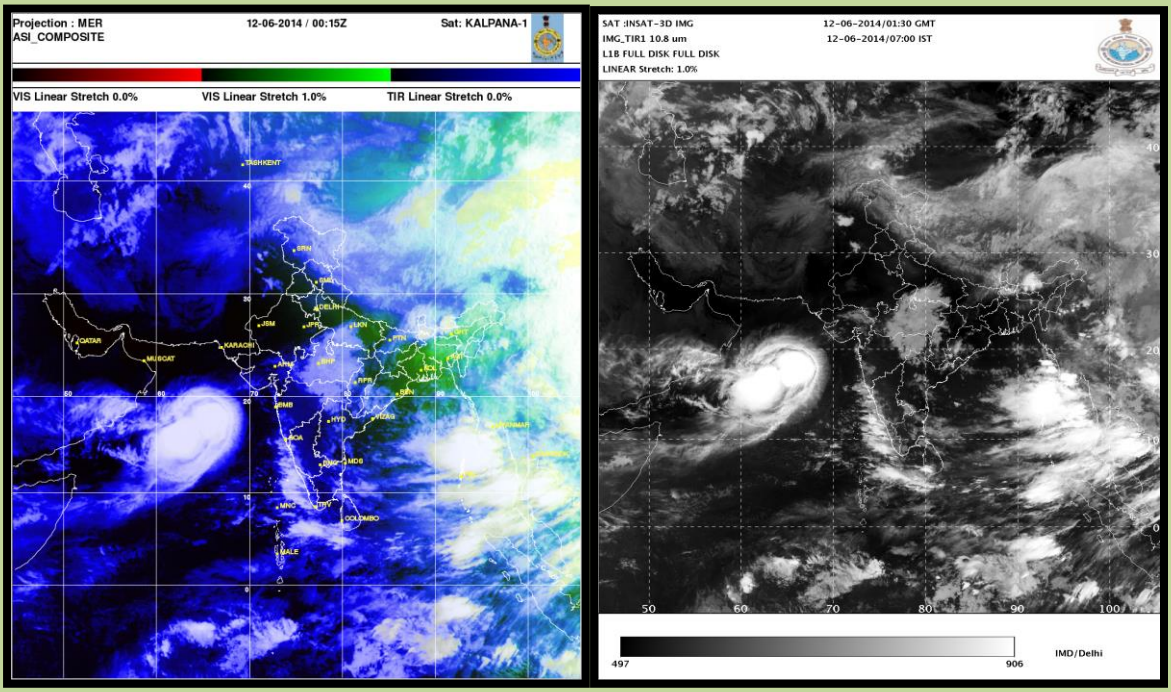
GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
EARTH SYSTEM SCIENCE ORGANISATION
INDIA METEOROLOGICAL DEPARTMENT

Cyclonic Storm, 'NANAUK' over the Arabian Sea (10-14 June 2014): A Report



INSAT-3D Satellite imagery of CS NANAUK

Cyclone Warning Division

India Meteorological Department

New Delhi

June 2014

Cyclonic Storm (CS) 'NANAUK' over the Arabian Sea
(10-14 June 2014)

1. Introduction

A Cyclonic Storm (CS) **'NANAUK'** originated from a low pressure area over east central Arabian Sea which developed on 9th June, 2014. It concentrated into a depression over the same region in the afternoon of 10th June, 2014. Moving north-northwestwards, it intensified into a cyclonic storm (CS), **'NANAUK'** in the early morning of 11th June 2014. It weakened into a deep depression in the afternoon of 13th June, 2014 over westcentral Arabian Sea and into a depression in the evening of 1.3 June, 2014 and further into a well marked low pressure area over the same region in the morning of 14th June, 2014. The salient features of this cyclone are given below.

(i) It developed in association with the southwest monsoon surge over Arabian Sea during the onset phase
(ii) It caused temporary hiatus in progress of monsoon over south India
(iii) It weakened over the northwest Arabian Sea on 14th June and its remnant moved northeastwards leading to revival and progress of monsoon along the west coast of India

2. Monitoring and Prediction:

The cyclonic storm **'NANAUK'** was monitored & predicted continuously since its inception by the India Meteorological Department. The forecast of its genesis, track, and intensity, as well as associated adverse weather were predicted exceedingly well with sufficient lead time which helped the disaster managers to maximize the management of cyclone. The system was monitored mainly with satellite observations, supported by meteorological buoys and coastal and Island observations. Data from conventional observatories and Automatic Weather Stations (AWSs) were also used. The half hourly INSAT/ Kalpana imageries, available microwave imageries and scatteometry products were used for monitoring of the system. Various national and international NWP models and dynamical-statistical models including IMD's global and meso-scale models, dynamical statistical models for genesis and intensity and models run at NCMRWF were utilized to predict the genesis, track and intensity. Tropical Cyclone Module, the

digitized forecasting system of IMD was utilized for analysis and comparison of various models guidance and decision making process and warning product generation.

3. Genesis

Under the influence of the active southwest monsoon surge over the Arabian Sea during its onset phase, a low level cyclonic circulation formed on 9th June morning. It concentrated into a vortex (T=1.0 as per Dvorak's analysis) in the evening of 09th June, which corresponds to a low pressure area over the east central Arabian Sea. It became a well marked low pressure area over the same region in the morning of 10th June. It concentrated into a depression over the same region in the afternoon of 10th June, 2014. According to satellite imagery and Dvorak's technique, the intensity was T1.0. The lowest cloud top temperature was about -75^{0}C. The maximum sustained wind speed was about 25 knots. However, the wind speed was higher in the southern sector in association with the southwest monsoon surge.

Considering the environmental conditions, the sea surface temperature (SST) was 30-32^{0}C. The tropical cyclone heat potential was about 60-80 kJ/cm^2. The vertical wind shear of horizontal wind was about 20-30 knots between upper and lower tropospheric level. There was increase in low level vorticity, lower level convergence and upper level divergence from 9th to 10th June favouring genesis of the depression. The Madden Julian Oscillation index lay in phase 3 (east equatorial |Indian Ocean) with amplitude less than 1. The past studies indicate that phase 3 is favourable for cyclogenesis. However, the amplitude was not favourable for further intensification.

The best track parameters are shown in Table 1 and the best track is shown in Fig.1.

4. Intensification and movement

As the favourable environmental parameters like vorticity and divergence/convergence continued to prevail on 10th and 11th, even though the vertical wind shear and MJO index were not favourable, the depression moved west-northwestwards and intensified into a deep depression around midnight of 10th June, 2014 and further into a cyclonic storm (CS), **'NANAUK'** in the early morning of 11th June 2014. It continued to move west–northwestward for some more time till early morning of 13th June. It then moved

northwestwards for some time and finally northwards to westcentral and adjoining northwest Arabian Sea till afternoon of 13th June, where it weakened into a deep depression and further weakened into a depression in the evening of 13th due to increase in vertical wind shear, entrainment of dry air and relatively colder SST. It then moved northwards to northwest and adjoining westcentral Arabian Sea It weakened into a well marked low pressure area over the same region in the morning of 14th June, 2014.

According to satellite imageries, the initial curves band pattern changed to central dense overcast (CDO) pattern as the system intensified into a cyclonic storm. The maximum intensity was T 3.0 corresponding to 45 knots. The lowest estimated central pressure was about 986 hPa. The CDO pattern changed to the shear pattern due to increase in vertical wind shear during the weakening of the system on 13th. The cloudmas was sheared to the southwest of the centre of low level circulation. There was rapid weakening as the cyclonic storm changed to depression from 0600 UTC to 1200 UTC of 13th June. It was mainly due to high vertical wind shear which was about 30-40 knots. To highlight the satellite features, the typical satellite imageries are shown in Fig.2. The IMD GFS analyses based on 0000 UTC of 10th to 14th June are shown in Fig.3 to highlight the dynamical features.

