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NATIONAL CENTER FOR HYDROLOGY AND METEOROLOGY
THIMPHU: BHUTAN

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25 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 temperature from the first half of the week and minimum temperature during last week. Light to moderate rain was observed over the northern region and the rest of the region observed light rain during the last week. The table below shows the observed rain and temperature data from the regional meteorological stations during last week.

Station	Parameter	17 Mar	18 Mar	19 Mar	20 Mar	21 Mar	22 Mar	23 Mar
Babesa	Tmax (°C)	24.0	25.5	26.5	21.0	22.5	21.0	20.0
	Tmin (°C)	3.0	3.5	4.0	7.0	7.5	9.5	10.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dagana	Tmax (°C)	28.0	28.5	26.5	25.0	26.5	28.0	23.0
	Tmin (°C)	13.5	15.0	15.0	17.0	15.5	16.0	15.5
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.2	4.4
Chamkhar	Tmax (°C)	24.0	24.0	24.0	20.0	20.0	20.0	18.0
	Tmin (°C)	-0.5	0.5	1.5	1.5	8.0	9.0	9.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.1	0.0	0.5
Deothang	Tmax (°C)	29.0	29.0	26.0	27.0	27.0	25.0	25.0
	Tmin (°C)	18.0	19.0	18.0	17.0	20.0	21.0	19.0
	Rain (mm)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gasa	Tmax (°C)	19.0	21.5	21.5	17.0	15.0	18.0	17.0
	Tmin (°C)	2.5	4.0	4.5	4.5	5.5	5.0	5.0
	Rain (mm)	0.0	0.0	0.0	7.2	0.0	1.8	26.6



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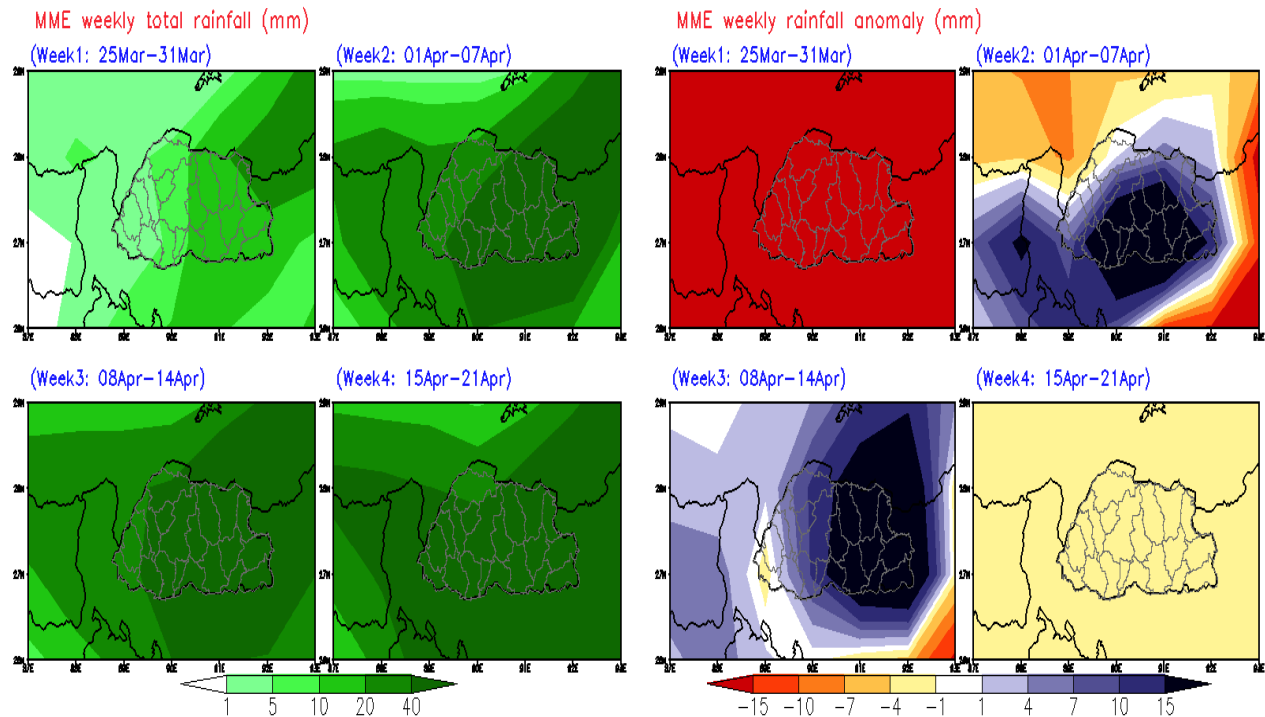
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Weekly forecast for Bhutan

