



Early Warning System: Improvements

Date: 08.03.2022

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Andhra Pradesh State Disaster Management Authority
GOVERNMENT OF ANDHRA PRADESH

STATE EMERGENCY OPERATION CENTRE



Alert Watch

Nodal Agencies, Weather watch-1800 AWS



Data process for Localised alerts

IMD 3x3

ECMWF

CFAN

Hazard Models

Automation of Alerts



Communication to Officials

Email

WhatsApp

Group messaging

DMR

VSAT

Satellite Phone



Public Alerting

Alert Sirens

Bulk sms

Location based sms

Savdhan

AP-ALERT

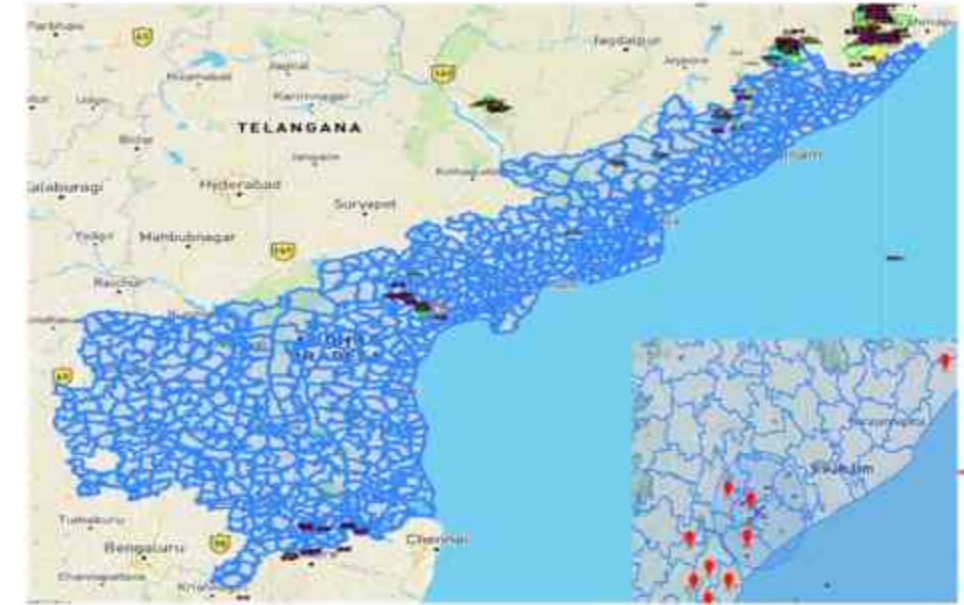
Alert communication



SBMDVT



digital mobile radio



Near Real time Location Specific Alerts-BSNL



ALERT TOWERS



Satellite Phone, VSAT
Bulk Messaging
Savdhan Messaging Systems

AP-ALERT

Public Warning System



- **State-wide early warning dissemination system to deliver Cell Broadcast-based alerts**
- **Geo-targeted and real time alerts**
- **No need for Mobile numbers-Non subscription**
- **Alert delivery time-2-3 minutes across the State**
- **Interactive alerts in local languages**
- **Captures location & MSISDN of respondents to rescue teams, response-wise**
- **Works also when the network is jammed**
- **Reach to both domestic and international Roamers**
- **Compatible with all networks 4G; 3G; 2G ; 5G**



