Government of India
Earth System Science Organization
Ministry of Earth Sciences
India Meteorological Department

Press: Dated: 13 July, 2023

Subject: Current Weather Status and Extended range Forecast for next two weeks (13-26 July 2023)

1. Salient Observed Features for week ending 12 July 2023

- **Occurrences of Prolonged Heavy rainfall spell over northwest India during the week:** During the week of 6-12 July, monsoon was active to vigorous in most of the dates over many meteorological sub-Divisions in northwest India. Isolated Heavy to very heavy rainfall reported during almost all dates over Himachal Pradesh, Haryana, Uttarakhand, Uttar Pradesh and Rajasthan. Punjab, Chandigarh and Delhi also reported heavy to very heavy rainfall during 8-11 July while Jammu & Kashmir mainly reported during 8-10 July. During this spell of heavy rainfall, Isolated extremely heavy rainfall also observed over Jammu & Kashmir 1 day on 8 July while over Himachal Pradesh, Haryana and Chandigarh, it was lasted for longer period covering 3-days for 8-11 July and then over Uttarakhand and western parts of Uttar Pradesh for 3 days for 10-13 July 2023. This extreme heavy rainfall event had caused multiple landslides and flash floods and riverine floods over western Himalayan region mainly over Himachal Pradesh and also in the adjoining plains over Chandigarh and Haryana which severely affected lives and property in the region. It was mainly due to confluence of two major systems over the region mainly observed during 7-12 July: i) monsoon systems supported with active monsoon trough located at south of the normal position with moisture laden easterly/southeasterly in the lower levels with **ii)**a very slowly west-ward moving active WD which lay as a north-south intense convergence line from extreme northeast Pakistan to northeast Arabian Sea and ran across Gujarat-west Rajasthan at the middle and upper tropospheric level, during the same period. Further, with the formation of an induced Low-pressure area during 9-11 July and its associated cyclonic circulation over Rajasthan, Western end of the monsoon trough became intense and there was sustaining of moisture

incursion in the lower levels over the region both from the Arabian Sea and Bay of Bengal during the period.

- With the eastern end of the monsoon trough lay close to the foot hills of Himalayas during 2nd half of the week, there was Convergence of strong southwesterlies/southeasterly in the northeastern states of India and it had caused isolated extremely heavy rainfall over Meghalaya and over Sub Himalayan West Bengal & Sikkim on 11 and 12 July and over Bihar on 11 July with isolated heavy to very heavy rainfall occurred in all dates in the 2nd half of the week.
- During 2nd half of the week, due to the weakening of the off shore trough along west coast, there was reduction of the rainfall activity over Konkan & Goa, Madhya Maharashtra, Coastal Karnataka and Kerala & Mahe during 2-5 July 2023.
- **Analysis of Weekly overall Rainfall distribution during the week ending on 12 July 2023 and monsoon Season's Rainfall Scenario (1 June-12 July 2023):** It shows for the country as a whole, the weekly cumulative All India Rainfall in % departure from its long period average (LPA) till week ending on 5 July 2023 was 34%, over south Peninsula as 12%, central India as 36% while over northwest India had got very value of 115 %. All India Seasonal cumulative rainfall % departure during this year's **monsoon Season's Rainfall** during **1 June to 12 July 2023,** has improved for the 1st time in this season in this week among all weeks, to higher side of its normal, with its value as +2% for the period till 12 July compared to the values as -7% which was till 5 July(all from 1 June) and over northwest India, it is +59(it was +37% during last week ending on 5 July). Details of the rainfall distribution over the four broad geographical regions of India are given in Table 1 and Meteorological sub-division-wise rainfall both for week and season are given in Annex II and III respectively.

