



Role of Current Indian Satellites (WMO Flash Flood Meeting)

Virendra Singh

Scientist-E (Operations)

Satellite Meteorology Division

India Meteorological Department

New Delhi, INDIA

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INDIA METEOROLOGICAL DEPARTMENT

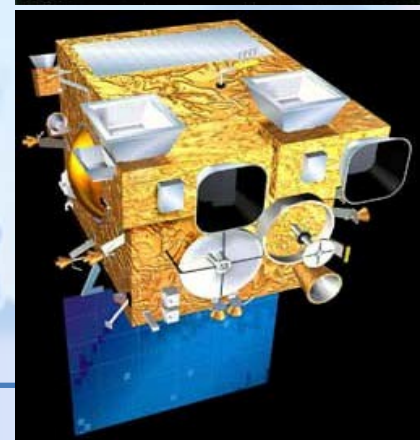
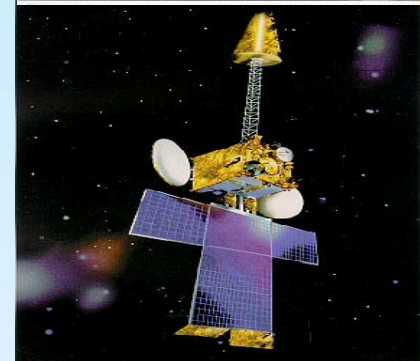
Current Indian Geo stationary Meteorological satellites

At present the following three INSAT satellites are in operation

[Kalpana -1](#) is a metrological satellite which was launched in September 2002. It is located at 74° east. For meteorological observation, METSAT carries a Very High Resolution Radiometer (VHRR) capable of imaging the Earth in the visible, thermal infrared and water vapor bands. It also carries a Data Relay Transponder (DRT) for collecting data from unattended meteorological platforms

[INSAT-3A](#) is a geostationary satellite which was launched in April 2003. It is located at 93.5° east longitude in the geostationary orbit. INSAT-3A is the third satellite in the INSAT-3 series. INSAT-3A is a multipurpose satellite for providing telecommunications, television broadcasting, meteorological (VHRR, CCD, DRT) and search & rescue services.

[INSAT-3D](#) is a India's advanced weather satellite and was launched in the early hours of July 26, 2013 from Kourou, French Guiana, and has successfully been placed in Geosynchronous orbit. It is a dedicated meteorological satellite and carries four payloads: Imager (Six Channels), Sounder (Nineteen Channels), Data Relay Transponder (DRT) & Satellite Aided Search and Rescue (SAS & R)



Payloads on Kalpana-1 and INSAT-3A

Payloads	Channel	Resolution
VHHR (very high resolution radiometer)	visible (0.55-0.75 μm)	2x2 Km
	Infrared (10.5-12.5 μm) water vapour (5.7-7.1 μm)	8x8 Km
DRT		
Search and Rescue		

Payloads	Channel	Resolution
VHHR (very high resolution radiometer)	visible (0.55-0.75 μm)	2x2 Km
	infrared (10.5-12.5 μm) water vapour (5.7-7.1 μm)	8x8 Km
CCD	Visible (0.62-0.68 μm)	1x1 Km
	NIR (0.77-0.86 μm)	
	SWIR (1.55-1.69 μm)	
DRT		
Search and Rescue		



INSAT-3D Imager and Sounder Channel Specification

INSAT-3D Imager Channel Characteristics

Spectral Band	Wave length μm	Ground Resolution	Quantization bits	IFOV μrad
VIS	0.55 - 0.75	1 Km	10	28
SWIR	1.55-1.70	1 Km	10	28
MIR	3.80-4.00	4 Km	10	112
WVP	6.50-7.10	8 Km	10	224
TIR 1	10.3-11.3	4 Km	10	112
TIR 2	11.5 - 12.5	4 KM	10	112

INSAT-3D Sounder Channels Characteristics

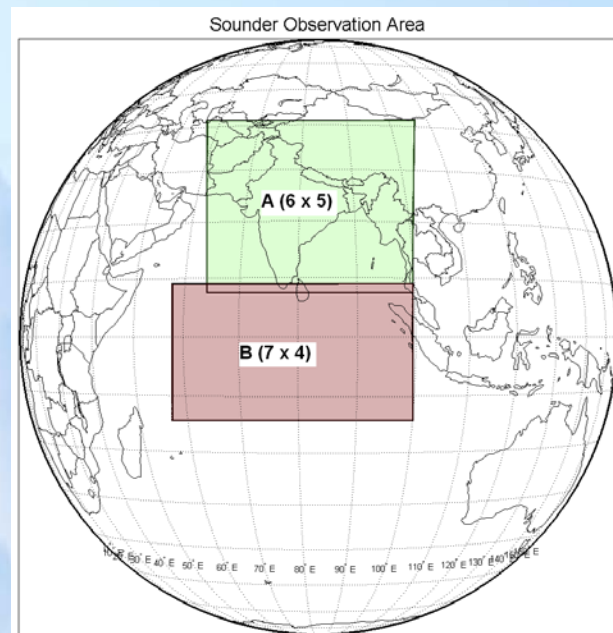
Detector	Ch. No.	λ_c (μm)	Principal absorbing gas	Ground Resolution
Long wave	1	14.67	CO ₂	10 X 10 Km
	2	14.32	CO ₂	10 X 10 Km
	3	14.04	CO ₂	10 X 10 Km
	4	13.64	CO ₂	10 X 10 Km
	5	13.32	CO ₂	10 X 10 Km
	6	12.62	water vapor	10 X 10 Km
	7	11.99	water vapor	10 X 10 Km
Mid wave	8	11.04	window	10 X 10 Km
	9	9.72	ozone	10 X 10 Km
	10	7.44	water vapor	10 X 10 Km
	11	7.03	water vapor	10 X 10 Km
	12	6.53	water vapor	10 X 10 Km
Short wave	13	4.58	N ₂ O	10 X 10 Km
	14	4.53	N ₂ O	10 X 10 Km
	15	4.46	CO ₂	10 X 10 Km
	16	4.13	CO ₂	10 X 10 Km
	17	3.98	window	10 X 10 Km
	18	3.76	window	10 X 10 Km
Visible	19	0.695	visible	10 X 10 Km



Present Operational Status

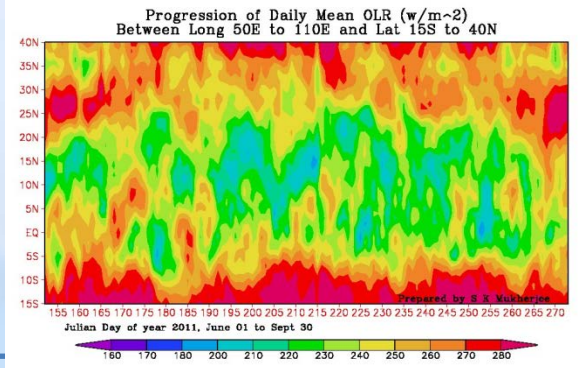
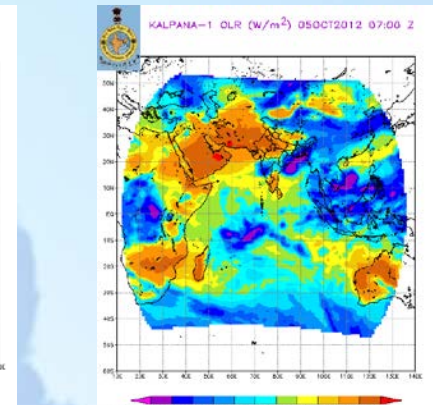
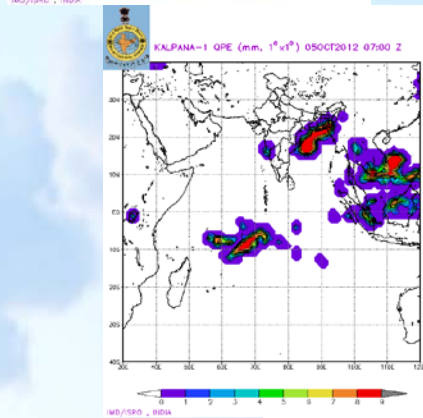
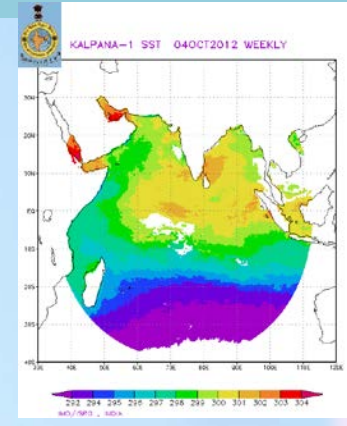
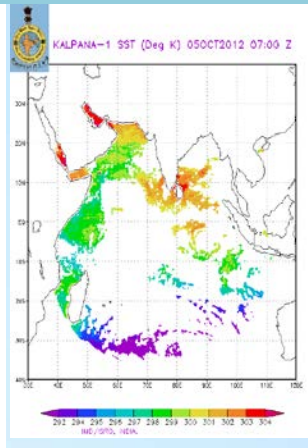
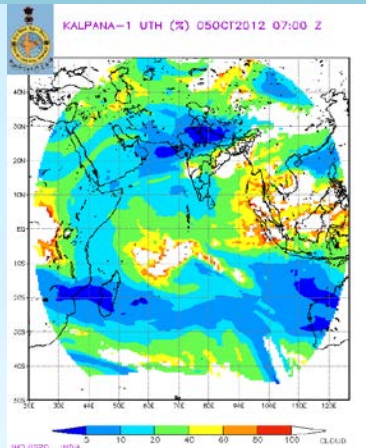
The present IMDPS system is used for processing and dissemination of data from all the three currently operational Geostationary satellites(Kalpana-1, INSAT-3A & INSAT-3D).

INSAT Series	Temporal Resolution
K1-VHRR	Half Hourly(0015 & 0045 UTC)
3A -VHRR	Hourly
3A- CCD	3,5,6,7,9,11 UTC
3D -Imager (6 Channel)	½ hourly (0000 & 0030 UTC)
3D -Sounder (19 Channel)	Hourly (Five times Region-A and sixth times region-B)



Kalpana-1 Satellite derived products

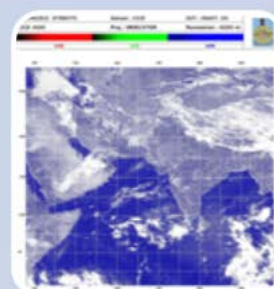
Products	Kalpana-1 VHRR
UTH	Half Hourly, Daily, Weekly and Monthly
SST	Half Hourly, Daily, Weekly and Monthly
OLR	Half Hourly, Daily, Weekly, Monthly and Seasonal
QPE	Half Hourly, Daily, Weekly, Monthly and Seasonal
Latitude/time OLR hovmoeller	Daily
Animated Images for last three Hours	Half hourly
Animated Images with CCT of Current and Previous day based on 06 UTC	Daily



