



सत्यमेव जयते
Ministry of
Earth Sciences

International Conference on HYDROPOWER AND DAMS DEVELOPMENT FOR WATER AND ENERGY SECURITY – UNDER CHANGING CLIMATE



South Asia Flash Flood Guidance System (SAsiaFFGS)

Trends in Flash Flood and Early Warning System

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New Delhi



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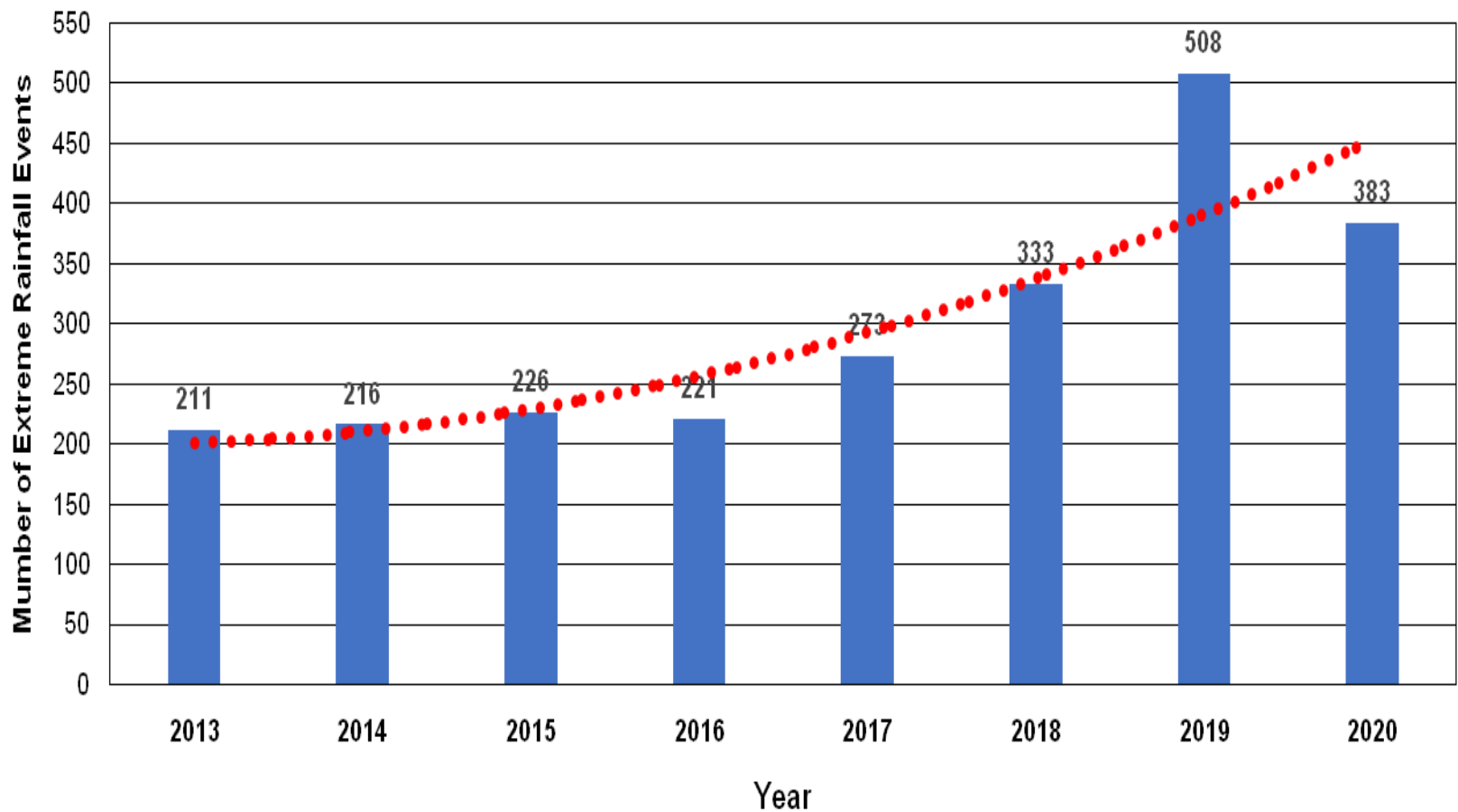


Central Board of
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Indian National Committee
on Large Dams

Seasonal cumulative Extreme Rainfall events - SW Monsoon





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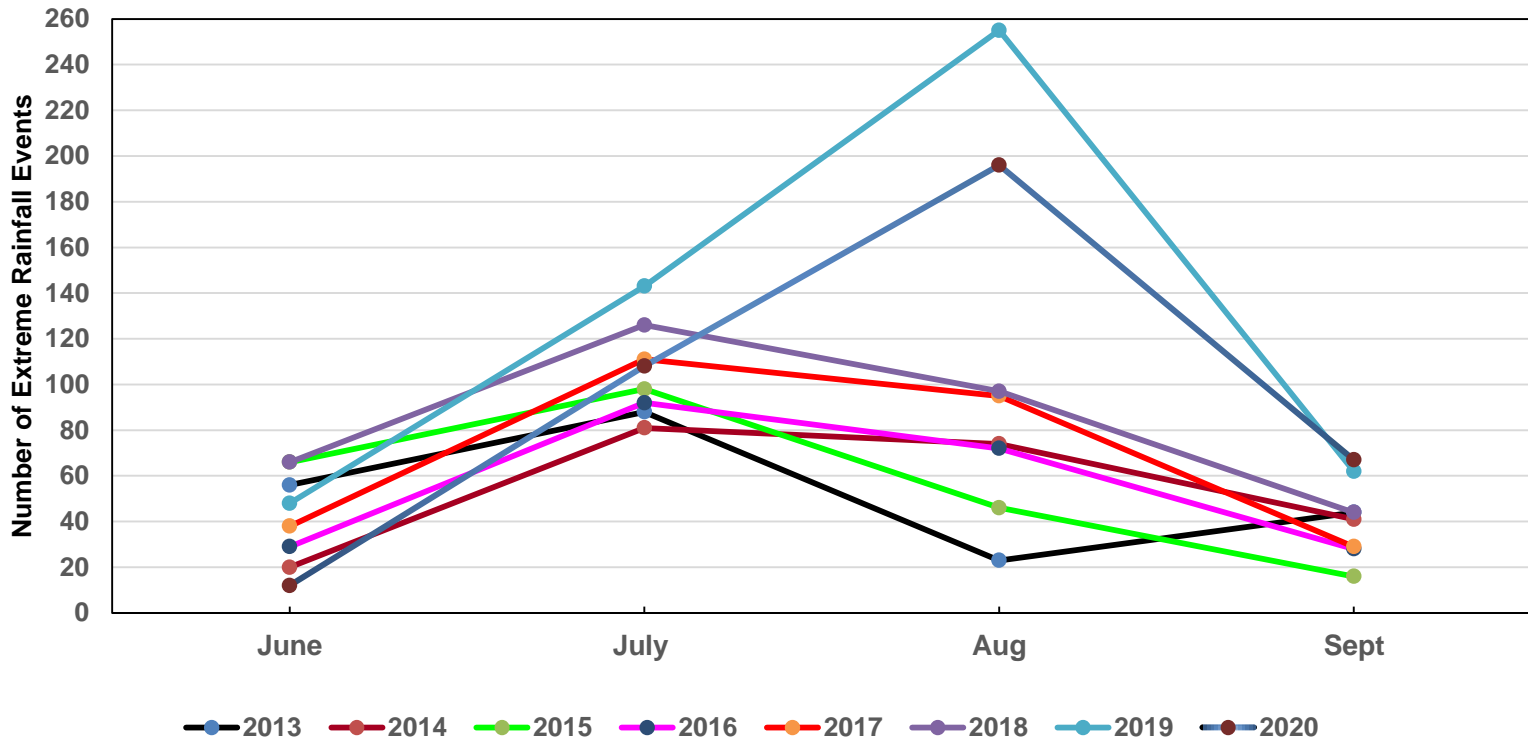


Central Board of Irrigation & Power



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Extreme Rainfall Events during SW Monsoon





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Why Flash Flood Guidance System

- Flash floods are among the world's deadliest natural disasters with more than **5 000 lives** being lost annually .
- Their social, economic and environmental impacts are significant. Accounting for approximately **85% of flooding cases**, flash floods also have the **highest mortality rate** among different classes of flooding, including riverine and coastal.
- Flash floods occur throughout the world, and the development times vary across regions from minutes to several hours depending on the land surface, geomorphological and hydrometeorological characteristics of the region.
- To address the issues associated with flash floods, especially the lack of capacity to develop effective flash flood warnings, the Flash Flood Guidance System (FFGS) was designed and developed for interactive use by meteorological and hydrological forecasters throughout the world.



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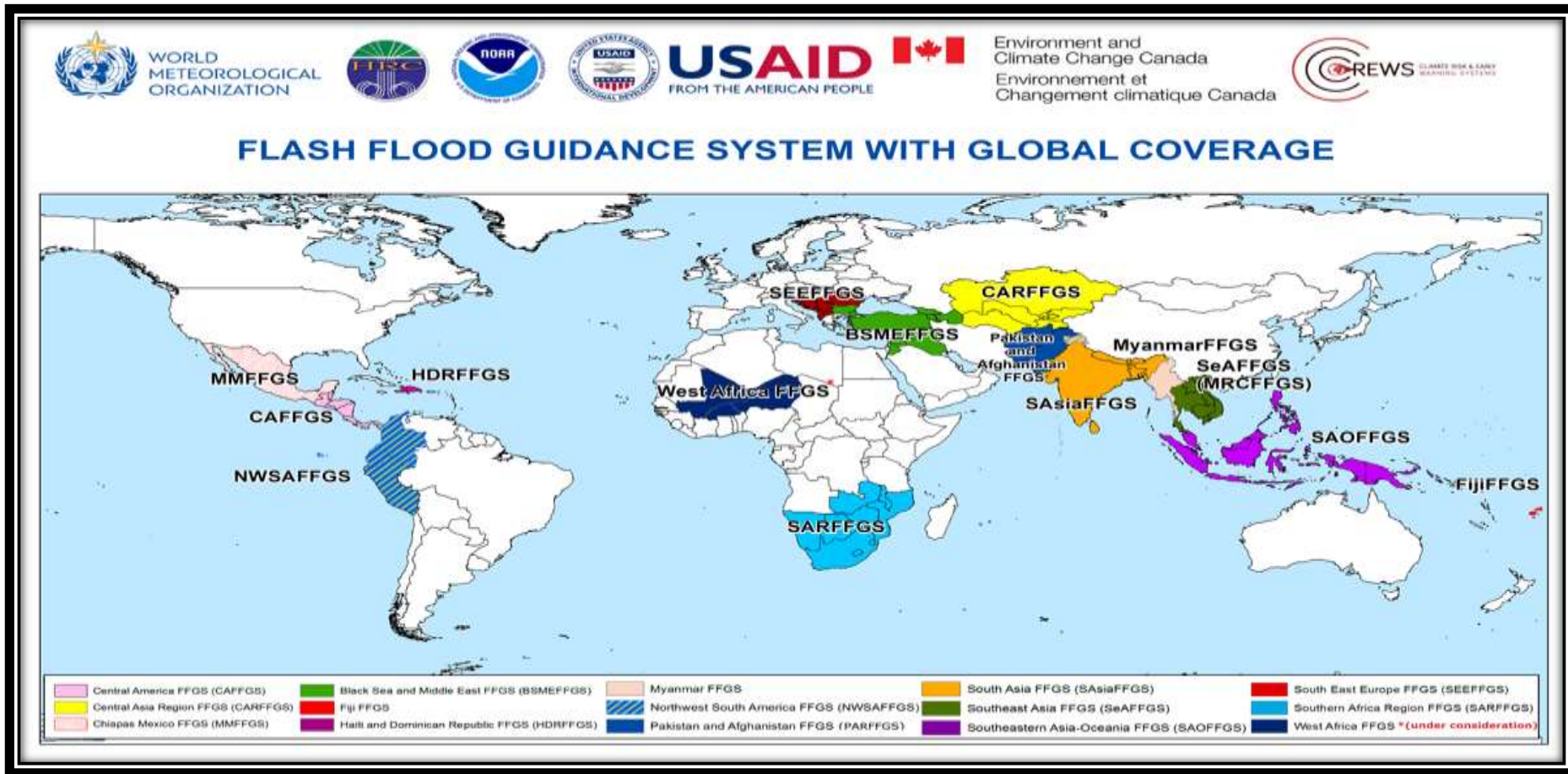


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FLASH FLOOD GUIDANCE SYSTEM WITH GLOBAL COVERAGE



FFGS covers around 60 countries with 15 Regional Centres all around the world



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INTRODUCTION

- Flash floods are typically associated with high-intensity rainstorms with short response time. Commissioning of South Asia Flash Flood Guidance System for South Asia on 23 Oct 2020 is a step towards fulfilling the mandate on providing impact based forecast of Flash Floods.
- The South Asia Flash Flood Guidance System (SASIAFFGS) is a robust system designed to provide the essential land surface products to support the development of warnings for flash floods to India, Nepal, Bangladesh, Bhutan & Srilanka, wherein India Meteorological Department is recognised as its Regional Centre by WMO.