Table 1: Rainfall status (Week and season)

Region	WEEK			SEASON		
	06.07.2023 TO 12.07.2023			01.06.2023 TO 12.07.2023		
	Actual	Normal	% Dep	Actual	Normal	% Dep
EAST & NORTH-EAST INDIA	74.1	101	-27%	404.5	500	-19%
NORTH-WEST INDIA	97	45	+115%	233.1	147	+59%

CENTRAL INDIA	92.7	68.3	+36%	295.7	284.4	+4%
SOUTH PENINSULA	51.7	46.3	+12%	181.2	235.8	-23%
Country as a whole	83	62	+34%	271.3	266.9	+2%

2. Large scale features

➢ Currently, warm ENSO neutral conditions are prevailing over the equatorial Pacifc. The sea surface temperatures (SSTs) across most of the equatorial Pacific Ocean are warmer than normal and near El Nino threshold value. The latest forecasts from MMCFS and other global models indicate high probabilities for the El Niño conditions to develop during the middle of the monsoon season and continue till the first quarter of 2024.

➢ The Madden–Julian Oscillation (MJO) Index is currently in Phase 3 (quasi-stationary over Indian Ocean) with amplitude less than 1. It would move slowly to phase 4 during next 2 days. Thereafter, it would move to phase 5 during the latter part of week 1 with amplitude remaining less than 1. During start of week 2 MJO index will be in phase 5 before it migrates into phase 6 at the end of week 2. Hence, MJO is likely to be favourable for enhancement of convective activity of monsoon over north Bay of Bengal (BoB) and Indian region during week 1.

3. Forecast for next two week

Forecast for next two week

Weather systems & associated Precipitation during Week 1 (13 to 19 July, 2023) and Week 2 (20 to 26 July, 2023)

Weather systems & associated Precipitation during Week 1 (13 to 19 July, 2023)

Significant Weather features

❖ The western end of the monsoon trough at mean sea level lies south of its normal position and eastern end lies north of its normal position. The eastern end likely to shift to north Bay of Bengal around 17 July.

❖ A fresh Western Disturbance as a cyclonic circulation in middle & upper tropospheric level lies over North Pakistan & neighbourhood and likely to move northeastwards during next 2 days.

- A cyclonic circulation lies over Westcentral & adjoining Southwest Bay of Bengal in middle tropospheric levels.
- A cyclonic circulation lies over central parts of south Uttar Pradesh & neighbourhood in lower tropospheric levels.
- The offshore trough at mean sea level lies off south Maharashtra coast to Kerala coast.
- A cyclonic circulation is likely to form over Northwest Bay of Bengal around 16th July, 2023. Model and other products show that under its influence, a low pressure area is likely to form over northwest Bay of Bengal and adjoining area around 19th July.

Weather Forecast and Warning:

Northwest India: Fairly widespread to widespread rainfall with **isolated heavy to very heavy rainfall** is very likely to continue over Uttar Pradesh during next 2 days and isolated heavy rainfall thereafter. **Isolated heavy rainfall also very likely** over Himachal Pradesh during next 5 days; north Haryana during next 3 days; East Rajasthan on 14th & 17th July and then during 18 and 19 July. **Isolated very heavy to extremely heavy rainfall very likely over Uttarakhand during next 5 days.**

East & adjoining Northeast India: Fairly widespread to widespread rainfall with isolated **heavy to very heavy rainfall** very likely over Assam, Arunachal Pradesh and Bihar during next 3 days and reduction thereafter. Isolated **heavy rainfall** very likely over Odisha during next 5 days and then increase from 19 July; Nagaland and Manipur during next 4 days and Gangetic West Bengal on 15th and 16 July. **Isolated very heavy to extremely heavy rainfall very likely over Sub-Himalayan West Bengal & Sikkim and Meghalaya during 13th -14th July and reduction thereafter.**

Central India: Light/moderate fairly widespread to widespread rainfall with **isolated heavy rainfall** is very likely over Madhya Pradesh on 13 July; subdued during 15th to 16th and increase thereafter from 17th July. **A fresh spell of heavy to very heavy rainfall likely over south** Madhya Pradesh, Chhattisgarh, Vidarbha and Telengana on 18 and 19 July.