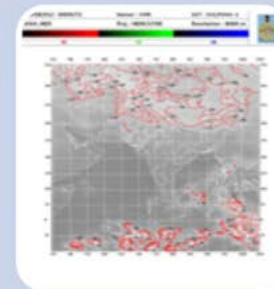
Sample Data Products of INSAT 3A



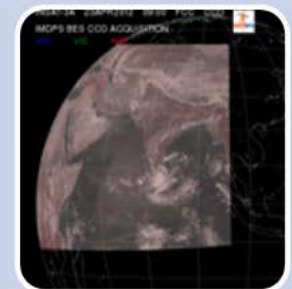
INSAT-3A (VHRR) Full disk product



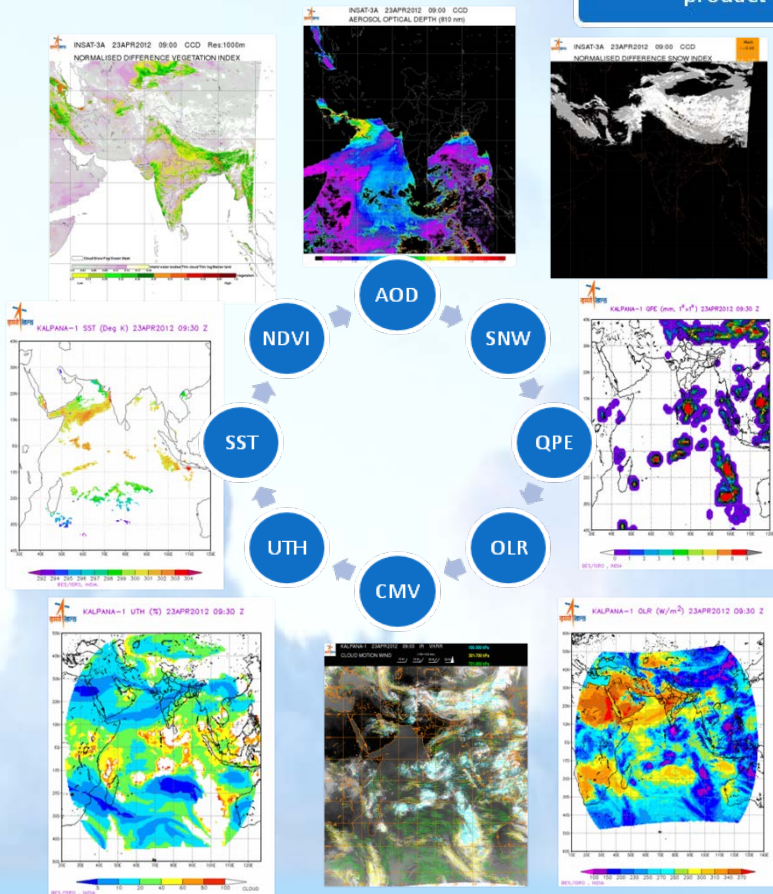
INSAT-3A (CCD) Sector product



Kalpana-1 sector product with cloud top temperature contours



INSAT-3A (CCD) full disk FCC products

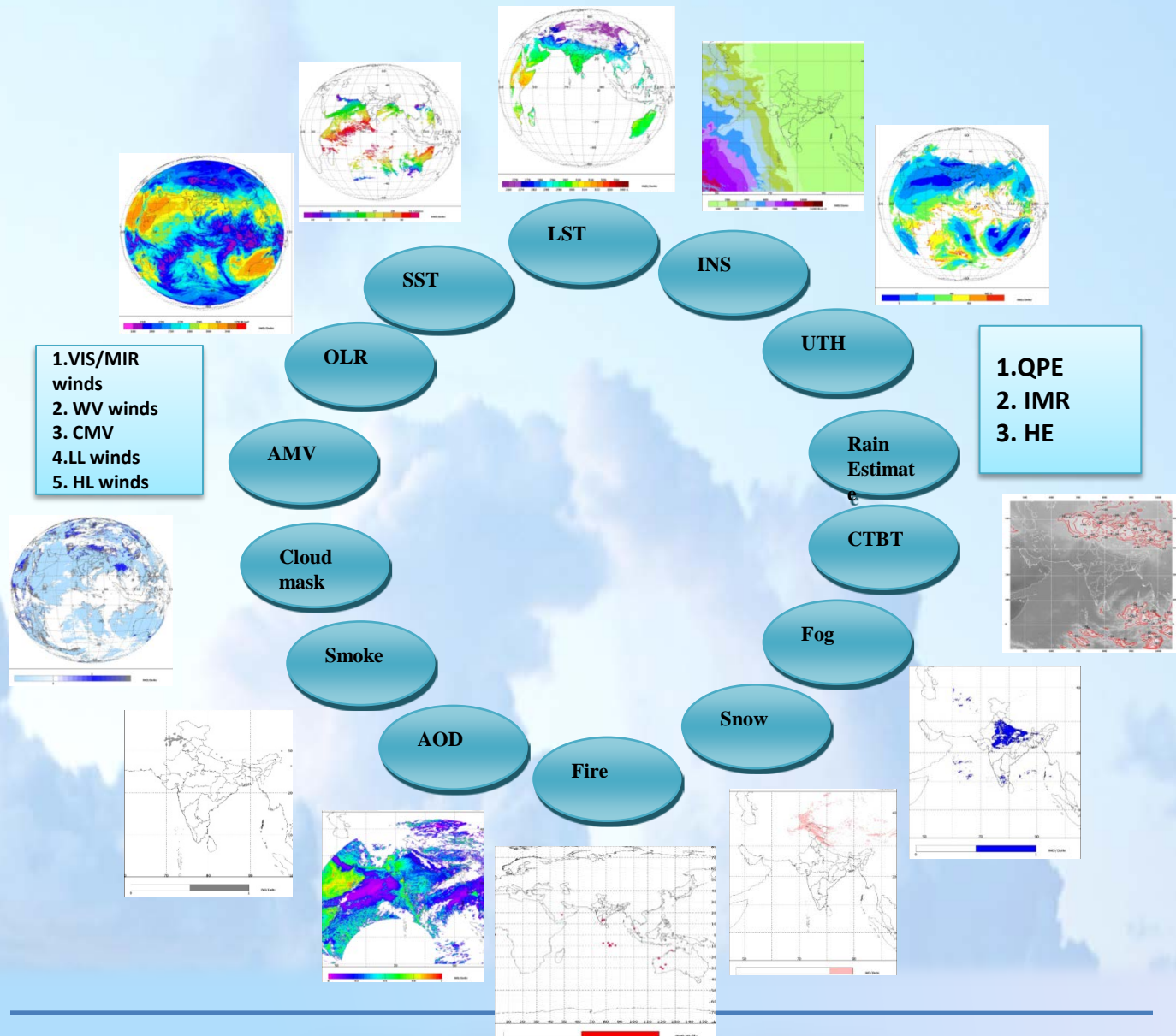


List of Geo-physical Parameters of INSAT 3A

Sl. No.	Sensor	Geo-Physical Parameters
1	INSAT-3A CCD	Normalized Differential Vegetative Index (NDVI)
		Aerosol Optical Depth
2	INSAT-3A VHRR	Outgoing Long-Wave Radiation (OLR)
		Quantitative Precipitation Estimate (QPE)
		Sea surface Temperature (SST)
		Upper Tropospheric Humidity(UTH)



Geophysical parameters/products of INSAT-3D Imager



- 1. VIS/MIR winds
- 2. WV winds
- 3. CMV
- 4. LL winds
- 5. HL winds

- 1. QPE
- 2. IMR
- 3. HE

SST

LST

INS

UTH

Rain Estimat

CTBT

Fog

Snow

Fire

AOD

Smoke

Cloud mask

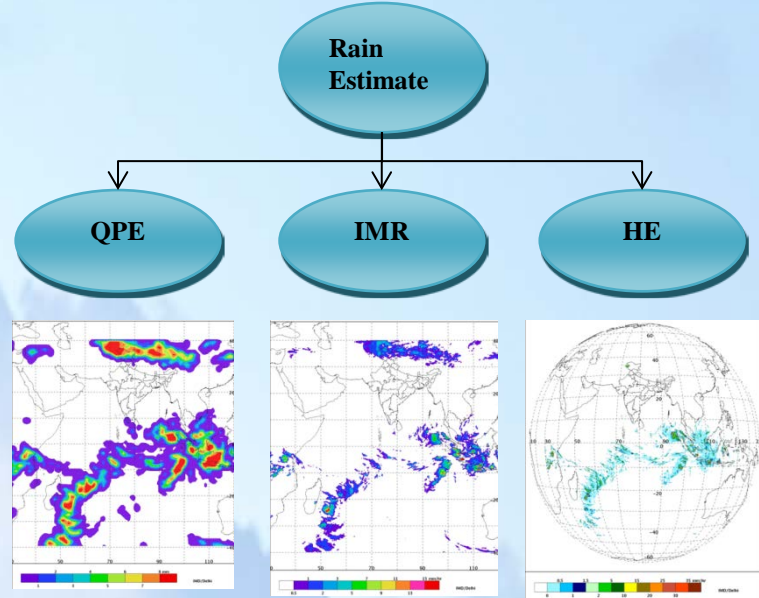
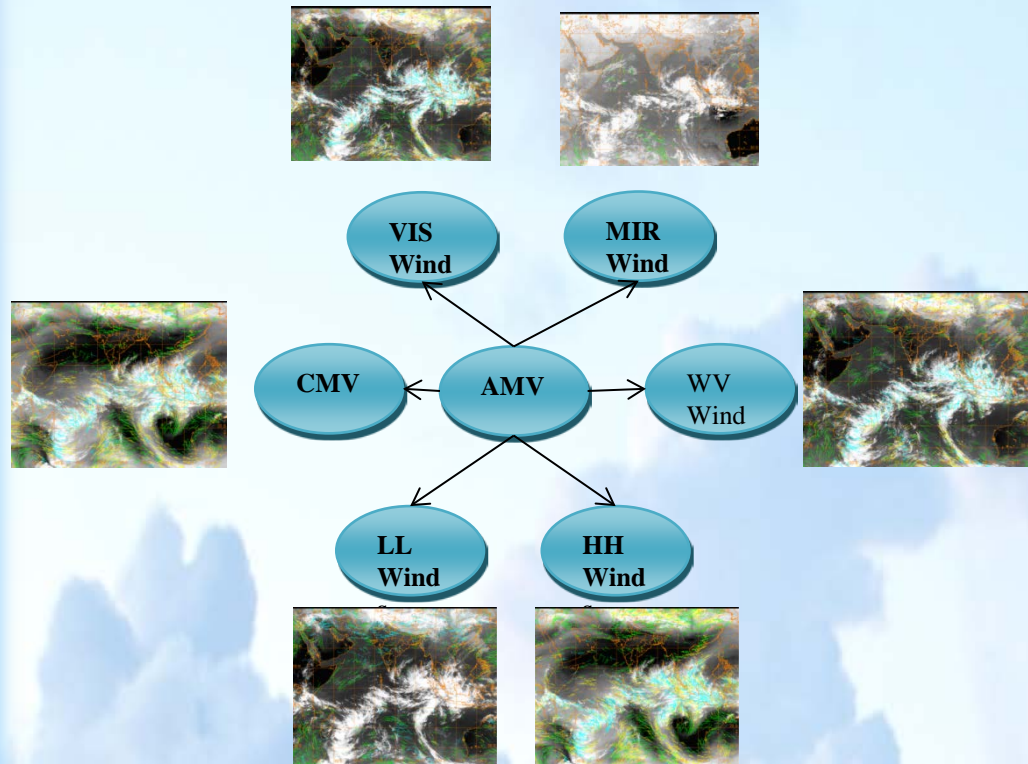
AMV