Objective :

- ❖ The Flash Flood Guidance System (FFGS) aims to mitigate the impacts of flash floods by enhancing early warning capabilities at regional and national levels.
- ❖ To provide location specific flash flood guidance alerts up to watershed level (100000 watersheds) on pluvial flash floods.
- ❖ Threats with 6 hour of lead time and Risks with 24 hour lead time based on IMD GFS (12km×12km), Regional NCUM (4km×4km) , Mesoscale IMD WRF (3km×3km) and by integrating near real-time gauge observations along with the satellite and IMD Radar rainfall estimates.



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Highlights

- The SASIAFFGS is configured on a secure **WEBGIS** platform for registered users in a client server environment.
- The location specific guidance services are being provided up to watershed level during flood season (May to December).
- The system has been constantly upgraded based on the feedback received from operational forecasters of all participating countries.
 - I. Improvement in visualization of SASIAFFGS products with customized new scale and color legends as per IMD standards.
 - II. integration of 18 Doppler Weather Radar based Precipitation Estimates (mm/hr) of IMD. Integration of remaining 15 in progress
 - III. Improvement in Merged Mean Areal Precipitation products by integration of 5204 District-Rainfall-Monitoring-System data.
 - IV. Integration of Rainfall Forecasts from IMD GFS (12km×12km), Regional NCUM (4km×4km) , Mesoscale IMD WRF (3km×3km).



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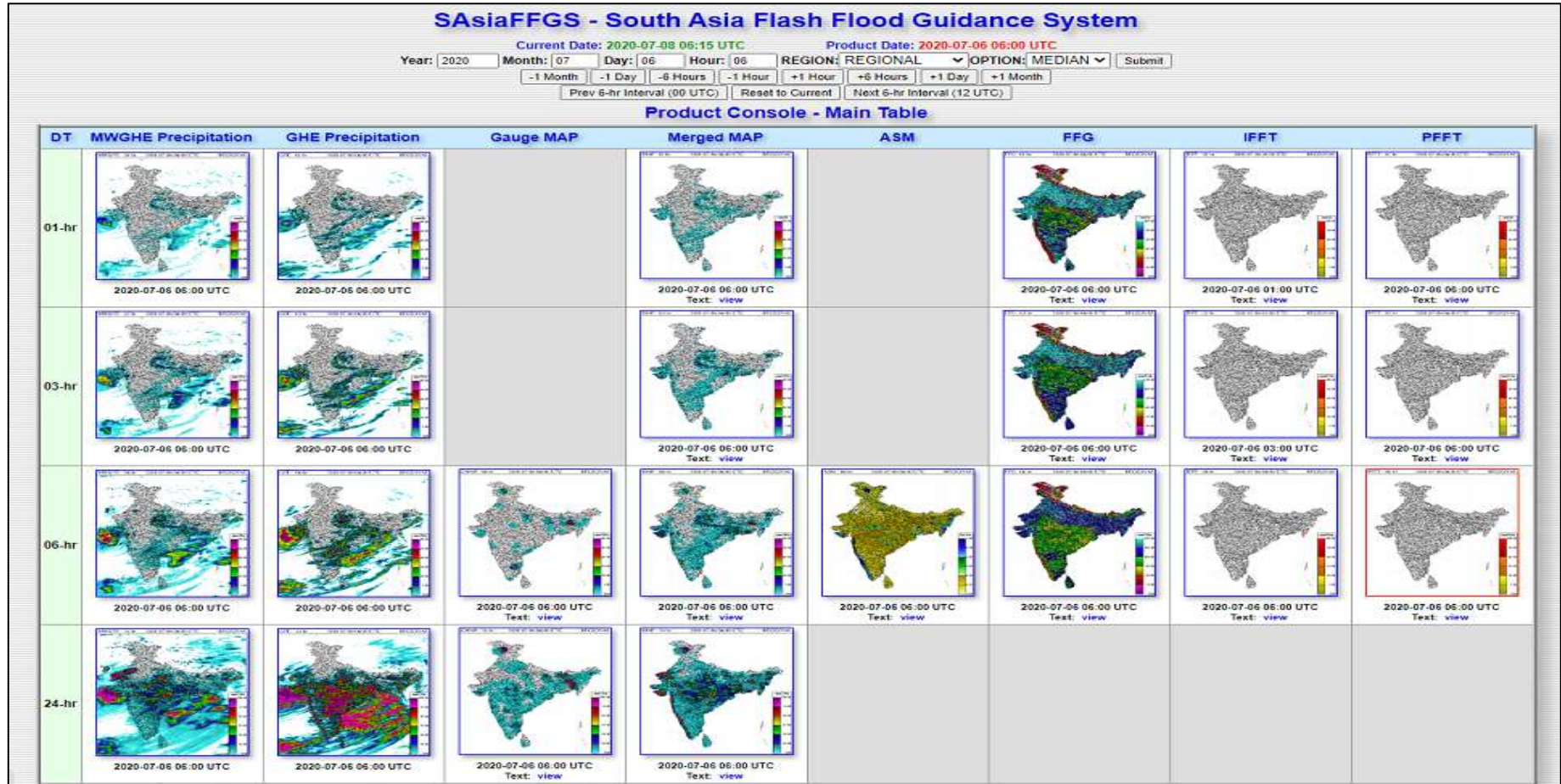


New Delhi
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SAsiaFFGS CONSOLE INTERFACE





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SAsiaFFGS-MAPSERVER INTERFACE

2020-09-07 16:15:23 IST **SAsiaFFGS - South Asia Flash Flood Guidance System** 2020-09-07 10:45:23 UTC

Product Date: 2020-08-21 03:00 UTC

00	01	02	03	04	05
06	07	08	09	10	11
12	13	14	15	16	17
18	19	20	21	22	23

Prev Timestep Next Timestep
Prev 6hr Interval Next 6hr Interval
Prev Day Next Day
Reset to Current

Product Selection
Nominal GMAP 24HR

Country Selection
SASIAFFG Region Zoom Filter

Basin Selection
Enter Basin ID Zoom Filter

Lat, Lon
Click map for information

If basin boundaries appear in red or green, no data exists for selected product/time

Product Downloads
Selected Product Basin Composite

GMAP-24hr 2020-08-21 03:00 UTC

Base Layers

- SRTM15PLUS 450m Bathymetry
- Flat Ocean Background
- Open StreetMap (OSM)
- SRTM 30m DEM
- SRTM 30m DEM with Shaded Relief
- SRTM 30m Contours
- SRTM Contour Labels
- SASIAFFG Operational Product
- SASIAFFG Basin Outlines
- OSM - Water Only
- OSM - Roads Only
- OSM - Places Only
- Districts of India
- Met Sub Divisions of India
- States of India
- IMD Country Outlines
- UN Country Outlines
- SASIAFFG Stations
- SASIAFFG Basin ID Labels
- Station Value Labels
- SASIAFFG Basin Value Labels

Map Dressing Layers

- LonLat Graticule
- Header Label
- Product Colorscale (in map)
- SRTM Colorscale (in map)

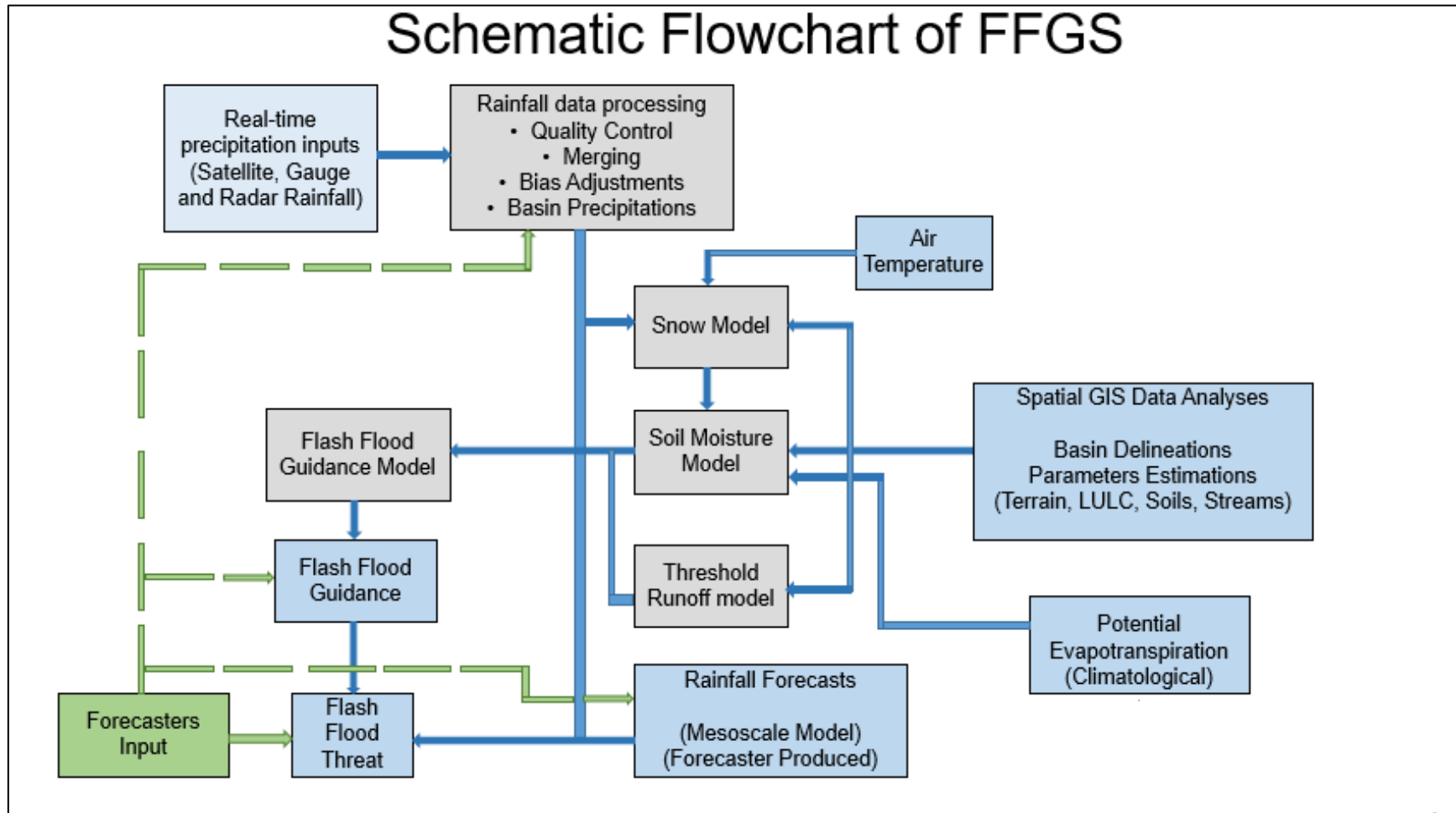
View in Product Comparison Page | Open Time Animator For Current Map View | Save Map as PNG

