14 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.

Observed weather over last week

Most of the stations across the country showed an increase in maximum temperature for the first of the week and decrease in minimum temperature for the last week. Light rainfall was expected over the country. The table below shows the observed rain and temperature data from the regional meteorological stations during last week.

Station	Parameter	06 Jan	07 Jan	08 Jan	09 Jan	10 Jan	11 Jan	12 Jan
Babesa	**Tmax (°C)**	12.0	15.0	16.5	16.5	15.0	15.0	12.0
	Tmin (°C)	2.0	1.0	-3.0	-3.0	-3.0	-4.0	0.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	8.8
Bhur	**Tmax (°C)**	24.0	24.5	25.0	25.0	25.0	23.0	23.0
	Tmin (°C)	15.0	15.0	14.5	15.0	18.0	15.5	15.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	1.4
Chamkhar	**Tmax (°C)**	12.5	13.0	15.0	15.5	13.5	14.0	9.5
	Tmin (°C)	1.5	3.0	0.0	1.5	2.0	-1.5	2.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	4.4
Deothang	**Tmax (°C)**	21.5	22.0	23.0	22.0	22.0	21.5	18.0
	Tmin (°C)	11.0	11.5	12.0	12.0	12.0	12.5	12.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.3	4.6
Gasa	**Tmax (°C)**	5.0	11.0	11.0	13.0	11.0	11.0	9.0
	Tmin (°C)	0.0	-2.0	-2.5	-1.5	-1.5	-3.0	-1.0
	Rain (mm)	0.0	0.0	0.0	0.0	2.0	0.8	6.2

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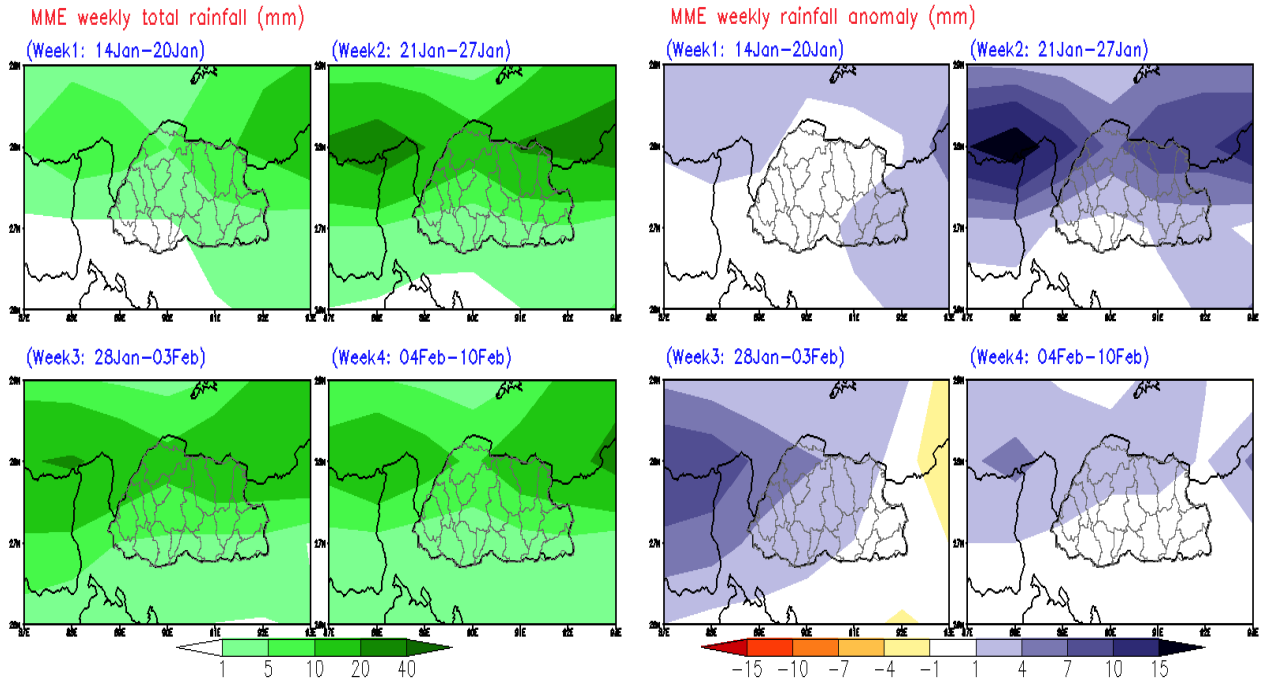
NATIONAL CENTER FOR HYDROLOGY AND METEOROLOGY
THIMPHU: BHUTAN
"Center of Excellence in Hydrology, Meteorology and Cryosphere Science and Services"

Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (14 January - 20 January)

The southeast region can expect above normal rainfall while the remaining region can observe normal rainfall.

Week 2 (21 January - 27 January)

Normal rainfall is expected across the western part of the southern region and above normal rainfall is expected across the remaining region.

Week 3 (28 January - 03 February)

The eastern region can expect normal rainfall while the remaining region can observe above normal rainfall.

Week 4 (04 February - 10 February)

Above normal rainfall is expected across the northern and western region but the rest of the region can experience normal rainfall.

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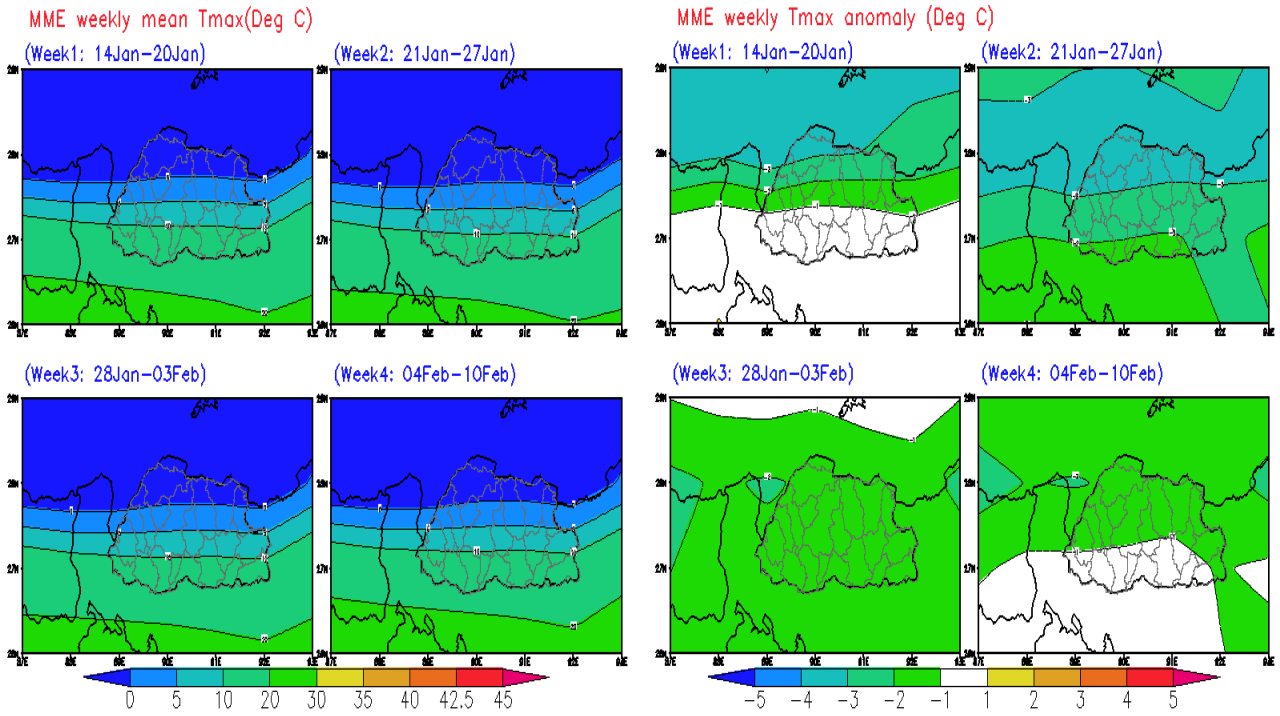
2. Maximum Temperature Prediction



Week 1 (14 January - 20 January)

The southern, and parts of the central and western region can expect normal maximum temperature while the remaining region can observe below normal maximum temperature.