1. Rainfall Prediction



Week 1 (25 March - 31 March)

Below normal rainfall is expected across the country.

Week 2 (01 April - 07 April) and Week 3 (08 April - 14 April)

Above normal rainfall is expected across the region.

Week 4 (15 April - 21 April)

Below normal rainfall is expected throughout the region.



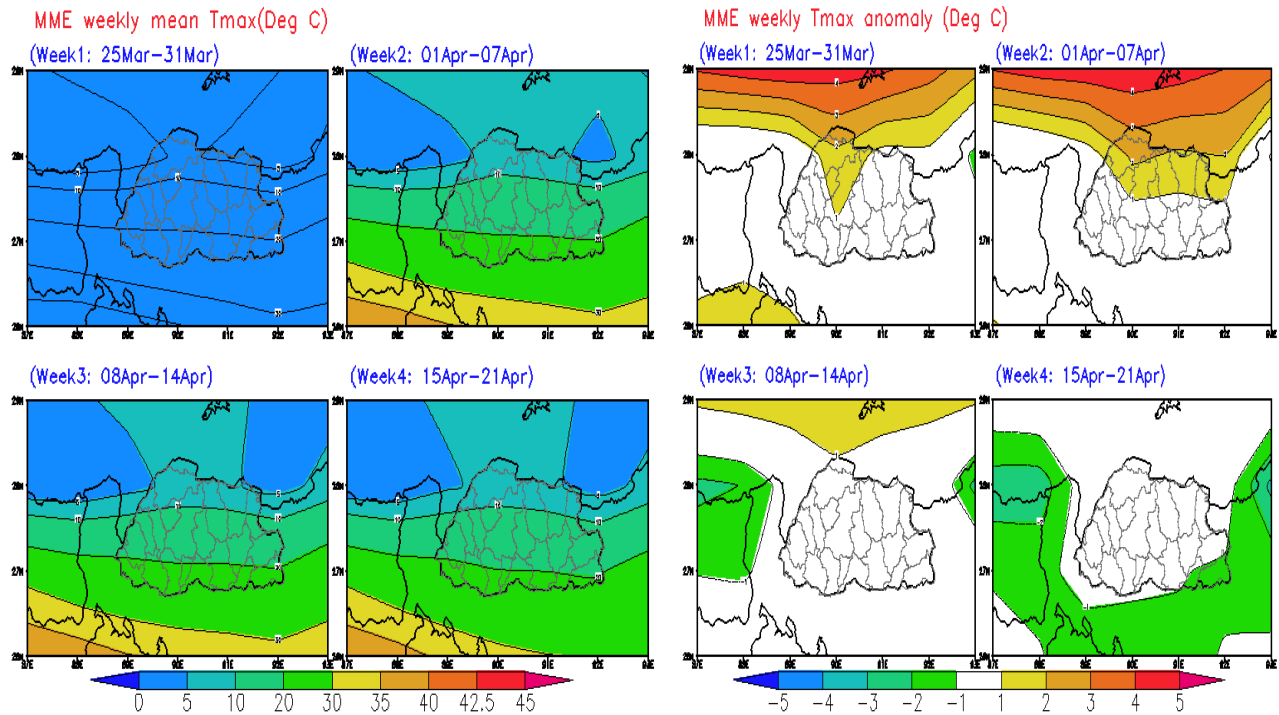
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2. Maximum Temperature Prediction



Week 1 (25 March - 31 March) and Week 2 (01 April - 07 April)

Above normal maximum temperature is expected across the northern and some parts of the central region and the rest of the region can expect normal maximum temperature.