OLR

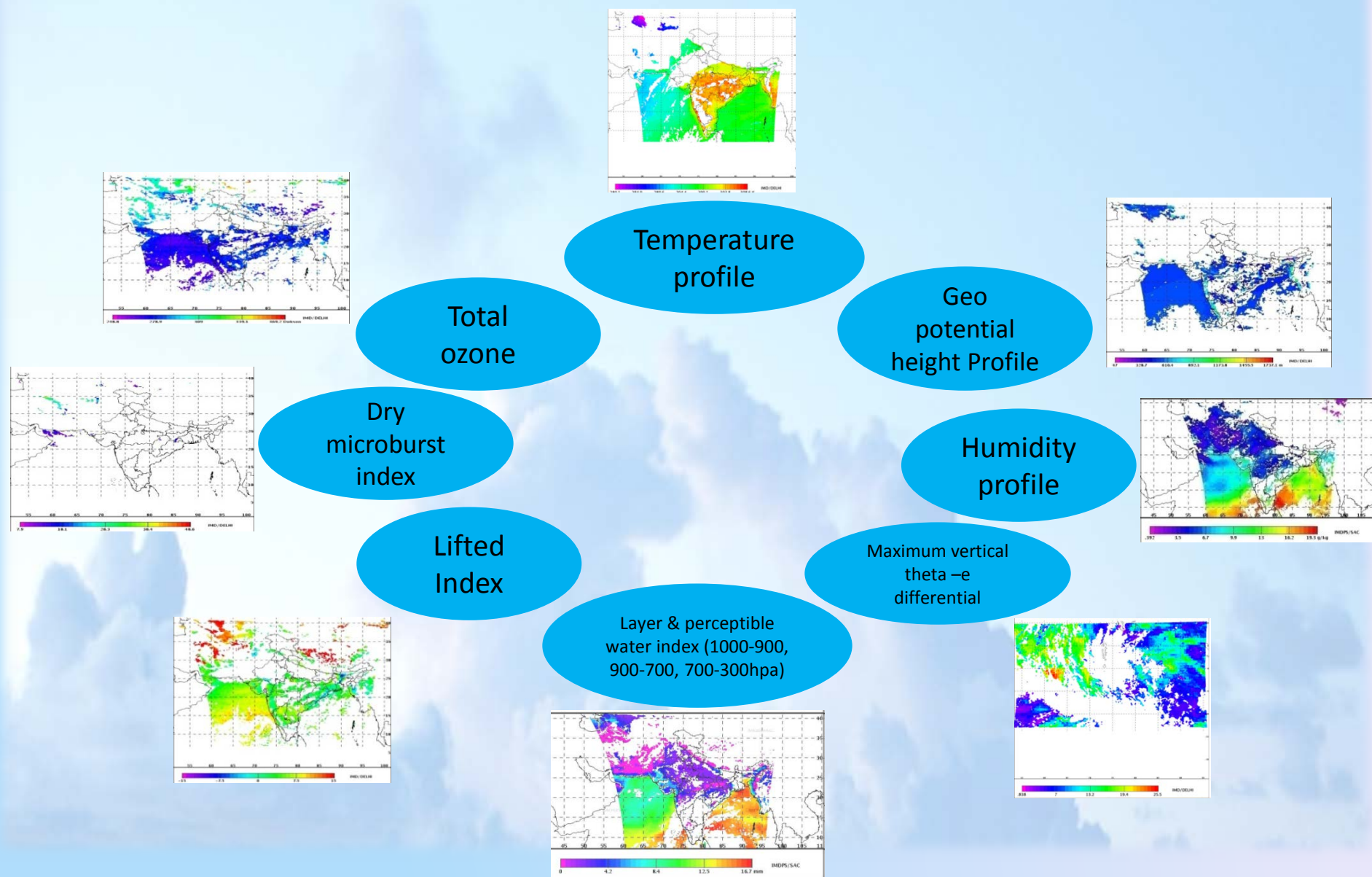
UTH



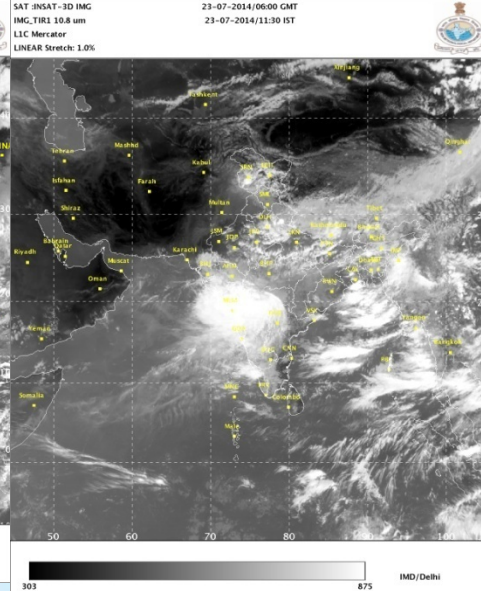
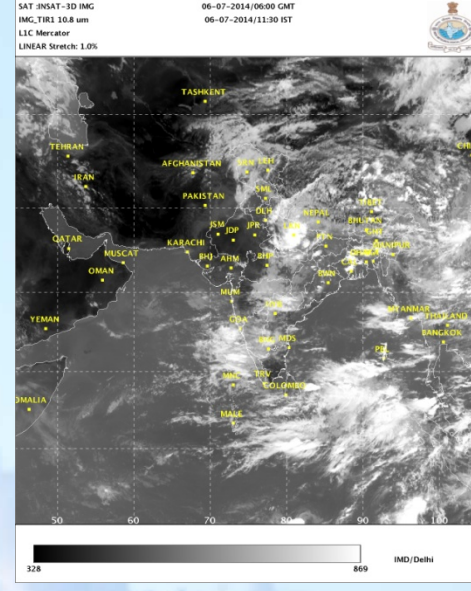
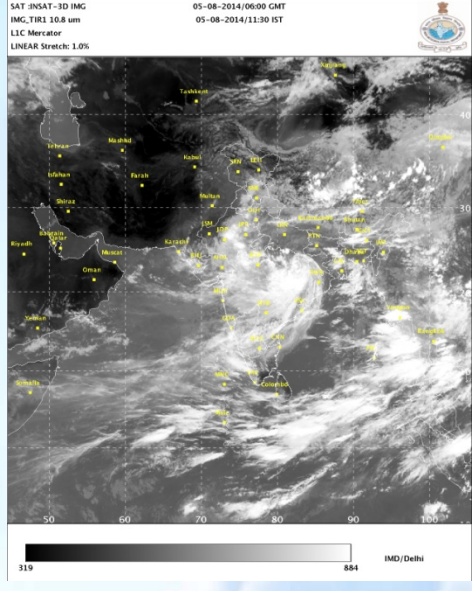
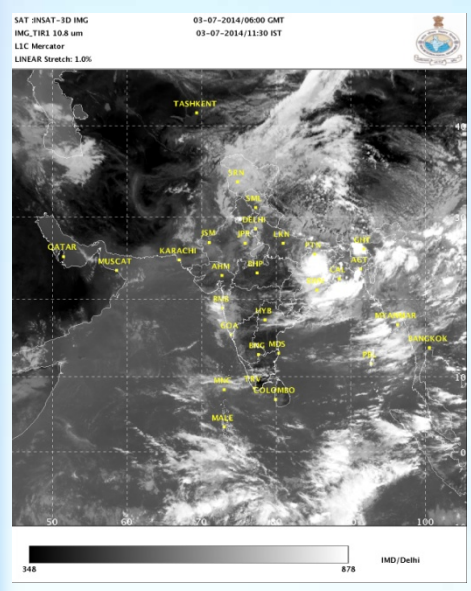
Geophysical parameters/products of AMV AND Rain Estimate from INSAT-3D Imager



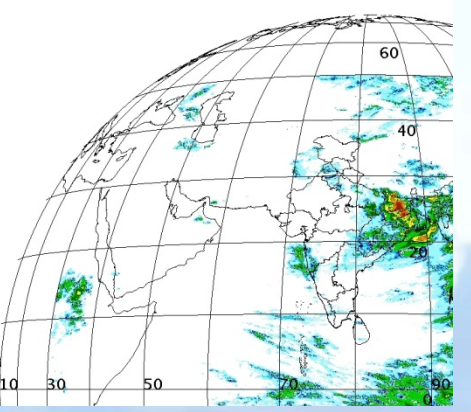
Geophysical parameters OF INSAT-3D Sounder



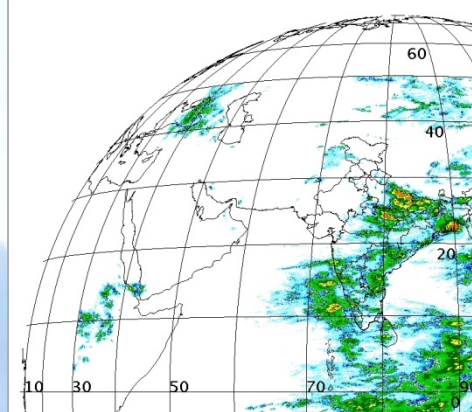
Active Monsoon Phase During July 2014 TIR1 Images & HE (R/F) product



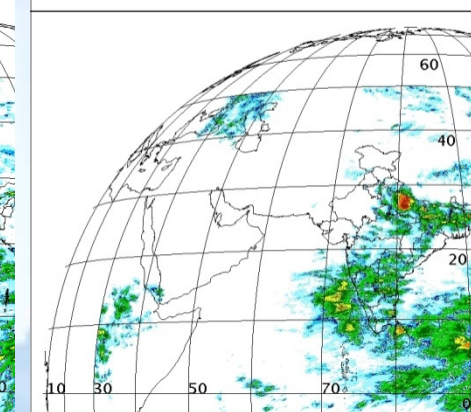
SAT :INSAT-3D IMG 03-07-2014
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK



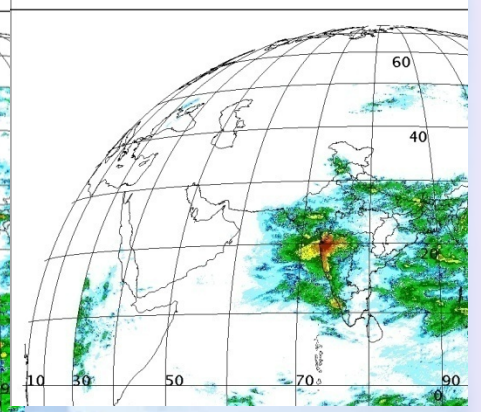
SAT :INSAT-3D IMG 05-07-2014
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK



SAT :INSAT-3D IMG 06-07-2014
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK



SAT :INSAT-3D IMG 23-07-2014
 Precipitation(HE) Daily
 L3B BINNED GEOPHYSICAL PARAMETER FULL DISK



03 Jul 2014

05 Jul 2014

06 Jul 2014

23 Jul 2014



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INDIA METEOROLOGICAL DEPARTMENT



