



# Central Water Commission Ministry of WR, RD & GR



1

## Operational Flood Forecasting

# Flood Forecasting by CWC

2

- **The work of flood forecasting and warning in India is entrusted with the Central Water Commission (CWC).**
- **First FF site- 1958 –Delhi**
- **Present network- 176 (148 Level+28 Inflow) FF stations, 878 hydrological observation sites**

# Flood Forecasting by CWC

3

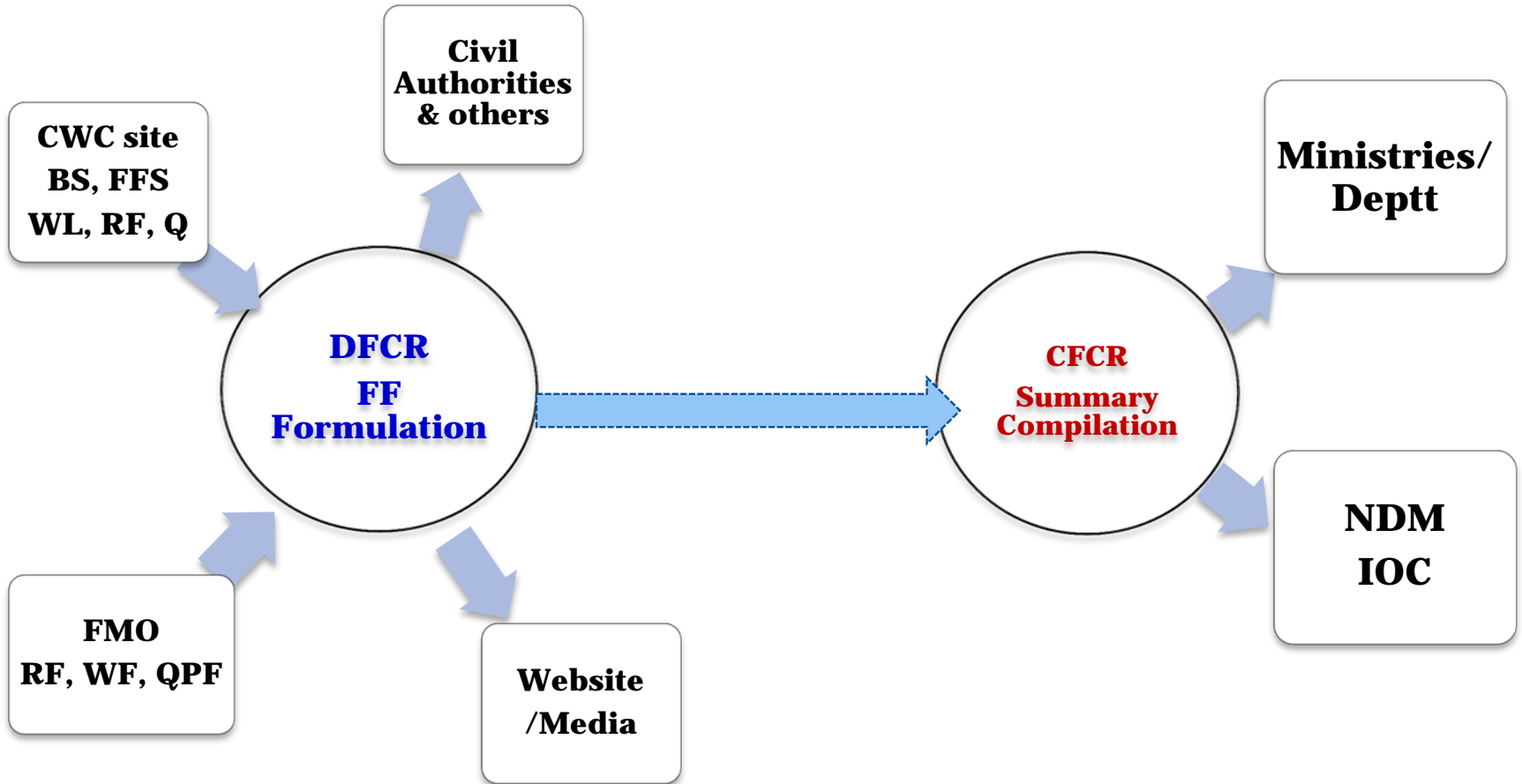
- **9 Major River Basins**
  - 71 sub basins
  - 18 states/Uts
- Period normally from 1<sup>st</sup> May to 31<sup>st</sup> October