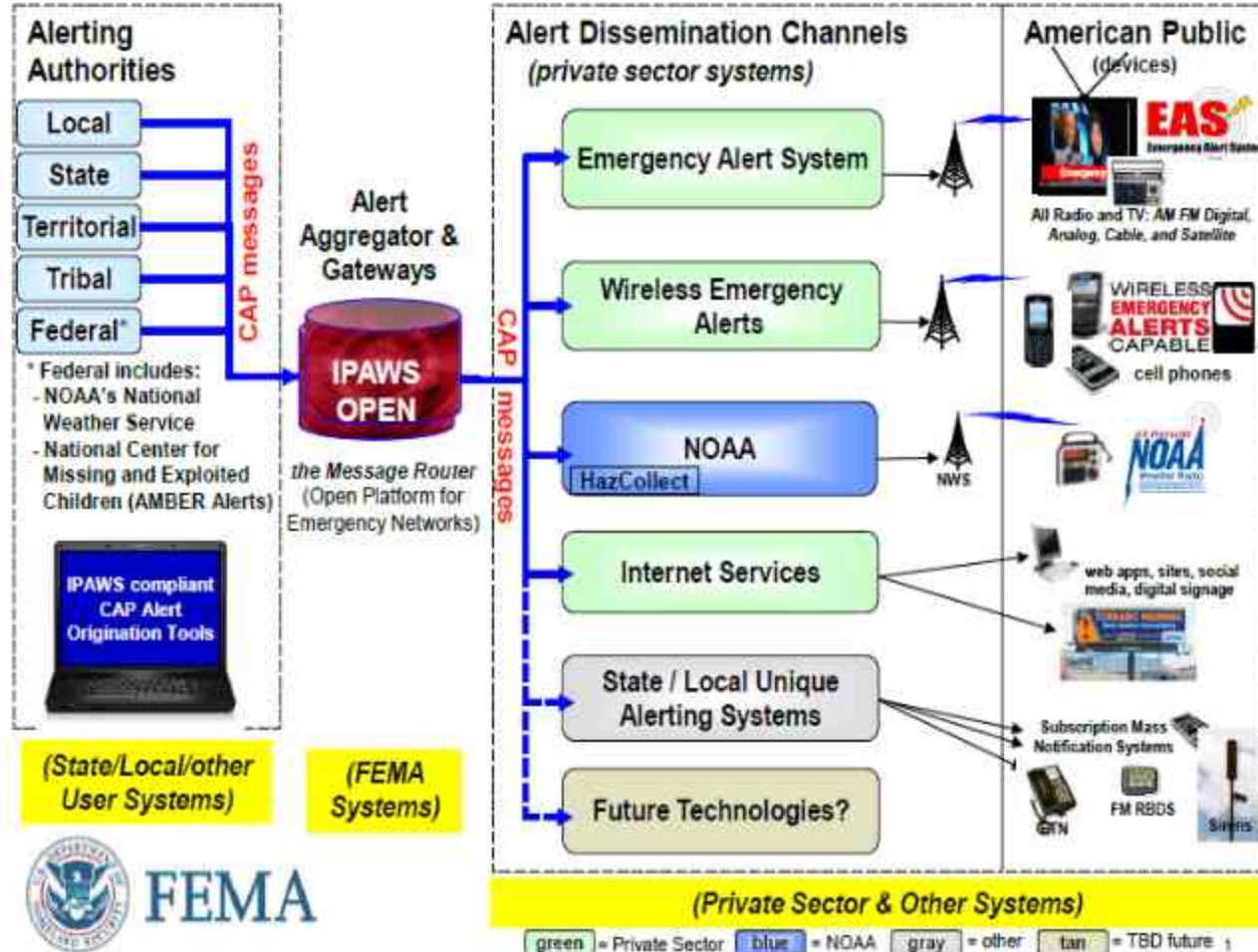
Weather alerts...
floods....earthquakes....tsunami
terror attacks....gas
leak....kidnaping....road
blocks



Wireless Emergency Alert Broadcast

Globally proven technology

IPAWS Architecture: "a National System for Local Alerting"



Examples

- EU-Alert – Europe
- NL Alert-Netherlands
- RO-Alert: Romania
- National Message – Israel
- Chile-Emergency Alert System (SAE)
- J-Alert– Japan
- UAE, Taiwan, Philippines, NZ



