

IMD Agency Report 2022



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**CMA, CNES, ESA, EUMETSAT, ISRO, IMD, JMA, KMA,
NASA, NIST, NOAA, ROSHYDROMET, SITP/CAS, USGS,
WMO**



Summary of IMDs GSICS Activities, Actions, and Achievements



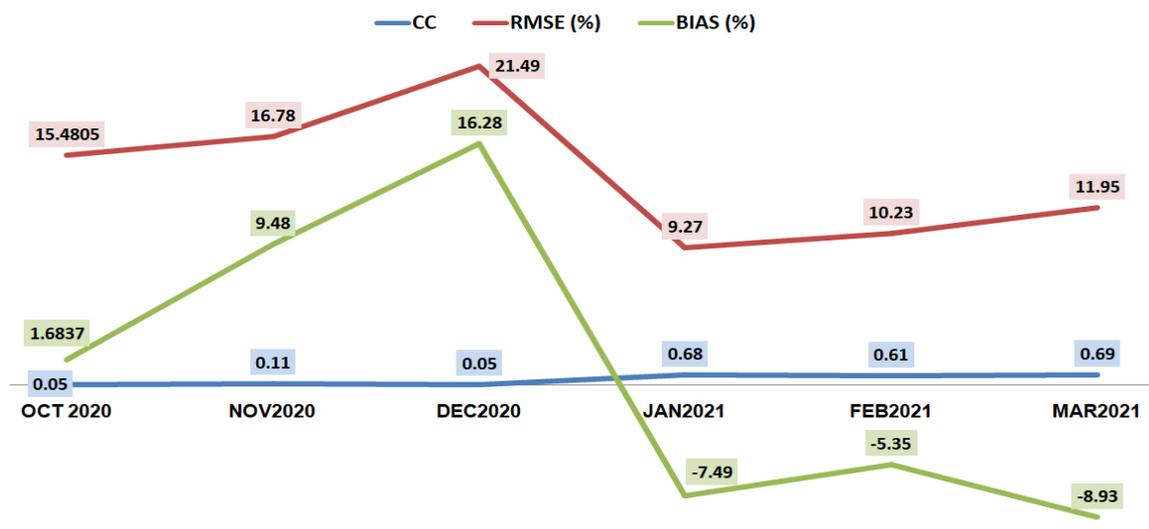
❖ Current Status of IMD activities

- INSAT3D/3DR GSICS correction for TIR1/TIR2/MIR and WV are being frequently implemented in MMDRPS. (Validation of INSAT 3D/3DR with SEVIRI)
- Cal/Val coefficients implementation in MMDRPS
- Recent INSAT-3D/3DR calibration campaign in Great Rann of Kutchh with Space Applications Centre (ISRO), Ahmadabad during 08 to 11 February 2022
- IMD CALVAL Portal - New Initiative by IMD
- Data Supply System (Archival and Storage)

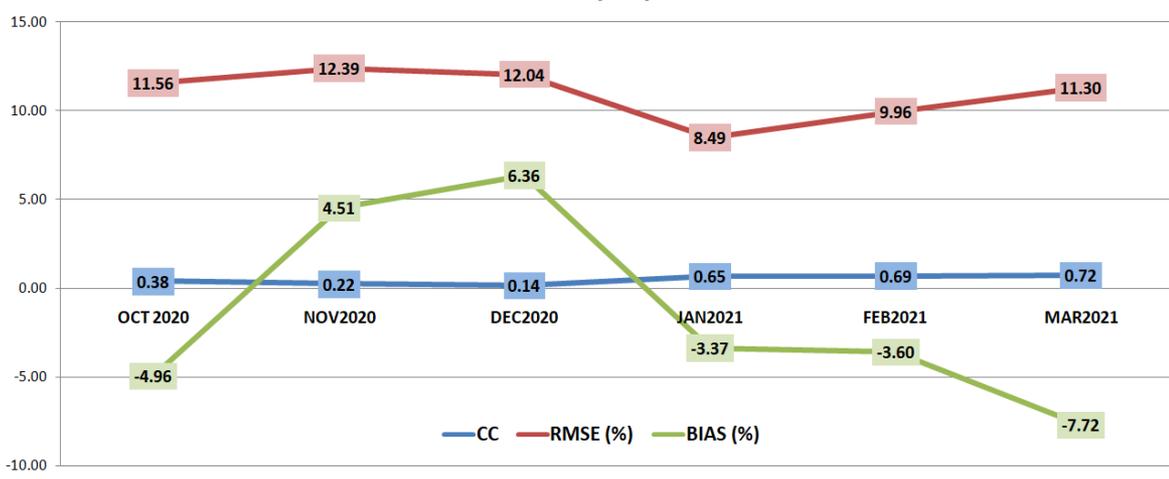
Achievements

- ❖ With vicarious calibration report of INSAT-3D and -3DR (CalVal Campaign held in Jan 2020), the coefficients have been successfully updated in MMDRPS operational systems.
- ❖ Pre- and Post analysis of Visible band (INSAT3D/VIIRS) conducted before and after implementation of the Coeff.
- ❖ Campaign done in Feb 2022, Coefficients will be updated in MMDRPS once post calibration analysis is done.