Product Viewer | Product Comparison | FFG Plot | Basin Time Series Downloads | Product Console | Dashboard



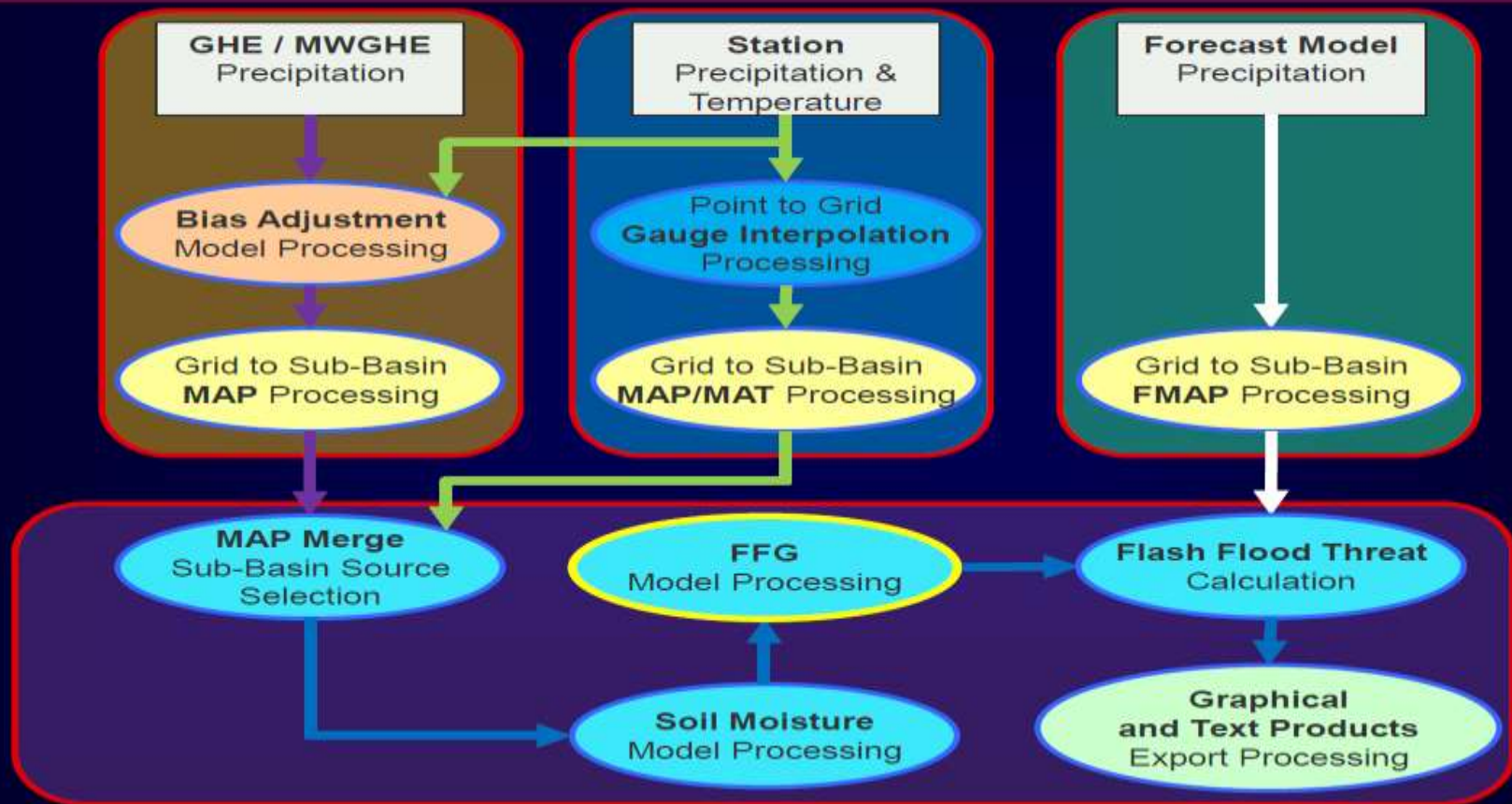
DATA Processing

Schematic Flowchart of FFGS





FFGS Model Processing Overview





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Basic Products of Flash Flood Guidance System

Flash Flood Guidance Model runs every six hours and product updation are available at 00,06,12 and 18 UTC.

Diagnostic Products

MWGHE – NOAA/NESDIS
Microwave-adjusted Global Hydro
Estimator Satellite-based
CMORPH Precipitation Estimates
(Every Hourly);

GHE – NOAA/NESDIS Global
Hydro Estimator Satellite Cloud
Top Brightness Temperature
(Infrared (IR) based) Precipitation
Estimates (Every Hourly);

GMAP - Gauge Mean Areal
Precipitation (Every 3 Hourly);

Merged MAP - Merged Mean
Areal Precipitation (Every Hourly);

ASM – Average Soil Moisture
(Every 6 Hourly) (SAC-SMA
model)

*CMORPH is based on microwave scattering
from hydrometeors.

FFG Products

FFG – Flash Flood Guidance
Value (Every Hourly)

IFFT - Imminent Flash Flood
Threat (Every Hourly)

PFFT - Persistence Flash
Flood Threat (Every Hourly)

*Validity is for next 6 hours

Forecast Products

WRF Forecast - Model
Precipitation Forecast (Every 3
Hourly)

WRF MAP - Forecast Mean Areal
Precipitation (Every 3 Hourly)

WRF FFFT - Forecast Flash
Flood Threat (Every 6 Hourly)

WRF FFR - Flash Flood Risk
(12, 24 and 36 hours product)

Snow Model Products:

GMAT - Gauge Mean Areal Temperature
(Every 6 Hourly)

IMS SCA - Fraction of basin Snow Cover
Area (Every 24 Hours)

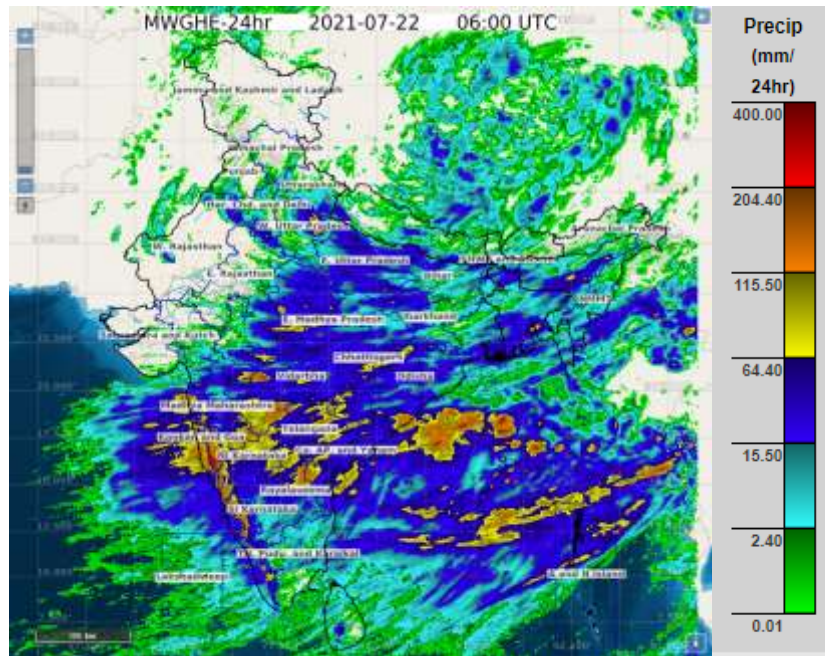
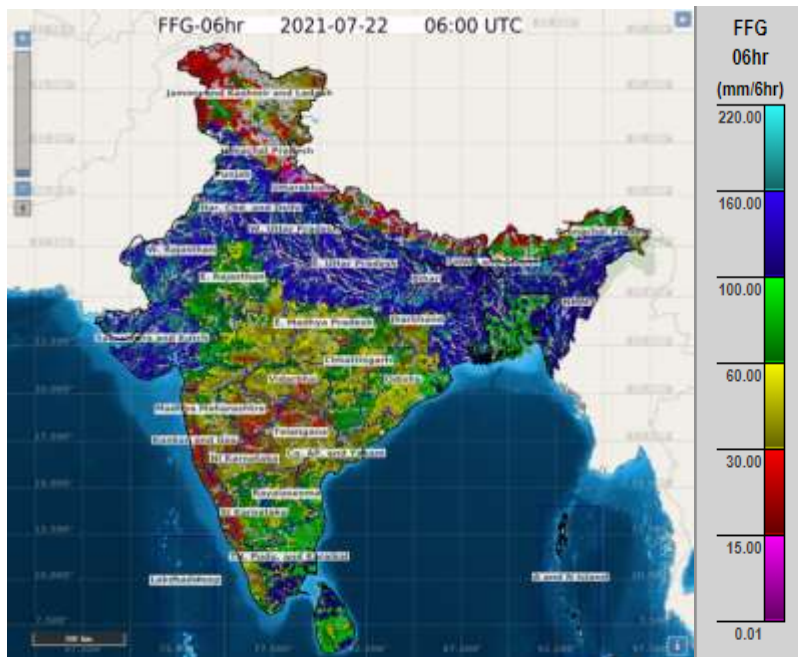
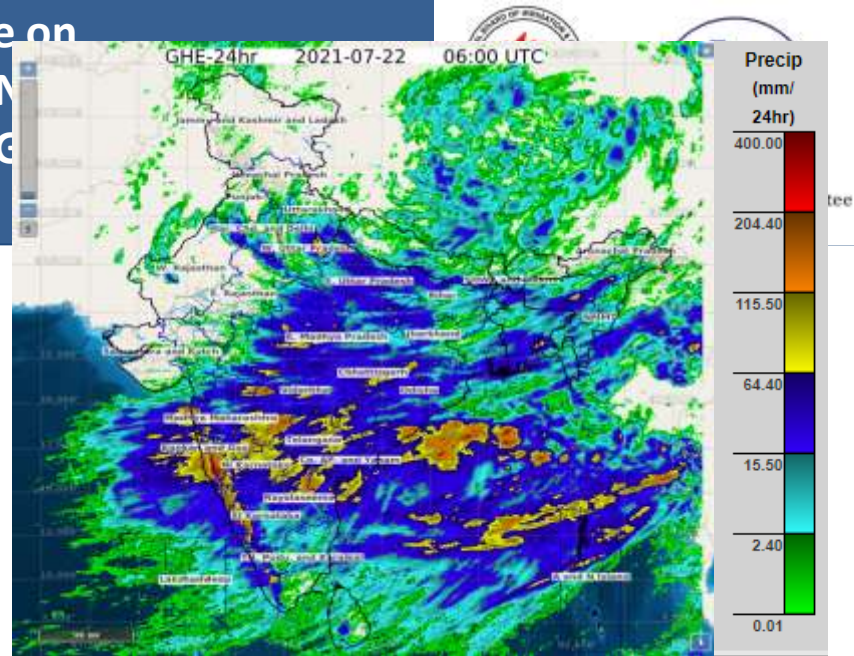
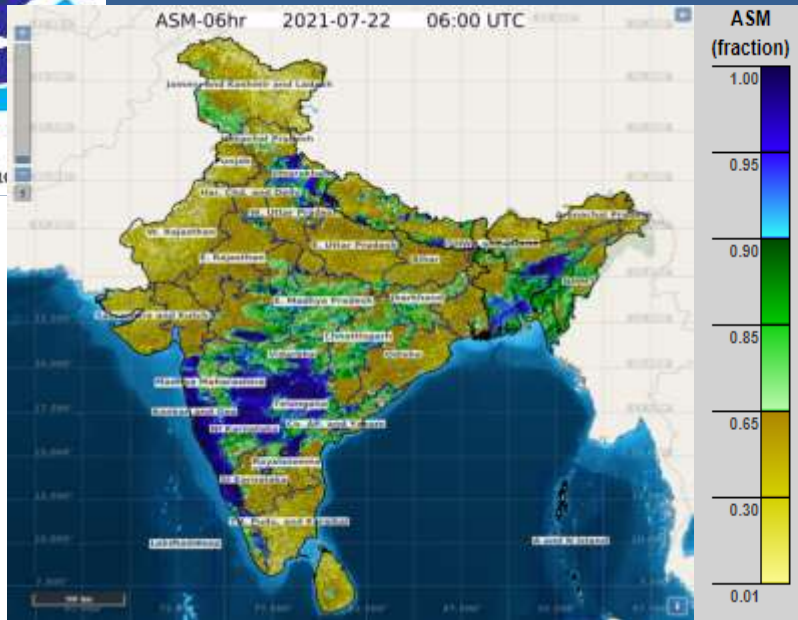
SWE - Snow Water Equivalent (Every 6
Hourly)