AP-ALERT: Priority Levels

Advisory



Presidential Alert



Level III: Interactive Cell Broadcast



Broadcast Message



Interactive Menus



SMS Response

Display Type	Sound Alert	Device Type
Repeated Flashing Message with an interactive option	Beep Supported	Handset agnostic. All devices that have the Celtick proprietary apelet

- Captures location & mobile number of respondents and map in GUI
- Provides click to call emergency assistance
- Local language
- Provides an option to report safe condition to friends & family on social media automatically

State Emergency Operation Centers (SEOC) (Alerting Agencies)

MNO's Data Centers (Cell Broadcast Centers)

Radio Network for each MNO (BSCs/RNCs/MMEs/SMSCs)

CBE (Command Post + Security)



VIL (Mumbai)

Airtel (Delhi)

BSNL (Pune)

JIO (Mumbai)

GERAN (2G)

BSCs — **BTS**

UTRAN (3G)

RNCs — **Node B**

E-UTRAN (4G)

MMEs — **eNodeB**

SMSCs

HTTPS

MPLS

APSDMA's Data Center

CBE Server (CentOS 6.9)

CBE Database (CentOS 6.9)

vCentre in FT mode

VMWare (Local HA)





- Alerts
- New
- Active
- Approved
- Waiting for Approval
- Rejected
- My Drafts
- Deleted
- Templates
- Reports
- Fault Management
- Geo Management
- Security
- Settings

Template: COASTAL FLOODING

Alert Group: Government

Alert Event:

 New Event Active Event

Event Name: FLOOD

Alert Priority:

 Alert level 1 Alert level 2 AMBER Drill

Alert Type: Select All

Severity: Cell Broadcast

Urgency: Cell Broadcast - CMAS

Certainty: Cell Broadcast - CBS

Cell Broadcast - Interactive

Alert Channels: Channels: Select...

OK Cancel

Map

Map showing a highlighted coastal region in South India, including cities like Visakhapatnam, Guntur, and Rajamahendravaram. The map includes various navigation controls like zoom in (+), zoom out (-), and search.

Presidential
Event: My new event
This is a test Presidential Alert. Please ignore. Thank you.
[View on cell] [View on CBS] [View on CMAS] [View on Interactive]

Presidential
Event: My New Event - 1
Test Presidential Alert. Please ignore.
[View on cell] [View on CBS] [View on CMAS] [View on Interactive]

Civil Danger Warning
Event: My new event - 26Nov2020
Test COW on 26Nov20-1. Please ignore.
[View on cell] [View on CBS] [View on CMAS] [View on Interactive]

Automation in FORECASTING AND WARNING



MASS ALERT

Region: Andhra Pradesh

- Base Layers
- Catchment
- Flood Forecast
- Actual Rainfall
- Forecast Rainfall
- Rainfall - Filter



River Basin View

Basin	Gross Capacity at FRL (T.M.C.)	Last year Storage as on Dec 10, 2020 (T.M.C.)	Current Storage (T.M.C.)	Flood Cushion (T.M.C.)
GODAVARI	5.9	4.85 (82.13 %)	4.75 (80.51 %)	1.15
KRISHNA	589.51	553.75 (93.94 %)	487.23 (82.65 %)	102.28
PENNAR	209.59	158.65 (66.22 %)	183.99 (76.79 %)	55.6
OTHERS	147.36	121.7 (82.59 %)	119.48 (81.08 %)	27.88
TOTAL	982.35	838.94 (85.4 %)	795.45 (80.97 %)	186.91

Water Available in Reservoirs Inside AP

S.No	Reservoir ↑	Reservoir Level Information & Capacity Details				Instant Inflow & Outflow			
		Date and Time	Current Level (feet)	Gross Capacity at FRL (T.M.C.)	Current Storage (T.M.C.)	Flood Cushion (T.M.C.)	Date and Time	Inflow (Cumecs)	Outflow (Cumecs)
1	Srisailem R. Major	10 Dec, 2021 11:13:59 AM	867.22	215.81	130.46 (60.45 %)	85.36	10 Dec, 2021 2:00:00 PM	5,960	
2	Nagarjuna Sagar Major	10 Dec, 2021 10:57:00 AM	586.81	312.05	304.47 (97.57 %)	7.58	10 Dec, 2021 10:57:00 AM	10,215	