INSAT-3D R/F Products: QPE,IMSRA.HE

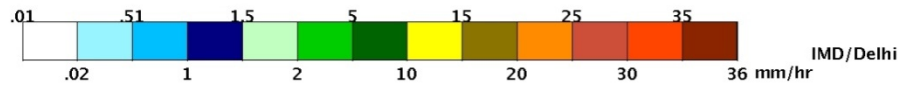
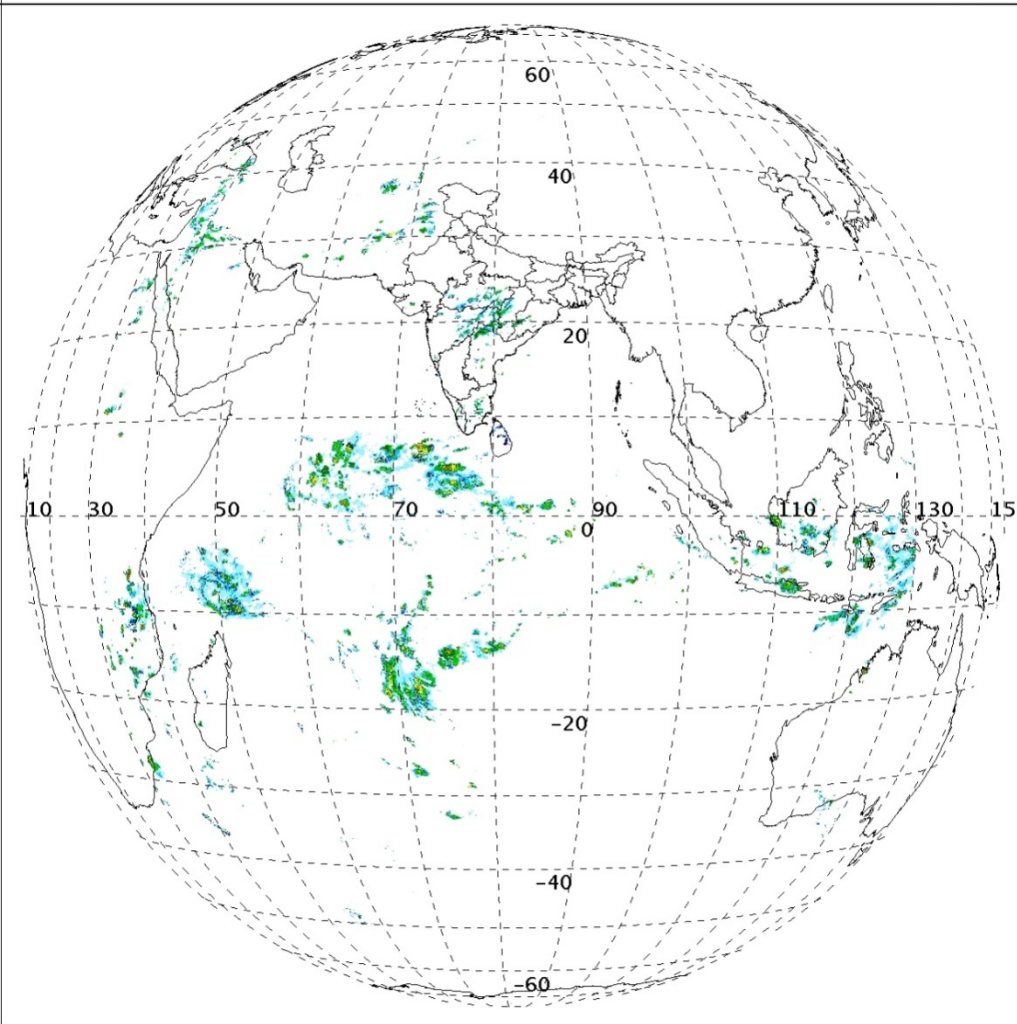
SAT :INSAT-3D IMG

08-03-2014/16:30 GMT

Precipitation(HE)

08-03-2014/22:00 IST

L2B GEOPHYSICAL PARAMETER FULL DISK



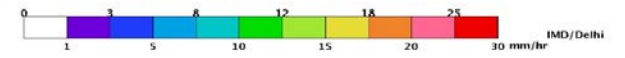
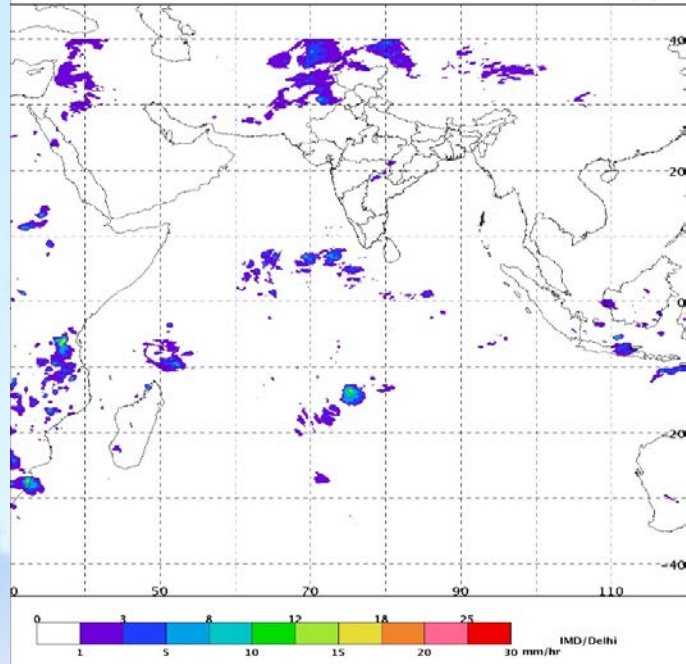
SAT :INSAT-3D IMG

08-03-2014/16:30 GMT

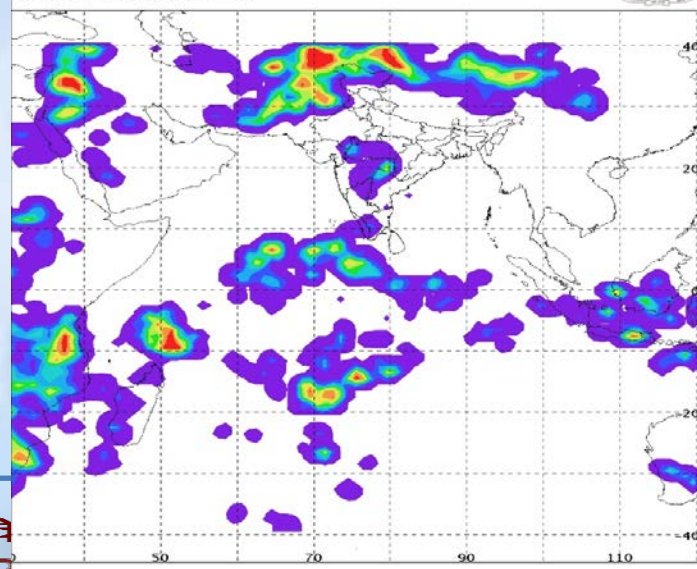
INSAT Multispectral Rainfall

08-03-2014/22:00 IST

L2G GEOPHYSICAL PARAMETER GRIDDED



L2G GEOPHYSICAL PARAMETER GRIDDED



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Event 1: Jammu and Kashmir, 2-5 September 2014

Date	Associated Synoptic Weather Conditions
2 Sep 2014	A western disturbance as an upper air cyclonic circulation laid over north Pakistan & adjoining Jammu & Kashmir
3 Sep 2014	Western disturbance persisted over the Jammu & Kashmir & neighborhood extended between 3.1 and 4.5 km above mean sea level. An another western disturbance reported as a trough in mid and upper tropospheric westerly's ran roughly along Long 64°E to the north of Lat 28°N
4 Sep 2014	The another disturbance lied along Long. 64°E to the north of Lat. 28°N laid over north Pakistan & neighborhood.
5 Sep 2014	This disturbance lied over Jammu & Kashmir and neighborhood.

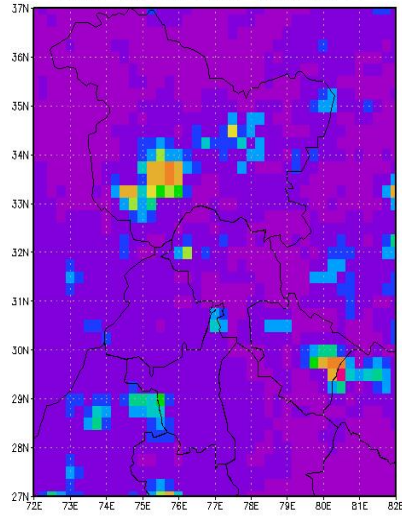
Damage:

The flash floods by the rain event caused huge loss of lives and properties. According to news paper reports, the floods caused loss of about 1 trillion rupee, 1.25 million families affected and 281 lives were lost. Several areas were inundated for several weeks.