# Flood Forecasting by CWC

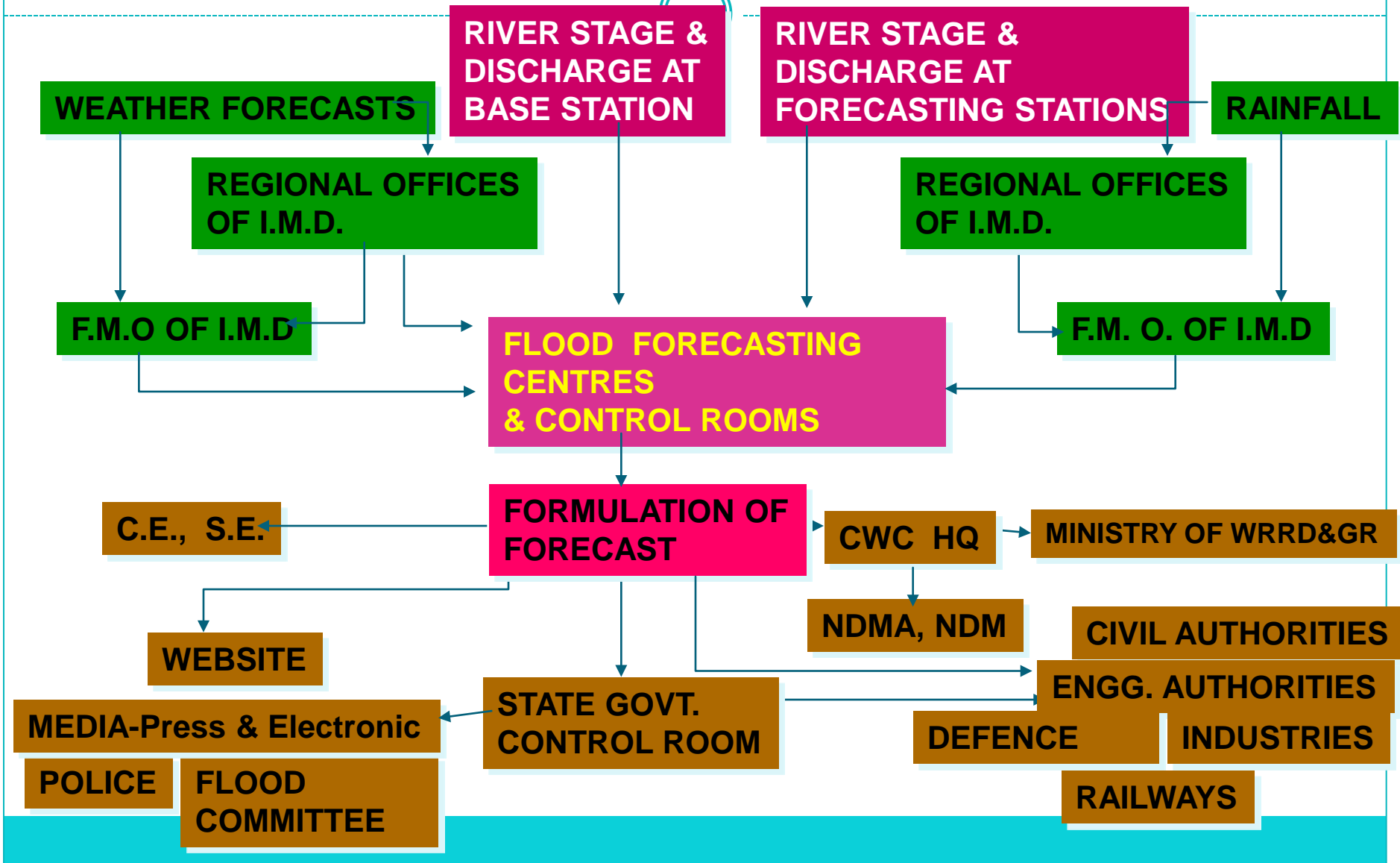
4

- **20 divisions**
- About 6000 forecasts are issued every year with an accuracy of more than 96%