MELT - Snow Melt (Every 6 Hourly)



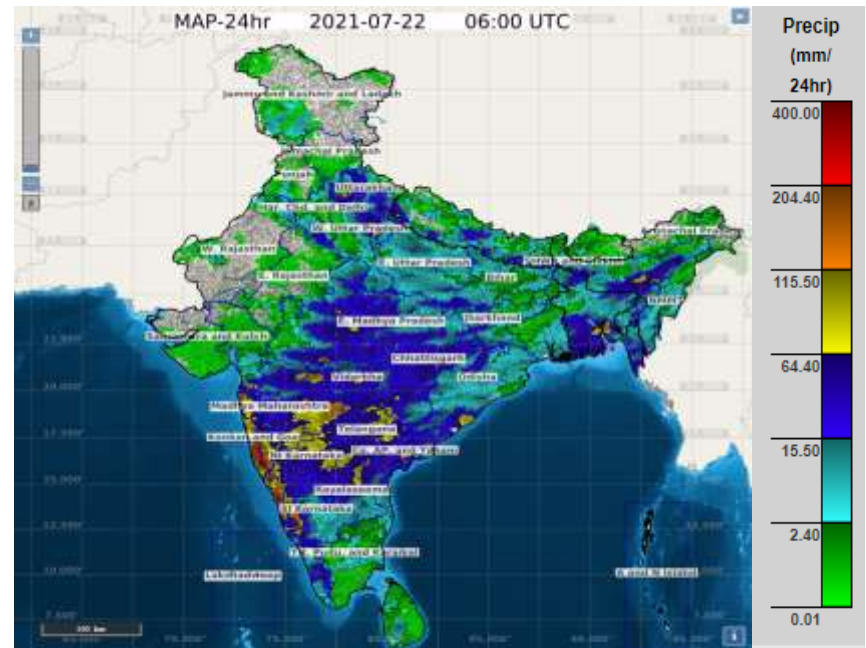
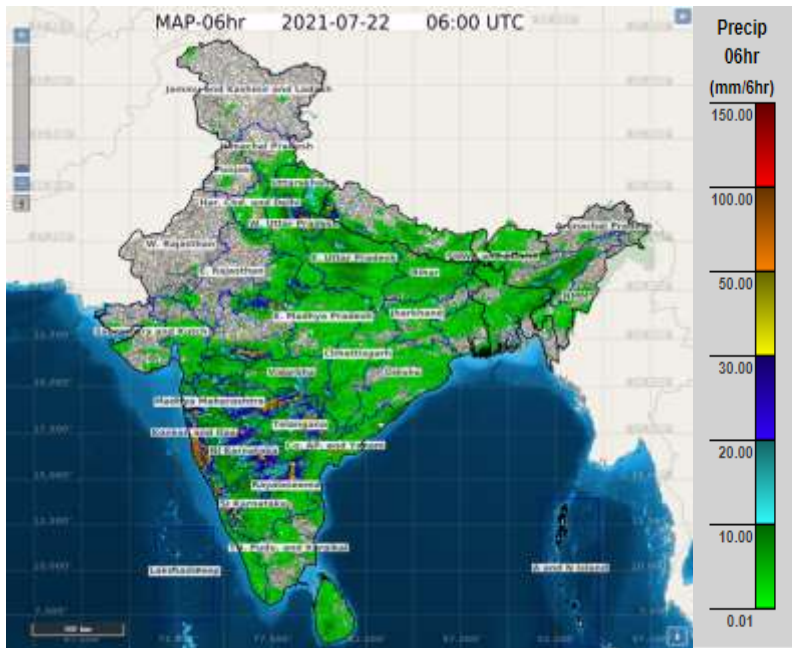
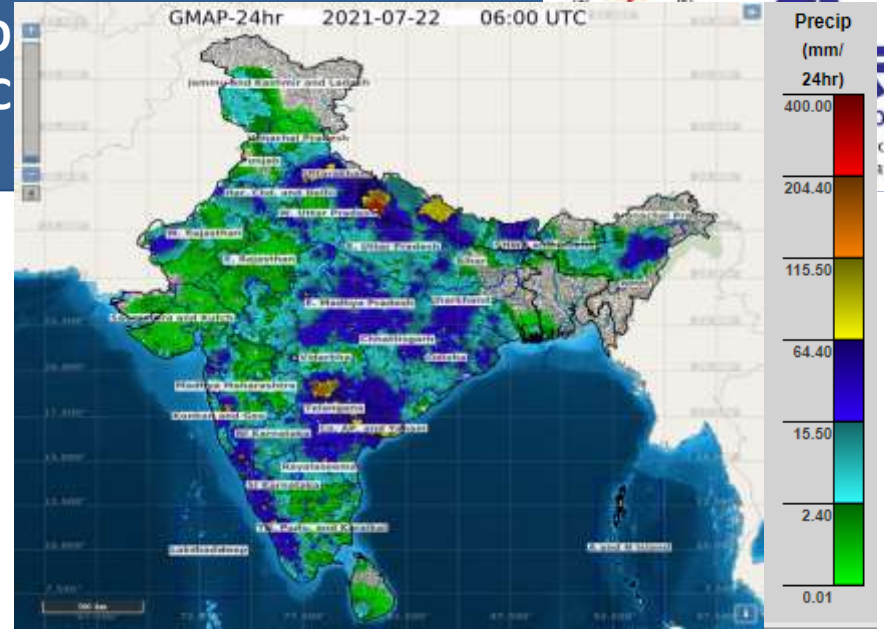
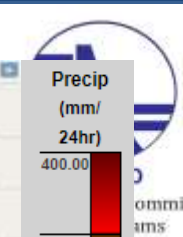
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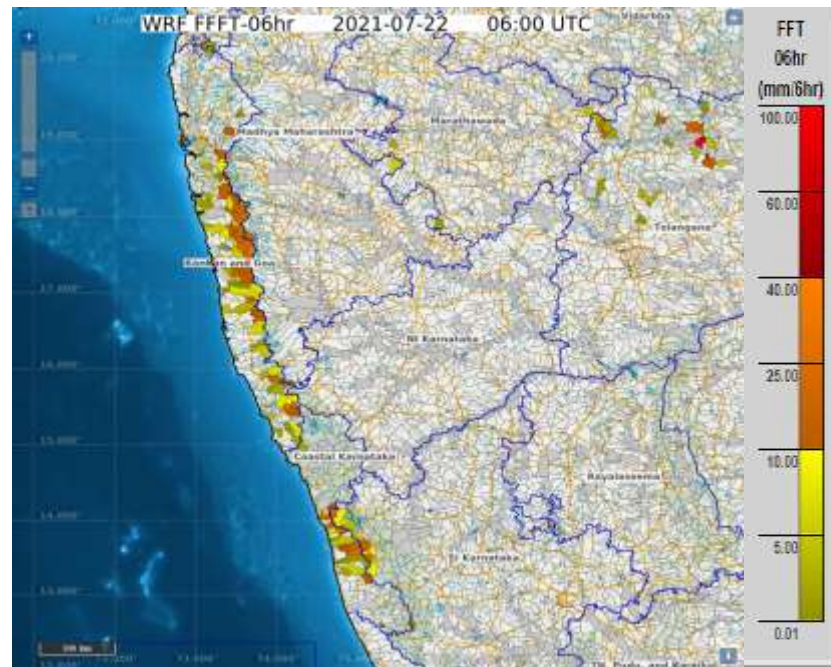
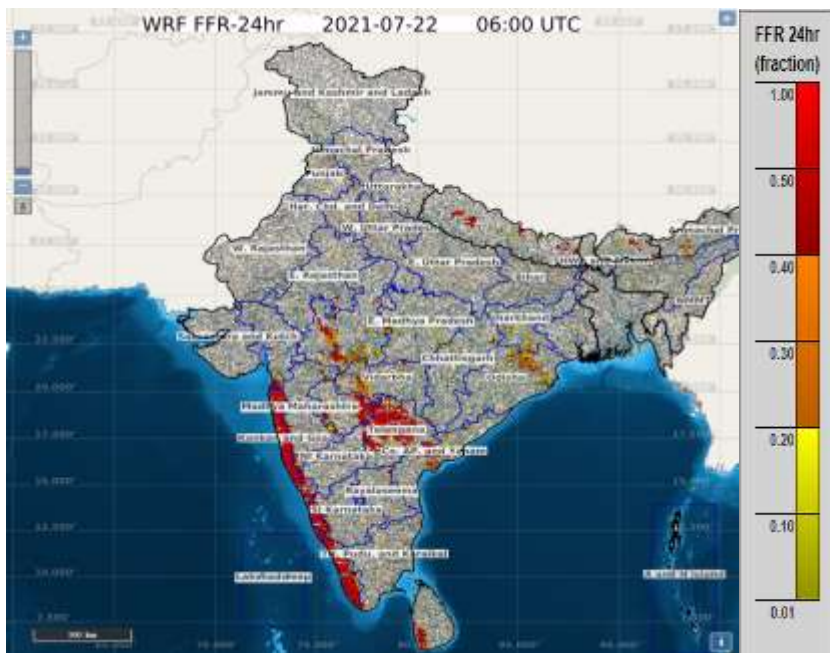
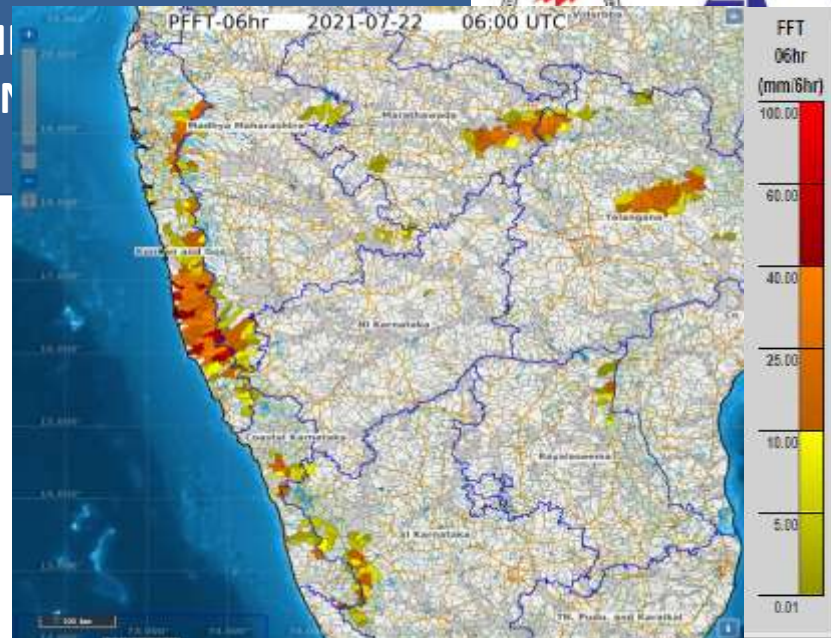
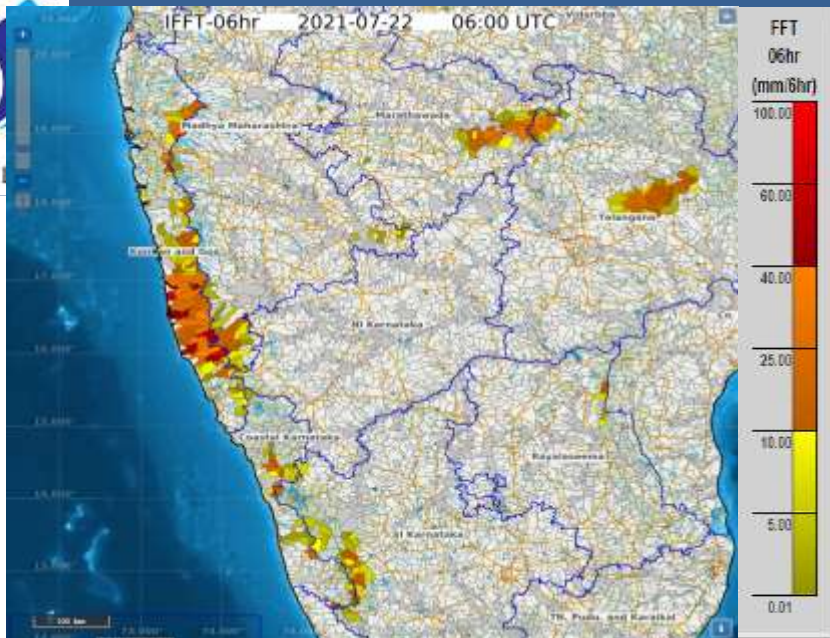