Jammu and Kashmir 02 Sept, 2014 to 06 Sept, 2014 Daily H-E plot

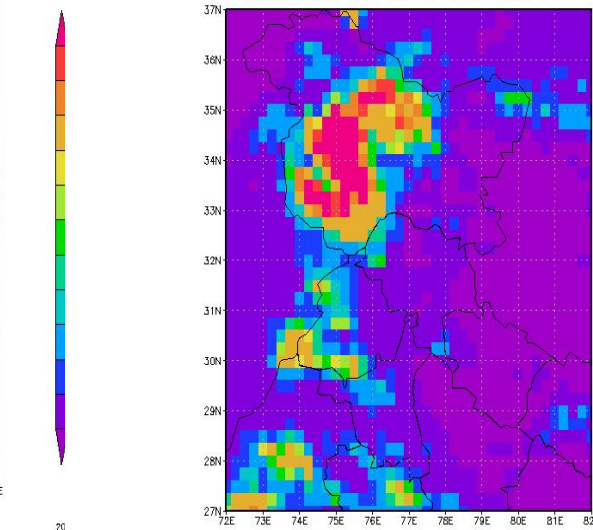
INSAT-3D HE Rain: 02SEP2014



GhMS: COLA/IGES

20

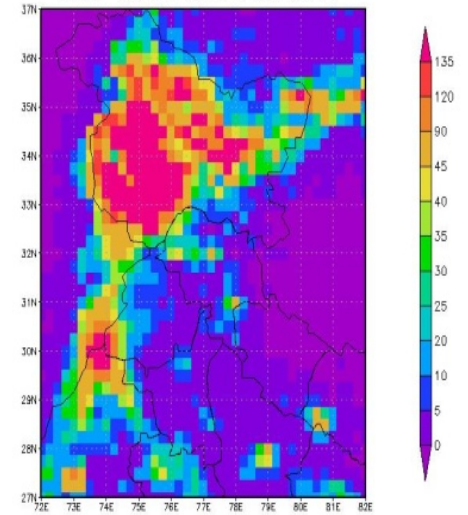
INSAT-3D HE Rain: 03SEP2014



GhMS: COLA/IGES

2015-09-21-11:14

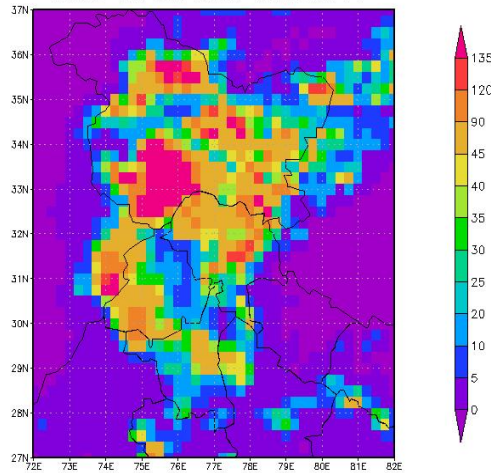
INSAT-3D HE Rain: 04SEP2014



GhMS: COLA/IGES

2015-09-21-11:14

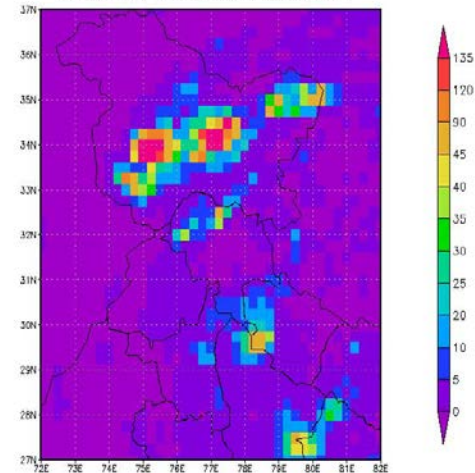
INSAT-3D HE Rain: 05SEP2014



GhMS: COLA/IGES

2015-09-21-11:15

INSAT-3D HE Rain: 06SEP2014

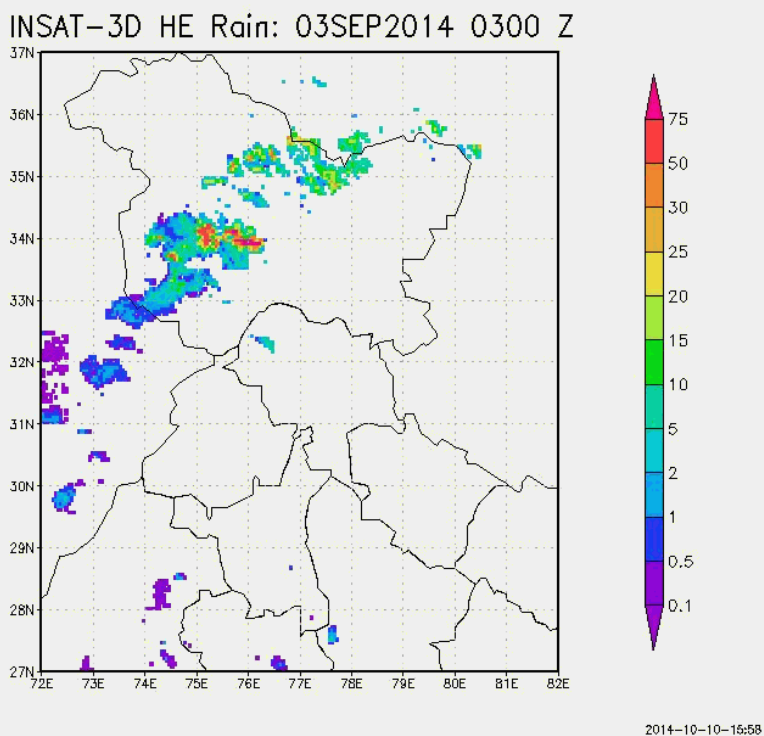


GhMS: COLA/IGES

2015-09-21-11:15



Jammu and Kashmir 03 Sept, 2014 to 06 Sept, 2014 loop of half hourly H-E plot and daily heavy rain event



District	24 Hr ending on 4 Sep 2014 at 0300 Z		24 Hr ending on 5 Sep 2014 at 0300 Z	
	HE	Actual	HE	Actual
ANANTNAG	135.15	106.5	138.66	99.7
BADGAM	73.99	53.9	122.11	69.6
BARAMULA	78.65	85.8	103.51	106.0
DODA	115.24	81.4	139.45	138.8
KARGIL	55.26		71.09	
KATHUA	33.01	33.8	30.83	65.6
KUPWARA	15.09	45.6	59.95	68.2
PULWAMA	66.57	54.7	93.95	121.2
PUNCH	75.51	1.3	135.7	9.5
RAJOURI	63.58	107.3	121.77	194.2
SRINAGAR	76.36	52.7	101.88	50.6
UDHAMPUR	81.35	57.5	111.86	157.5

H-E Rain - State Average 24 Hr accumulated :

- 02 Sep 2014: 4.42 mm
- 03 Sep 2014: 29.80 mm
- 04 Sep 2014: 62.30 mm
- 05 Sep 2014: 46.45 mm

In Table

Red colour - Heavy R/F event captured by HE and actual

Green colour- - Heavy R/F event captured by HE only

Purple colour- - Heavy R/F event captured in actual not by HE but very close



Event 2: North-Eastern India, 20-22 September 2014

Date	Associated Synoptic Weather Conditions
20 Sep 2014	A low pressure area over Jharkhand and Orissa
21 Sep 2014	Low pressure area reported on previous day prevailed and extended northwards
22 Sep 2014	Low pressure area intensified and laid over Bangladesh that facilitated large moisture influx into N-E India.

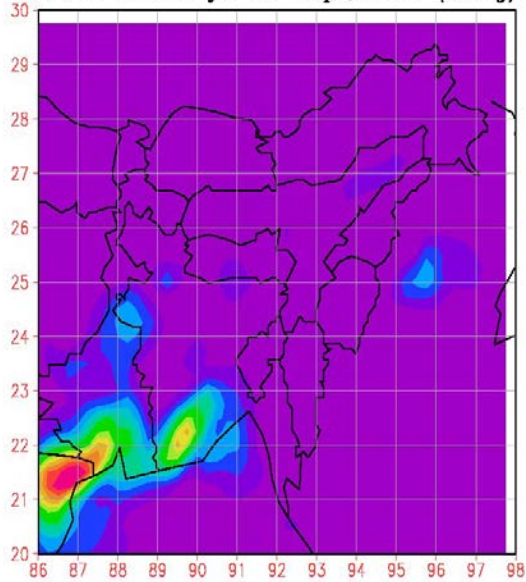
Damage:

The heavy rain on 21-22 September 2014 caused huge loss of lives and properties. According to news paper reports on 22 September about 100 villages were flooded in the state of Meghalaya. In a about week time about 88 people were dead and about 1 million were displaced.

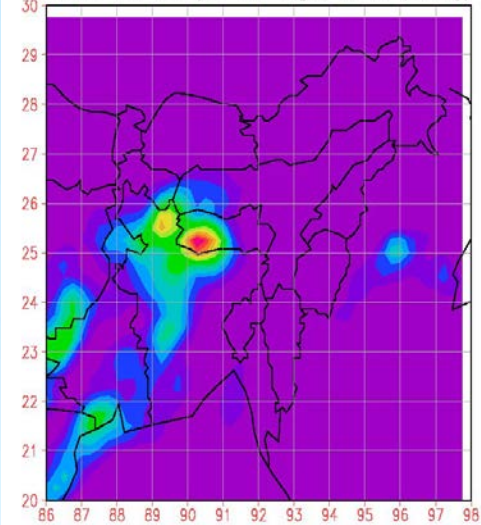


North-Eastern India 21 Sept, 2014 to 23 Sept, 2014 Daily H-E plot

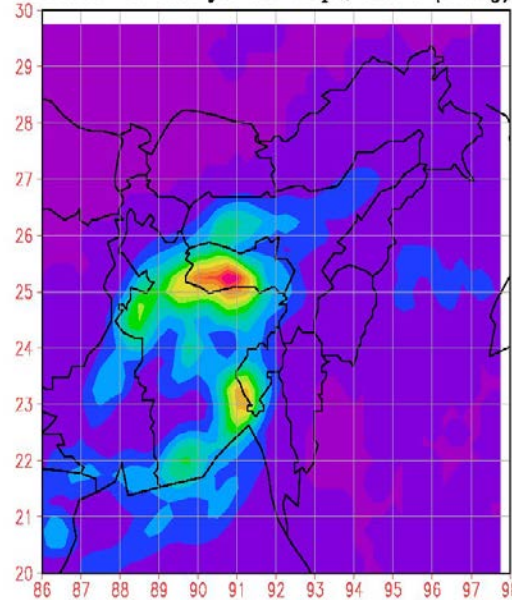
INSAT-3D HE for 21 Sept, 2014 (Daily)



INSAT-3D HE for 22 Sept, 2014 (Daily)

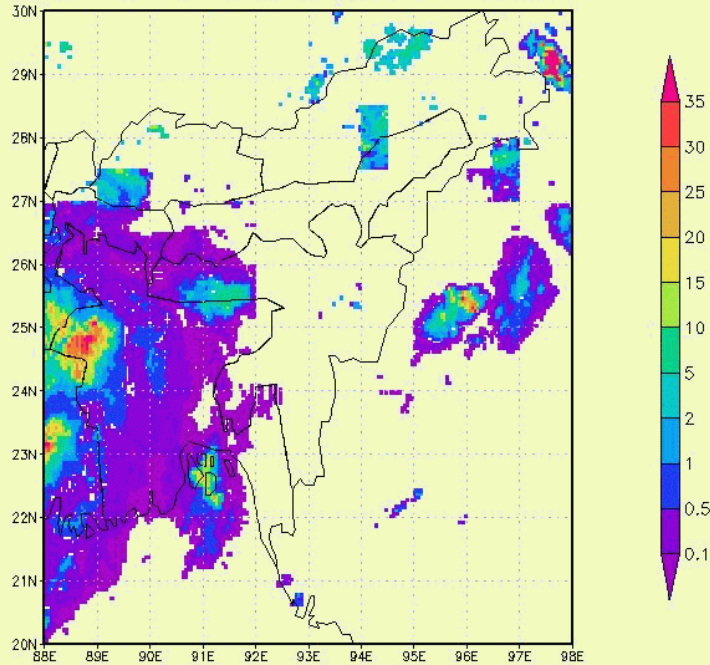


INSAT-3D HE for 23 Sept, 2014 (Daily)



North-Eastern India 21 Sept, 2014 to 23 Sept, 2014 half Hourly rain rate loop of H-E plot and heavy daily R/f event table

INSAT-3D HE Rain: 21SEP2014 0000 Z



GRADS: COLA/IGES

2015-07-16-12:27

Rain(MM) occurring in N-E India						
	24 Hr ending on 21 Sep 2014 at 0300 Z		24 Hr ending on 22 Sep 2014 at 0300 Z		24 Hr ending on 23 Sep 2014 at 0300 Z	
District	HE	Actual	HE	Actual	HE	Actual
DHUBRI	1.69	35.0	52.56	112.8		27.1
EAST-GARO-HILLS	120.0	105.5	161.88	380.0	45.11	345.0
EAST-KHASI-HILLS	107.0	127.9	76.0	121.1	189.1	343.8
JANTIA-HILLS	4.14	24.5	90.0	75.8	90.0	97.3
KOKRAJHAR		31.4	21.38	244.5		10.5
MALDAH	11.54	10.6	11.34	85.2		1.0
NALBARI	2.19	7.4	18.51	134.3		27.9
SOUTH-GARO-HILLS	105.0	101.0	178.83	125.0	64.96	169.0
UTTAR-DINAJPUR	3.14	35.1	9.94	77.5		0.1
WEST-GARO-HILLS	5.69	20.6	166.97	540.0	32.8	62.2
WEST-KHASI-HILLS	19.73	0.0	159.58	0.0	170.48	0.0

H-E Rain – Heaviest 24 Hr. accumulated

21Sep 2014: 120 mm in East Garo Hills,
107 mm in West Garo Hills

22 Sep 2014: 211 – 33 mm in different districts

23 Sep 2014: 90 mm in Jantia Hills and 76 mm in East Khasi Hills

In Table

Red colour - Heavy R/F event captured by HE and actual

Green colour- - Heavy R/F event captured by HE only

Purple colour- - Heavy R/F event captured in actual not by HE but very close



Event 3: Gujarat and Maharashtra Region, 28 July – 1 August 2014

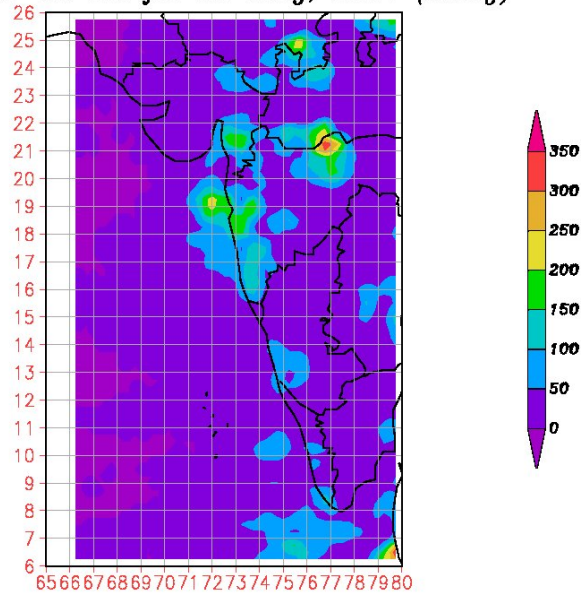
Date	Associated Synoptic Weather Conditions
28 July 2014	An offshore trough at mean sea level from Maharashtra to Karnataka coast
29 July 2014	Off shore trough extended to Gujarat coast
30-31 Jul 2014	Off shore coast extended from South Gujarat coast to Karnataka coast
1 Aug 2014	Off shore coast extended southwards to Kerala coast.