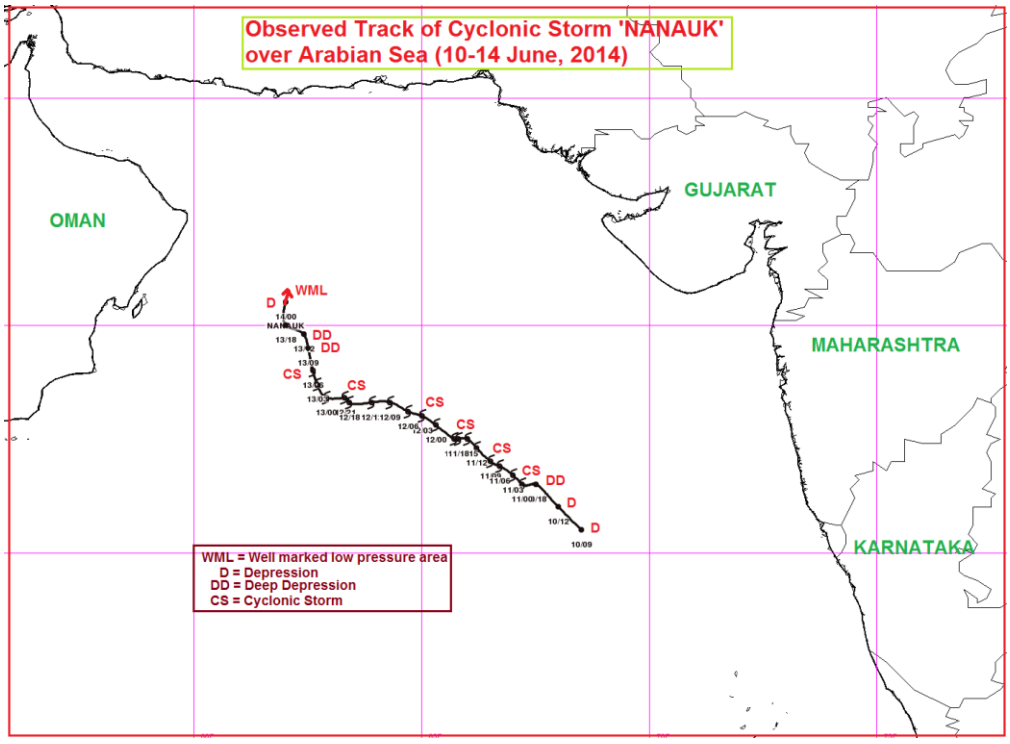


Fig.1. Track of cyclonic storm, Nanauk during 10-14 June 2014 over Arabian Sea

Table 1. Best track positions and other parameters of the Cyclonic Storm 'NANAUK' over the Arabian Sea during 10-14 June, 2014

Date	Time (UTC)	Centre lat.^{0} N/ long.^{0} E	C.I. NO.	Estimated Central Pressure (hPa)	Estimated Maximum Sustained Surface Wind (kt)	Estimated Pressure drop at the Centre (hPa)	Grade
10-06-2014	0900	15.5/68.5	1.5	998	25	3	D
	1200	16.0/68.0	1.5	996	25	3	D
	1800	16.5/67.5	2.0	994	30	5	DD
11-06-2014	0000	16.5/67.2	2.5	992	35	8	CS
	0300	16.7/67.0	2.5	992	35	8	CS
	0600	16.9/66.7	3.0	990	45	10	CS
	0900	17.0/66.5	3.0	990	45	10	CS
	1200	17.3/66.2	3.0	988	45	10	CS
	1500	17.5/66.0	3.0	988	45	10	CS
	1800	17.5/65.8	3.0	988	45	10	CS
	2100	17.5/65.7	3.0	988	45	10	CS
12-06-2014	0000	17.8/65.3	3.0	986	45	10	CS
	0300	18.0/65.0	3.0	986	45	10	CS
	0600	18.1/64.7	3.0	986	45	10	CS
	0900	18.3/64.3	3.0	988	45	10	CS
	1200	18.3/63.9	3.0	988	45	10	CS
	1500	18.3/63.6	3.0	988	45	10	CS
	1800	18.3/63.4	3.0	988	45	10	CS
	2100	18.4/63.3	3.0	988	45	10	CS
13-06-2014	0000	18.4/62.9	3.0	988	45	10	CS
	0300	18.7/62.7	3.0	990	45	10	CS
	0600	19.0/62.6	2.5	992	40	8	CS
	0900	19.5/62.5	2.0	994	30	5	DD
	1200	19.8/62.4	1.5	996	25	3	D
	1800	20.0/62.0	1.5	996	25	3	D
14-06-2014	0000	20.5/62.0	1.5	996	25	3	D
	0300	The depression over northwest and adjoining westcentral Arabian Sea weakened into a well marked low pressure area over the same region.					

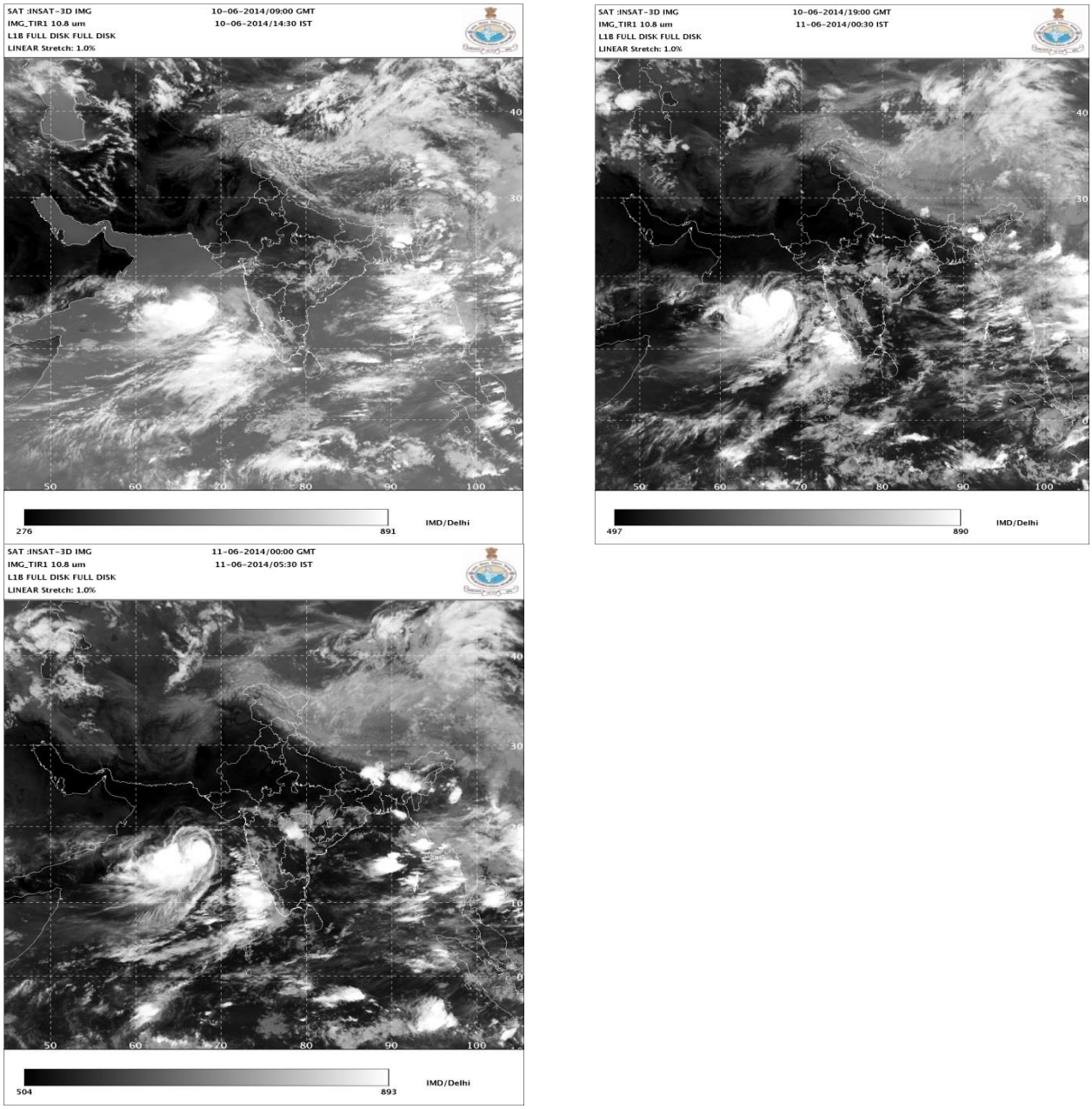


Fig.2. Typical INSAT 3D imageries of cyclonic storm 'NANAUK' at 00,06,12 &18 UTC of 10th and 11th June, 2014.