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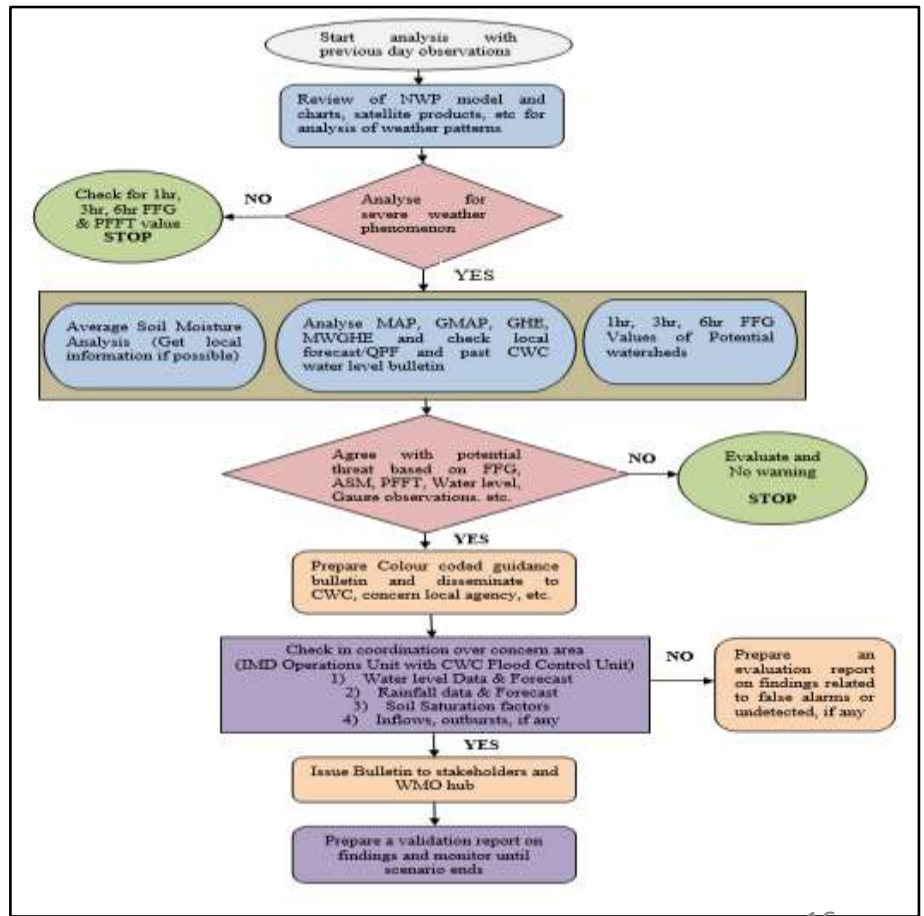
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Forecasters Checklist

Decision Making Process

Who is responsible for this report? Mr/Ms. XXXX
 What region are you focusing on? India
 Date and Time: 08th June, 2020 & 00 UTC

S.No	Evaluation Checklist	Yes/No	Remarks
A) SYNOPTIC CONDITION:			
i.	Has there been any rainfall in the last 24 hours?		
ii.	Inference on Surface Charts (850 hpa)		
iii.	Inference on Upper Air Analysis (500 hpa)		
iv.	Inference on Monsoon Charts		
B) Near Real-time Satellite Rainfall (INSAT)			
i.	QPE (mm/hr)		
ii.	HEM (mm/hr)		
iii.	ISMR (mm/hr)		
C) Is any DWR data currently available?			
i.	Reflectivity (dBz)		
ii.	SRI (mm/hr)		
D) Meteorological Warnings			
i.	Is there any Rainfall Warnings (Day 1)		
ii.	Is there any NOWCAST Warnings (Next 6 hours)		
iii.	Is any imminent ARG/AWS hourly data available?		
NWP PROGNOSTIC PARAMETER:			
A) Is additional rainfall expected in next 6 hours?			
i.	WRF FCST 06h		
ii.	NCUM FCST 06h		
iii.	GFS FCST		
B) Is there any persistent synoptic situation			
i.	Divergence		
ii.	Convergence		
iii.	Wind Shear		
iv.	Vorticity		
FFGS DIAGNOSTIC PARAMETER:			
(A) Near Real-time Guidance Products			
i.	MWGE Satellite Estimate (mm/hr)		
ii.	GHE Satellite Estimate (mm/hr)		
iii.	Merged Areal Precipitation (mm/hr)		
iv.	Average Soil Moisture (%)		
PROGNASTIC PARAMETER:			
i.	Forecast Mean Areal Precipitation (mm/hr)		
ii.	Forecast Flash Flood Threat (Next 6 hours)		
iii.	Forecast Flash Flood Risk (Next 12 Hours)		
iv.	Forecast Flash Flood Risk (Next 24 Hours)		
HYDROLOGICAL PARAMETER:			
i.	Is the top soil moisture saturation above 70%?		
ii.	Are the Flash Flood Guidance Model (FFG in mm/hr) values fairly low?		
iii.	Are there areas where you would be concerned for flash flooding or has occurred during past 24 hours?		
iv.	Are there any Water Level alerts Wx issued by CWC nearer to potential areas?		
FFG THREAT PARAMETER			
i.	Imminent Flash Flood Threat		
ii.	Persistent Flash Flood Threat 06 hr		
Specify location of concern (Area of Interest)		If Yes, please mention.....	