Damage: Not much damage was reported.

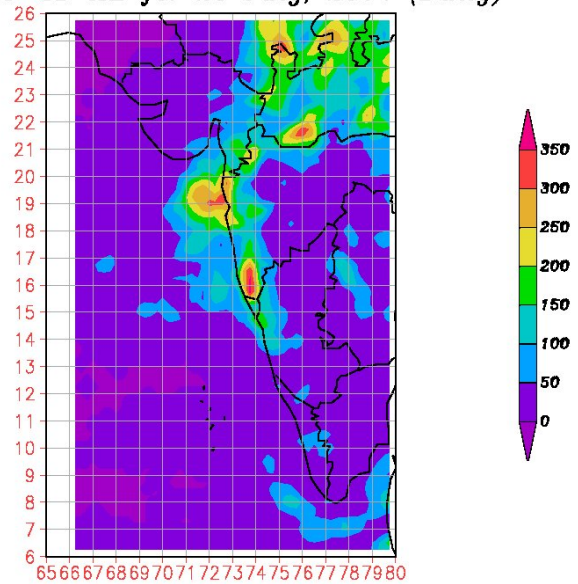


Gujarat and Maharashtra Region 28 July, 2014 to 01 Aug, 2014

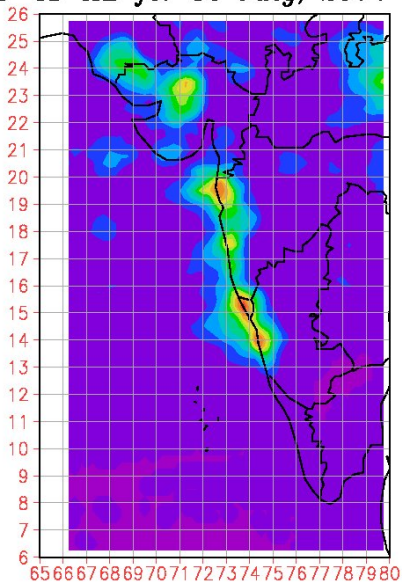
INSAT-3D HE for 28 July, 2014 (Daily)



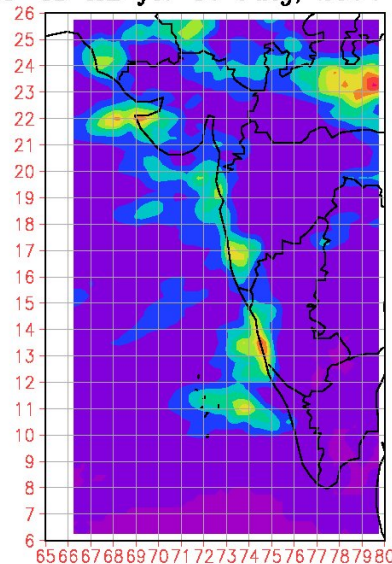
INSAT-3D HE for 29 July, 2014 (Daily)



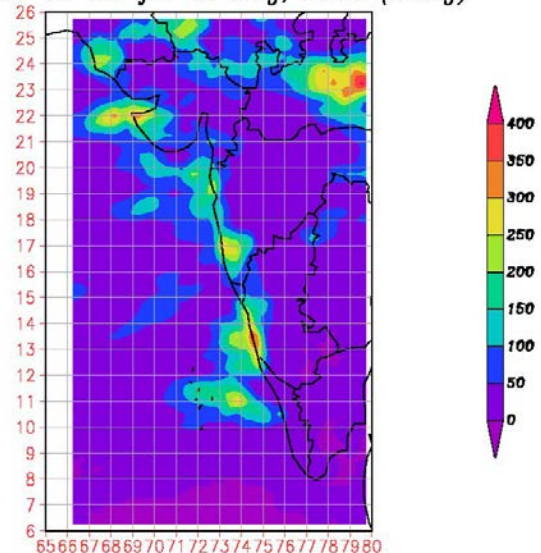
INSAT-3D HE for 30 July, 2014 (Daily)



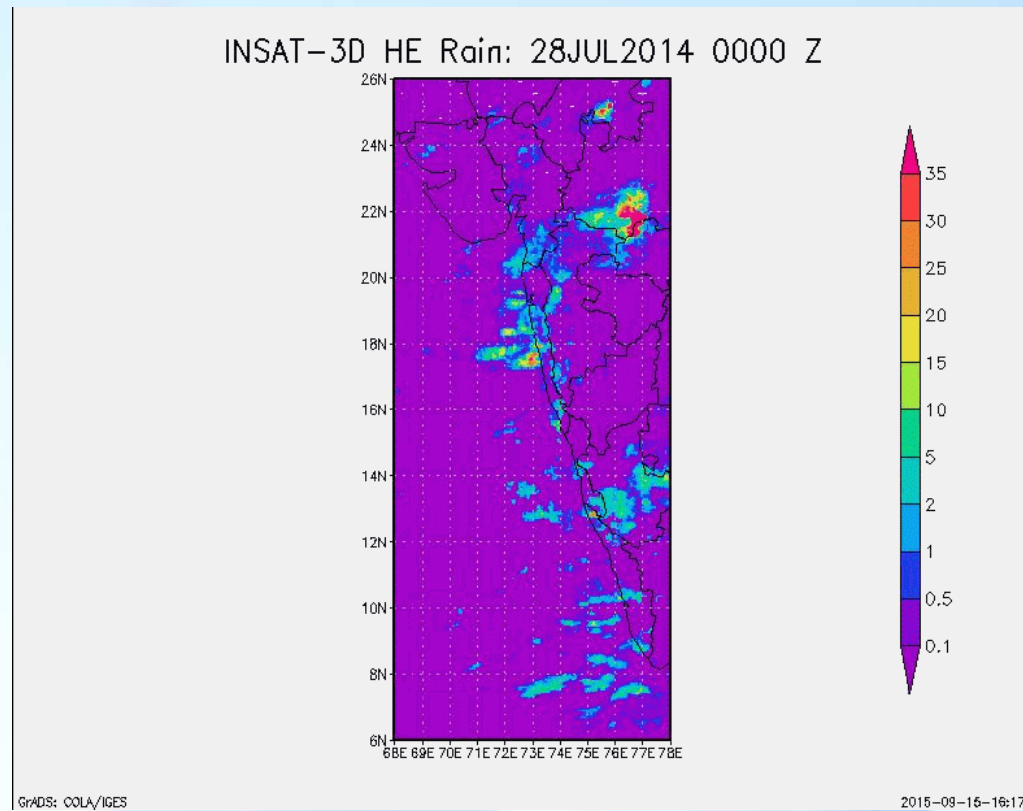
INSAT-3D HE for 31 July, 2014 (Daily)



INSAT-3D HE for 01 Aug, 2014 (Daily)



Gujarat and Maharashtra Region, 28 July – 1 August 2014 half Hourly rain rate loop of H-E plot



H-E Rain – Heaviest 24 Hr. accumulated :

28 July 2014: 96 mm in Daman, 58 mm in Mumbai (suburb), 36 mm in Mumbai, 39 mm in Valsad (Gujarat) and 29 mm in Thane.

29 July 2014: 100 mm to 31 mm in districts around Mumbai

30 July 2014: 68 to 37 mm in districts around Mumbai

01 Aug 2014: 34 mm in Porbander



Gujarat and Maharashtra Region, 28 July – 1 August 2014 daily heavy r/f events of H-E values table

Rain(MM) occurring in Mumbai and Gujarat								
District	24 Hr ending on 28Jul 2014 at 0300 Z		24 Hr ending on 29Jul 2014 at 0300 Z		24 Hr ending on 30Jul 2014 at 0300 Z		24 Hr ending on 31Jul 2014 at 0300 Z	
	HE	Actual	HE	Actual	HE	Actual	HE	Actual
DADRA-AND-NAGAR-HAV	31.05	91.3	42.76	261.2	51.33	152.5	28.34	224.1
DAMAN	96.05	45.4	113.72	199.0	47.54	138.0	42.65	131.0
VALSAD	39.57	44.2	42.62	224.5	46.55	199.3	21.21	127.1
MUMBAI	36.01	80.6	36.59	26.6	108.28	23.0	17.97	43.7
MUMBAI(SUBURB)	58.05	143.0	61.15	48.3	131.96	131.0	42.97	43.7
NORTH-GOIA	15.77	7.7	67.49	7.3	104.67	15.7	203.6	140.9
PUNE	21.96	12.7	36.16	23.0	49.78	68.6	24.1	47.5
RAIGARH(Maharashtra)	16.5	106.4	28.06	88.8	60.74	108.4	37.84	111.1
RATNAGIRI	39.62	70.6	46.19	59.0	44.76	27.4	82.3	101.9
SATARA	29.01	17.9	17.51	18.4	25.32	21.1	23.58	70.3
SINDHUDURG		8.2	53.1	6.9	28.86	22.9	80.5	88.0
SOUTH-GOIA	22.07	5.6	39.5	12.8	40.73	20.7	171.85	92.1
THANE	29.63	111.5	52.24	182.2	74.48	162.8	44.03	111.4

In Table

Red colour - Heavy R/F event captured by HE and actual

Green colour- - Heavy R/F event captured by HE only

Purple colour- - Heavy R/F event captured in actual not by HE but very close



Event 4: Sourashtra and Katch Region, 24 – 25 June 2015

Date	Associated Synoptic Weather Conditions
23 June 2015	A depression in the Arabian Sea moved east north-eastwards and intensified into a Deep Depression and lay centered over northeast Arabian sea off south Gujarat coast near Latitude 20.5° N and Longitude 70.5° E, about 50 km west-southwest of Diu. Off shore trough at mean sea level ran from centre of Deep Depression (over northeast Arabian sea off south Gujarat coast) to north Kerala coast
24 June 2015	Depression further moved northeastwards and lay centered over Saurashtra & adjoining Gujarat Region near Lat. 22.4°N/Long.72.0°E about 85 km southwest of Ahmedabad. Off shore trough existed from Gujarat coast to north Kerala coast
25 June 2014	It laid as a well marked low pressure area over northwest Madhya Pradesh & neighborhood and further weakened. Off shore trough ran from Gujarat coast to north Kerala coast

