Features of Indian Summer Monsoon 2004

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New Delhi, India

NCMRWF Gridded output for CEOP

- **NCMRWF will provide the model output data for the EOP4 period 2003-2004 from the current operational version of the T80/L18 analysis-forecast system.**

- **Gridded data has been provided for the period Oct 2003-May 2004**

NCMRWF Gridded output for CEOP

- **The analysis fields provided will be valid for 00, 06, 12 and 18UTC. These fields will contain only the 3D atmospheric variables on 15 pressure levels and Surface Pressure.**
- **The forecast fields provided will also be valid for 00, 06, 12 and 18UTC. The forecast fields will have the 2D surface fields in addition to the 3D fields. The details of the forecast fields are given in the table.**

Monsoon Diagnostic Studies

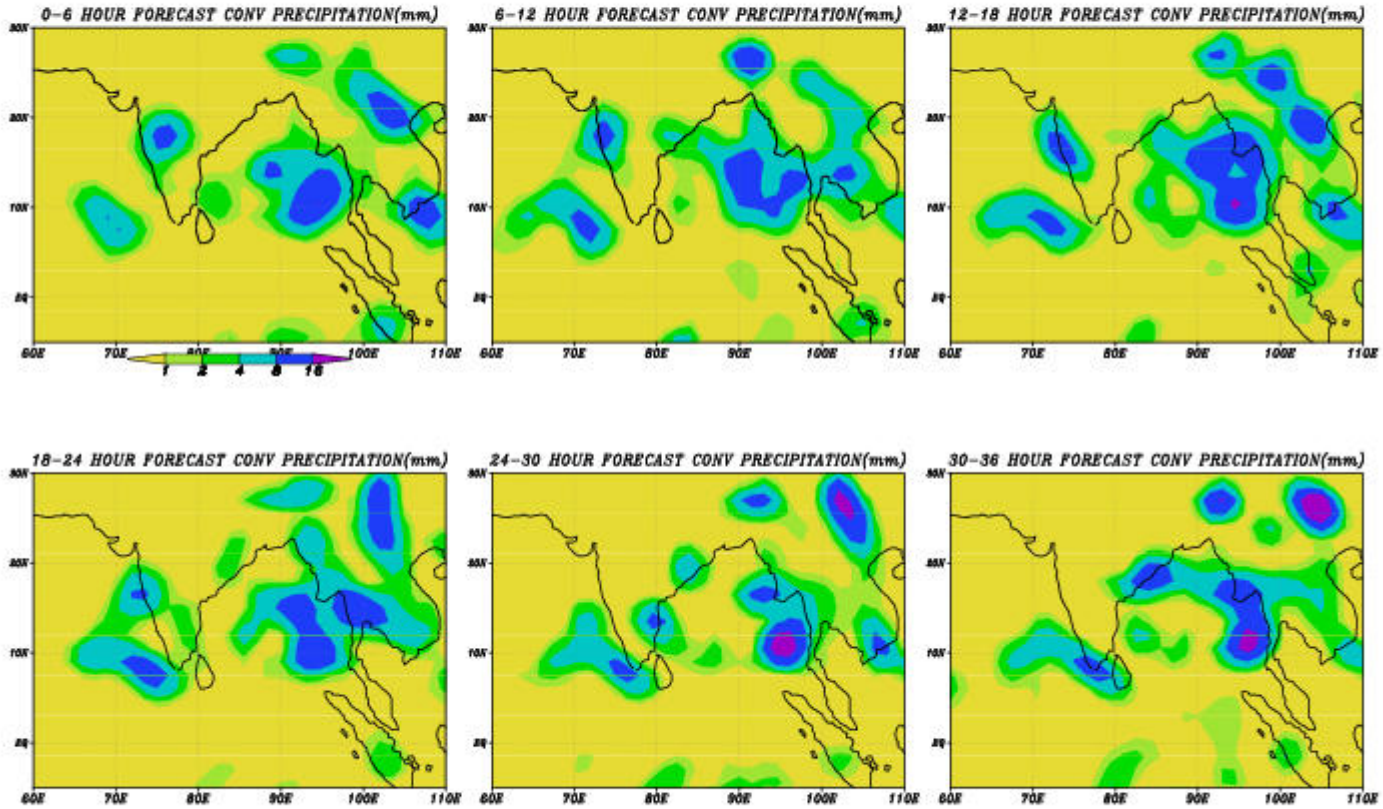
(Onset/Advancement, Synoptic disturbances, Intra-seasonal variability, dry & wet spells)