Pre and Post Calibration - INSAT 3D VIS with VIIRS Cloudy Sky



Pre and Post Calibration - INSAT 3DR VIS with VIIRS Cloudy Sky

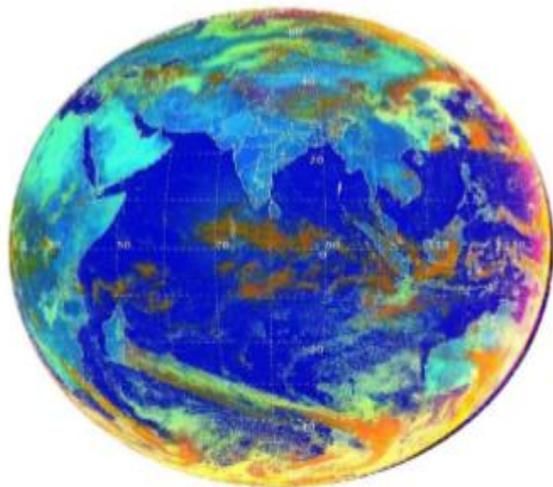


Multi Mission Meteorological Data Receiving and Processing System (MMDRPS)

Calibration & Validation Report

November 2021

Project Name: MMDRPS



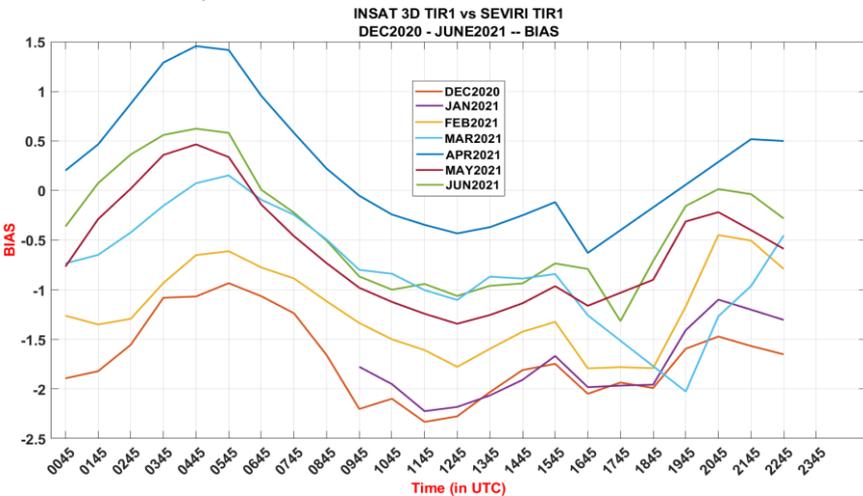
1.	Introduction	
2.	MMDRPS Meteorological Products (Imager)	
2.1.	Clear Sky BT of TIR-1/2, MIR, WV	
2.2.	Cloud Mask (CMK)	
2.3.	Cloud Properties	
a)	Cloud Top Pressure	21
b)	Cloud Top Temperature	21
c)	Effective Cloud Emissivity	21
2.4.	Cloud Microphysics	26
a)	Cloud Particle Effective Radius	26
b)	Cloud Optical Thickness	26
2.5.	Sea Surface Temperature	30
2.6.	AMV Winds and AMV Derived Products	34
a)	Wind Shear	34
b)	Mid-Level Wind Shear	34
c)	24hr Shear Tendency	34
d)	Vorticity at different pressure levels	34
e)	Low Level Convergence	34
f)	Upper Level Divergence	34
2.7.	Outgoing Longwave Radiation	56
2.8.	Upper Tropospheric Humidity	64
2.9.	Hydro estimator	68
2.10.	IMSRA	95
2.11.	Improved IMSRA	95
2.12.	Global Precipitation Index(GPI)	95
2.13.	Fog cover and Intensity	101
2.14.	Land Surface Albedo	107
2.15.	Land Surface Temperature	111
2.16.	Daily Insolation	116
2.17.	Global Horizontal irradiance	128
2.18.	Diffused Normal Irradiance	129
2.19.	Net Radiation (Clear Sky)	130
2.20.	Actual Evapo-Transpiration	142
2.21.	Potential Evapo-Transpiration	148
2.22.	Snow cover	155
2.23.	Smoke	163
2.24.	Forest Fire	167
2.25.	Aerosol Optical Depth (AOD)	175
2.26.	Net Surface Shortwave Radiation over Ocean	179
3.	MMDRPS Meteorological Products (Sounder)	183
3.1.	Temperature Profiles	183
3.2.	Humidity Profiles	183
3.3.	Total Column Ozone	191
3.4.	Sounder Derived Products	197
3.4.1.	Total Precipitable Water Vapor	197
3.4.2.	Geopotential Height	202
3.4.3.	Lifted Index	203

MMDRPS Report of Calibration & validation Committee INSAT-3D & 3DR satellites and shall serve as a record of acceptance from IMD for the milestone