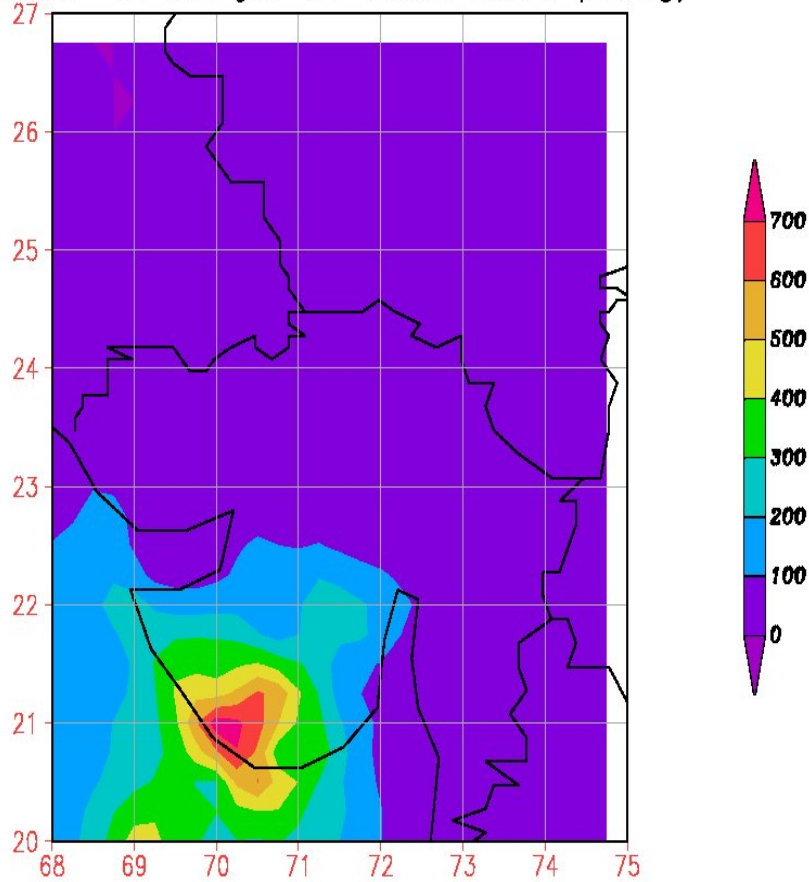
Damage:

Loss of lives and property is reported. As per news paper reports, about 60 people died and loss of property worth million of rupees reported due to flooding.

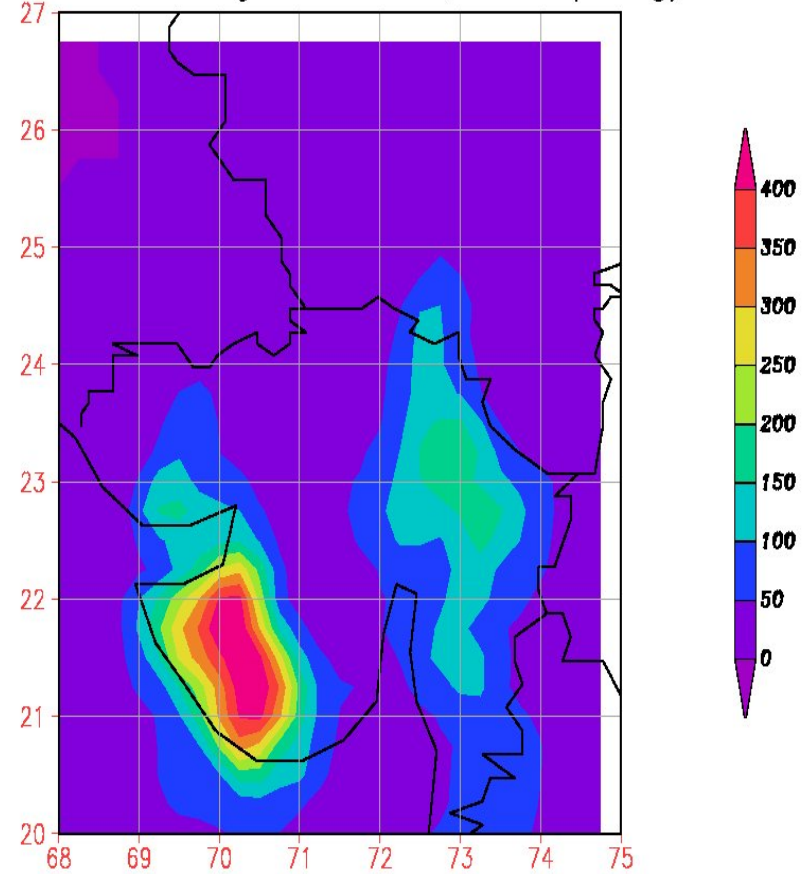


Sourashtra and Katch Region 24 and 25 June, 2015

INSAT-3D HE for 24 June, 2015 (Daily)

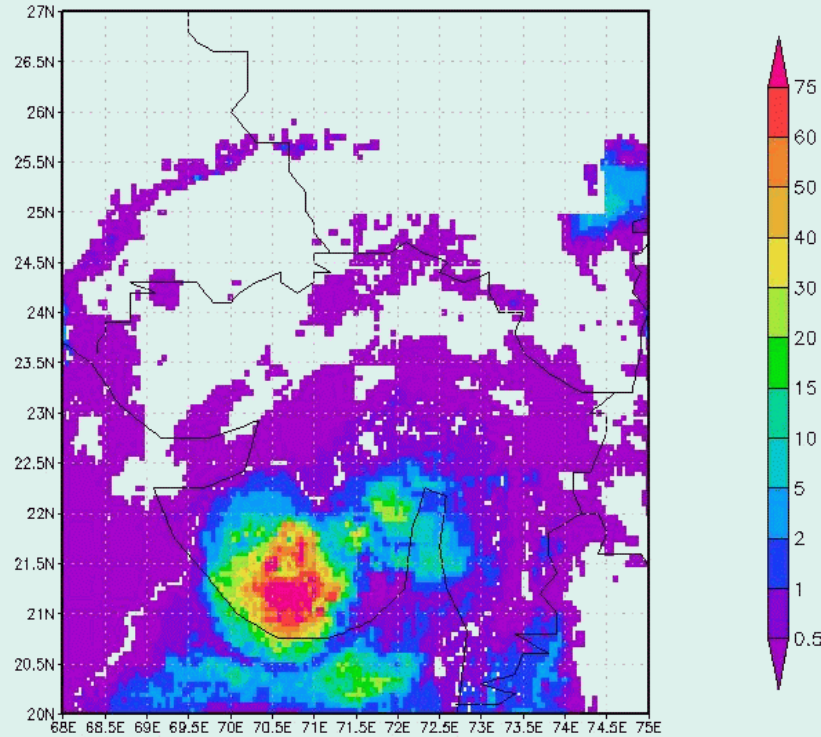


INSAT-3D HE for 25 June, 2015 (Daily)



Sourashtra and Katch Region, 24-25 Jun 2015 half Hourly rain rate loop of H-E plot and daily heavy r/f events table

INSAT-3D HE Rain: 24JUN2015 0300 Z



GRADS: COLA/IGES

2015-06-26-11:27

District	24 Hr ending on 24 Jun 2015 at 0300 Z		24 Hr ending on 25 Jun 2015 at 0300 Z	
	HE	Actual	HE	Actual
AHMEDABAD	84.7	27.0	19.15	50.5
AMRELI	388.32	72.8	110.27	221.4
GANDHINAGAR	10.41	1.3	44.39	87.4
JAMNAGAR	203.87	25.9	102.05	11.4
JUNAGADH	626.53	124.0	205.56	17.7
KHEDA	13.81	9.8	40.33	88.9
PANCH-MAHALS	8.29	5.5	104.96	104.4
PORBANDAR	420.71	69.2	83.76	1.3
RAJKOT	187.1	60.2	89.38	85.7
SABAR-KANTHA	4.02	5.2	83.39	142.0
SURENDRANAGAR	99.28	31.9	8.18	32.1
VALSAD	34.42	41.5	20.91	8.9
MUMBAI	91.54	28.2	6.4	7.0
MUMBAI(SUBURB)	148.2	52.8	12.3	7.6
RAIGARH(Maharashtra)	77.79	119.7	13.16	19.4
RATNAGIRI	35.26	91.4	59.52	28.2
SINDHUDURG	29.79	48.3	32.28	35.6
THANE	86.29	73.0	24.55	20.0

H-E Rain – Heaviest 24 Hr. accumulated

24 Jun 2015: 62 mm average rain for Gujarat 351 mm in Junagadh, 197 in Amreli, 112 mm in Rajkot, 103 mm in Jamnagar Panch Mehel, and 89 mm in Porbandar.

In Table

Red colour - Heavy R/F event captured by HE and actual

Green colour- - Heavy R/F event captured by HE only

Purple colour- - Heavy R/F event captured in actual not by HE but very close



Details of Volume of data generated in IMDPS

Satellite	Data – Type	Data Size for 1 Day		Data Size Monthly	
K1VHR	RAWDATA	5.6 GB	11.4 GB	170 GB	342 GB
	HDF	4.8 GB		145 GB	
	Images & Products	1 GB		30 GB	
3AVHR	RAWDATA	4 GB	5.9 GB	120 G	177 GB
	HDF	1.8 GB		54 GB	
	Images & Products	66 MB		2 GB	
3ACCD	RAWDATA	2.1 GB	8.4 GB	65 GB	246 GB
	HDF	6 GB		180 GB	
	Images & Products	33 MB		1 GB	
3DIMG	RAWDATA	50 GB	114 GB	1.5 TB	3.4 TB
	HDF	50 GB		1.5 TB	
	Images & Products	14 GB		420 GB	
3DSND	RAWDATA	333 MB	3.1 GB	10 GB	95 GB
	HDF	833		25 GB	
	Images & Products	2 GB		60 GB	
TOTAL SIZE		142.8 GB		4.2 TB	

MODIFIED DATA – ARCHIVAL SCHEME

Satellite wise and type of data (Raw, HDF, JPG) data is being archived sequentially on Linear Tape Object (LTO) mounted on Tape Library in following three categories :

- RAWDATA
- HDF Files (Level-1, Level-2 & Level-3 Data)
- Channels & Products IMAGES(jpg & png)



Dissemination through a dedicated IMD web site Updated every fifteen Minutes

<http://satellite.imd.gov.in/insat.htm>










The screenshot shows the website interface with a central map of India displaying satellite imagery. The map is titled 'SAT INSAT-3D IMG' and includes metadata: '10-02-2016/14:30 GMT', 'IMG_TIRL 10.8 um', and '10-02-2016/2000 IST'. The map uses a 'LIC Mercator (LINEAR STRETCH 1.0%)' projection. The website layout includes a top navigation bar with links like 'RAPID', 'Animation', 'CT BT', 'Archived Images', 'Product Information', 'INSAT 3D SRF', 'DRT Secretariat', and 'FAQ'. The left sidebar contains a menu for 'INSAT 3D' with categories such as '(Home)', 'Atmospheric Motion Vector' (with sub-links for WVV and CMV, and Visible Wind and MIR Wind), 'Vorticity' (with sub-links for 850mb, 700mb, 500mb, 200mb, and Shear), 'Wind Shear' (with sub-links for Mid Shear and Shear Tendency), 'Convergence' (with sub-links for Low Level and Divergence), 'Upper Level', 'Current Rainfall Product' (with sub-links for IIM, IMR, and QPE), 'Daily Rainfall Product' (with sub-links for HEM, IMR, and QPE), 'Other Products' (with sub-links for OLR, UHI, SST, INS, LST, AOD, Fog, and Snow), 'Sounder Products' (with sub-links for Vertical Profile, TPWV, and Total Ozone), and 'Satellite Bulletin'. The right sidebar contains a menu for '(Home)' with categories like 'Full Disk Images' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV, and IR 1 Brightness Temperature Colour Composite), 'Asia Sector Images' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV, and IR 1 Brightness Temperature Colour Composite), 'High Resolution North East Sector Images with District Boundaries' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV), 'High Resolution North West Sector Images with District Boundaries' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV), 'High Resolution South East Sector Images with District Boundaries' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV), 'High Resolution South West Sector Images with District Boundaries' (with sub-links for Visible, SWIR, MIR, IR-1, IR-2, WV), 'Cyclone Enhancement Images' (with sub-links for SW Sector BD Curve, SW Sector IMD Curve, SE Sector BD Curve, and SE Sector IMD Curve), and 'Special Sectors Images'.