Fluctuations in the activity of the summer monsoon over India are known to dominantly dependent on

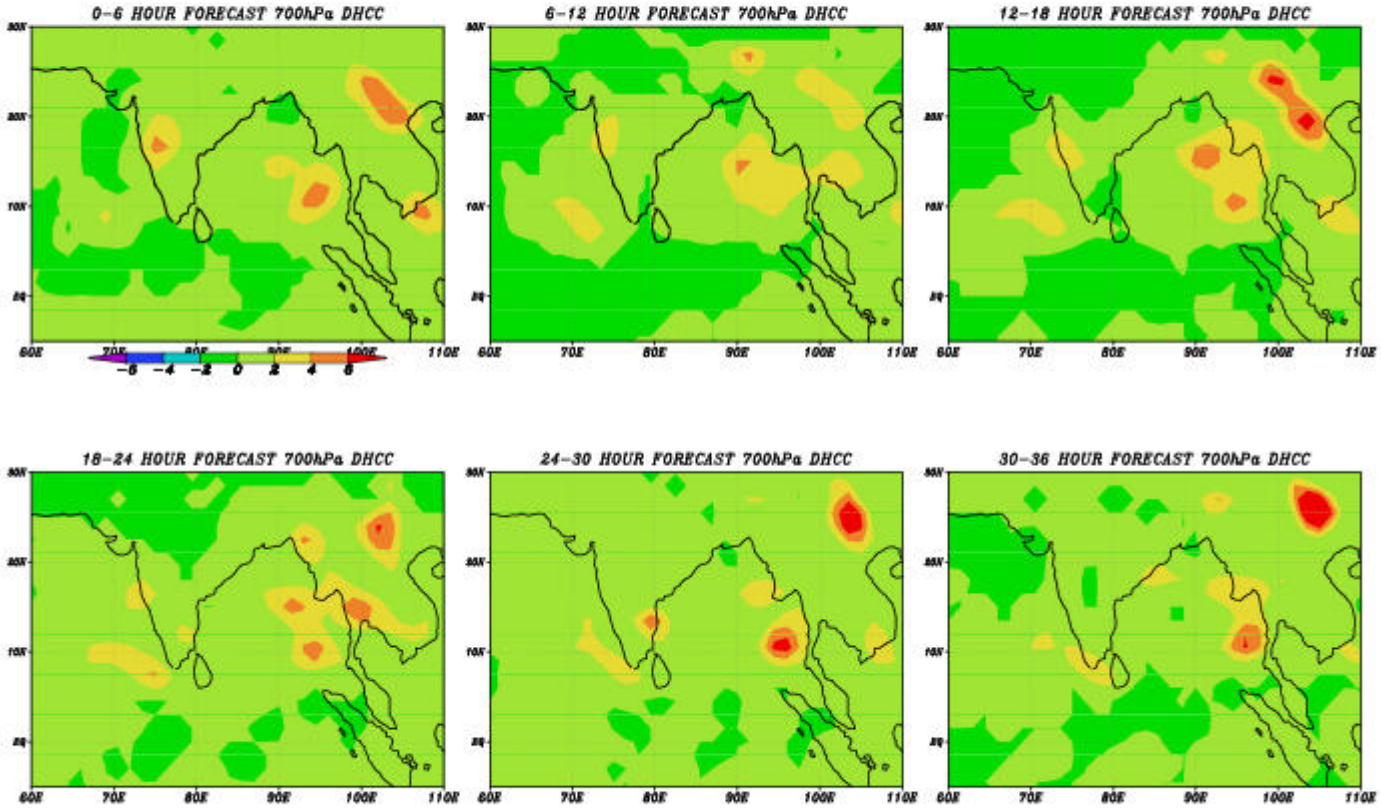
North-south oscillations in the regional monsoon trough
Frequency of formation of the synoptic scale (3-5 day) weather disturbances like the monsoon lows and depressions

The intra-seasonal active-break cyclone of the monsoon and the overlapping formation of the monsoon lows/depressions or prolonged absence of the cyclogenesis for a period of 15-30 days are influenced by the intra-seasonal oscillation of the Monsoon on 30-50 day scale.