Week 3 (08 April - 14 April) and Week 4 (15 April - 21 April)

Normal maximum temperature is expected across the country.



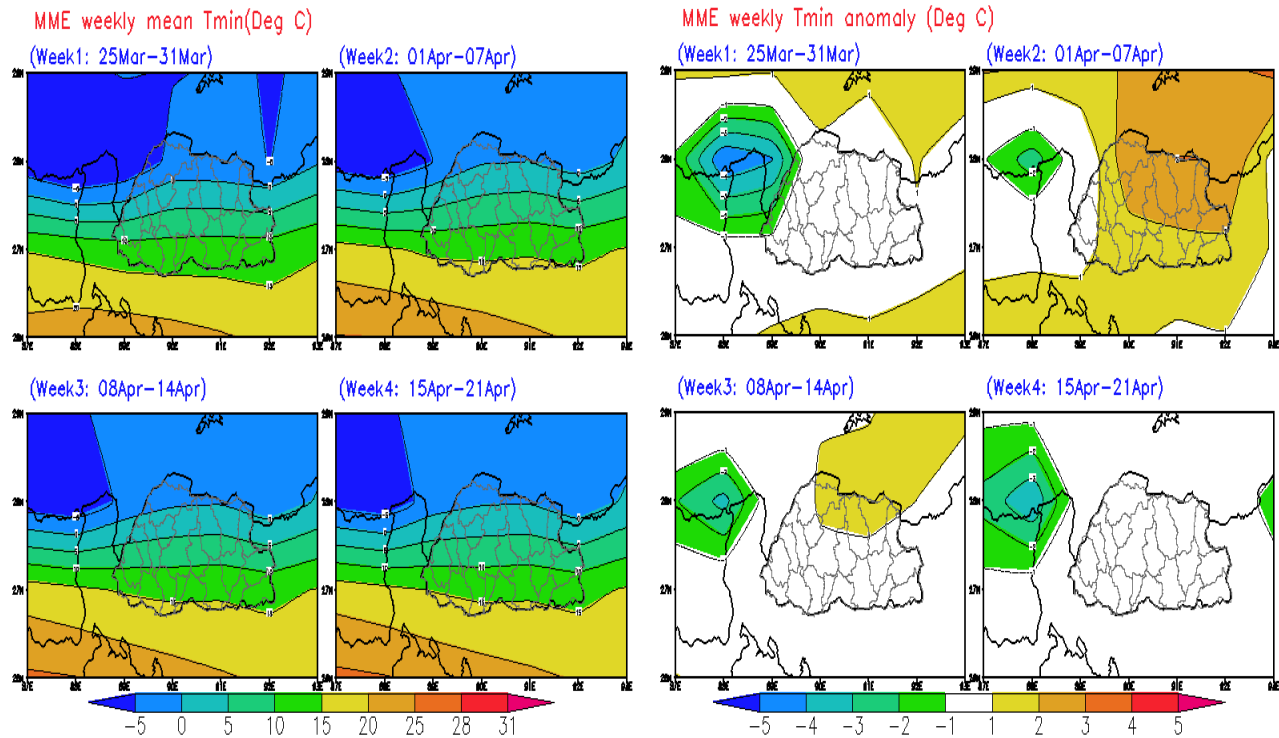
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3. Minimum Temperature Prediction



Week 1 (25 March - 31 March)

Normal minimum temperature is expected across the region.

Week 2 (01 April - 07 April)

Above normal minimum temperature is expected across the region.

Week 3 (08 April - 14 April)

The northern and upper parts of the central region can observe above minimum temperature and the remaining region can observe normal minimum temperature.

Week 4 (15 April - 21 April)

Normal minimum temperature is expected across the country.



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Summary

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