Online Archival of all channel images & products images are available of last six month

<http://satellite.imd.gov.in/archive/>

Index of /archive

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
 CYCLONE-IMAGES/	30-Oct-2015 10:24	-	
 INSAT-3A-CCD/	14-Sep-2015 10:59	-	
 INSAT-3A-VHRR/	15-Jan-2015 04:05	-	
 INSAT-3D-IMAGER/	05-Sep-2015 09:43	-	
 INSAT-3D-SOUNDER/	14-Jan-2015 14:31	-	
 KALPANA-1/	15-Jan-2015 03:05	-	
 MODIS/	14-Jan-2015 14:56	-	
 REQUESTS/	17-Nov-2015 11:23	-	

Apache/2.2.15 (Red Hat) Server at satellite.imd.gov.in Port 80



Index of /archive/INSAT-3D-IMAGER

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
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 3D-PRODUCTS/	07-Sep-2015 11:31	-	
 DISTRICT_BOUNDARIES/	03-Sep-2015 12:34	-	
 HIGH-RESOLUTION/	05-Sep-2015 10:07	-	

Apache/2.2.15 (Red Hat) Server at satellite.imd.gov.in Port 80



RAPID(Real time Analysis of Products & Information Dissemination) :-

It is a web based quick visualization and analysis tool for satellite data on a real time basis.This introduces Next Generation Weather Data Access & Advance Visualization.

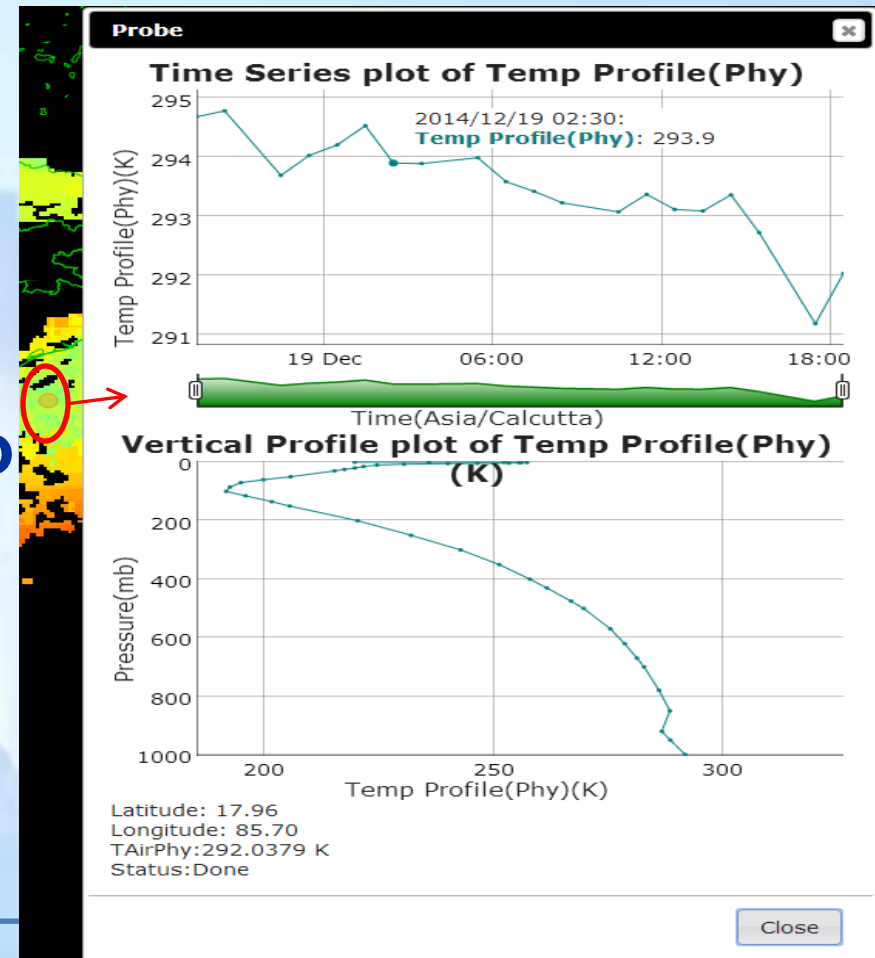
<http://www.rapid.imd.gov.in>

- ❖ **Connects atmospheric- and geosciences**
- ❖ **No specific OS/ software/ library / compiler required on the desktop. Access through browser**
- ❖ **Provides features of interest to scientific community**
- ❖ **Open standards OGC**
 - **Web Mapping Service (WMS) – For visualization**
 - **Extensions written for scientific community**
- ❖ **Zero learning curve**



Features

- **Overlay Map Boundaries (World Coastline, State, District Boundaries, Gridlines) with configurable:**
 - Color
 - Opacity
 - Thickness
- **Contrast Stretch**
- **Lookup Table Application**
- **Probe Data (on the fly)**
 - Time Series
 - Vertical Profile
 - Transect



Selection of the product Name

Full Disk- Globe set of Data uploaded and different channels are available in layer selection

Sector- sector data will be uploaded and different channels are available in layer selection

RGB Composite- Day TIME Micro Physics(DMP)/ Night Micro Physics data will be uploaded may be available in Layer selection

Geophysical Parameter – Derived product such as SST, UTH, IMSRA, HE, OLR etc may be available in Layer selection

Enable

Sat: 3DIMG

Product: Full Disk

Layer: Full Disk

Time: RGB Composite

TZ: IST

Opacity: 0.5

Range Palette

Probe

Animation Control

Contour

Enable

Sat: 3DIMG

Product: Full Disk

Layer: TIR1 Count

Time: RGB Composite

TZ: IST

Opacity: 0.5

Range Palette

Probe

Animation Control

Contour

Enable

Sat: 3DIMG

Product: Geophysical

Layer: OLR

Time: RGB Composite

TZ: IST

Opacity: 0.5

Range Palette

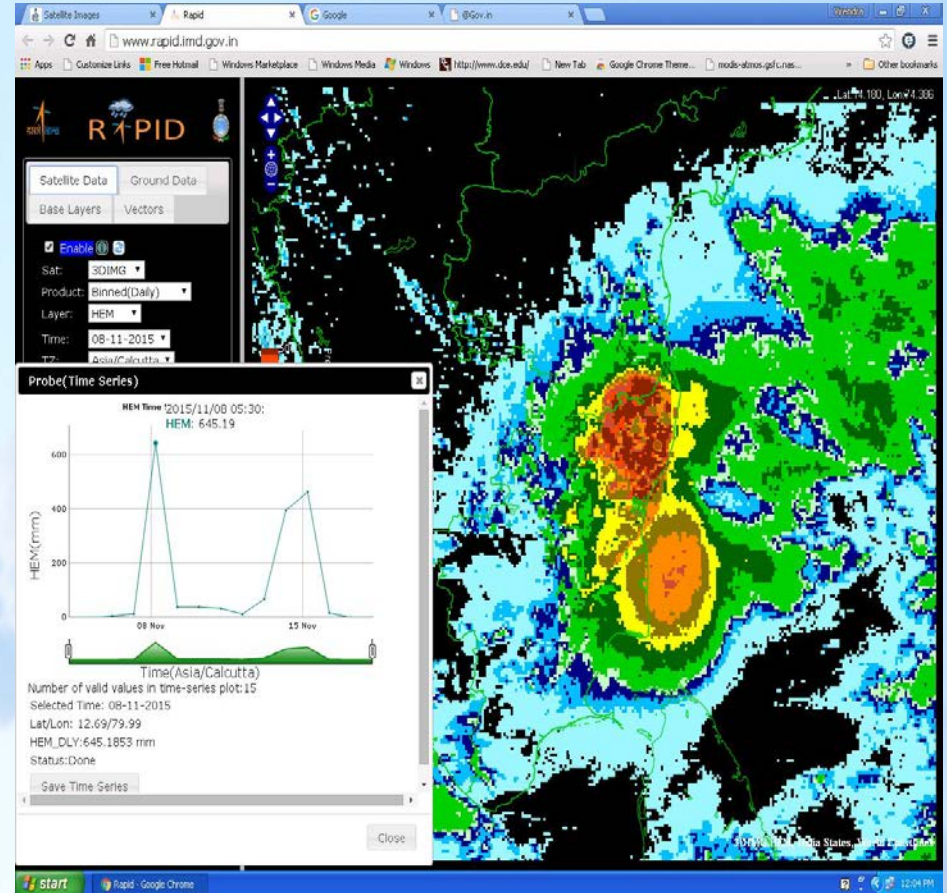
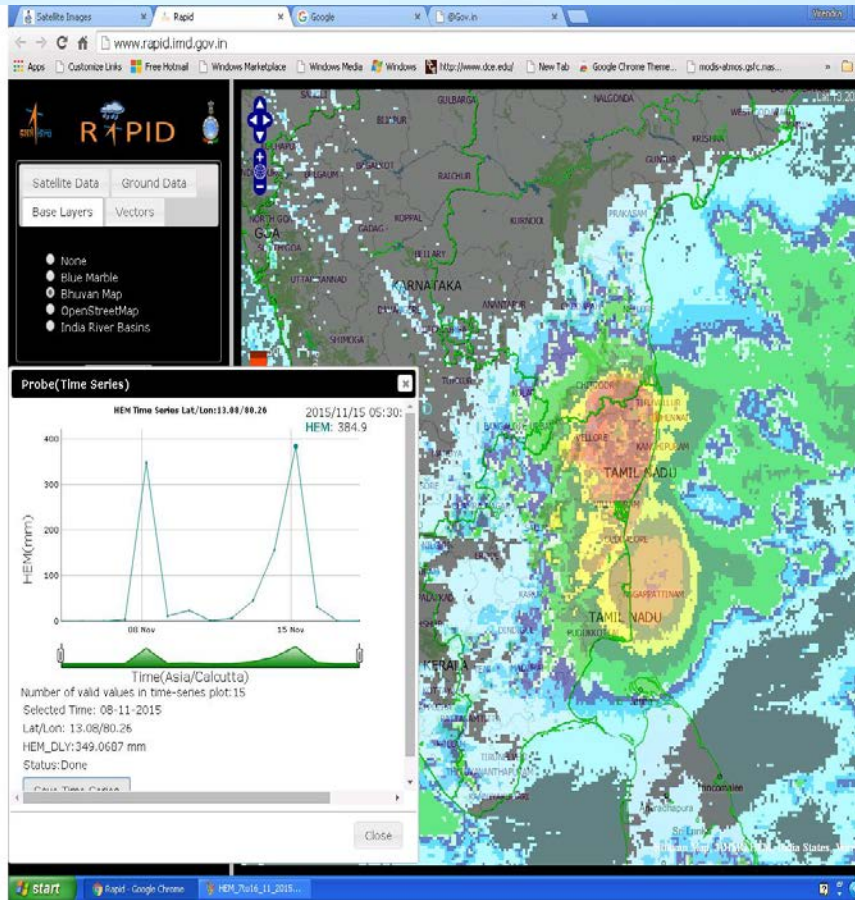
Probe

Animation Control

Contour



HEM R/F of Chennai flood through RAPID



Thank You



भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT

