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11 March 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 minimum temperature during last week. Light rain was observed over the northern and some isolated parts of the southern region and the remaining region did not observe rain. The table below shows the observed rain and temperature data from the regional meteorological stations during last week.

Station	Parameter	03 Mar	04 Mar	05 Mar	06 Mar	07 Mar	08 Mar	09 Mar
Babesa	Tmax (°C)	16.0	17.0	18.5	21.0	23.0	22.0	21.5
	Tmin (°C)	-1.0	1.5	-2.0	0.0	-1.0	-1.5	-1.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dagana	Tmax (°C)	21.0	21.5	21.5	24.0	27.5	28.0	27.5
	Tmin (°C)	9.0	8.5	9.0	9.0	12.0	12.0	11.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chamkhar	Tmax (°C)	14.0	14.5	15.0	21.5	21.0	20.0	20.5
	Tmin (°C)	-1.0	2.5	0.0	-3.0	-4.5	-4.5	-3.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Deothang	Tmax (°C)	24.0	23.0	22.0	24.0	27.0	28.0	27.0
	Tmin (°C)	11.0	14.0	14.0	16.0	15.0	17.0	18.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	11.0	11.5	10.0	17.5	18.0	17.0	16.5
	Tmin (°C)	-1.0	-1.0	-2.0	-2.5	-0.5	-0.5	-0.5
	Rain (mm)	1.0	3.5	0.0	0.0	0.0	0.0	0.0



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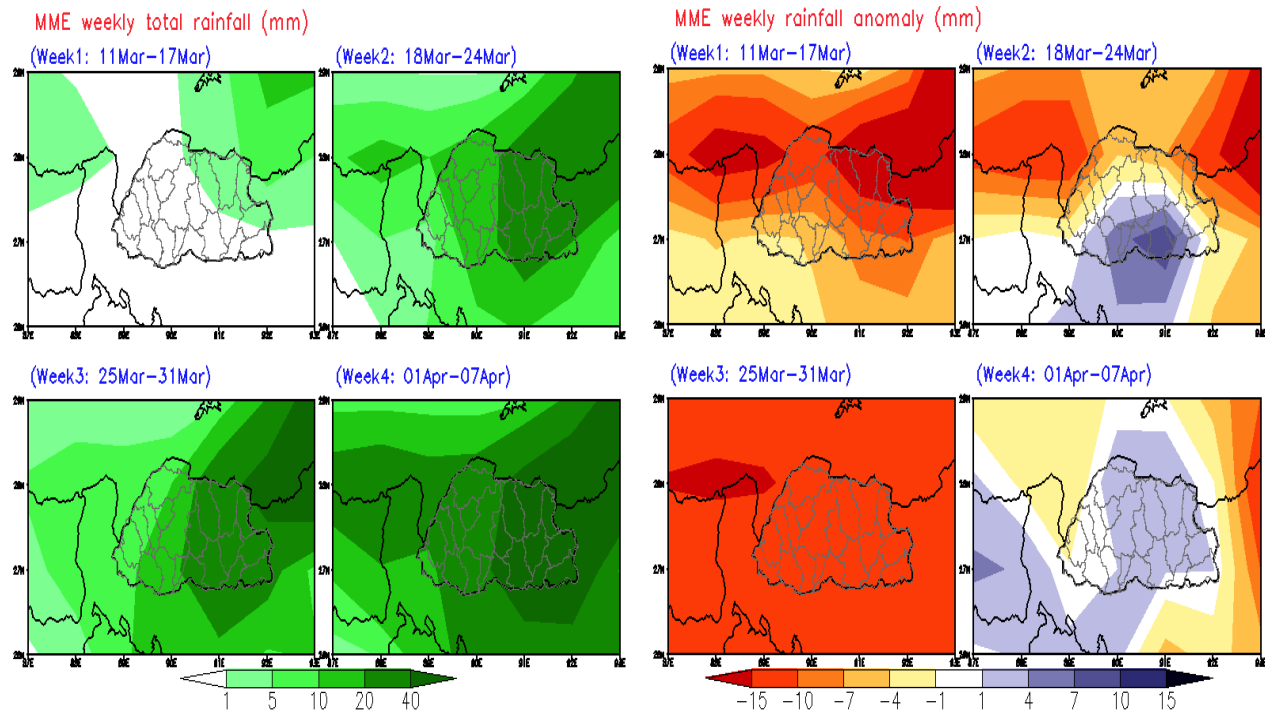
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Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (11 March - 17 March)

Below normal rainfall is expected across the region.

Week 2 (18 March - 24 March)

The southern and central parts of the region can expect above normal rainfall while the remaining region can observe below normal rainfall.

Week 3 (25 March - 31 March)

Below normal rainfall is expected across the region.

Week 4 (01 April - 07 April)

Normal rainfall is expected across the western region and the rest of the region can experience above normal rainfall.