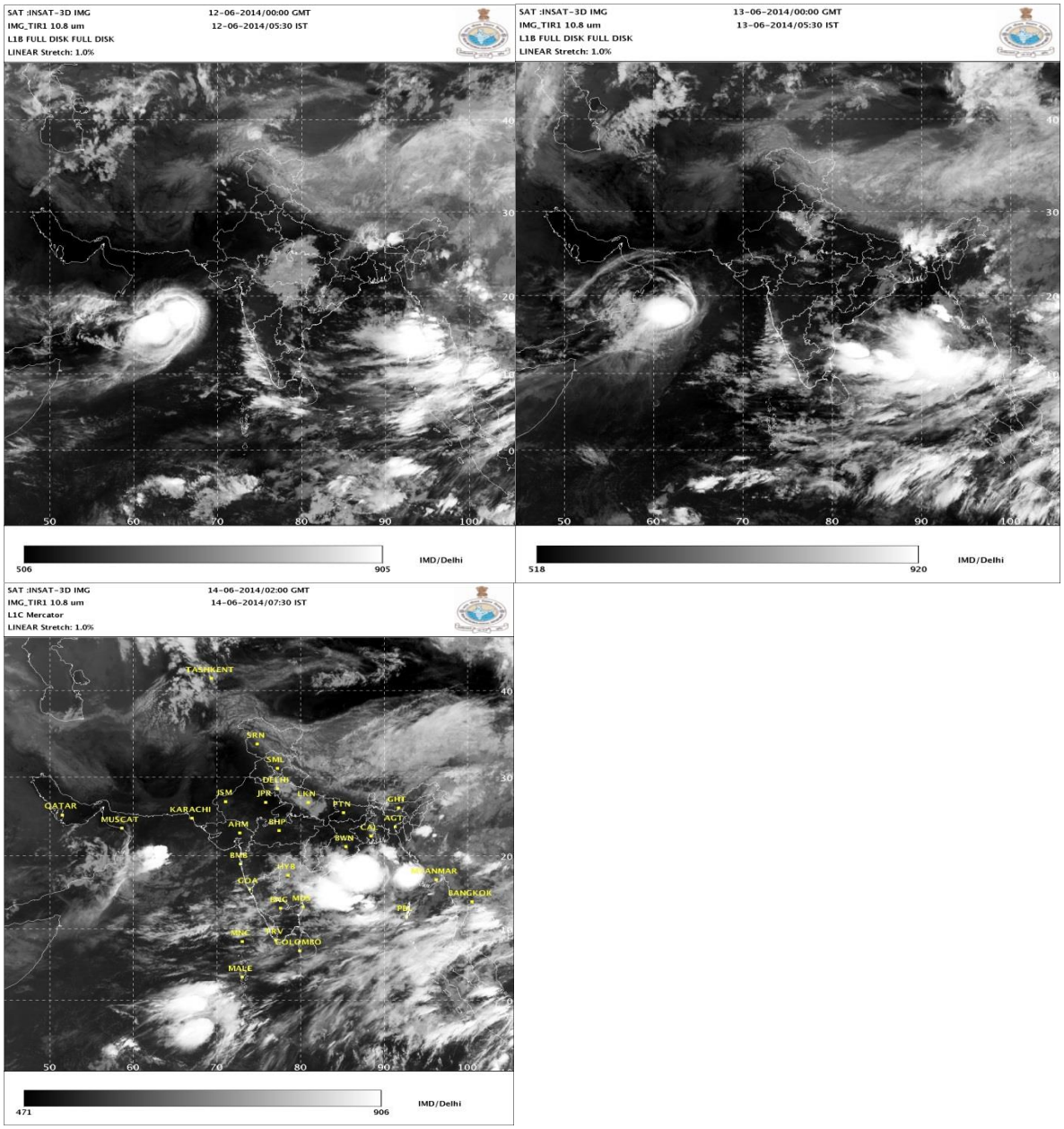


Fig.2(Contd) Typical INSAT 3D imageries of cyclonic storm 'NANAUK' at 00,06,12 &18 UTC of 10th June, 2014.