NCMRWF T80/L18 FORECAST IC: 12Z16MAY2004



NCMRWF T80/L18 FORECAST IC: 12Z16MAY2004



Observed Rainfall distribution June,2004

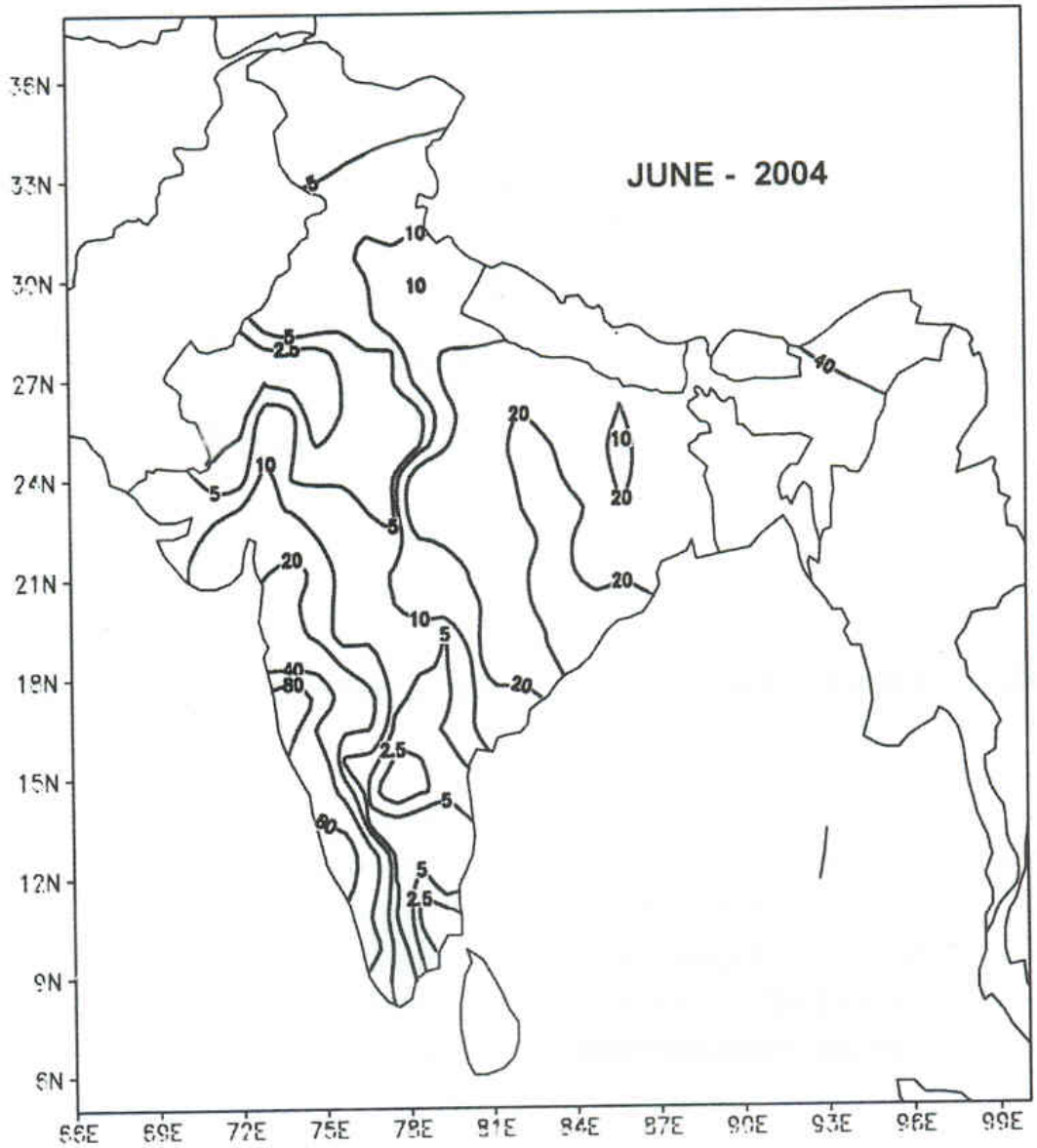
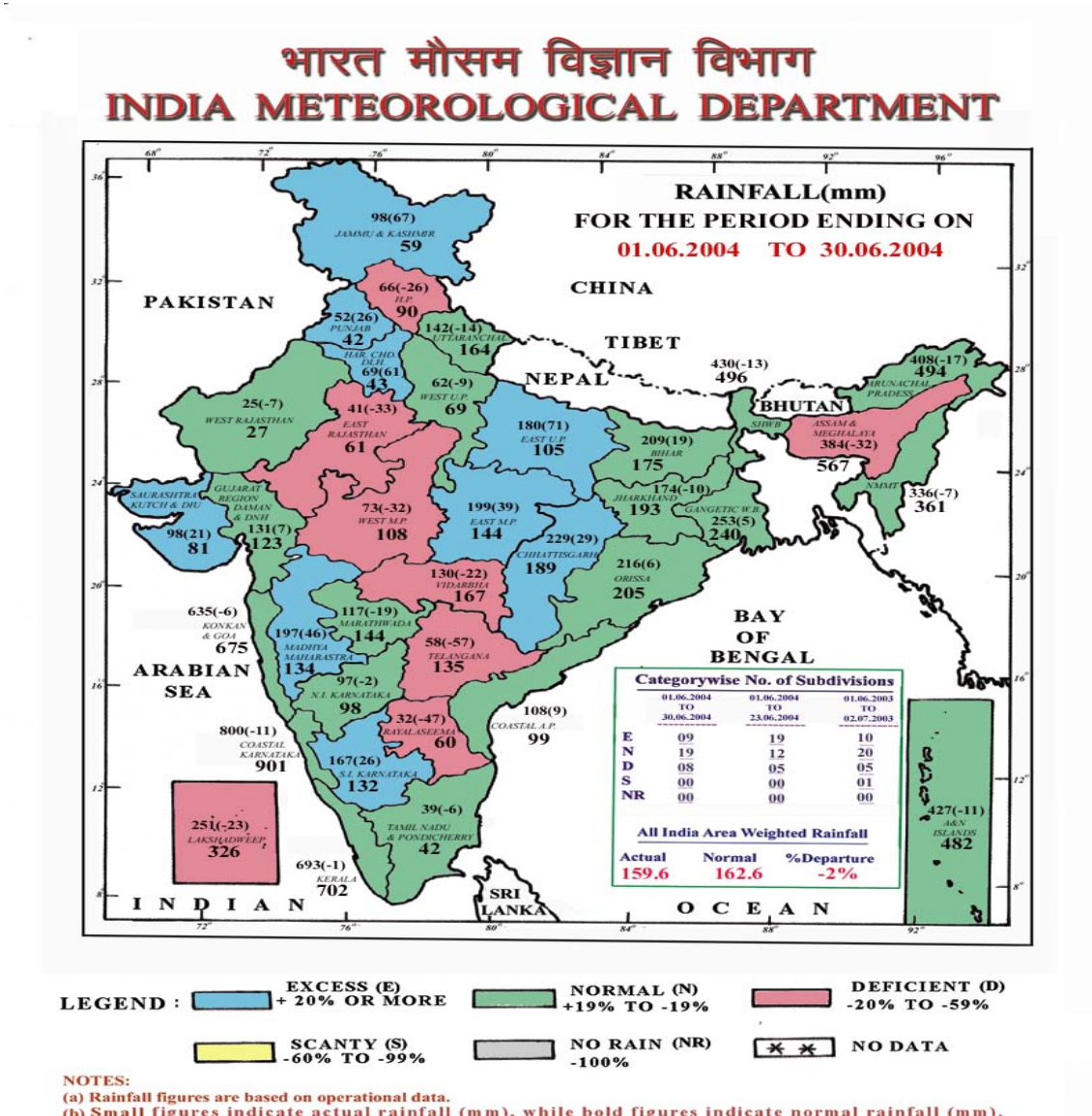