West India: Light/moderate widespread rainfall with **isolated heavy rainfall** very likely to continue over Konkan & Goa, Ghat areas of Madhya Maharashtra during next 7 days; over Gujarat state during next 2 days. The rainfall likely to increase over these areas from 18 July with isolated heavy to very heavy rainfall over Gujarat on 19 July.

South India: Light/moderate fairly widespread to widespread rainfall with **isolated heavy**

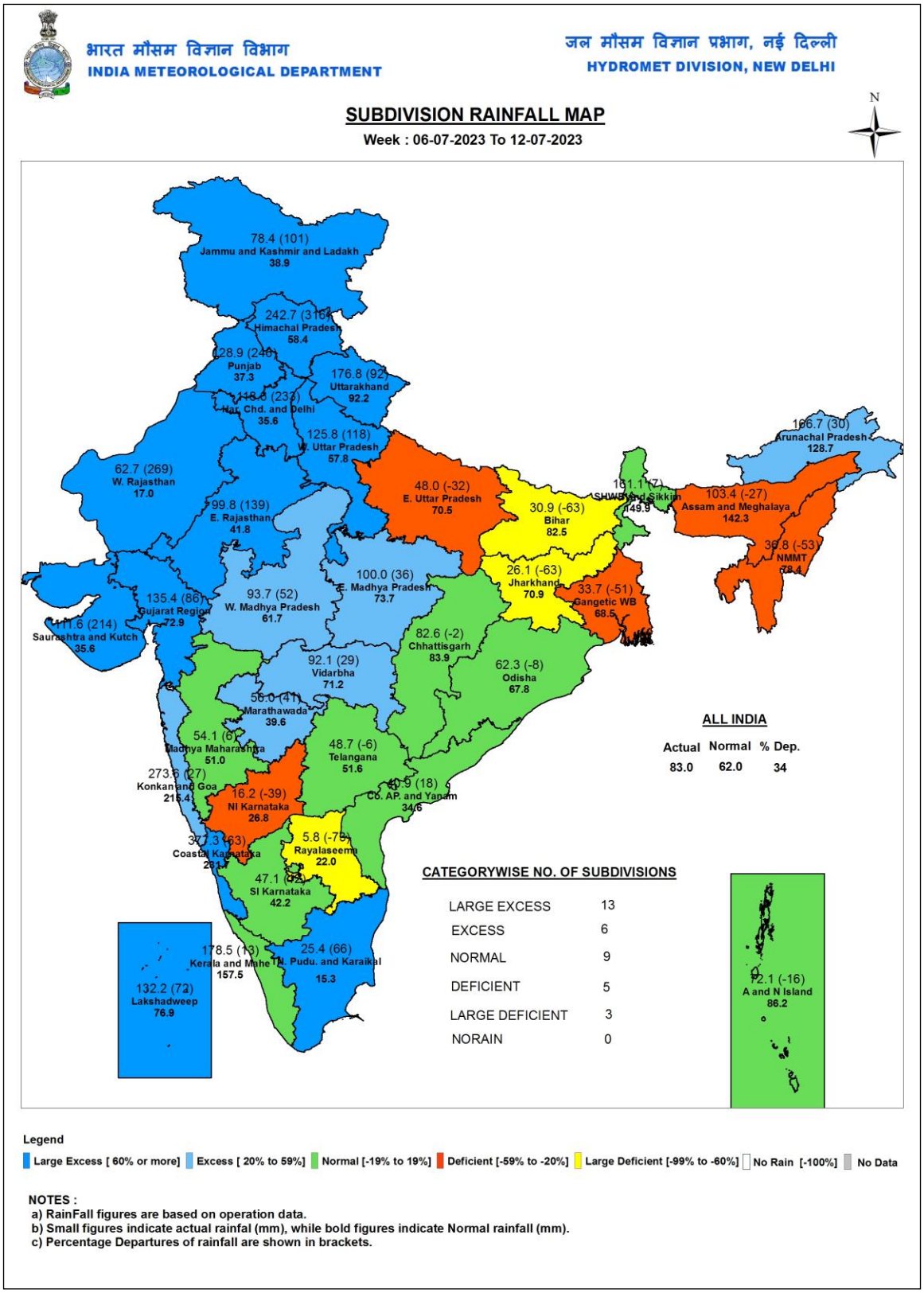
rainfall very likely to over Coastal Karnataka, South Interior Karnataka and Kerala during next 3 days; Tamil Nadu, Coastal Andhra Pradesh, Telangana during next 2 days. **Isolated very heavy rainfall** also very likely over coastal Karnataka today and reduction thereafter. The rainfall likely to increase over these areas from 18 July.

Rainfall for week 2 (20-26 July, 2023):

- ✓ Due to likely formation of a low pressure area(LPA) over northwest Bay of Bengal and adjoining area around 19th July and this LPA is likely to intensify into a depression over the same region during next 48 hours and subsequently move west-northwestward towards central India across Odisha & Chhattisgarh. So Monsoon trough is likely to be active and south of its normal position during most days of the week.
- ✓ Off shore trough likely from Gujarat coast to Kerala coast during many days of the week.
- ✓ Strong westerly/southwesterly winds are likely along west coast during many days of the week.
- ✓ Under above scenario
  - Significant Increase of rainfall likely over central India. Light to moderate fairly widespread to widespread rainfall activity with isolated heavy to very heavy rainfall falls are likely over central parts of the country and along the west coast in most of the dates in the week.
  - Light to moderate fairly widespread to widespread rainfall activity is also likely over rest parts of South Peninsular India during most days of the week except over Tamil Nadu.
  - Reduction in the rainfall activity over extreme northern parts of the country and northeast India, West Bengal and Sikkim. Light to moderate scattered/fairly widespread rainfall/thunderstorm is likely in the region with isolated heavy to very heavy rainfall likely during most dates in the week. Isolated heavy rainfall is also likely over northeast & adjoining east India during many days of the week.
  - **Overall, rainfall activity is likely to be normal to above normal over central India, Gujarat, western parts of the country covering mainly along west coasts and adjoining south Peninsular India. It is likely to be normal over rest parts of the country, outside some parts of Western Himalayan Region, Uttar Pradesh, Bihar and northeastern states and west Bengal and Sikkim, where it is likely to be normal to below normal.**

Legends: **Heavy Rain:** 64.5 to 115.5 mm **Very Heavy Rain:** 115.6 to 204.4 mm, **Extremely Heavy Rain**> 204.4 mm