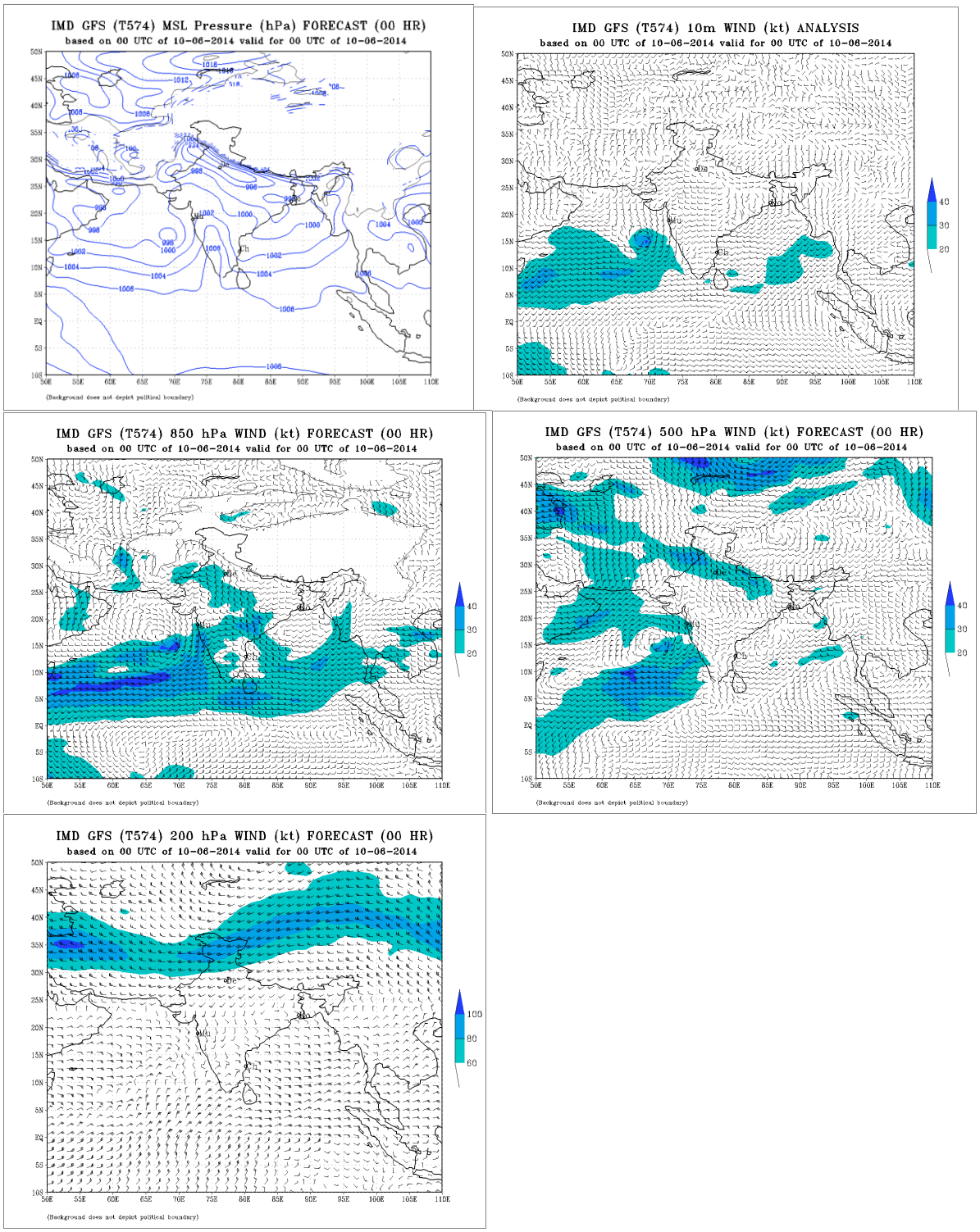
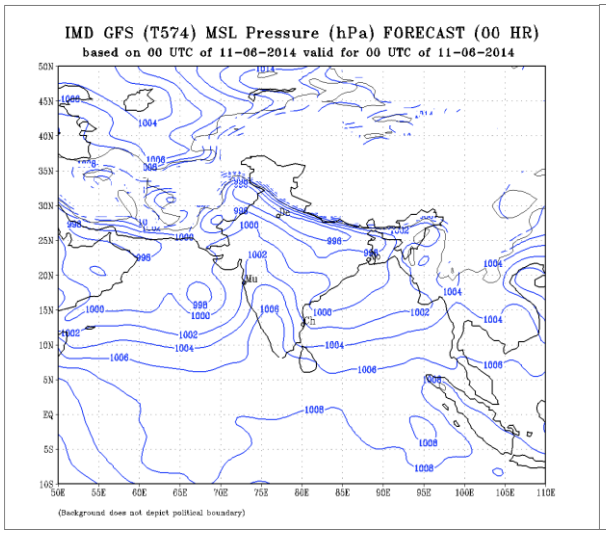
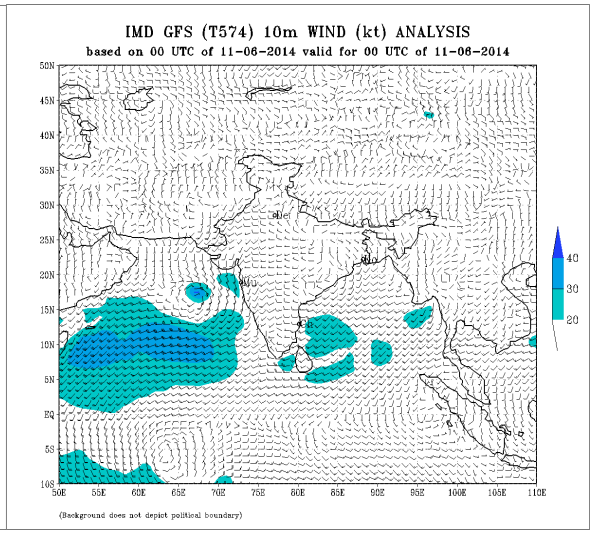
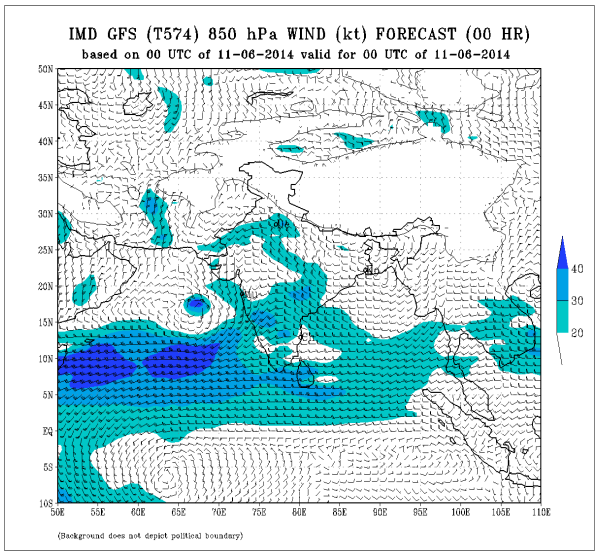
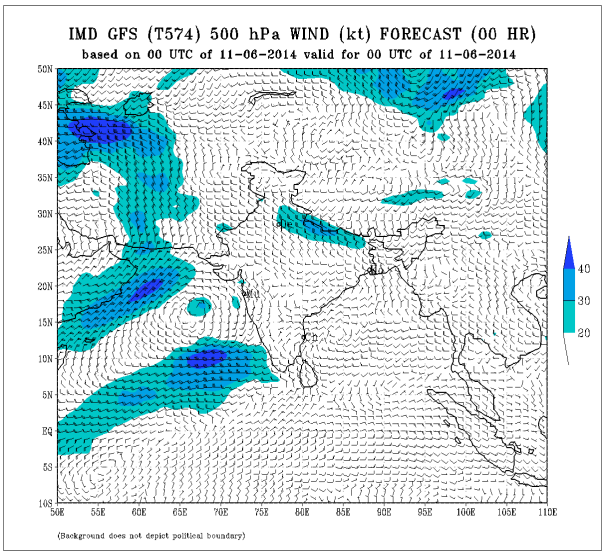


Fig.3 (a) IMD GFS MSLP and winds at 850, 500 & 200 hPa levels analysis and 10meter wind based on 10th June 2014









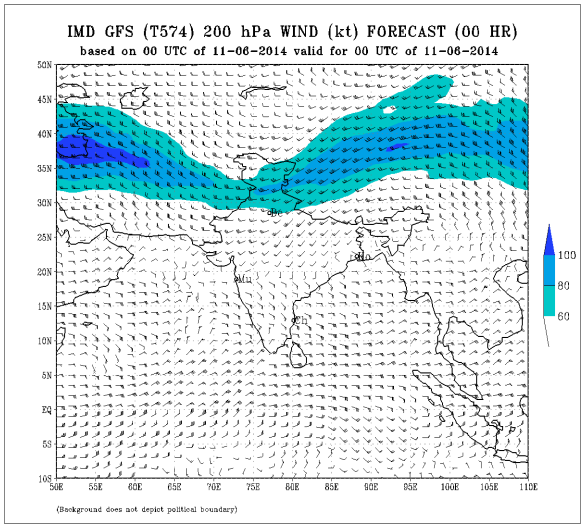


Fig.3(b) IMD GFS MSLP and winds at 850, 500 & 200 hPa levels analysis and 10meter wind based on 11th June 2014