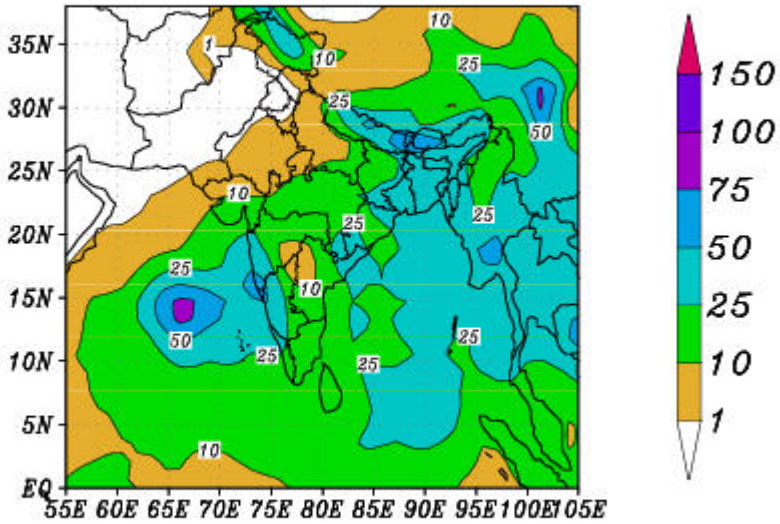
FIG. 3 : MONTHLY RAINFALL (cm)