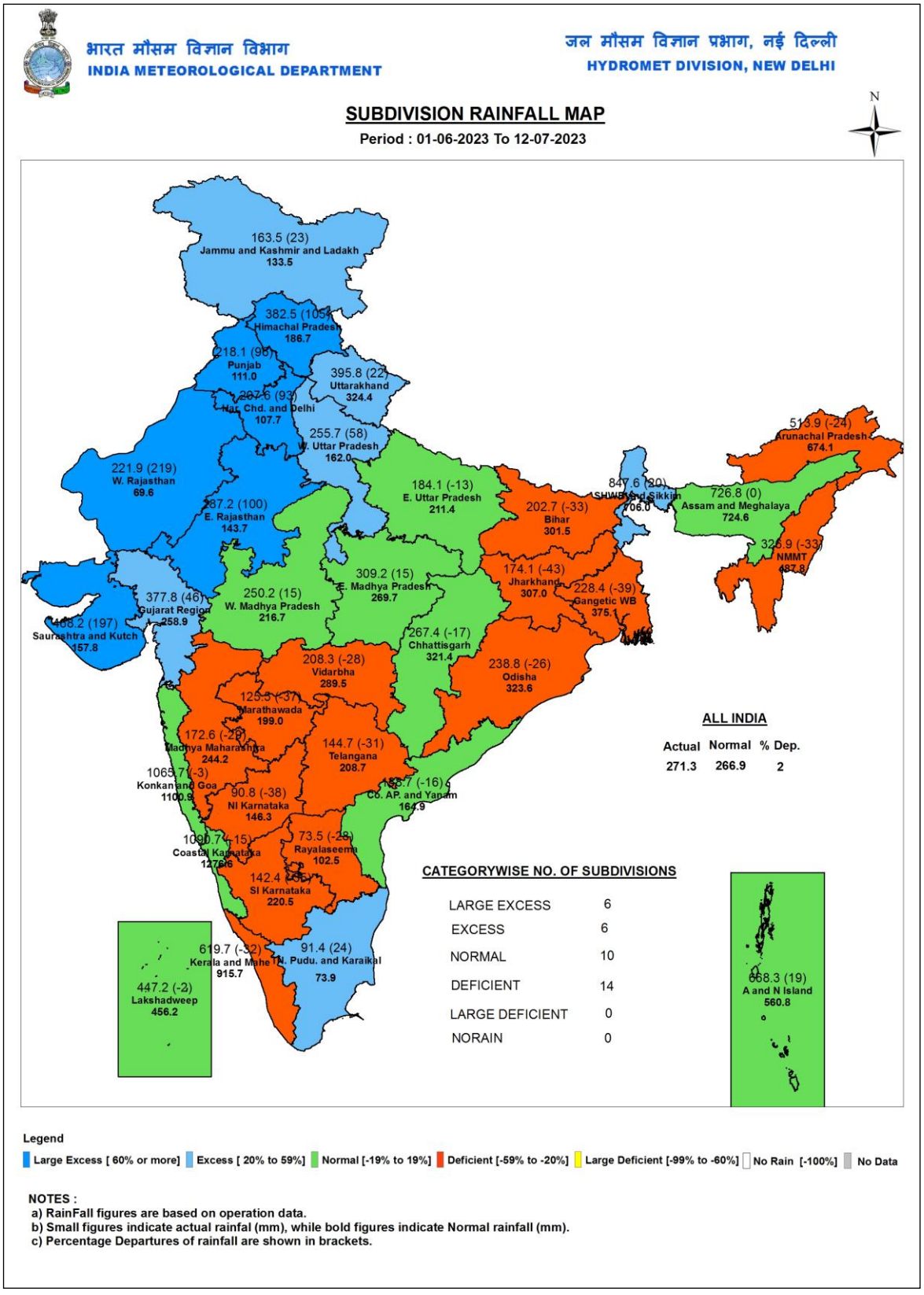
Annex: I



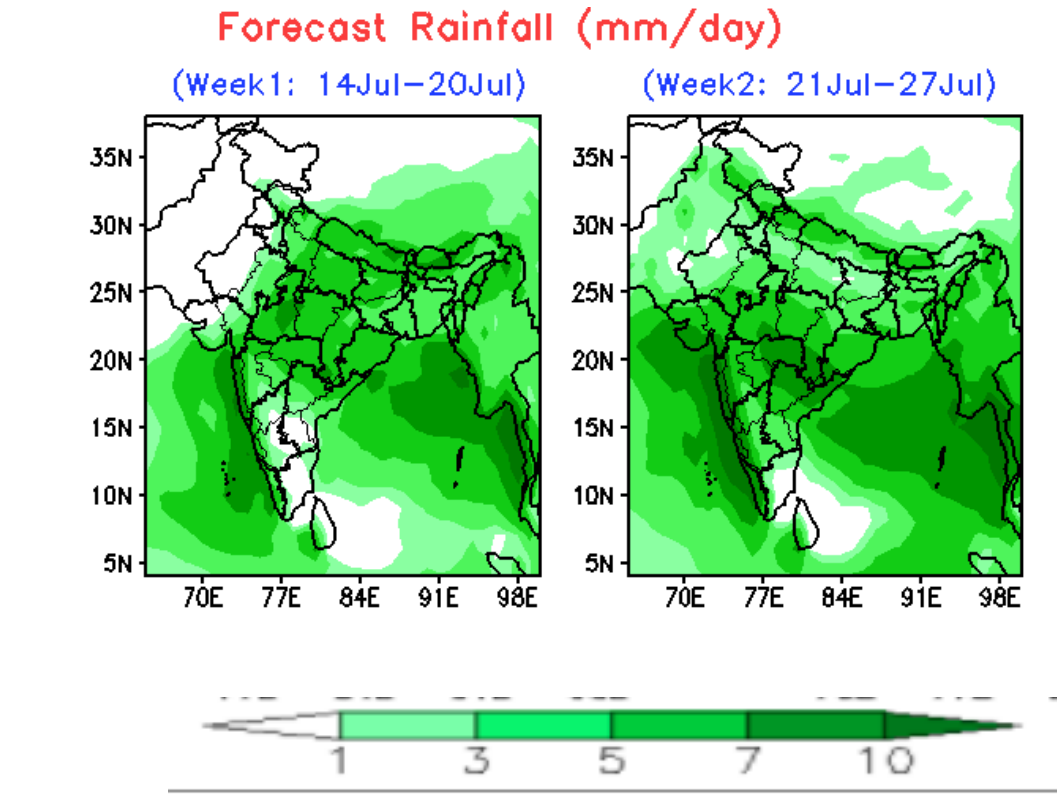
NOTES :

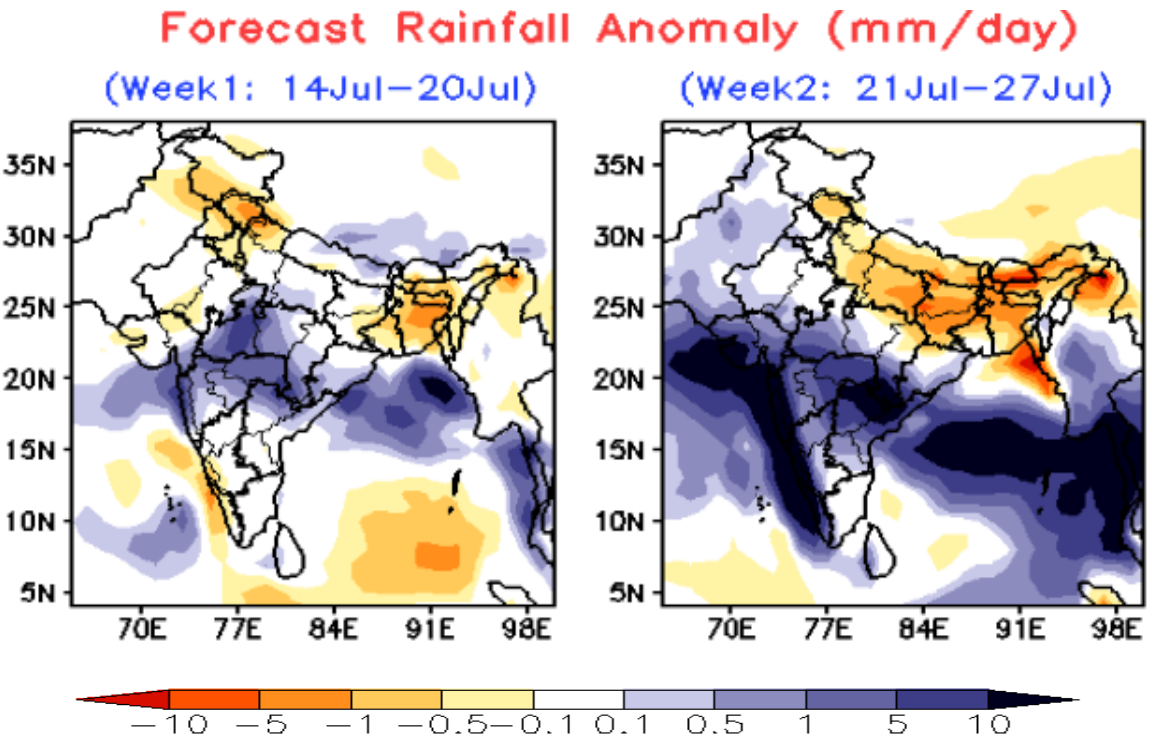
a) RainFall figures are based on operation data.
b) Small figures indicate actual rainfal (mm), while bold figures indicate Normal rainfall (mm).
c) Percentage Departures of rainfall are shown in brackets.