Validation of INSAT 3D/3DR with SEVIRI

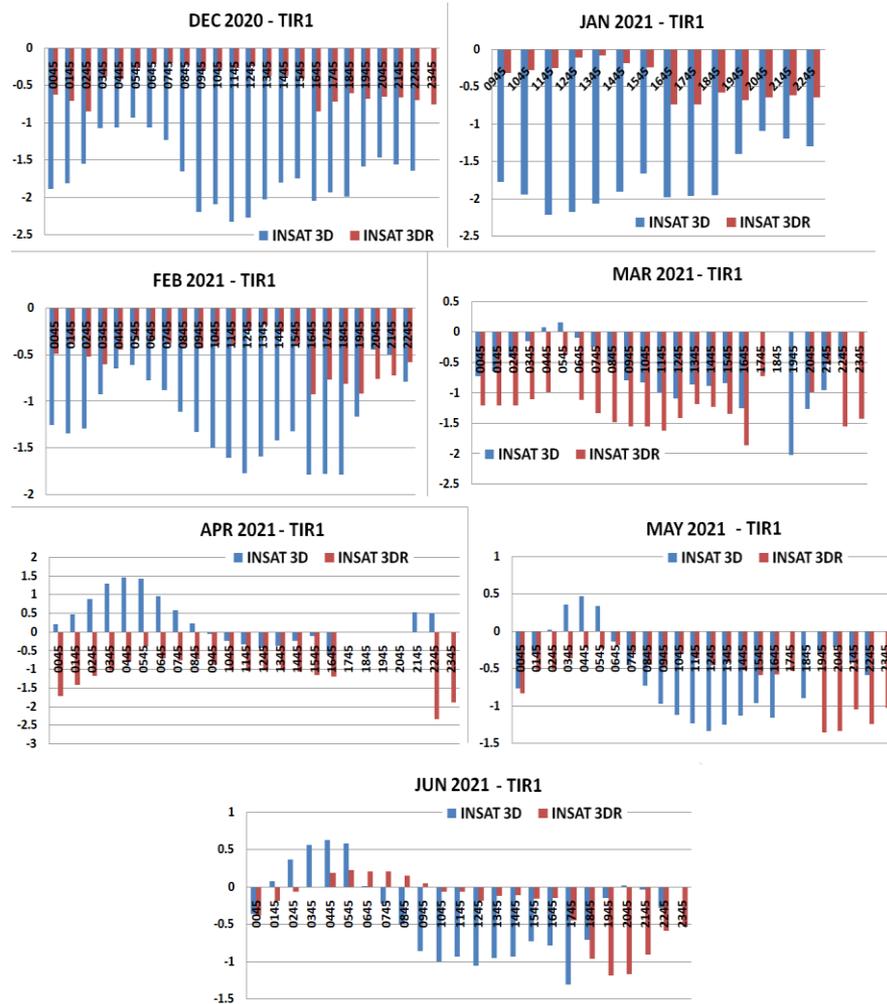
❖ Approach:

- RMSE/BIAS computation using matchup dataset with reference satellites (in this case SEVIRI)

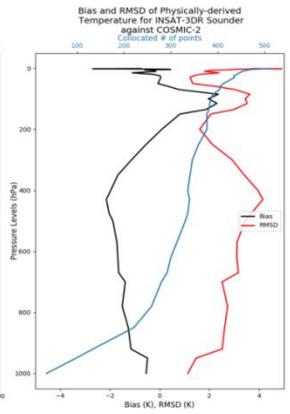
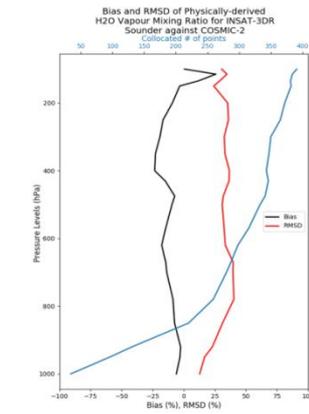
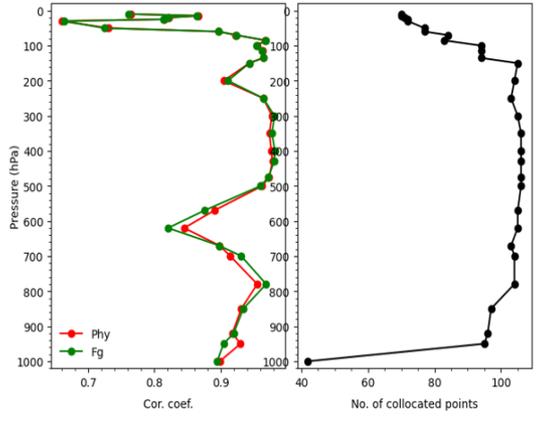
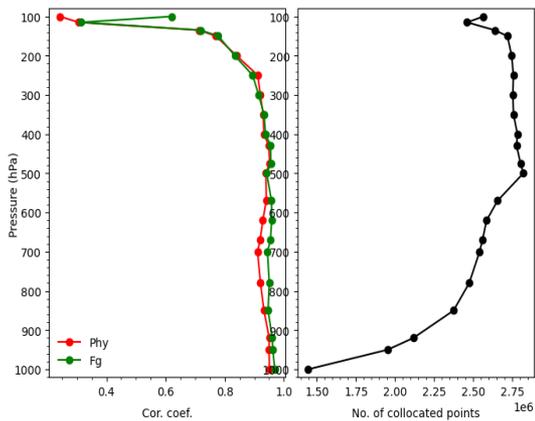
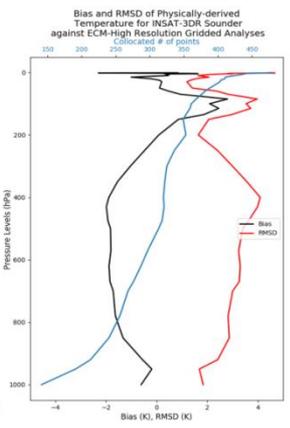
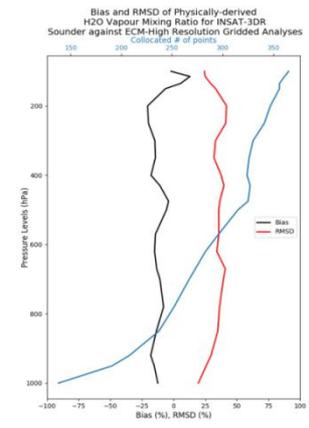
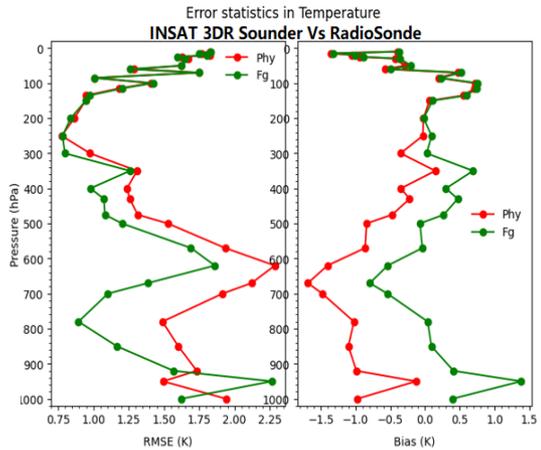
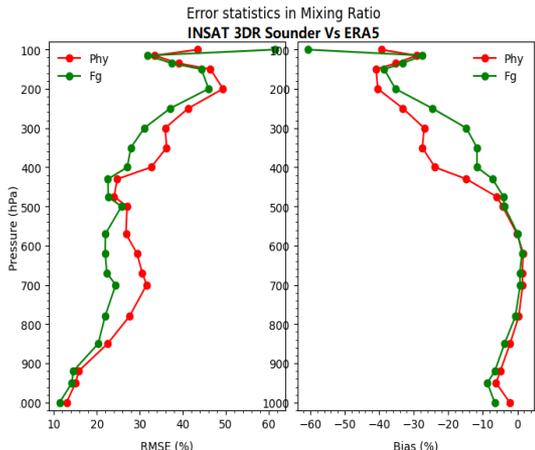