Observed Rainfall distribution

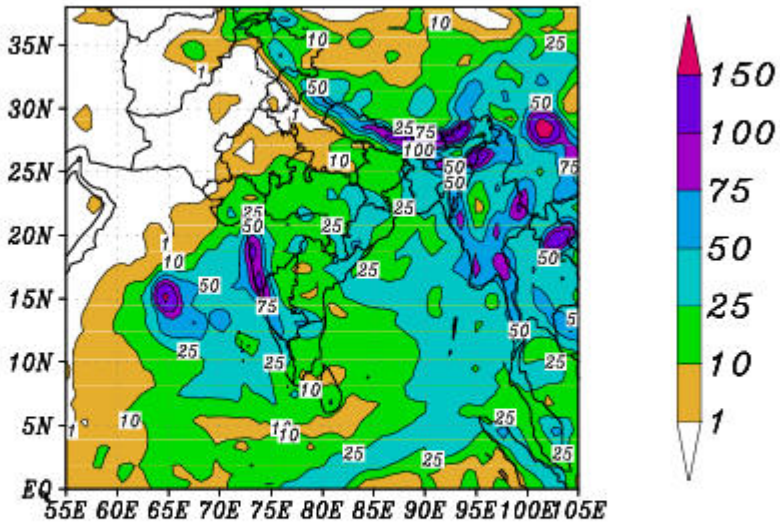
June,2004

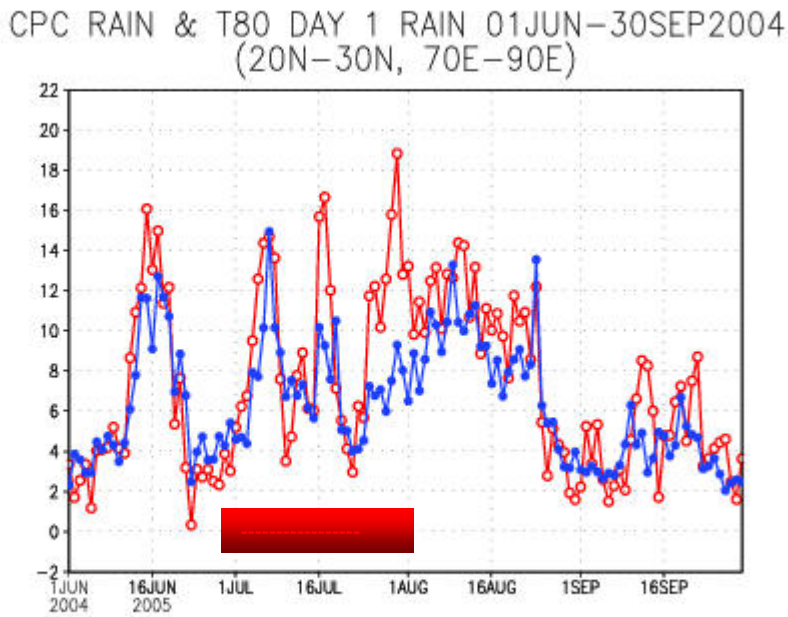


T80 MODEL RAIN(cm)
DAY 1 FCST JUN 2004



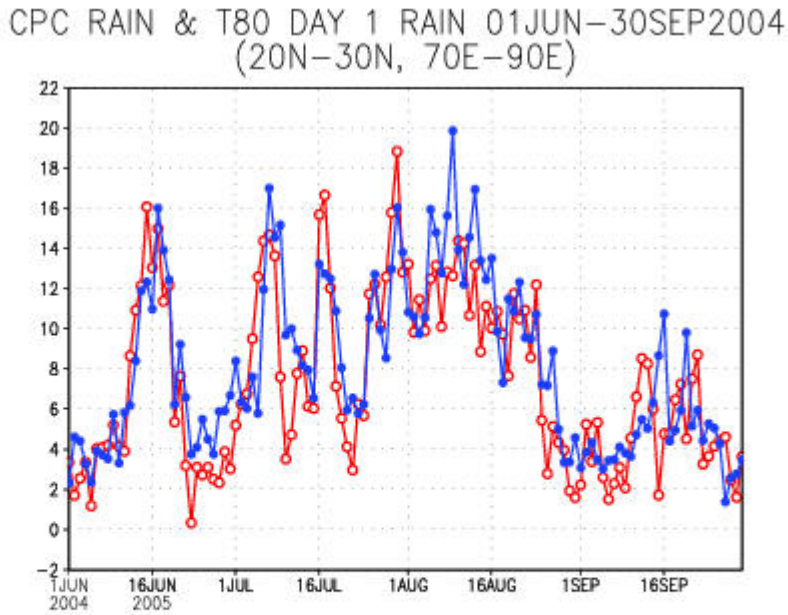
T170 MODEL RAIN(cm)
DAY 1 FCST JUN 2004




CPC RAIN & T80 DAY 1 RAIN 01JUN–30SEP2004
(20N–30N, 70E–90E)
22
20
18
16
14
12
10
8
6
4
2
0
–2
1JUN
2004
16JUN
2005
1JUL
16JUL
1AUG
16AUG
1SEP
16SEP

OBS

T80


CPC RAIN & T80 DAY 1 RAIN 01JUN–30SEP2004
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22
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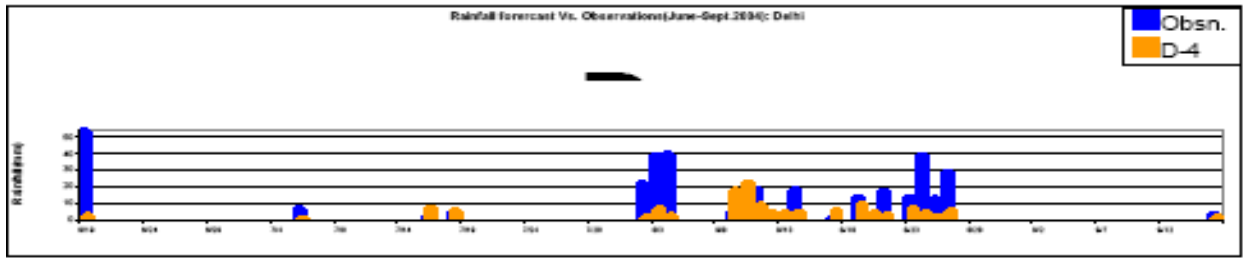
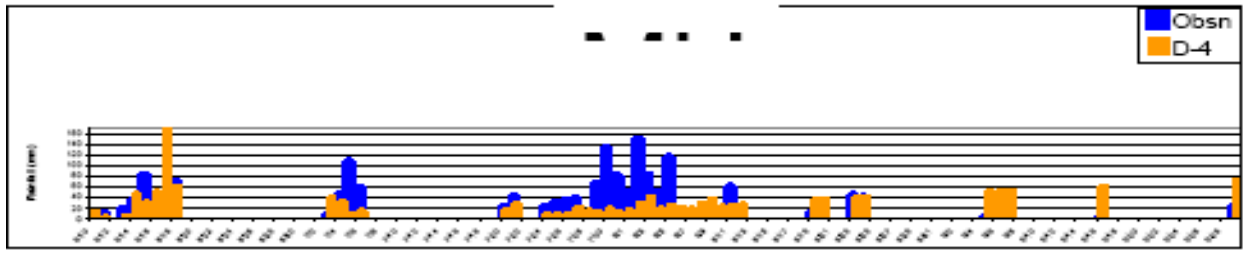
1JUN
2004
16JUN
2005
1JUL
16JUL
1AUG
16AUG
1SEP
16SEP