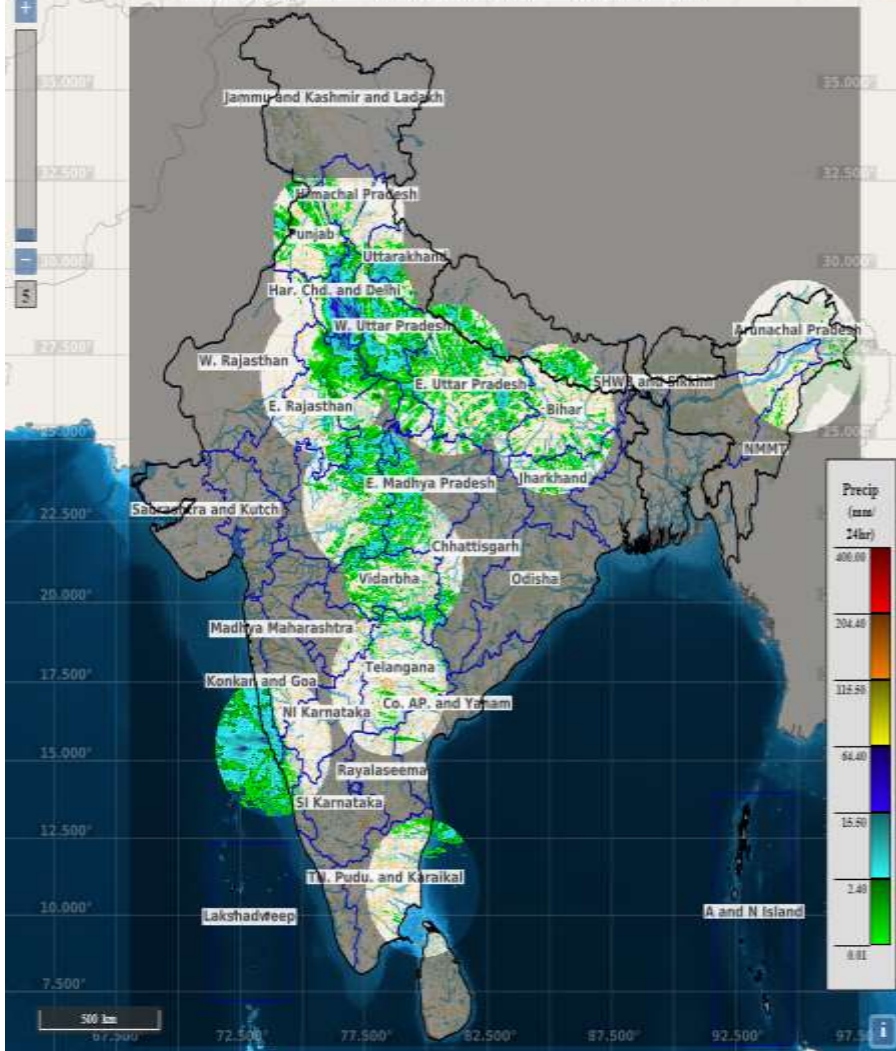


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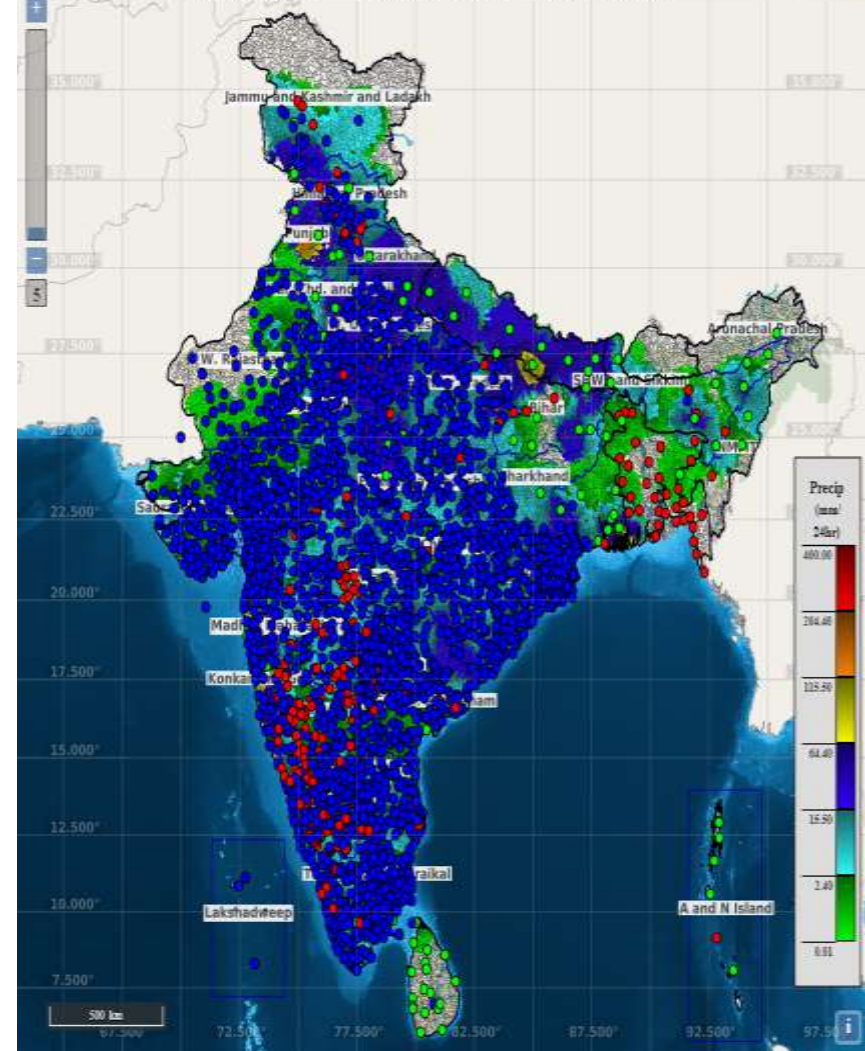


Central Board of Water Resources, India
Indian National Committee on Large Dams

RADAR-24hr 2021-07-20 06:00 UTC



GMAP-24hr 2021-07-20 06:00 UTC



Presently, 18 DWR, 370 GTS, 851 Mobile & 5178 DRMS



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National and International Bulletins (4 times a day)



Ministry of Irrigation & Power

National Committee on Large Dams



GOVERNMENT OF INDIA
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INDIA METEOROLOGICAL DEPARTMENT
HYDROMET DIVISION
FLASH FLOOD GUIDANCE CELL



National Flash Flood Guidance Bulletin

DATED: 26.07.2021 TIME OF ISSUE: 0650 IST VALID TILL 1130 IST

From: India Meteorological Department, New Delhi (Email Id: sasiaffg.imd@gmail.com)

To: RMC Nagpur, RMC New Delhi, MC Jaipur, MC Bhopal, MC Srinagar, MC Shimla, MC Dehradun

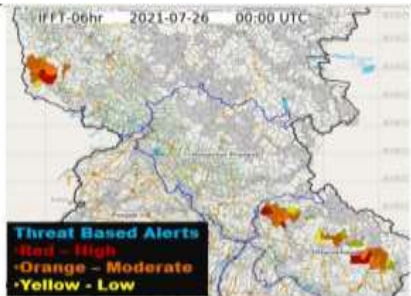
Area of Concern (AoC): Few watersheds and neighborhood of East Rajasthan adjoining West Madhya Pradesh, Jammu & Kashmir, Himachal Pradesh and Uttarakhand met subdivision.

Diagnostic Guidance: Based on Merged Mean Areal Precipitation at 0530 IST, recorded rainfall is up to 105 mm in last 6 hours and up to 220 mm in last 24 hours over few watersheds of AoC, Gujarat, Konkan & Goa and Coastal Karnataka. Land Surface model shows soil saturation of 100% over few watersheds of AoC Saurashtra & Kutch, Gujarat, Konkan & Goa and Coastal Karnataka met subdivision; partial saturation of about 85% over few watersheds of NMMT and Assam & Meghalaya, East Rajasthan, Vidarbha, Madhya Maharashtra, Jharkhand, Chhattisgarh, Telangana and Marathwada met subdivision and up to 55% soil saturation over remaining parts of the country.

Prognostic Guidance: Dynamic Global (GFS) & Mesoscale Model (WRF & NCUM) forecasts high rainfall up to 250 mm in next 24 hours over the region.

Observed Flash Flood Threat (OFFT) till 0530 IST of 26.07.2021:

Moderate threat of flash flood observed over few watersheds and neighborhood of Mirpur, Punch and Rajouri districts of Jammu & Kashmir and Dehradun, Uttarkashi, Rudraprayag, Chamoli, Bageshwar and Pithoragarh districts of Uttarakhand met subdivision in last 06 hours.



Disclaimer: This is only a guidance bulletin and not a warning for flash floods.

Contact: WMO Regional Centre (SASIAFFGS),
Hydromet Division, Flash Flood Guidance Cell
Phone: 011-43824359/011-43824410
Email: sasiaffg.imd@gmail.com



GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
INDIA METEOROLOGICAL DEPARTMENT
HYDROMET DIVISION
FLASH FLOOD GUIDANCE CELL



South Asia Flash Flood Guidance Bulletin

DATED: 13.07.2021 TIME OF ISSUE: 0730 UTC VALID TILL 1200 UTC

From: India Meteorological Department, New Delhi (Email Id: sasiaffg.imd@gmail.com)

To: All National Meteorological and Hydrological Services (NMHS) – Sri Lanka, Nepal, Bhutan, Bangladesh.

Area of Concern (AoC): Few watersheds and neighborhood in the North Central Province of Sri Lanka

Diagnostic Guidance: Based on Merged Mean Areal Precipitation (Gauge and Satellite) of 0600 UTC, recorded rainfall is 276 mm during last 6 hours & up to 323 mm in last 24 hours over AoC. Land Surface Model shows few fully saturated watersheds and few nearly saturated watersheds up to 85% over Nepal, Sri Lanka & remaining watersheds up to 45% saturated over entire region.

Prognostic Guidance: Dynamic Global (GFS) & Mesoscale Model (WRF & NCUM) forecasts Moderate rainfall up to 90 mm in next 24 hours over AoC & Nepal.

Persistent Flash Flood Threat (PFFT) Till 1200 UTC of 13.07.2021:

Moderate to High Threat over few watersheds and neighborhood in the North Central Province of Sri Lanka.

Surface runoff/ Inundation may occur at some fully saturated soils & low-lying areas over AoC as depicted in maps due to expected persistent rainfall in next 6 hours.



Regional Guidance Bulletin should be modified by the respective NMHS as per latest meteorological and hydrological conditions.

Disclaimer: This is only a guidance bulletin and not a warning for flash floods.

Contact: WMO Regional Centre (SASIAFFGS),
Hydromet Division, Flash Flood Guidance Cell
Phone: 011-43824359/011-43824410
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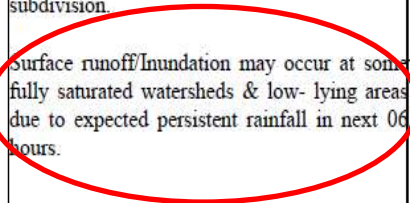
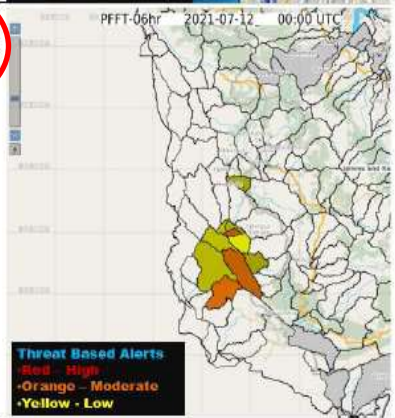
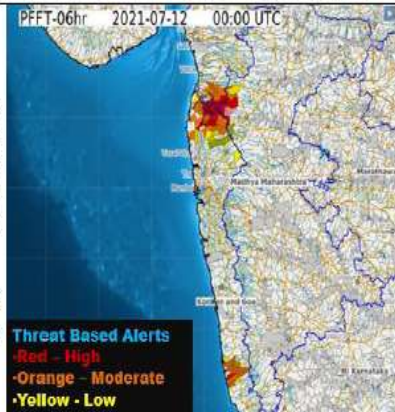


Persistent Flash Flood Threat (PFFT) till 1130 IST of 12.07.2021:

Moderate to high threat over few watersheds and neighborhood of Thane, Palghar, Sindhudurg and Ratnagiri districts of Konkan & Goa met subdivision, Valsad district of Gujarat met subdivision, Nashik district of Madhya Maharashtra met subdivision.

Moderate threat over Mirpur and Rajouri district of Jammu and Kashmir met subdivision.

Surface runoff/Inundation may occur at some fully saturated watersheds & low-lying areas due to expected persistent rainfall in next 06 hours.



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 HYDROMET DIVISION
 FLASH FLOOD GUIDANCE CELL

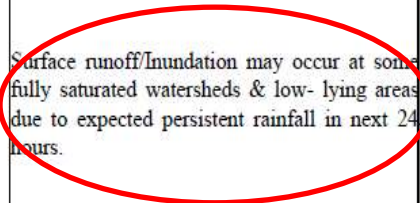
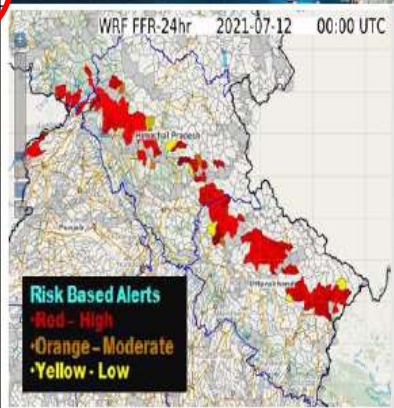


24 hours Outlook for the Flash Flood Risk till 0530 IST of 13.07.2021:

Moderate to High risk over few watersheds and neighborhood of Konkan & Goa, Coastal Karnataka and Kerala & Mahe met subdivision.

Moderate risk over few watersheds and neighborhood of Himachal Pradesh and Uttarakhand met subdivision.

Surface runoff/Inundation may occur at some fully saturated watersheds & low-lying areas due to expected persistent rainfall in next 24 hours.



Note: Next Bulletin will be issued based on 1130 IST of 12.07.2021.

Disclaimer: This is only a guidance bulletin and not a warning for flash floods.