- Inter-calibration is also being done between INSAT 3D /INSAT 3DR

INSAT 3D BIAS vs INSAT 3DR BIAS - TIR1 Channel



Validation of INSAT 3DR Sounder Profile with ERA5/RS/COSMIC-2 (2021)



INSAT-3D/3DR calibration campaign in Great Rann of Kutchh A Joint Campaign with Space Applications Centre (ISRO), Ahmadabad **08 to 11 February 2022**

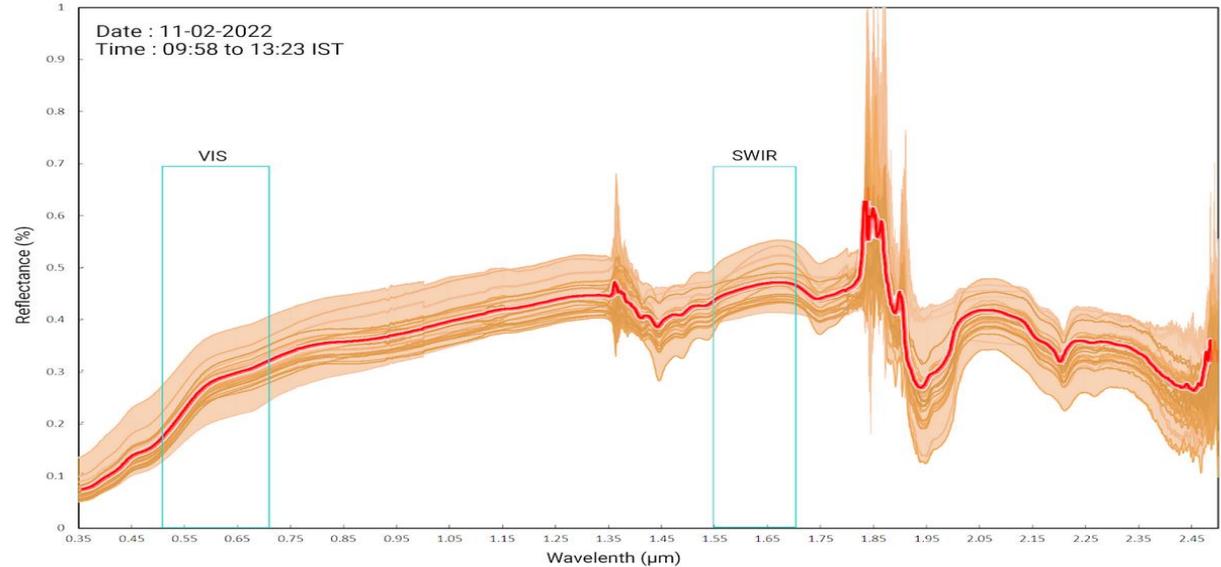
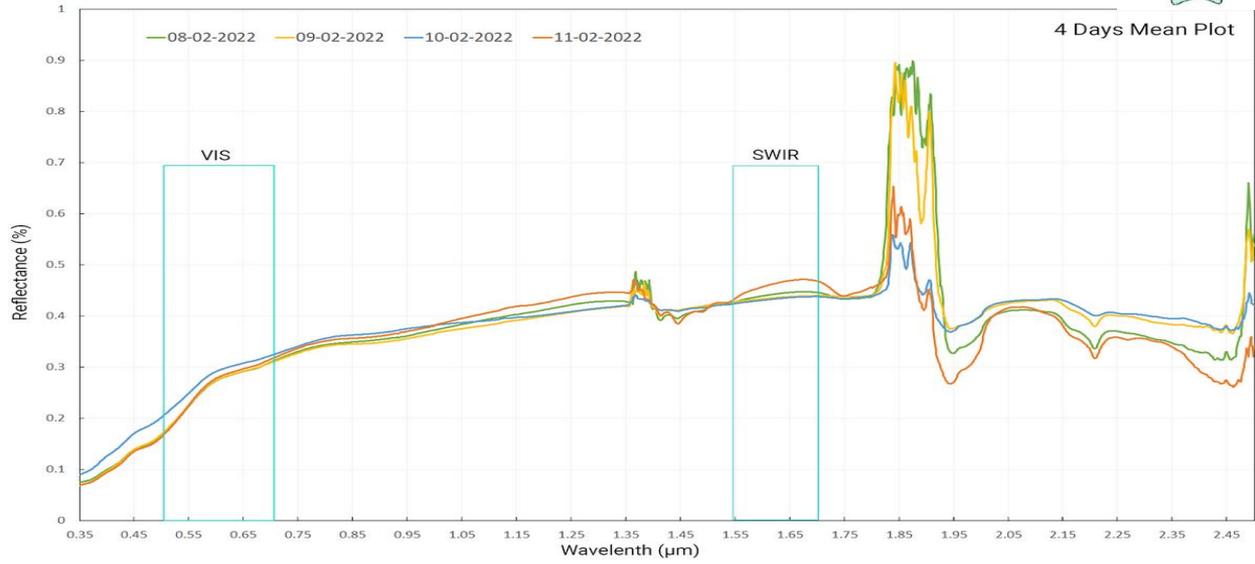