Annex II

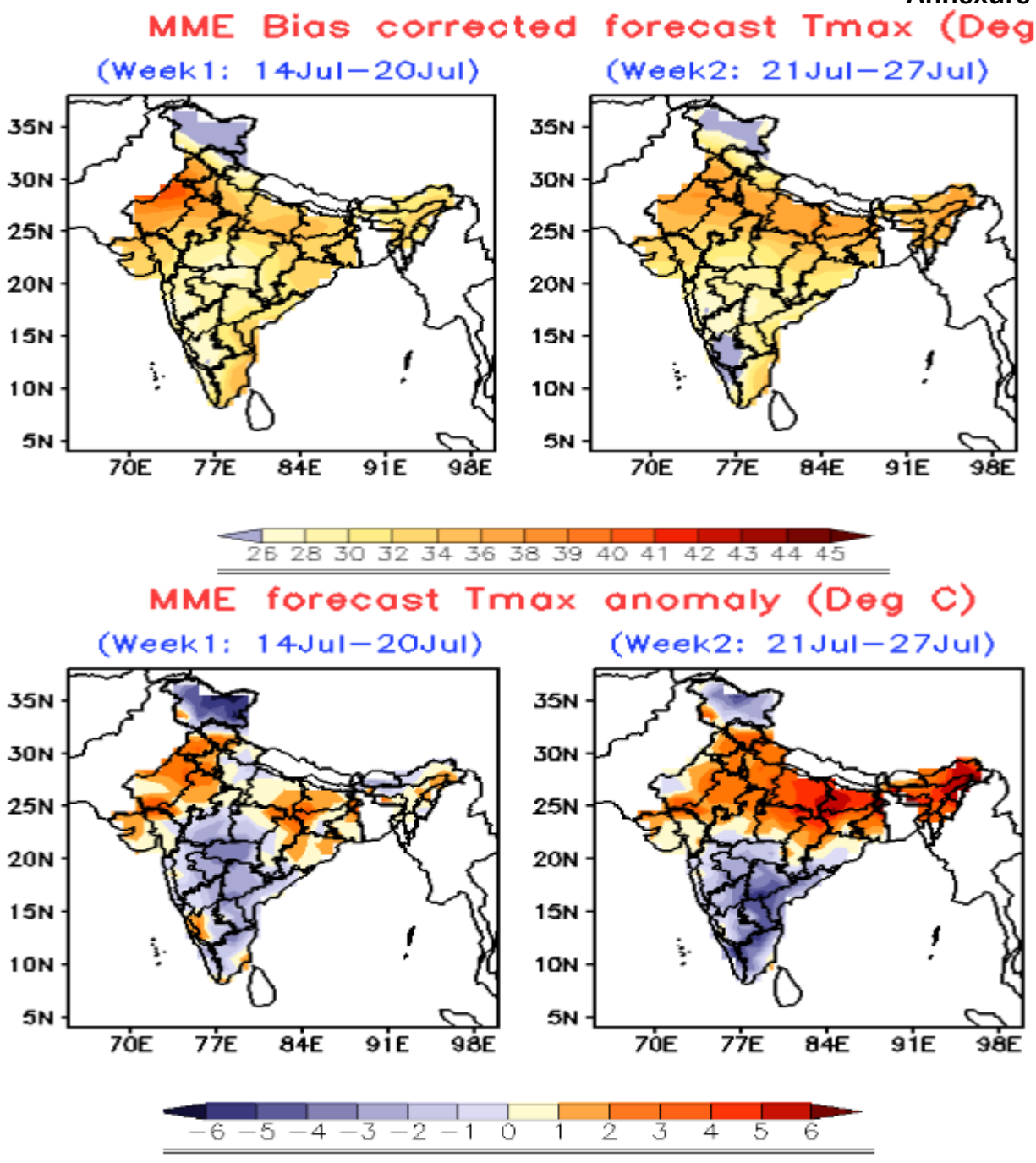

भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT
जल मौसम विज्ञान प्रभाग, नई दिल्ली
HYDROMET DIVISION, NEW DELHI
SUBDIVISION RAINFALL MAP
Period : 01-06-2023 To 12-07-2023
N
163.5 (23)
Jammu and Kashmir and Ladakh
133.5
382.5 (105)
Himachal Pradesh
186.7
218.1 (96)
Punjab
111.0
395.8 (22)
Uttarakhand
324.4
207.6 (93)
Har. Chd. and Delhi
107.7
255.7 (58)
W. Uttar Pradesh
162.0
221.9 (219)
W. Rajasthan
69.6
287.2 (100)
E. Rajasthan
143.7
184.1 (-13)
E. Uttar Pradesh
211.4
202.7 (-33)
Bihar
301.5
847.6 (20)
Sikkim
706.0
726.8 (0)
Assam and Meghalaya
724.6
513.9 (-24)
Arunachal Pradesh
674.1
326.9 (-33)
NMMT
487.8
309.2 (15)
E. Madhya Pradesh
269.7
174.1 (-43)
Jharkhand
307.0
228.4 (-39)
Gangetic WB
375.1
377.8 (46)
Gujarat Region
258.9
250.2 (15)
W. Madhya Pradesh
216.7
466.2 (197)
Saurashtra and Kutch
157.8
267.4 (-17)
Chhattisgarh
321.4
208.3 (-28)
Vidarbha
289.5
238.8 (-26)
Odisha
323.6
125.3 (-37)
Marathawada
199.0
172.6 (-29)
Madhya Maharashtra
244.2
144.7 (-31)
Telangana
208.7
1065.7 (-3)
Konkan and Goa
1100.9
90.8 (-38)
NI Karnataka
146.3