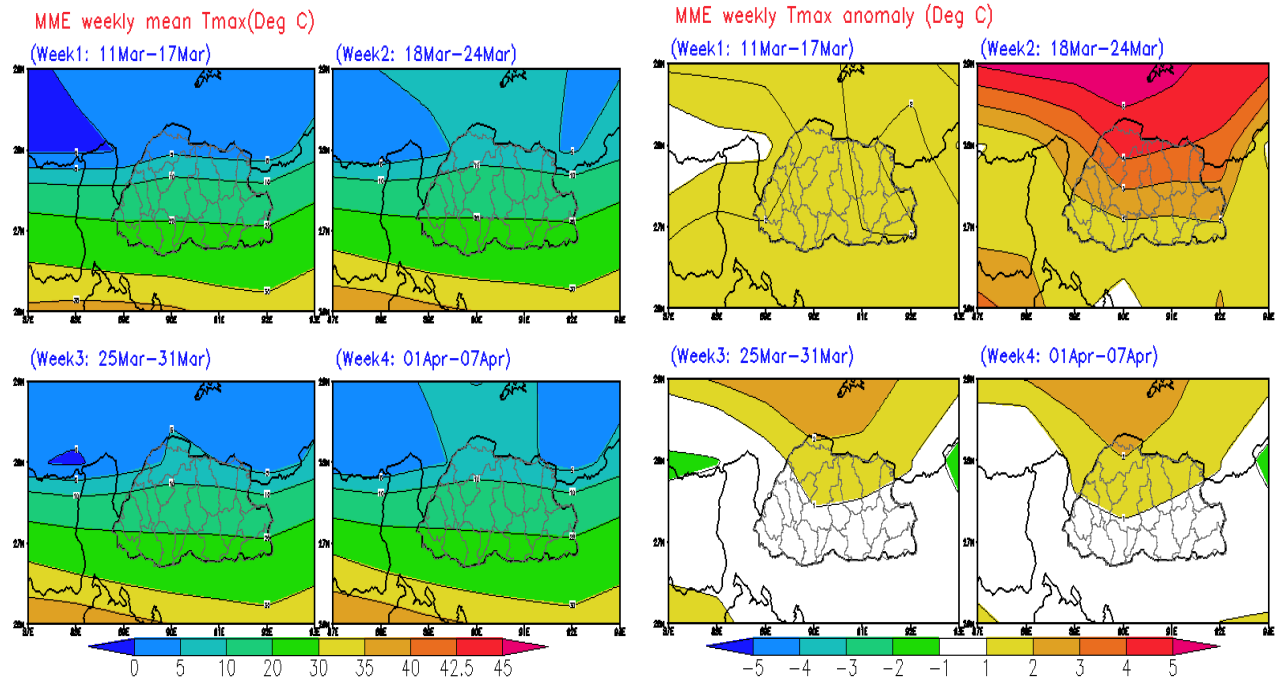
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2. Maximum Temperature Prediction



Week 1 (11 March - 17 March) and Week 2 (18 March - 24 March)

Above normal maximum temperature is expected across the country.

Week 3 (25 March - 31 March) and Week 4 (01 April - 07 April)

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



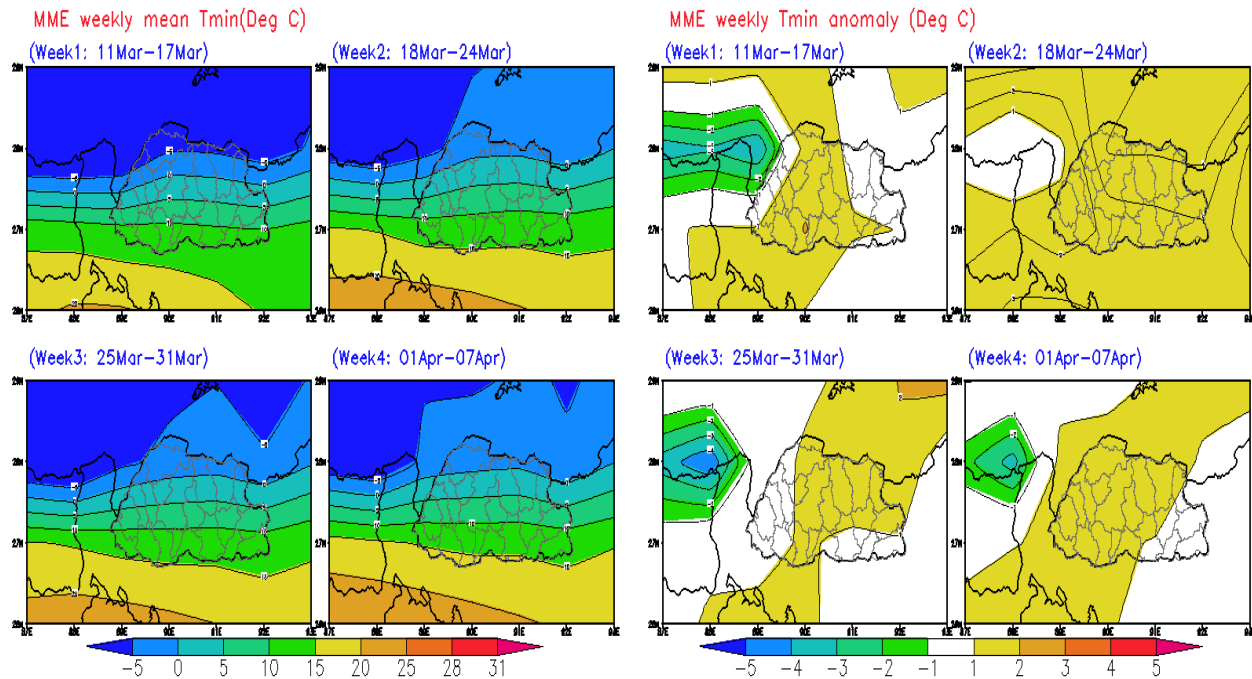
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3. Minimum Temperature Prediction



Week 1 (11 March - 17 March)

The western and eastern region can expect normal minimum temperature and above normal minimum temperature is expected across the remaining region.

Week 2 (18 March - 24 March)

Above normal minimum temperature is expected across the region.

Week 3 (25 March - 31 March)

Normal minimum temperature is expected across the western and southeast region however, the rest of the region can observe above normal minimum temperature.

Week 4 (01 April - 07 April)

The eastern region can observe normal minimum temperature and the rest of the region can expect above normal minimum temperature.



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Summary

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