IMD with CalVal Instruments to carry out calval activities.

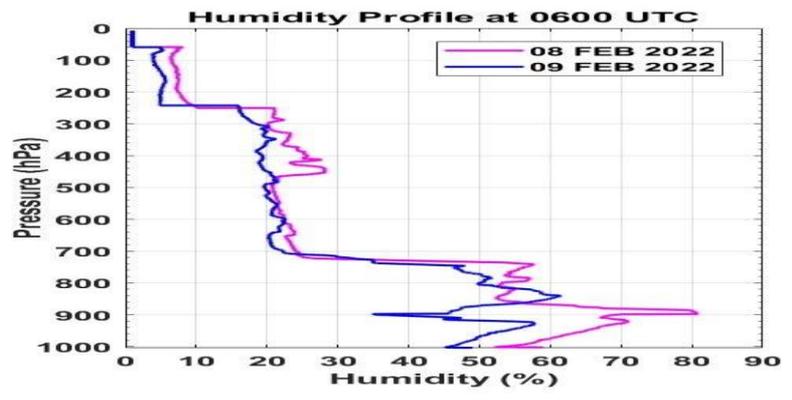
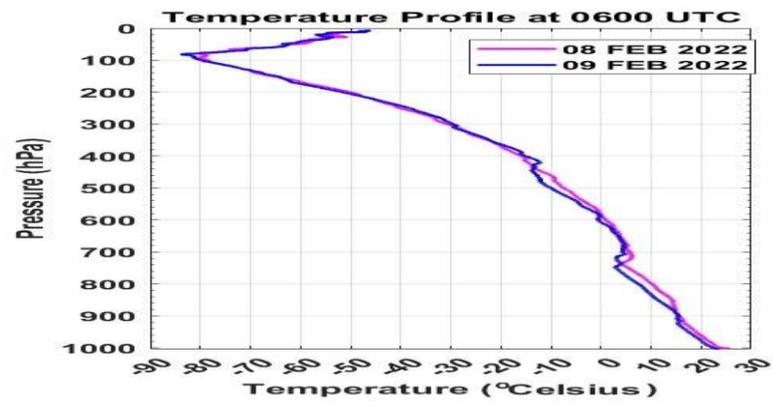
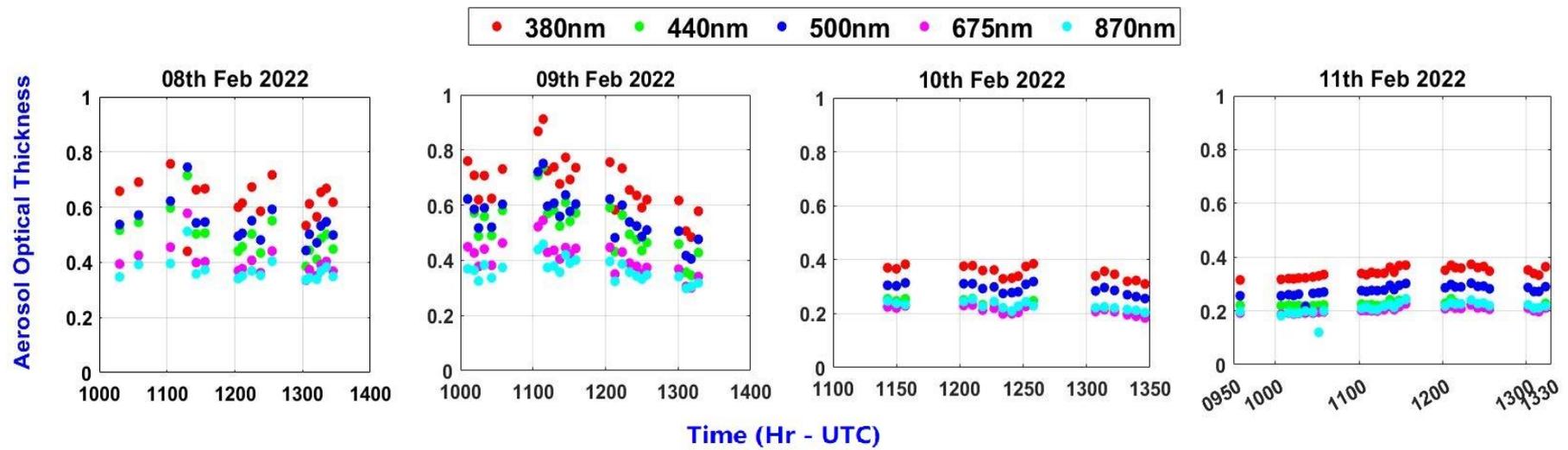
Calval Campaign was carried out to account the characterization errors or undetermined post-launch changes in spectral response of the sensor.