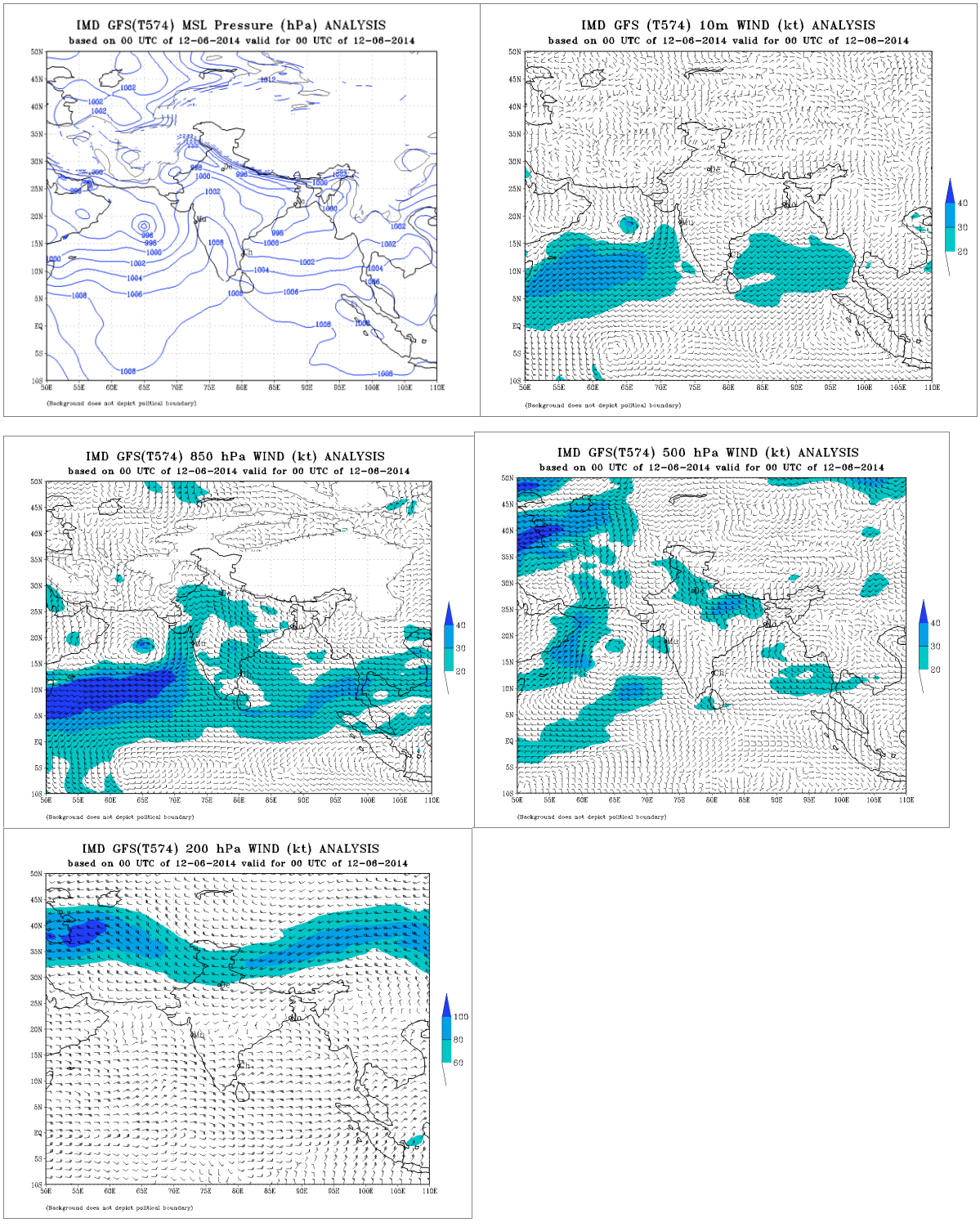


Fig.3(c) IMD GFS MSLP and winds at 850, 500 & 200 hPa levels analysis and 10meter wind based on 12th June 2014

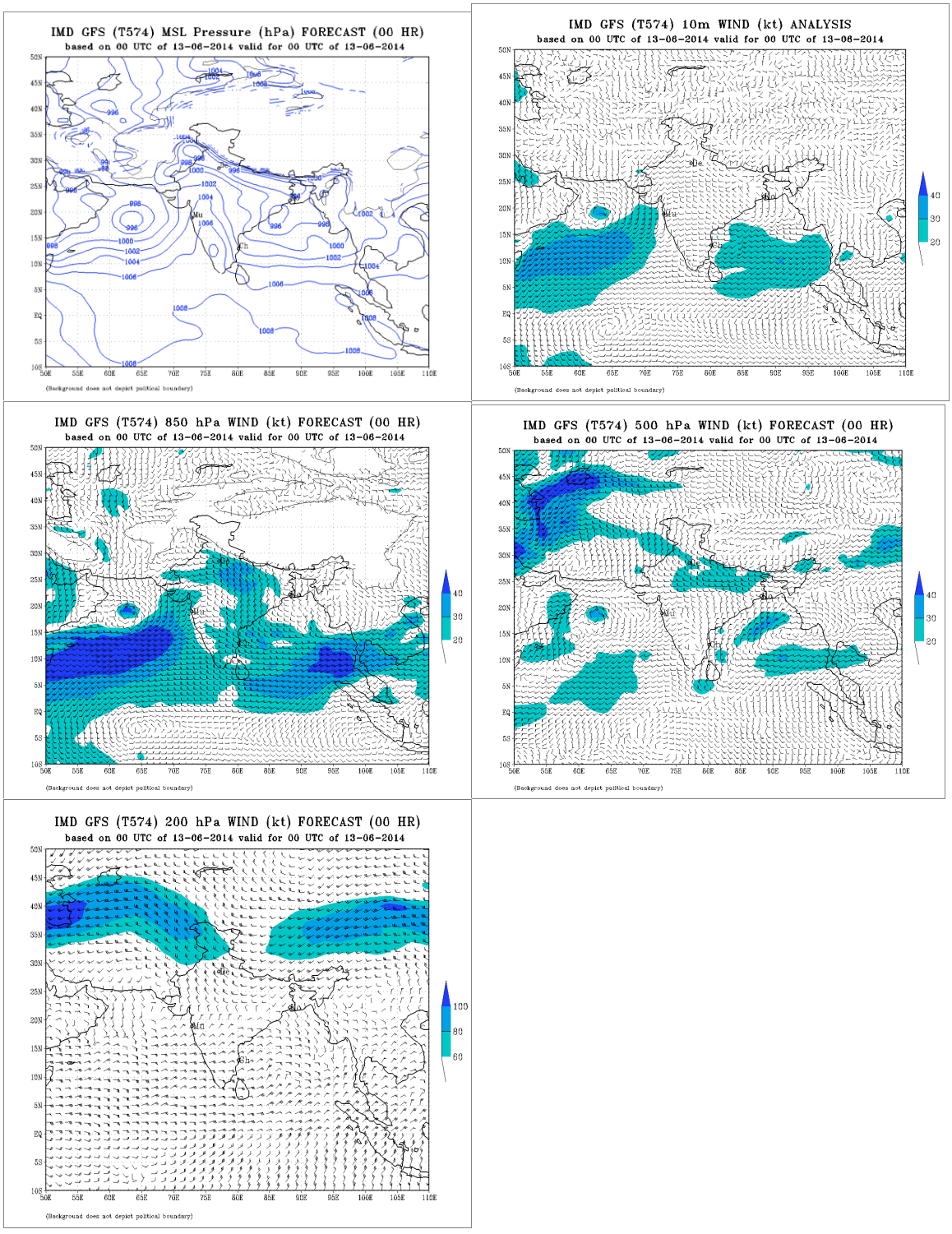


Fig.3(d) IMD GFS MSLP and winds at 850, 500 & 200 hPa levels analysis and 10meter wind based on 13th June 2014