138.7 (-16)
Co. AP. and Yanam
164.9
1090.7 (-15)
Coastal Karnataka
1276.6
73.5 (-28)
Rayalaseema
102.5
142.4 (-35)
SI Karnataka
220.5
619.7 (-32)
Kerala and Mahe
915.7
91.4 (24)
N. Pudu. and Karaikal
73.9
447.2 (-2)
Lakshadweep
456.2
668.3 (19)
A and N Island
560.8
ALL INDIA
Actual Normal % Dep.
271.3 266.9 2
CATEGORYWISE NO. OF SUBDIVISIONS
LARGE EXCESS 6
EXCESS 6
NORMAL 10
DEFICIENT 14
LARGE DEFICIENT 0
NORAIN 0
Legend
Large Excess [60% or more]
Excess [20% to 59%]
Normal [-19% to 19%]
Deficient [-59% to -20%]
Large Deficient [-99% to -60%]
No Rain [-100%]
No Data
NOTES :
a) RainFall figures are based on operation data.
b) Small figures indicate actual rainfal (mm), while bold figures indicate Normal rainfall (mm).
c) Percentage Departures of rainfall are shown in brackets.

Annexure III





Annexure IV


MME Bias corrected forecast Tmax (Deg
(Week1: 14Jul–20Jul)
(Week2: 21Jul–27Jul)
35N
30N
25N
20N
15N
10N
5N
70E
77E
84E
91E
98E
26 28 30 32 34 36 38 39 40 41 42 43 44 45
MME forecast Tmax anomaly (Deg C)
(Week1: 14Jul–20Jul)
(Week2: 21Jul–27Jul)
−6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6