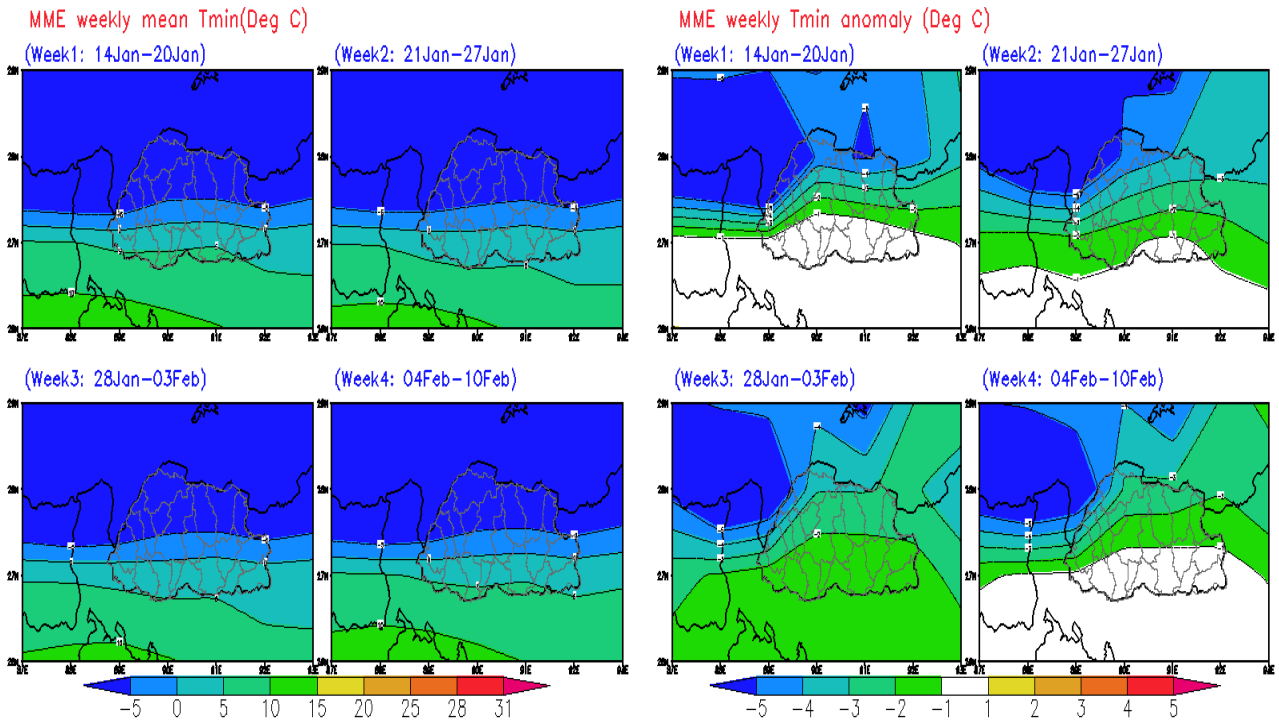
Week 2 (21 January - 27 January) and Week 3 (28 January - 03 February)

Below normal maximum temperature is expected across the country.

Week 4 (04 February - 10 February)

Normal maximum temperature is expected across the southern region and the rest of the region can experience below normal maximum temperature.

3. Minimum Temperature Prediction



Week 1 (14 January - 20 January)

The southern, and parts of the western and central region can expect normal minimum temperature while the remaining region can observe below normal minimum temperature.

Week 2 (21 January - 27 January)

Normal minimum temperature is expected across the isolated parts of the southern region while the remaining region will experience below normal minimum temperature.

Week 3 (28 January - 03 February)

Below normal minimum temperature is expected throughout the country.

Week 4 (04 February - 10 February)

Normal maximum temperature is expected across the southern and parts of the western and central region while below normal minimum temperature is expected for the remaining regions.

Summary

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