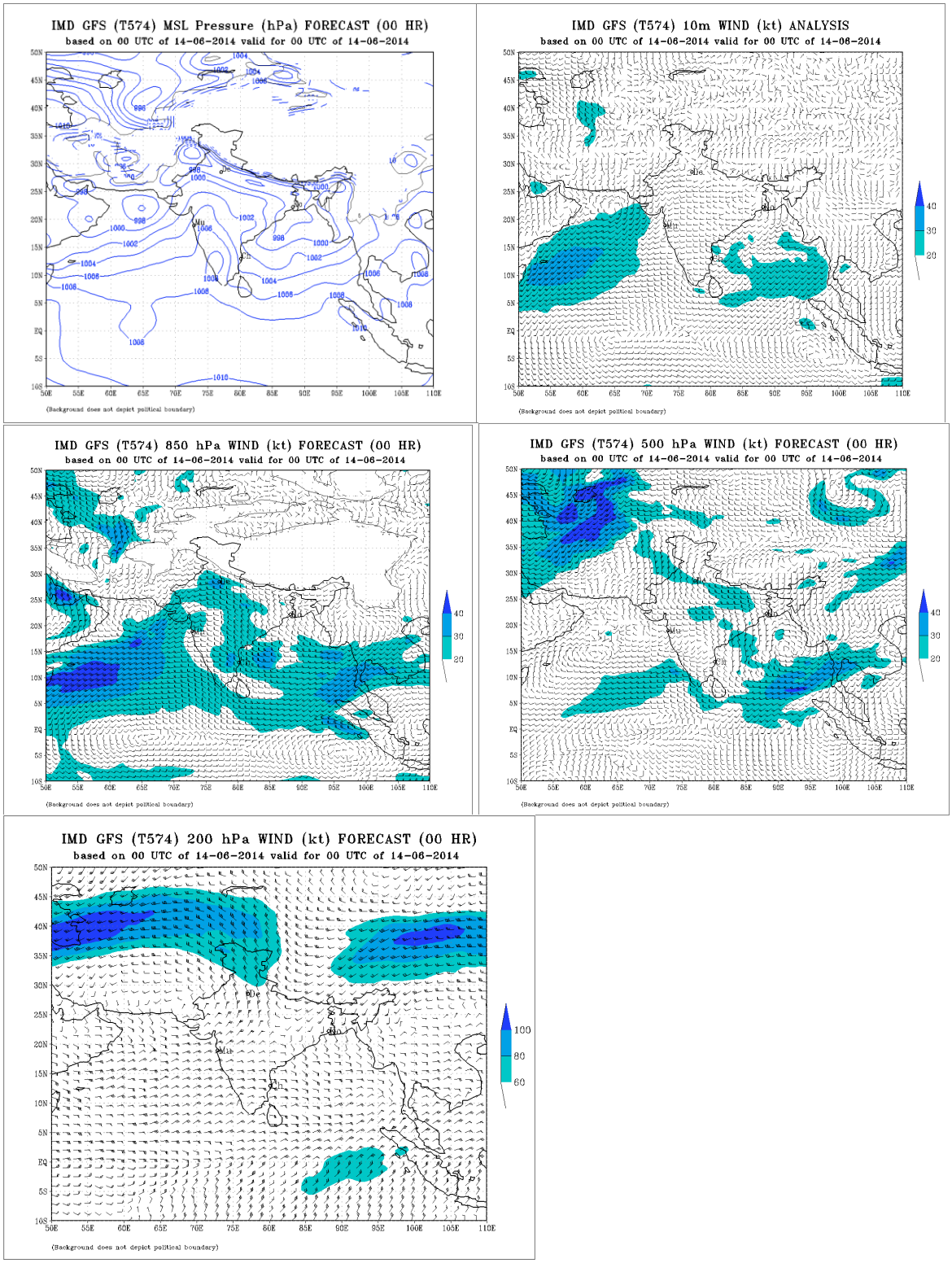


Fig.3(e) IMD GFS MSLP and winds at 850, 500 & 200 hPa levels analysis and 10meter wind based on 14th June 2014

5. Warning services

The Cyclone Warning Division / Regional Specialised Meteorological Centre (RSMC)-Tropical Cyclone, IMD, New Delhi mobilised all its resources for monitoring and prediction of cyclonic storm, **'NANAUK'**. It issued 3/6 hourly warning/advisory bulletins to national disaster management agencies. It issued forecast and warning bulletins to various national and international disaster management agencies including National Disaster Management (NDM), Ministry of Home Affairs (MHA), National Disaster Management Authority (NDMA) concerned state Govts. and other users at regular intervals. It also issued advisories to World Meteorological Organisation (WMO)/Economic and Social Cooperation for Asia and the Pacific (ESCAP) Panel member countries including Bangladesh, Myanmar, Thailand, Pakistan, Oman, Sri Lanka and Maldives during cyclone period. As Tropical Cyclone Advisory Centre (TCAC), it also issued tropical cyclone advisories with effect from the stage of deep depression for international civil aviation purpose as per the requirement of International Civil Aviation Organization (ICAO). The TCAC bulletin was also sent to Aviation Disaster Risk reduction (ADRR) centre of WMO at Hong Kong like previous year. Tropical cyclone vitals were prepared every six hourly from deep depression stage onwards and provided to various NWP modeling groups in India for synthetic vortex generation in NWP models.

The numbered warning bulletins were issued by Cyclone Warning Division, IMD, New Delhi since 1430 hrs IST of 10th June, 2014. The bulletins were issued every three hourly since the cyclonic storm stage, i.e. from early morning of 11th June, 2014. The number of bulletins issued by the Regional Specialised Meteorological Centre and Cyclone Warning Division, New Delhi, are given in Table 2:

Table 2. Statistics of bulletins issued during CS, 'NANAUK'

S.N.	Bulletins	No. of Bulletins
1	Press Release	1
2	Personal Briefing to Higher Officials	Daily
3	National Bulletin	27
4	RSMC Bulletin	26
5	TCAC Bulletin (Text & Graphics)	12
6	ADRR Bulletin to Hong Kong	12
7	TC Vitals	11
8	Observed and forecast track and Quadrant Wind radii graphics	17

6. Realized Weather:

6.1. Rainfall: Chief amounts of 24 hrs. Rainfall (7 cm or more) ending at 0300 UTC from 10th to 14th June 2014 are given below:

10 JUNE,

COASTAL KARNATAKA: Kollur-5, Belthangady-3, Siddapura-2, Bhatkal-2, Mudubidre-2, Shirali-2, Bajpe Obsy-2, Bantwal-2, Dharmasthala-2, Mulki-1, Honavar-1, Karkala-1, Kundapura-1, Kumta-1, Manki-1, Panambur Obsy-1, Puttur-1, Uppinagadi-1, Mangalore-1, ,

KERALA: Enamakkal-7, Vellanikkara-6, Thrissur-5, Thritla-4, Pookot-4, Karipur AP-4, Perinthalamanna-3, Mavelikara-3, Irikkur-3, Angadipuram-3, Varkala-3, Kayamkulam-3, Kozha-3, Kurudamannil-3, Ernakulam South-3, Kanjirappally-3, Chengannur-3, Mattanur-3, Nilambur-3, Quilandi-3, Tellichery-3, Peermade-3, Vadakara-3, Pattembi-3, Taliparamba-3, Manjeri-3, Konni-3, Kayamkulam Agri-3, Alapuzha-3, Kozhikode-3, Cheruthazham-2, Ponnani-2, Ottapalam-2, Vyttiri-2, Kollam Rly-2, Punalur-2, Vadakkancherry-2, Alwaye Pwd-2, Kannur-2, Haripad-2, Kottayam-2, Irinjalakuda-2, Aryankavu-1, Kunnamkulam-1, Perumpavur-1, Vaikom-1, Mannarkkad-1, Kudulu-1, Mancompu-1, Piravam-1, Kochi I.A.F.-1, Trivandrum Aero-1, Cherthala-1, Kumarakam-1, Thiruvananthapuram-1, Nedumangad-1.

LAKSHADWEEP: Agathi-8, Kavaratti-3, Amini-2.