# CWC FF Services Set-up

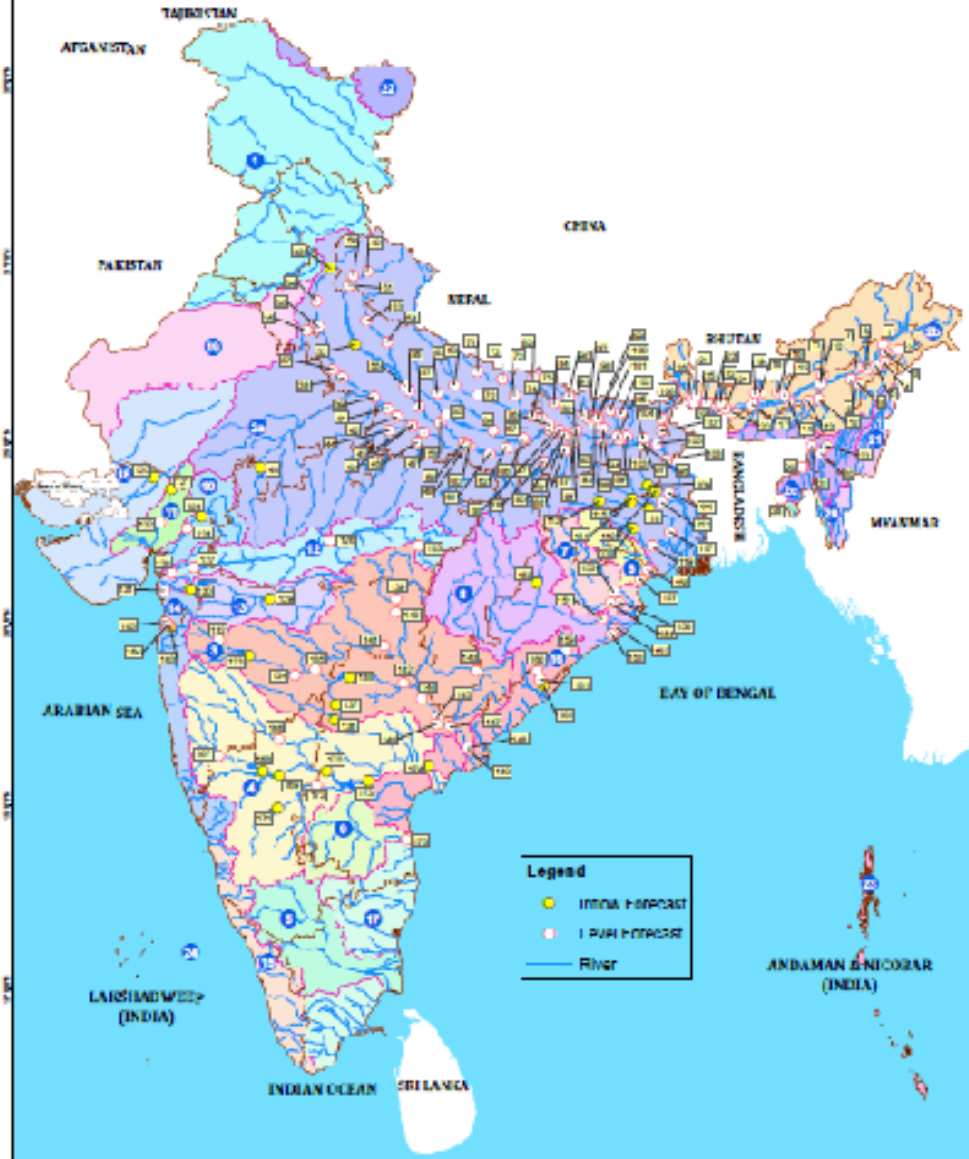
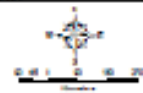


# FF and Warning Present System – schematic Diagram





# FLOOD FORECASTING STATIONS IN INDIA



**Legend**

- INDIRA FORECAST
- PURNA FORECAST
- River

For International/State boundaries and Coastal Line refer to Govt. of India maps.

# Forecast Frequency

8

- **Major rivers (Travel time >24 hours)**
  - **Forecasts are being formulated based on 0800 hrs/ 0900 hrs water level data and forecast issued once in a day at 1000 hrs with advance warning time from 24 hrs to 36 hrs**



# Forecast Frequency

9

- **Medium rivers (Travel time 12-24 hours)**
  - **Forecasts are being formulated based on 0600 hrs and 1800 hrs water level data and forecast issued twice in a day at 0700 hrs and 1900 hrs with advance warning time from 12 hrs to 24 hrs**

# Forecast Frequency

10

- **Flashy rivers (Travel time < 12 hours)**
  - **Forecasts are being formulated based on any hr water level data and forecast issued multiple times (more than twice) in a day with advance warning time less than 12 hrs**

# Data Collection and Forecast Formulation



- ✦ **Data Collection : Manually, Sensors**
- ✦ **Transmission: Wireless, Telephone, Mobiles, Satellite**

# Data Collection and Forecast Formulation



## ✦ Forecast Formulation:

- **Statistical Correlations using gauge to gauge, Gauge - discharge data - Multiple coaxial correlations using gauge, rainfall, Antecedent Precipitation Index (API) data**
- **Mathematical Models like MIKE-11 - Rainfall Runoff module, Hydrodynamic module, Flood Forecast module**

# Forecast Dissemination



- Mode of communication
  - Commonly used mode-Special Messenger, Telephone, Fax, Wireless
  - Now a days adopted widely-Email, SMS, Website