PULICHINTHALA PROJECT(Krishna-Basin)

Capacity	45.77 T.M.C	
Travel Time	2.00 Hours	
Downstream Distance	12.00 Kms	
GPS	16.771 , 80.055	
Date	Storage (T.M.C)	Flow (m)
06/12/2021 08:30	43.1	2150.0 / 2150.0
07/12/2021 08:30	42.7	175.0 / 3150.0
08/12/2021 08:30	42.6	187.0 / 1900.0
09/12/2021 08:30	42.5	571.0 / 1400.0
10/12/2021 08:30	42.5	571.0 / 1400.0



APDIMS



Weather Forecast



Observed Weather



Heat Watch



Cyclone



Drought



Nowcast Weather



Flood



Cyclone

AREA SPECIFIC DATA

Source ECMWF

Events

Current event

Forecast

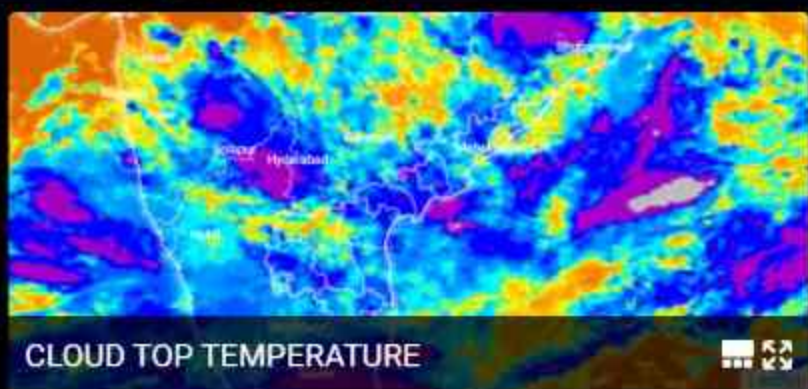
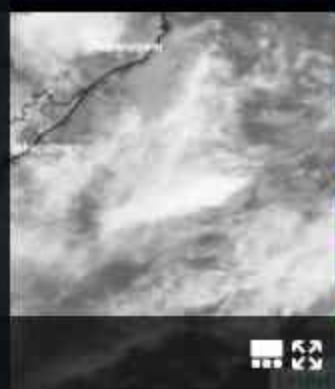
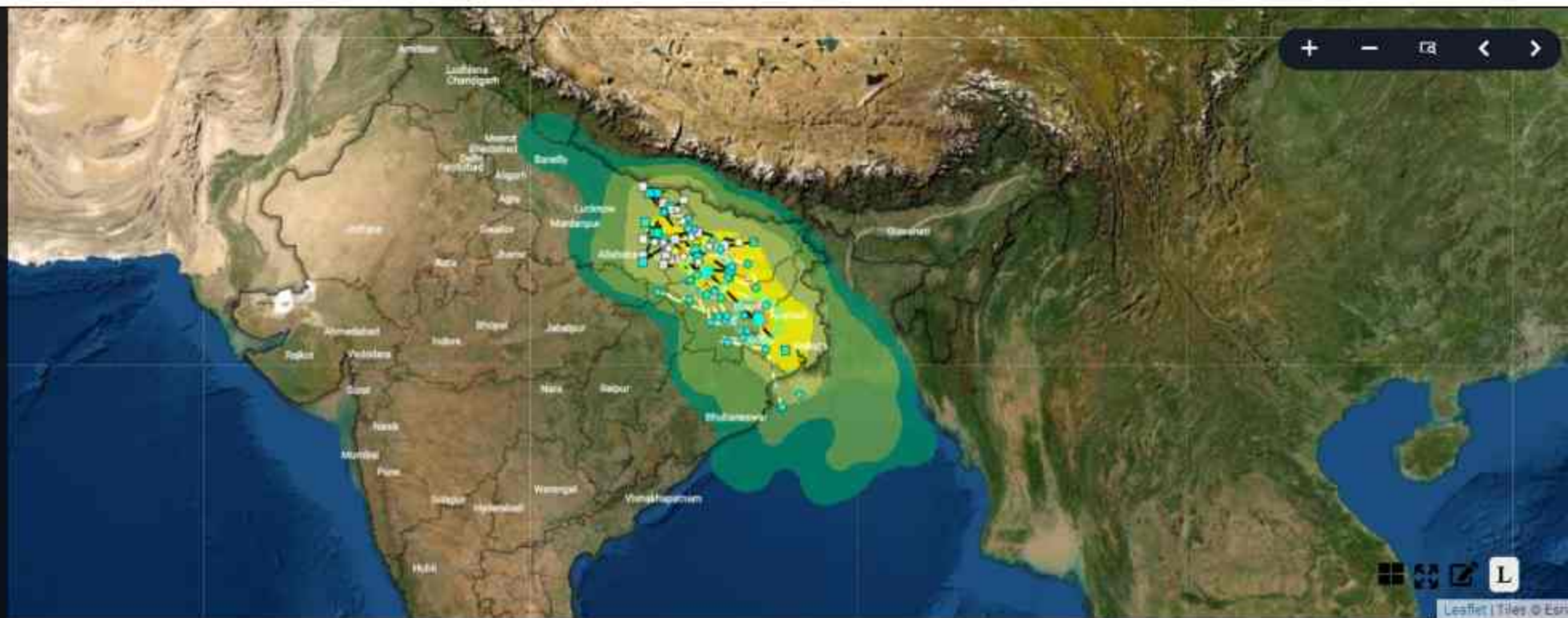
- Deterministic
- Ensemble