11 JUNE

COASTAL KARNATAKA: Gokarna-8, Manki-6, Karwar-5, Mudubidre-5, Kadra-5, Udupi-4, Puttur Hms-4, Kumta-4, Shirali-4, Bajpe Obsy-4, Gorsoppa-3, Bhatkal-3, Dharmasthala-3, Ankola-3, Karkala-3, Vitla (ARG)-3, Uppinagadi-3, Kundapura-3, Honavar-2, Mulki-2, Kota-2, Nilkund-2, Panambur Obsy-2, Bantwal-2, Mani-2, Sulya-1, Belthangady-1, Nilkund (ARG)-1, ,

KERALA: Ponnani-12, Thrissur-10, Thritla-9, Ernakulam South-9, Kodungallur-9, Kochi I.A.F.-9, Vadakara-8, Kozhikode-8, Cherthala-8, Irinjalakuda-8, Mavelikara-7, Kayamkulam Agri-7, Manjeri-7, Kayamkulam-7, Mancompu-7, Irikkur-7, Vaikom-7, Vellanikkara-7, Alapuzha-6, Kunnamkulam-6, Angadipuram-5, Kumarakam-5, Alwaye Pwd-5, Kochi C.I.A.L.-5, Pookot-5, Chalakudi-5, Perinthalamanna-5, Kurudamannil-5, Pattembi-5, Kanjirappally-5, Varkala-4, Quilandi-4, Cheruthazham-4, Kottayam-4, Kannur-4, Kozha-4, Perumpavur-4, Haripad-4, Karipur-4, Punalur-3, Konni-3, Chengannur-3, Taliparamba-3, Peermade -3, Tellichery-3, Thodupuzha-3, Nilambur-3, Mattanur-3, Mannarkkad-3, Aryankavu-3, Ottapalam-2, Vyttiri-2, Vadakkancherry-2, Hosdurg-2, Kudulu-2, Piravam-2, Neyyattinkara-1, Thiruvananthapuram-1, Munnar Kseb-1, Trivandrum Aero-1, Idukki-1, ,

LAKSHADWEEP: Agathi-2, Amini-2, Kavaratti-2.

12 JUNE

COASTAL KARNATAKA: Bajpe Obsy-10, Bantwal-9, Mudubidre-9, Manki-8, Siddapura-8, Kollur-8, Kundapura-7, Mani-7, Panambur-6, Bhatkal-6, Kumta-6, Uppinagadi-6, Honavar-6, Puttur-6, Dharmasthala-5, Mulki-5, Shirali-5, Karkala-5, Kadra-5, Belthangady-5, Udupi-4, Gorsoppa-4, Ankola-3, Kota-3, Gokarna-3, Yellapur-2, Karwar-2, Nilkund (ARG)-2, Sulya-1, Siddapur-1, Subramanya-1, ,

KERALA: Ponnani-11, Taliparamba-10, Cheruthazham-9, Enamakkal-9, Hosdurg-9, Vadakara-8, Kannur-7, Mancompu-7, Tellichery-7, Kunnamkulam-6, Vaikom-6, Kodungallur-6, Irikkur-6, Quilandi-5, Ernakulam South-5, Chengannur-5, Irinjalakuda-5,

Kozha-5, Piravam-5, Alwaye Pwd-4, Konni-4, Thrissur-4, Thodupuzha-3, Mavelikara-3, Kanjirappally-3, Karipur-3, Kayamkulam-3, Kochi C.I.A.L.-3, Kochi I.A.F.-3, Haripad-3, Kudulu-3, Kumarakam-3, Kayamkulam Agri-3, Ottapalam-3, Kurudamannil-3, Mattanur-3, Kollam Rly-3, Thritla-2, Varkala-2, Vadakkancherry-2, Manantoddy-2, Idukki-2, Pattembi-2, Peermade -2, Kottayam-2, Kozhikode-2, Perumpavur-2, Vellanikkara-2, Chalakudi-1, Punalur-1, Pookot-1, Vyttiri-1, Nedumangad-1, Manjeri-1, Palakkad-1, Thiruvananthapuram (City)-1, Cherthala-1, Thiruvananthapuram (AP)-1, Myladumpara Agri-1,

LAKSHADWEEP: Agathi-8, Kavaratti-5, Amini-1.

13 JUNE

COASTAL KARNATAKA: Shirali-11, Bhatkal-9, Manki-9, Karkala-8, Udupi-8, Karwar-8, Honavar-7, Mangalore-7, Panambur Obsy-7, Mani-7, Bantwal-7, Bajpe Obsy-7, Gorsoppa-7, Uppinagadi-6, Ankola-6, Mudubidre-5, Belthangady-5, Kumta-5, Kota-5, Dharmasthala-5, Puttur -5, Yellapur-4, Mulki-4, Kollur-3, Subramanya-3, Siddapura-3, Kadra-2, Siddapur-1, Kirwati-1, Manchikere-1, ,

KERALA: Cheruthazham-10, Kudulu-9, Kunnamkulam-9, Kodungallur-9, Vadakara-8, Enamakkal-7, Kozhikode-7, Kannur-7, Hosdurg-6, Kochi C.I.A.L.-6, Thrissur-5, Tellichery-5, Irinjalakuda-5, Taliparamba-5, Alwaye-5, Perumpavur-4, Quilandi-4, Chalakudi-4, Cherthala-4, Ponnani-3, Vadakkancherry-3, Kozha-3, Irikkur-3, Vaikom-3, Kochi I.A.F.-3, Vellanikkara-3, Vyttiri-3, Ernakulam South-3, Mattanur-3, Kayamkulam Agri-3, Palakkad-3, Piravam-2, Pookot-2, Nilambur-2, Thodupuzha-1, Alapuzha-1, Mancompu-1, Kayamkulam-1, Ottapalam-1, Pattembi-1, Peermade-1, Karipur (AP).-1, Kottayam-1, Thritla-1, Chengannur-1, Aryankavu-1, Punalur-1, Kumarakam-1, Mavelikara-1, Konni-1, Manantoddy-1, Kanjirappally-1, Chittur-1, ,

LAKSHADWEEP: Agathi-1.

The rainfall distribution based on satellite estimate and station recorded data during 10-16 June 2014 are shown in Fig.4

6.2. Wind

Strong wind of about 35-45 kmph prevailed along and off Konkan, Goa and south Gujarat coast during 11-13th June 2014