The measurements include

1. Surface reflectance using ASD Spectro-radiometer.
2. Aerosol, Ozone and water vapour using MicroTops-II sunphotometer and Ozonometer.
3. For CAL/VAL campaign, RS observations were launched on 8th and 9th February at **06 UTC** from which vertical profiles of the temperature and humidity including wind observation were obtained.
4. Surface observations like dry bulb temperature, Dew point Temperature, wind speed etc were also taken through surface observatories.



CalVal site at Kutchh has been verified for spatial uniformity and spectral homogeneity.

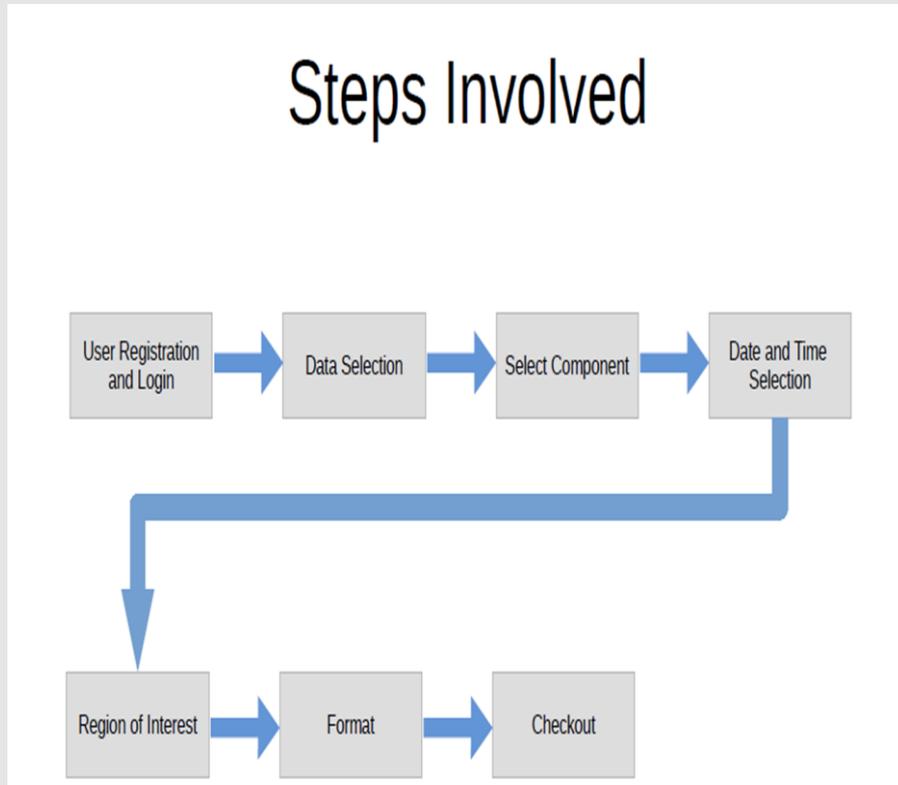


Navigation
Home
Data Availability
shibin's Profile
Cart
Logout
Payment Procedure
Payment Procedure for Indian Nationals
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Select Data

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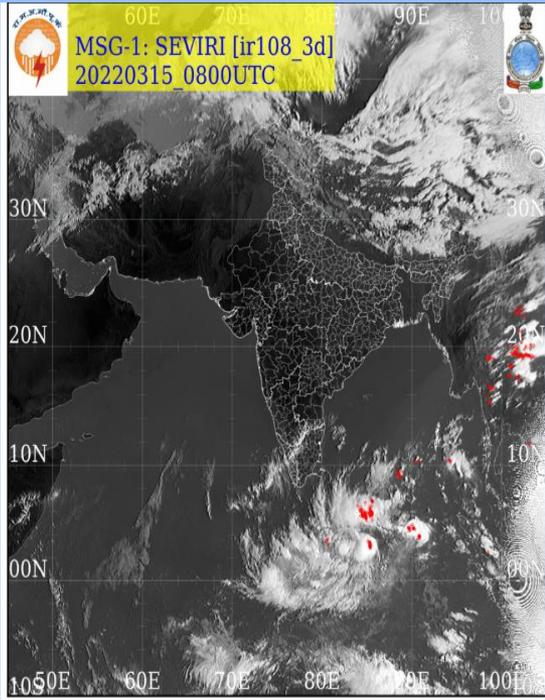
Next



EUMETCAST service



INDIA METEOROLOGICAL DEPARTMENT
 Ministry of Earth Sciences
 EUMETCAST Images and Products