# Forecast Dissemination



- **Mailing List/ Beneficiaries**
  - Commonly - civil/ engineering authorities of concerned States, defense, railways/ highways authorities, industrial and other important establishments located in the flood prone areas through telephone/ fax/ e-mail/ special messenger for taking advance action for flood fighting & evacuating population to safer places.
  - **Also Media, Press for the benefit of the likely flood affected population**

# Website for Forecast and hourly data display

15

Central Water Commission  
Flood Forecast

HOME | FLOOD FORECAST

DATAFLOW MAPBOARD  
DATAFLOW LISTBOARD  
FLOOD FORECASTED BULLETIN  
HYDROGRAPH  
CURRENT FLOOD FORECAST

Logged as Guest  
User:  
Pass:  
Submit

Map of India showing forecasting sites

Central Water Commission  
Flood Forecast

HOME | HYDROGRAPH

Hydrograph

Filter:  
State Name: [Select value]  
Basin Name: [Select value]  
Division Name: [Select value]  
Station Name: No Data

Logged as Guest  
User:  
Pass:  
Submit

Central Water Commission  
Flood Forecast

HOME | CURRENT FLOOD FORECAST

Current Flood Forecast

S. NO.	Site Name	State	Basin
No Level Forecasting Sites recorded			

S. NO.	Site Name	State	Basin
No Inflow Forecasting Sites recorded			

Logged as Guest  
User:  
Pass:  
Submit

Central Water Commission  
Flood Forecast

HOME | FLOOD FORECASTED BULLETINS

Flood Forecasted Bulletins

- For Level Forecasting Sites
- For Inflow Forecasting Sites

Logged as Guest  
User:  
Pass:  
Submit

Central Water Commission  
Flood Forecast

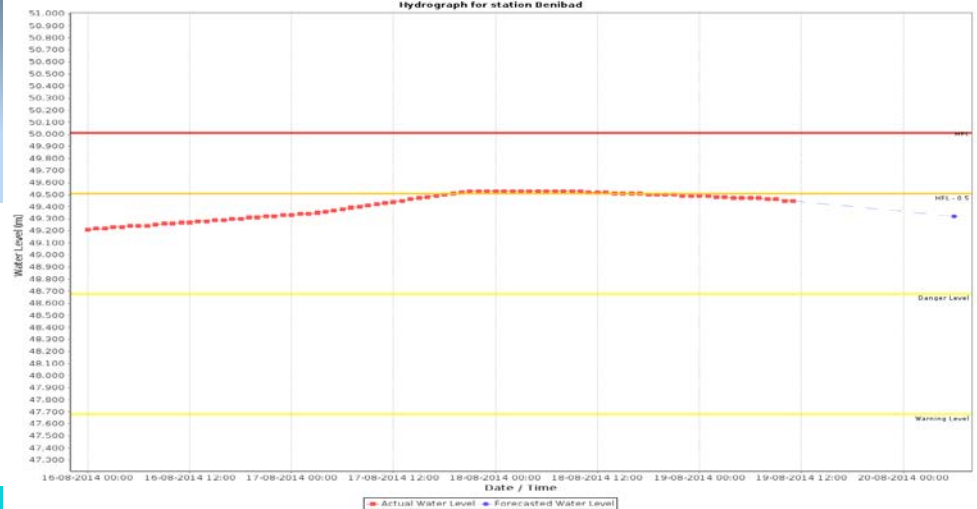
HOME | LIST BASED SELECTION

List Based Selection

Filter:  
State Name: [Select value]  
Basin Name: [Select value]  
Division Name: [Select value]  
Clear Filter

List Based Selection:  
Flood Forecast Sites: [Select value]

Logged as Guest  
User:  
Pass:  
Submit



# Standard Operating Procedure to be followed by CWC For Flood Disaster



Category	Description	Stage	Whom to communicate
IV	Low Flood (Water Level between Warning Level and Danger Level)	Yellow	Will not be communicated to PMO/ Cabinet Secretary
III	Moderate Flood (Water Level below 0.50 m less than HFL and above Danger Level)	Yellow	Will not be communicated to PMO/ Cabinet Secretary
II	High Flood (water level less than Highest Flood Level but still within 0.50 m of the HFL)	Orange	Communicated to PMO/ Cabinet Secretariat with 12 hourly updates or when it is upgraded to the Red Stage, whichever is earlier
I	Unprecedented Flood (Water Level equal and above Highest Flood Level (HFL))	Red	Communicated to PMO/ Cabinet Secretariat with 3 hourly updates or at more frequent intervals as warranted by the situation.





**THANKS**