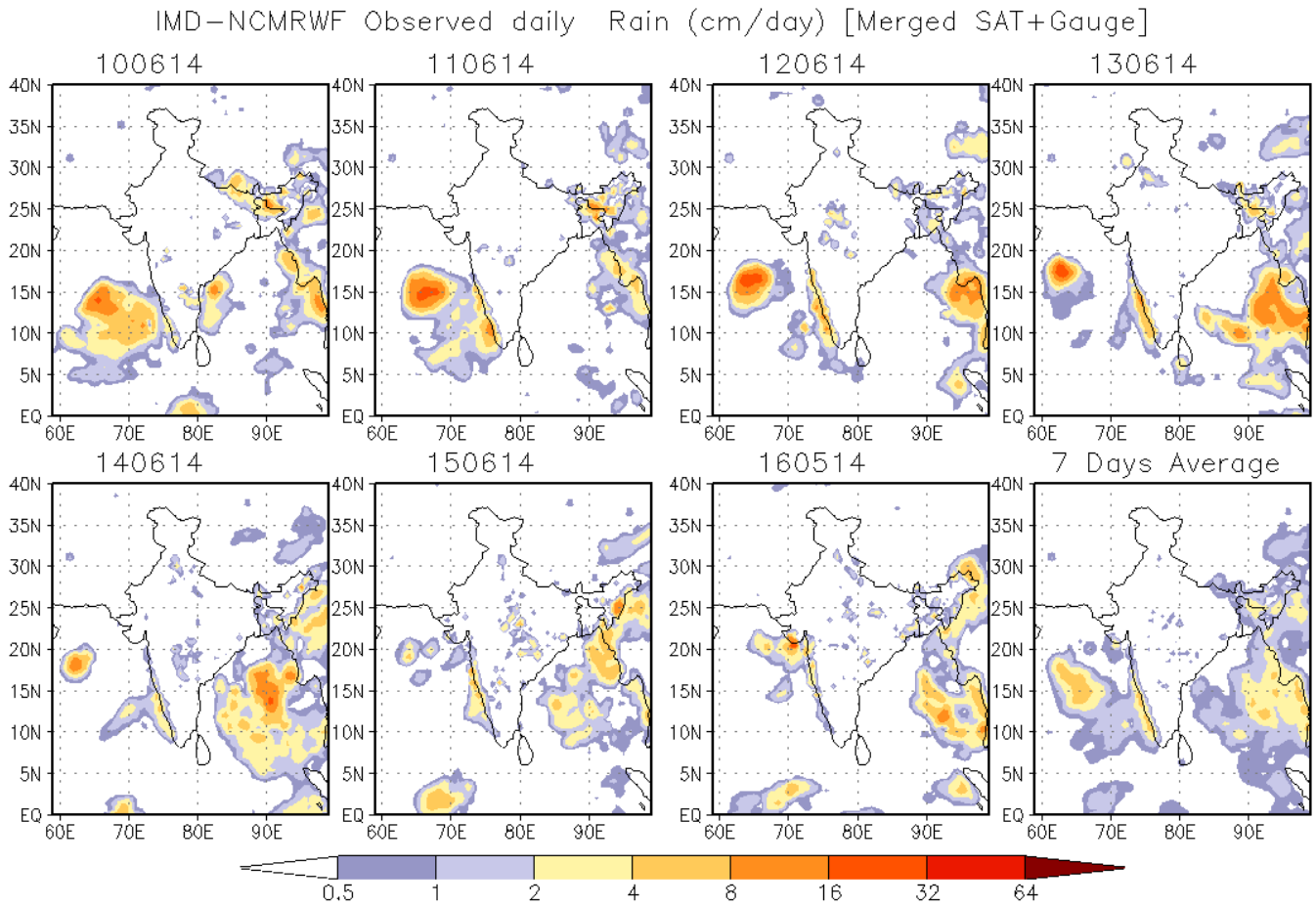


Fig.5. Rainfall distribution based on satellite estimate and station recorded data during 10-16 June 2014

8. Forecast verification

8.1. Track forecast error

In the first bulletin issued in the afternoon of 10th June, 2014 , when the system was a depression over eastcentral Arabian sea, it was predicted that the system would move north-northwestwards and intensify further into a deep depression and move west-northwestwards towards Oman coast. In the second bulletin issued on 10th June it was predicted that the system would intensify into a cyclonic storm.

The average track forecast error is shown in Table 3. It was about 79 km, 89 km and 94 km respectively for 24, 48 and 72 hr forecast respectively against the long period average of 124, 202 and 268 km based on the period of 2009-2013. The operational track forecast skill for this cyclone is shown in Table 4. The track forecast skill was about 54%, 74% and 84% for 24, 48 and 72 hr forecasts respectively.

Table 3. Operational average track forecast error of IMD of 'NANAUK'

Lead Period	Track Forecast Error (km)	Long period average (2009-2013)
12	48.0(11)	68.5
24	78.8(10)	124.1
36	81.2(08)	163.8
48	89.0(06)	202.1
60	77.5(04)	233.8
72	94.2(02)	268.2

Figures in the parentheses show the number of six hourly forecasts verified

Table 4. Operational Track Forecast Skill (%)

Lead period (hrs)	Track forecast skill	Long period skill (2009-2013)
12	43.8(11)	31.2
24	54.1(10)	35.9
36	67.9(08)	43.9
48	74.1(06)	52.6
60	84.2(04)	58.1
72	84.9(02)	61.8

Figures in the parentheses show the number of six hourly forecasts verified

8.2. Intensity forecast error

The intensity forecast errors (average absolute error (AAE) and root mean square error (RMSE)) of IMD for cyclonic storm, **'NANAUK'** are shown in Table 5. The AAE was about 13, 30 and 28 knots against the long period average of 16, 23 & 27 knots based on the period of 2009-2013 for 24, 48 & 72 hr forecasts respectively. The average RMSE was about 14, 32 and 28 knots against the long period average of 21,28 and 31 knots respectively for the same period. Though the AAE was higher than long period average for 36-72 hr forecasts and RMSE was higher for 48-72 hr forecasts, the forecast was skillful as compared to persistence forecast as shown in Table 5. The higher intensity error in the lead period of 36-72 hrs may be attributed to the poor guidance from numerical models, as most of the models could not predict intensity accurately.

The intensity forecast skills are shown in Table 6. The Skill in terms of improvement in AAE with respect to persistence forecast is about 9%, 27% and 66%

respectively for 24, 48 and 72 hr forecasts. Similarly, the Skill in terms of improvement in RMSE with respect to persistence forecast is about 12%, 26% and 67% respectively for 24, 48 and 72 hr forecasts.

Table 5. Operational average intensity forecast error of IMD of 'NANAUK'

Lead Period	Intensity Forecast Error (knots)		Long period Average (2009-2013): Absolute Error (knots)	Long period Average (2009-2013): RMS Error (knots)
	Absolute error	Root mean square error		
12	6.1(11)	7.5(11)	10.4	14.0
24	13.2(10)	14.1(10)	15.7	20.5
36	20.4(08)	21.6(08)	20.5	25.2
48	30.2(06)	32.0(06)	22.5	27.6
60	33.1(04)	34.5(04)	23.5	26.4
72	28.4(02)	28.4(02)	26.7	30.8

Figures in the parentheses show the number of six hourly forecasts verified

Table 6. Operational Intensity Forecast skill (%)

Lead period (hrs)	Skill in term of Absolute Error (%)	Skill in term of RMS Error (%)
12	-19.6(11)	1.3
24	9.0(10)	12.4
36	16.7(08)	13.3
48	27.0(06)	25.9
60	51.5(04)	49.4
72	66.4(02)	66.7

Figures in the parentheses show the number of six hourly forecasts verified

8.3. Heavy Rainfall Warning

The heavy rainfall warning issued by IMD alongwith the actual heavy rainfall is given in Table 7. It may be mentioned that the heavy rainfall due to the cyclone could be predicted well in advance with good accuracy.

Table 7: Heavy rainfall warning issued by IMD and realised rainfall

Date	Forecast heavy rainfall	Actual heavy rainfall
10. 06.2014	Rainfall at most places with isolated heavy falls over coastal Karnataka, Kerala and Lakshadweep during next 24 hrs	Rainfall at most places with isolated heavy falls over coastal Karnataka and Kerala
11. 06.2014	Rainfall at most places with isolated heavy falls over coastal Karnataka, Kerala and Lakshadweep during next 24 hrs	Rainfall at most places with isolated heavy falls over coastal Karnataka, Kerala and Lakshadweep
12. 06.2014	Rainfall at most places with isolated heavy falls over coastal Karnataka, Kerala and Lakshadweep during next 24 hrs	Rainfall at most places with isolated heavy falls over coastal Karnataka and Kerala

8.4. Wind Warning

The strong wind forecast along with actual wind are presented in Table 8.

Table 8. Wind forecast along with actual wind

Date	Forecast wind (kmph)	Actual wind (kmph)
10. 06.2014 1630 hrs IST	Strong wind of 35-45 kmph gusting to 55 kmph would prevail along and off south Gujarat, Konkan and Goa coasts	Strong wind of 35-45 kmph prevailed along and off south Gujarat, Konkan and Goa coasts
11. 06.2014	Strong wind of 35-45 kmph gusting to 55 kmph would prevail along and off south Gujarat, Konkan and Goa coasts	
12. 06.2014	Strong wind of 35-45 kmph gusting to 55 kmph would prevail along and off south Gujarat, Konkan and Goa coasts	
13. 06.2014	Strong wind of 35-45 kmph gusting to 55 kmph would prevail along and off south Gujarat, Konkan and Goa coasts	
14. 06.2014	Strong wind of 30-40 kmph gusting to 50 kmph would prevail along and off Gujarat, Konkan and Goa coasts	

8.5. Storm surge warning

As initially, it was predicted that the cyclone will weaken at the time of landfall and later it was predicted that the cyclone would weaken over the sea, storm surge was not predicted by RSMC, New Delhi.

9. Damage Report:

As the cyclone dissipated over the sea, it did not cause any significant damage. However, as the cyclone developed during the full moon day and there was strong wind along west coast of India in association with cyclone and monsoon surge, the tidal wave inundated low lying areas in Konkan, including Mumbai. But no damage has been reported due to this system.

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