<u>Meteosat-8 Channel Imagery</u>		
VIS-0.6° VIS-0.8°		
IR-1.6° IR-3.9 IR-8.7 IR-9.7		
IR-10.8 IR-12.0 IR-13.4		
IR-10.8 (3D-View) IR-10.8 (Troll)		
WV-6.2 WV-7.3		
Full Disk (Troll)		
<u>Himawari Channel Imagery</u>		
IR-BoB-region		
<u>Meteosat-8 RGB Products</u>		
Air Mass Convection*		
Day-Microphysics* Night Fog		
Dust True Colour*		
<u>Meteosat-8 Nowcasting Products</u>		
RDT CT ASI CRR		
CI-30 CI-60 CI-90		
<u>Meteosat-8 Winds Products</u>		
HRW-ALL HRW-Top		
HRW-Mid HRW-Low		
<u>Lightning Products</u>		
<u>Lightning Animation</u>		
KML		
RealTime RealTime-15mins RealTime-30mins		
Previous Day		
<u>Real Time Amplitude</u>		
Total C-C C-G		
<u>Real Time Count</u>		
Total C-C C-G		
<u>Last 3-hours Amplitude</u>		
Total C-C C-G		
<u>Last 3-hours Count</u>		
Total C-C C-G		
<u>LMI Based Lightning</u>		

Lightning

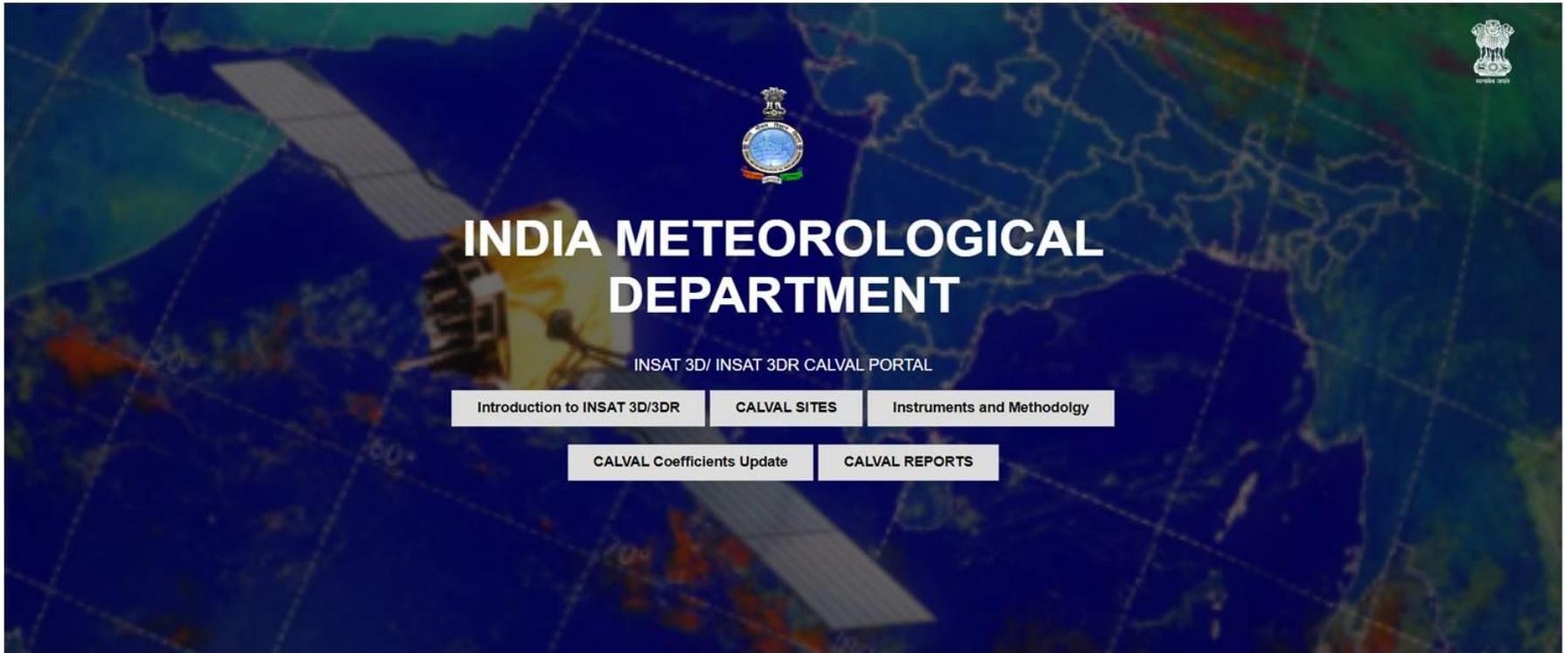
Locations of lightning flashes are overlaid and marked with red dots over the satellite imagery. Source of lightning data is IITM network.

The data has been received through EUMETSAT's EUMETCAST service at the National Centre for Medium Range Weather Forecasting (NCMRWF) through the National Knowledge Network (NKN) infrastructure, under the license agreement with the India Meteorological Department (IMD).

The imagery and products hosted at this website are for internal use of India Meteorological Department.