Contact: WMO Regional Centre (SASIAFFGS), Hydromet Division, Flash Flood Guidance Cell

Phone: 011-43824359/011-43824410

Email: sasiaffg.imd@gmail.com

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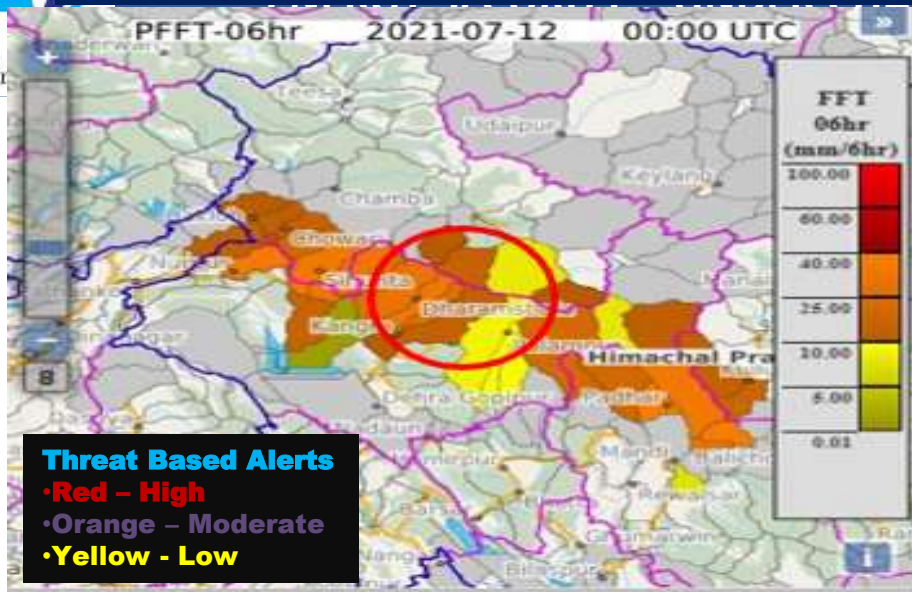
Contact: WMO Regional Centre (SASIAFFGS), Hydromet Division, Flash Flood Guidance Cell

Phone: 011-43824359/011-43824410

Email: sasiaffg.imd@gmail.com



THDC In



TOI TOIChandigarh @TOIChandigarh

Around 10 shops damaged as Manjhi River rages following heavy rainfall in Himachal Pradesh's #Dharamshala. (ANI)

#DharamshalaRainfall



11:49 AM - Jul 12, 2021

Dharamshala flash floods: 10 persons missing in landslide presumed dead; 184 roads blocked in Himachal

1 Flash flood in Himachal's McLeodganj washes away cars





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Gap Areas

- Integration of Population Data layer, Utilities (emergency services) data layer across the country.
- Enhanced observational network (both direct-AWS/ARG and remotely sensed DWR)
- Accuracy of forecast of Heavy rainfall events?
- High Resolution NWP modelling
- Multi organizational Co-ordination and exchange of information (both data and information)
- last Mile Connectivity



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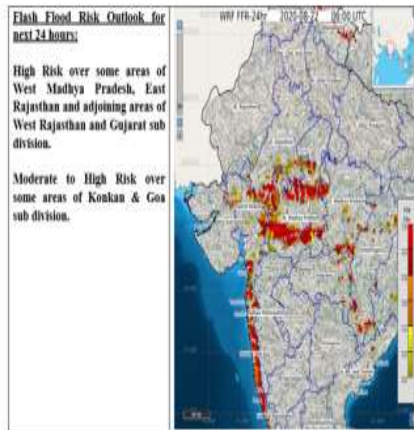


Central Board of Irrigation & Power



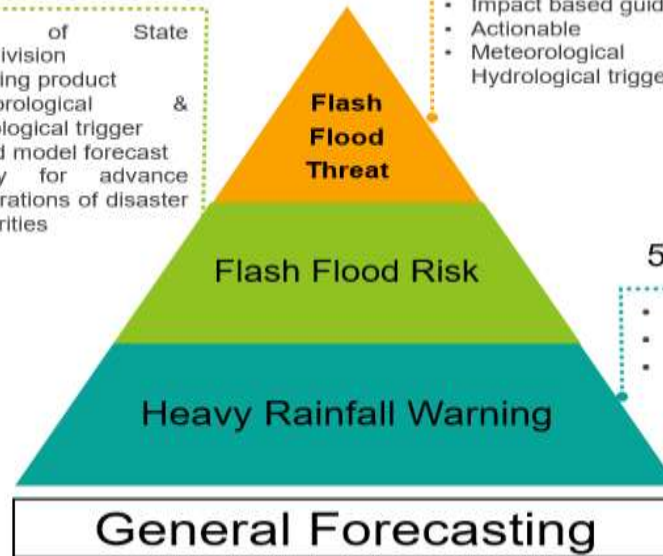
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Transition to impact based forecast



12,24 & 36 hrs. product

- Part of State /Subdivision
- Planning product
- Meteorological & Hydrological trigger
- Based model forecast
- Mainly for advance preparations of disaster authorities



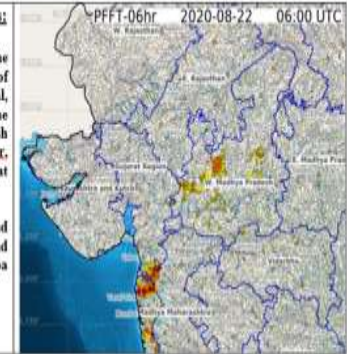
6 hr. product

- Location Specific
- Incorporation of last mile input like radar, satellite, gauge, etc.
- Impact based guidance
- Actionable
- Meteorological & Hydrological trigger

Flash Flood threat for next 6 hours:

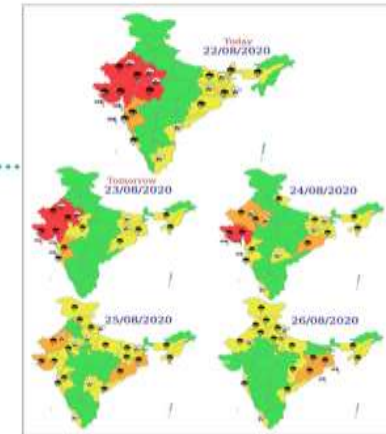
Moderate to High Risk over some watersheds and neighbourhoods of Ujjain, Agar-Malwa, Rajgarh, Bhopal, Raisen, Yadesha, Harda, Khargone districts in West Madhya Pradesh subdivision and Chhota Udepur, Dahod and Vahad districts in Gujarat Subdivision.

Moderate Risk over some watersheds and neighbourhoods of Palghar, Thane and Raigarh district in Konkan and Goa Subdivision.



5 days warning

- Subdivision driven
- Broad generalized view
- Meteorological Trigger





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Ongoing Initiatives

- ✓ Integration of 15 Indian DWR's into SASIAFFGS.
- ✓ Integration of Landslide Susceptibility Zonation Module on identified Wayand district of Kerala and Rudraprayag District of Uttarakhand in collaboration with GSI, NRSC, IMD, HRC and WMO. (Pilot Stage)
- ✓ Integration of Urban Flood Module Component of Delhi City. (Pilot Stage)



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List of Flash Flood Events - 2021

Sr. No.	State	Districts	Event Date
1	Uttarakhand	Chamoli	13-07-2021
2	Uttarakhand	Banbasa	17-10-2021
3	Himachal Pradesh	Dharamshala, Shimla	07-12-2021
4	SHWB & Sikkim, Assam, Meghalaya	Kochbihar, Jalpaiguri, West Garo Hills	30-06-2021
5	J&K	Kupwara, Kulgam, Punch, Rajouri, Mirpur	28-07-2021
6	West Bengal	South 24 pargana, Purba Medinipur , Paschim Medinipur	14-09-2021
7	Tamilnadu	Salem, Tiruvannamalai	16-10-2021
8	Karnataka	Raichur, Adoni	28-06-2021
9	Karnataka	Uttara Kannada, Udupi	19-07-2021
10	Kerala	Kottayam, Idukki	17-10-2021
11	Kerala	Kottayam, Kollam, Pathanamthitta	11-12-2021
12	Gujarat	Jamnagar, Rajkot	13-09-2021
13	Odisha	Keonjhar, mayurbhanj, Balasore, Bhadrak	27-05-2021
14	Odisha	Gajapati	30-07-2021
15	Odisha	Bhubaneshwar, Puri, Paradip	13-09-2021
16	Andhra Pradesh	Anantapur, Kadappa, Guntur, Kurnool	18-07-2021
17	Andhra Pradesh	srikakulam, Vizianagaram, vishakapatnam	28-09-2021
18	Andhra Pradesh	kadappa, Amaravati, Anantapuram, Chittoor	20-11-201
19	DELHI/NCR	Chandigarh, Gurgaon, Delhi	19-07-2021
20	East Rajasthan	Jaipur, Kota, Bundi, Tonk, Sawai Madhopur, Dausa	03-08-2021
21	West Madhya Pradesh	Agar Malwa, Ashok Nahar, Gune, Rajgarh, Videsha, Ujjain, Shahjapur	06-08-2021
22	Cyclone Tauktae	Konkan & Goa, Coastal Karnataka, North Interior Karnataka, Madhya Maharashtra	16-05-2021
23	Cyclone Yaas	Odisha adjoining West Bengal	25-05-2021



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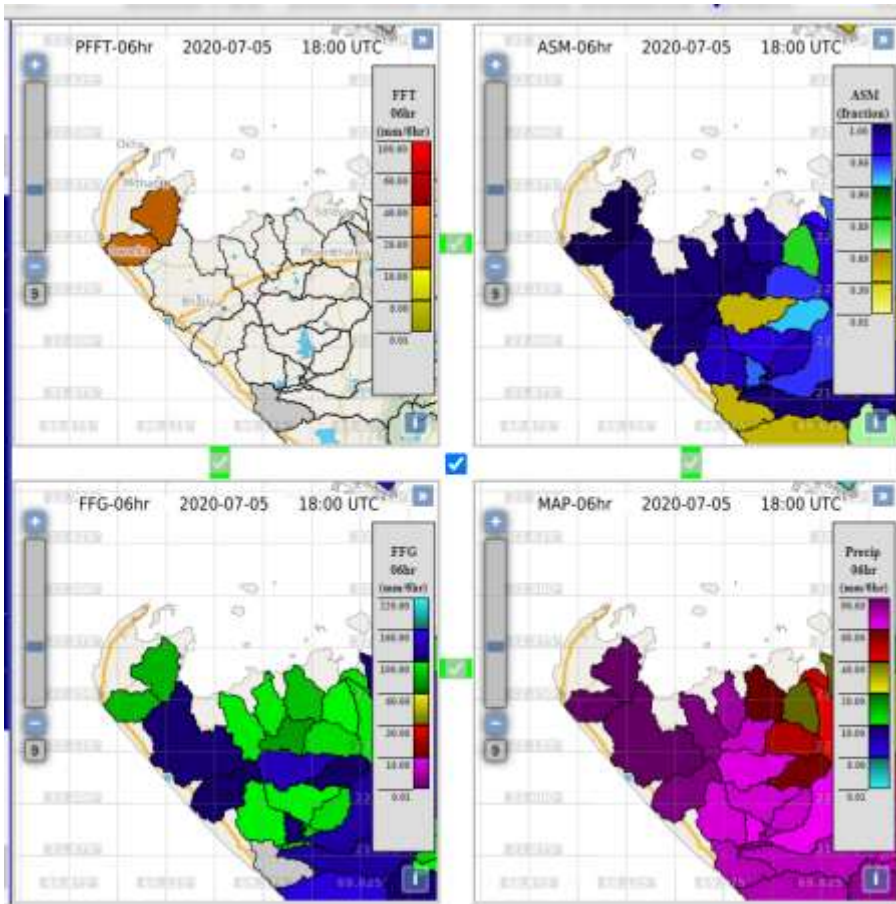


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Dwarka case study (05.07.2020)



27 cm rainfall realised over a short span of time resulting in flash floods in Dwarka , Gujarat on 05 July 20

Watch: Lightning, thunderstorms hit Dwarka, Porbandar causing floods; heavy rains in Gir Somnath, Junagadh too

Heavy rainfall, lightning, thunderstorms lashed parts of Gujarat causing flood situation in Dwarka, Porbandar. One of the regions which witnessed lightning thunderstorms was the site near Dwarkadhish Temple. Rains caused water-logging, flooding in parts of Dwarka and Porbandar. Heavy rains, lightning, thunderstorms have lashed several districts in Gujarat causing flood situations at various places including Dwarka city on Sunday. The district was hit by heavy downpour, lightning and thunderstorm.

INDIA TV News Desk
New Delhi
Updated on: July 05, 2020 9:24 IST



Screenshot from a video posted on Twitter by news agency ANI.

Watch: Cars sink, JCB stuck as parts of Gujarat's Dwarka gets flooded



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PFFT – Bhopal Flash floods (22.08.2020)

	GOVERNMENT OF INDIA MINISTRY OF EARTH SCIENCES INDIA METEOROLOGICAL DEPARTMENT HYDROMET DIVISION FLASH FLOOD GUIDANCE CELL	
National Flash Flood Guidance Bulletin (Preoperational)		
DATED: 22.08.2020 TIME OF ISSUE: 1330 HOURS IST VALID UPTO 1900 HOURS IST From: India Meteorological Department, New Delhi (FAX NO. 24643965/24699216) To: RMC Mumbai, Nagpur, Delhi MC Goa, Jaipur, Bhopal, Ahmedabad.		
Area of Concern (AoC Area): Some areas of West Madhya Pradesh, Gujarat, East Rajasthan, West Rajasthan and Konkan & Goa subdivision.		
Diagnostic Guidance: Based on Merged Areal Precipitation of 06 UTC recorded rainfall is around 100 to 200 mm during last 6 hours and around 200 to 450 mm during last 24 hours over area of AoC. Real-time Satellite indicates convective activity persists.		
Prognostic Guidance: Global (GFS) & Mesoscale Model (WRF) forecasts moderate to High rainfall in next 24 hours. Land Surface Model shows highly saturated soil conditions with low water holding capacity in the AoC.		
Flash Flood threat for next 6 hours: Flash Flood Threat for next 6 hours is as follows:		
Flash Flood threat for next 6 hours: Moderate to High Risk over some watersheds and neighbourhoods of Ujjain, Agar-Mahwa, Rajgarh, Bhopal, Raisen, Vidisha, Harda, Khargone districts in West Madhya Pradesh subdivision and Chhota Udaipur, Dehad and Valsad districts in Gujarat Subdivision. Moderate Risk over some watersheds and neighbourhoods of Palghar, Thane and Raigarh district in Konkan and Goa Subdivision.		
<small>Disclaimer: This is only a guidance bulletin and not a warning for flash floods. Contact: WMO Regional Centre (SASAFF05), Hydromet Division, Flash Flood Guidance Cell Phone: 011-43824359/011-43824410 Email: sasaffg.mdi@gmail.com</small>		



Streets of Bhopal water-logged following heavy rainfall

NEWS | VIDEOS | INDIA | MADHYA PRADESH STREETS OF BHOPAL WATER LOGGED FOLLOWING HE... 6481 views | 1 week ago

Madhya Pradesh: Streets of Bhopal water-logged following heavy rainfall

Aug 22, 2020, 03:25PM IST | Source: ANI

Streets of Bhopal were heavily water-logged following incessant rainfall. Water level touched Upper Lake's full capacity. Gate of the Bhadbhada Dam was opened on August 22.

85 people and cattle rescued from floods in Bhopal MP CM

PTI | August 22, 2020 18:14 IST

Bhopal, Aug 22 (PTI) Jawans of the Home Guards and the Madhya Pradesh Disaster Response Force on Saturday rescued 85 people and two dozen cattle who were trapped in floods in Bhopal district, Chief Minister Shivraj Singh Chouhan said.

Incessant rains in the last 24 hours have left many areas inundated in Bhopal district as well as in the state capital.



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FFR 24 hours : Jaipur Case Study (14.08.2020)

GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
INDIA METEOROLOGICAL DEPARTMENT
HYDROMET DIVISION
FLASH FLOOD GUIDANCE CELL

National Flash Flood Guidance Bulletin (Preoperational)

DATED: 13.08.2020 TIME OF ISSUE: 1300 HOURS IST VALID UPTO 1900 HOURS IST

From: India Meteorological Department, New Delhi (FAX NO. 24643965/24699216/24623220)

Area of Concern (AoC): Some areas of East Rajasthan, East Madhya Pradesh, Chhattisgarh, Odisha, Telangana and Coastal Andhra Pradesh subdivision

Diagnostic Guidance: Based on Merged Areal Precipitation of 06 UTC recorded rainfall is around 10 to 40 mm during last 6 hours and around 20 to 75 mm during last 24 hours over area of AoC. Real-time Satellite indicates convective activity persists.

Prognostic Guidance: Global (GFS) & Mesoscale Model (WRF) forecasts moderate rainfall in next 24 hours. Land Surface Model shows highly saturated soil conditions with low water holding capacity in the AoC.

Flash Flood threat for next 6 hours: No Flash Flood Threat for next 6 hours

Flash Flood Risk Outlook for next 24 hours: Following is flash flood risk based on the expected rainfall over the AoC as per Mesoscale model only.

Moderate Risk over neighbourhood areas of East Rajasthan and adjoining North East Madhya Pradesh sub division.

Disclaimer: This is only a guidance bulletin and not a warning for flash floods.
Contact: WMO Regional Centre (SASIAFFGS), Hydromet Division, Flash Flood Guidance Cell
Phone: 011-43824359/011-43824410
Email: sasiffg.imd@gmail.com

Climate Adaptation

Three Die as Rains Lash India's Jaipur City, Flooding Some Areas

By P.R. Sanjal
August 15, 2020, 12:01 PM GMT+5:30

Flooded Jai Mahal road after a heavy monsoon rainfall in Jaipur on Aug. 14. Photograph: Vishal Mishra/ANUP/PTI via Getty Images

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Heavy rain in Jaipur paralyses city, waterlogging outside Secretariat

Heavy rains in Jaipur for the past few hours have paralysed the city with the weather department predicting more heavy rainfall today and light rainfall for the next 48 hours.

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Dr. Arun Westhavan
Jaipur
August 14, 2020 UPDATED: August 14, 2020 13:41 IST

Waterlogging outside Jaipur Secretariat (Photo: India Today)



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THDC India Ltd. Twitter Updates about SAsiaFFGS



Thread

World Meteorological Organization @WMO · Jul 10
 Warnings of more heavy rains for India and neighbouring countries coincided with @Indiametdept online training session for Flash Flood Guidance System in South Asia. Funded by @USAIDSAVESLIVES, the initiative aims to improve warnings of this major natural hazard.



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THE TIMES OF INDIA

IMD issues flash flood alerts for parts of north Konkan

TNN | May 18, 2021, 04:30 AM IST

Pune: The India Meteorological Department (IMD) on Monday evening issued a flash flood warning for parts of north Konkan till Tuesday morning due to the extremely severe cyclonic storm, calling some watersheds and neighbourhoods of east Saurashtra region, north Konkan and south Gujarat region areas of concern for the 24 hours till May 18.

The IMD stated this in its national flash flood guidance bulletin. The diagnostic guidance was based on the merged areal precipitation. Rainfall up to 90mm was recorded during the six hours till 11:30am on Monday. It was up to 230mm during 24 hours till Monday morning over the areas of concern. The IMD stated that rainfall up to 126.56mm was recorded in the six hours till 5:30pm on Monday and up to 243.89mm during 24 hours till Monday evening over these areas. The land surface model showed 100% soil saturation of many watersheds over these areas.

The IMD's 24-hour flash flood risk outlook stated there was high risk over watersheds and neighbourhoods of East Saurashtra region, and moderate to high risk over watersheds and neighbourhoods of the Konkan region till Tuesday.

Many areas of Ratnagiri district have been severely affected with Chiplun bearing the brunt of the rain.



Buses completely submerged in Chiplun - only the tops are visible

Central Water Commission Official Floo... 5,037 Tweets

Central Water Commission Official Flood Forecast @CW... · May 16
Flash #Flood Guidance issued by IMD, Delhi at 1730 hrs on 16th May 2021 for #Goa, #Maharashtra (Konkan) is appended.

Moderate to High Risk over watershed and neighborhood of Southern part Konkan & Goa adjoining Southern part of Madhya Maharashtra Subdivision.

Moderate risk over watershed and neighborhood of extreme northern part of Coastal Karnataka subdivisions.

24 hours Flash Flood Risk Outlook
Till 17:00 IST of 17.05.2021.

Moderate to High Risk over watershed and neighborhood of Northern and central part of Konkan & Goa subdivision.



CYCLONE DEVASTATES GOA; TWO DEAD

'Tauktae' triggers gusty winds and downpour which throw life out of gear; heavy to very heavy rainfall likely today; cyclone hurtles northwards towards Gujarat

STATE
Pune

The state witnessed extensive heavy rainfall and high speed winds triggered by cyclone Tauktae which weakened further. At least two lives and injured several others on Monday.

Shant (14) was carried to hospital in Agarda after she was hit by a coconut tree which was uprooted in the cyclonic winds.

Cyclone Tauktae and heavy rain across Konkan brought life to a standstill in P2, P3

Flurry rains in Saurashtra since last few days in March.

Below also, Keshav (17) who was riding a motor, was washed to death after an electricity pole uprooted on him at 1.30 pm. The pillar near Shree Sanki sustained injuries and has been adjacent to the GMC.

The gale winds and the downpour caused heavy damage across the state, which suffered from a major power outage in several towns.

The cyclone moved gradually and closer to the state coast. On Monday morning, the centre of the cyclone moved parallel to the coast of Goa and remained at closest distance for nearly three hours.

From 13 kilometers east-west of Panaji at 7.30 am and came close to 100 km at 10:55 am and went below 100 km by late afternoon in the north west of Panaji before moving north towards the Konkan coast.

Since the cyclone is a very strong cyclone, the gale winds which reached at the speed of 40-60 kmph and continued for almost the entire day, uprooting trees, buildings and electricity poles that supported overhead power supply lines forcing people to stay without power for several hours.

Here, low-lying places and houses close to beaches were inundated and also in the small settlements.

The Indian meteorological department had issued an alert for Monday with extremely heavy rainfall, according to the state.



A panoramic view shows the flooded state locality of the city on Monday.

CM says there was power outage for 15 minutes at GMC

of which the supply equipment to be normal, he said.

The state government has set up 20,000 tents, that capacity occupies tent in the GMC premises in Saurashtra, which was made functional immediately after the occupation of patients in COVID wards due to lack of oxygen.

However, said the COVID wards are getting oxygen supply from this week.

The state government had made it sure that all the hospitals, where COVID patients are undergoing treatment, should have power backup in the evening of the cyclone had been in such state. They had by GMC, he added.

He said he is attending to all emergencies.

— continued on P2



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Development and Operationalization of SAsiaFFGS

First SCM
Introductory Regional Workshop in New Delhi



Regional Workshop
Follow up workshop in New Delhi.



Online IT & System admin training



Simulator Training
Specialized training at HRC, USA



Global FFGS
workshop in Turkey



Online Regional forecasters
workshop



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Sustainability Strategy

South Asia Flash Flood Guidance System