T170

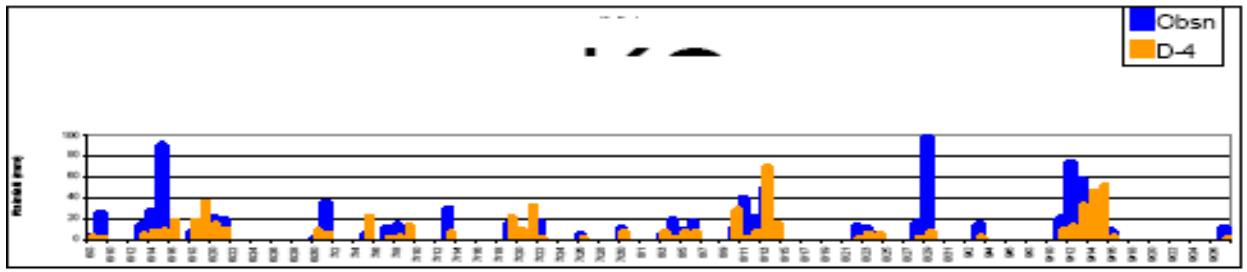
SAMPLE VERIFICATION OF DMO FOR 4 METROPOLITAN CITIES DURING JUNE-SEPTEMBER 2004



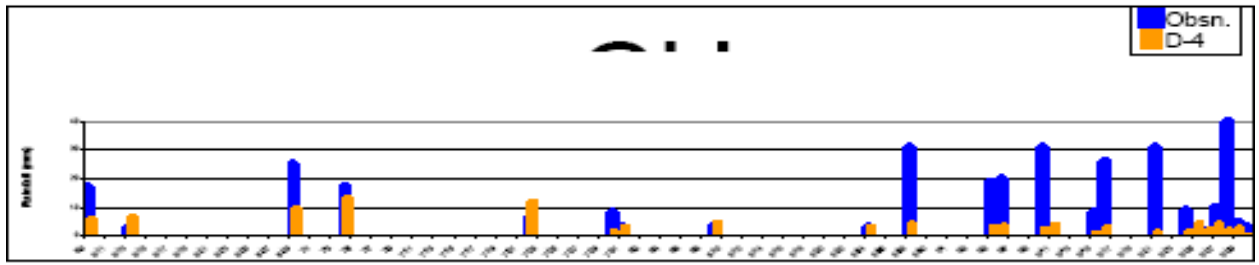
Delhi



Mumbai

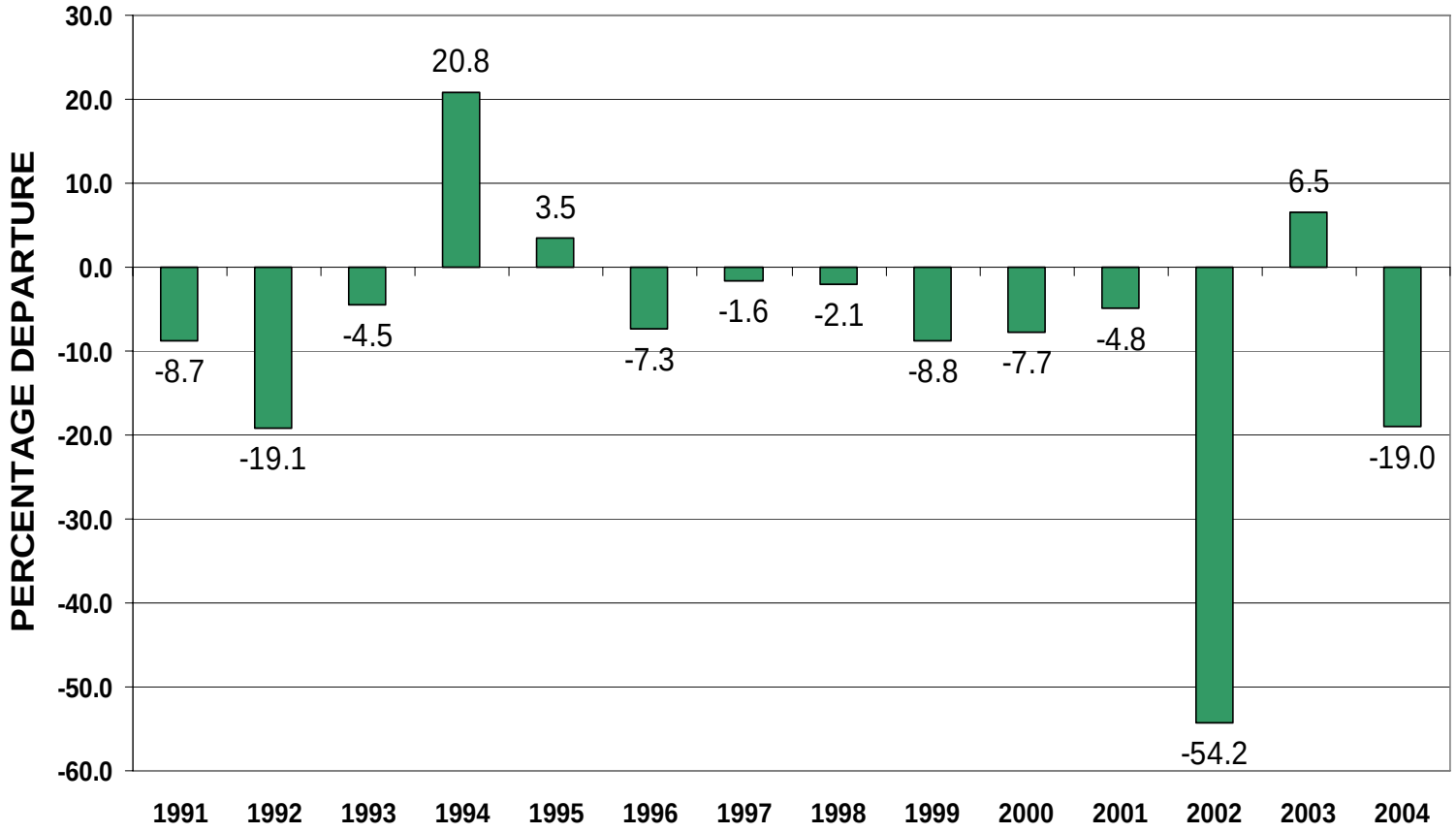


Kolkata



Chennai

July Rainfall in Recent Years



Since 1991, number of years (11 out of 14 years) with less than LPA of July rainfall was more as compared to previous decades. 2002 was the worst year with All India rainfall 54% below normal.

Diurnal behaviour of the Asian Summer Monsoon

Krishnamurti and Kishtwal(2000)

Infrared cloud images and Cloud motion winds from meteosat-5

Evidence of continental-scale diurnal cycle of the monsoon
Circulation from mapping of the divergent circulations

Motion of cloud clusters form Bay of Bengal inland in daytime hours
And a reverse motion in the early morning hours

Diurnal amplification and weakening in the Tibetan High circulation.

The tropical easterly jet on the southern flank of this anti-cyclone
Exhibits a strong diurnal fluctuation in its intensity.

Diurnal response to surface heating, convection and the buildup
And weakening of thermal winds

Ananthkrishnan(1977) has examined the diurnal variation of surface and tropospheric winds for selected sites over India

Pronounced surface wind speed variations were evident at coastal and inland stations.

Amplitude of the surface wind speed oscillations as large as 7m/s at coastal sites and 3m/s at inland sites on diurnal time scale.

Murakami(1983) showed convection over Tibetan plateau is enhanced during the afternoon and is suppressed during early morning hours

Diurnal variation of rainfall and convection over the different tropical land areas, including the monsoon domain.

WORK PLAN

- Verification and intercomparison of precipitation forecasts
- Skill in predicting the occurrence and amount of daily precipitation
- Evolution and predictability of high impact weather in the short range forecasting
- Diurnal behaviour of Indian summer monsoon