IMD CALVAL Portal

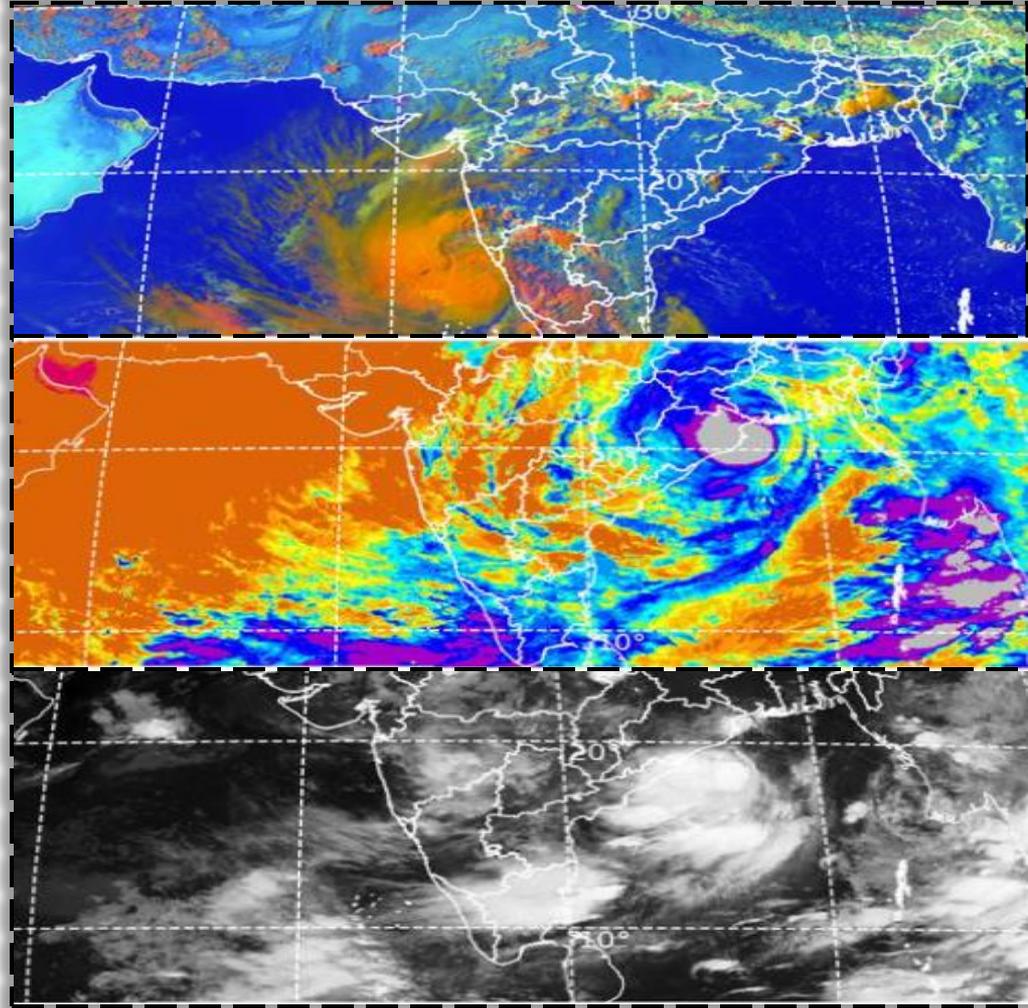
New Initiative by IMD



- ❖ This CalVal portal will have all information about CAL VAL activities performed time-to-time by IMD/ISRO.
- ❖ Information regarding CALVAL Sites, Instruments and Methodology used for CALVAL and CALVAL reports also will be updated here.

Rapid scan analysis for cyclones and thunderstorm activities (2021)

Sr. No	Name	Date
1.	ESCS Tauktae	May 14 – 19
2.	VSCS Yaas	May 23 – 28
3.	CS Gulab	September 24 – 28
4.	SCS Shaheen	Sept 30 – Oct 4
5.	CS Jawad	December 2 – 6





Future Plans: 2022-2026



MMDRPS to be used operationally to receive, process and disseminate the data from INSAT-3D & 3DR satellites. Validation of products of INSAT-3D/3DR/3DS will be carried out.

Augmentation of GNSS network. New GNSS Network of 75 numbers.

Establishment of IMDCast; development of SAF Nowcasting.

GISAT and OCEANSAT-3/3A Data processing and visualization systems.

GISAT (2022)

- ❖ GISAT is configured to facilitate continuous observation of Indian sub-continent, quick monitoring of natural hazards and disaster.

Band	Channels	Ground Resolution(m)	Range(μm)
MX-(VNIR)	6	42	0.45 – 0.875
HyS-(VNIR)	158	318	0.375 – 1.0
HyS-(SWIR)	256	191	0.9 – 2.5

- ❖ GISAT will be useful in Tropical Cyclone Monitoring, Dust monitoring, Day Time Monitoring, Value added Agromet Products, and monitoring of Extreme events such as cloud burst and thunderstorm.

OCEANSAT-3 (2022)

- ❖ OceanSat is configured to cover global oceans and provide continuity of ocean colour data with global wind vector and characterization of lower atmosphere and ionosphere.
 - An 13-band Ocean Colour Monitor (OCM) in VNIR (400-1010 nm range) with 360 m spatial resolution and 1400 km swath for ocean Colour monitoring
 - 2-band Long Wave Infra Red (LWIR) around 11 and 12 μm for Sea Surface Temperature (thermal channels) at 1080 m resolution.
 - A Ku-Band Pencil beam SCATTEROMETER with a ground resolution of 50 km × 50 km for Continuity of wind vector data for cyclone forecasting and numerical weather modelling
- ❖ The mission objectives are to provide continuity of ocean colour data with improvements to continue and enhance operational services like potential fishery zone and primary productivity. Continuity of wind vector data through repeat of Scatterometer for cyclone forecasting and numerical weather modelling.



Thank you for your attention

WMO GSICS Portal

<http://gsics.wmo.int>

GSICS Coordination Centre

<http://www.star.nesdis.noaa.gov/smcd/GCC/index.php>

GSICS Product Catalog

<https://www.star.nesdis.noaa.gov/smcd/GCC/ProductCatalog.php>

GSICS Wiki

<http://gsics.atmos.umd.edu/wiki/Home>