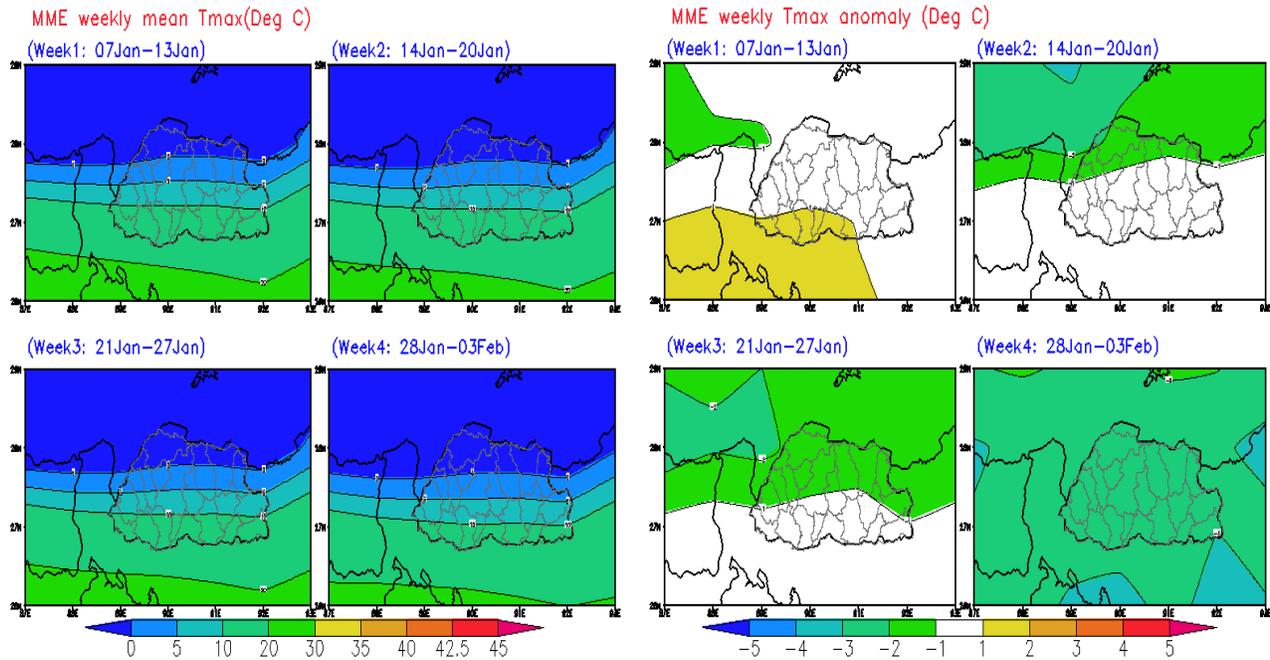
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2. Maximum Temperature Prediction



Week 1 (07 January - 13 January)

The southern region can expect above normal maximum temperature while the remaining region can observe normal maximum temperature.

Week 2 (14 January - 20 January)

Below normal maximum temperature is expected in some parts of the northern region and the remaining region will experience normal maximum temperature.

Week 3 (21 January - 27 January)

The southern region can expect normal maximum temperature while the remaining region can observe below normal maximum temperature.

Week 4 (28 January - 03 February)

Below normal maximum temperature is expected throughout the region.



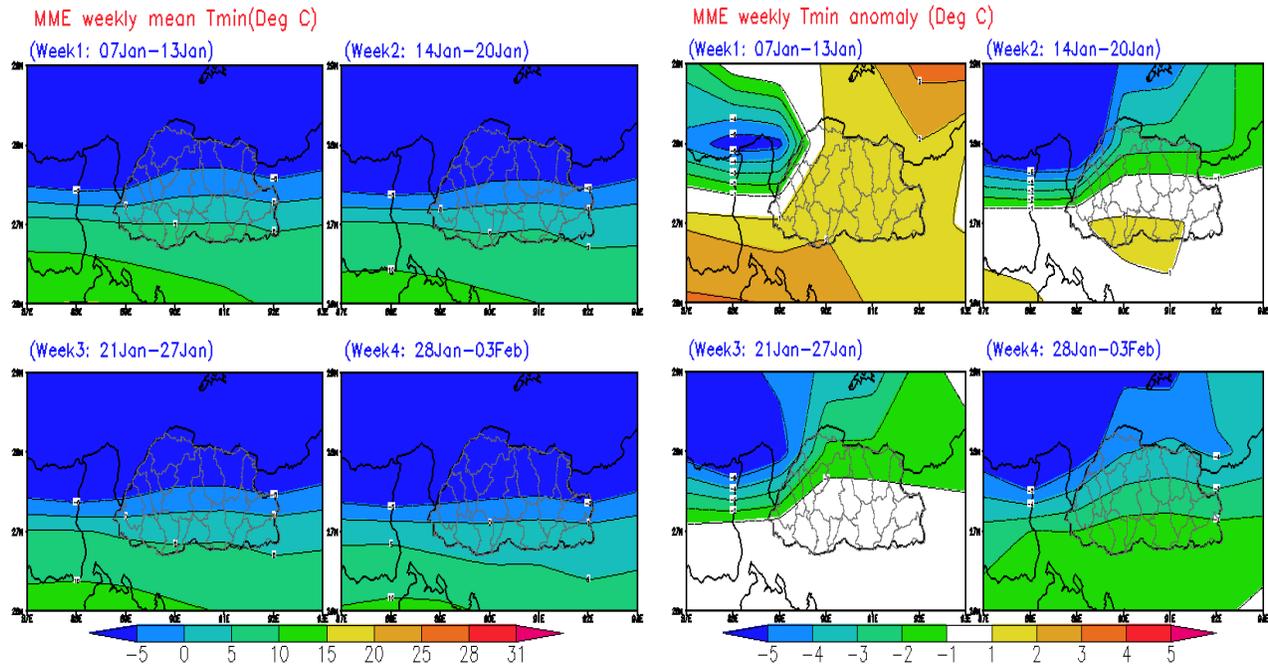
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3. Minimum Temperature Prediction



Week 1 (07 January - 13 January)

The parts of the western region can expect normal minimum temperature while the remaining region can observe above normal minimum temperature.

Week 2 (14 January - 20 January)

Below normal minimum temperature is expected across the western and northern region, above normal minimum temperature across the southern region while the remaining region will experience normal minimum temperature.

Week 3 (21 January - 27 January)

The western and northern region can observe below normal minimum temperature while the remaining region can expect normal minimum temperature.

Week 4 (28 January - 03 February)

Below normal maximum temperature is expected throughout the region.



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Summary

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

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