Available Events

- Depression

Uncheck any active map to enable the disabled maps

- Cloud Cover
- Cloud Top Temperature
- Wave Height
 - DEM Layers
- Radar Data



CLOUD COVER

CLOUD TOP TEMPERATURE

WAVE HEIGHT



MASS ALERT

WebEOC: INCIDENT MANAGEMENT SYSTEM

webeoc.ap.gov.in/APCOSMIC/controlpanel.aspx

Apps Sci-Hub: removing... Inbox (6) - faisel.ap... World Bank Group... How reporters can... Online tool makes c... The Facts on Crowd... How to Estimate Cr... Reading list

WebEOC | ESDDMA | AP SEOC ESDDMA | AP Day to Day 2021- | Log Out

JUVARE

Home Menu

 DASHBOARDS AND REPORTS	 MAJOR INCIDENTS	 EVENT REPORTING	 REQUEST FOR ASSISTANCE	 ROAD STATUS	 SHELTERS	 SITUATION REPORT
 RESCUE TEAMS	 RESOURCE DATABASE	 CONTACT DATABASE	 PRESS RELEASE	 FORECAST AND ALERTS	 EOC DAILY LOG	 GIS DASHBOARDS

Andhra Pradesh State Disaster Management Authority

IMD Nowcast District Warnings

■ No warning
 ■ Watch
 ■ Alert
 ■ Warning

KURNOOL	2021-08-25	Time of issue: 13:00 Valid up to: 16:00	☁️ Light rain: < 5 mm/hr ⚡️ Light Thunderstorms with maximum surface wind speed less than 40 kmph (In gusts)	Yellow
KRISHNA	2021-08-25	Time of issue: 13:01 Valid up to: 16:00	🚫 No Warning	Green
NELLORE	2021-08-25	Time of issue: 13:01 Valid up to: 16:00	🚫 No Warning	Green
PRAKASAM	2021-08-25	Time of issue: 13:00 Valid up to: 16:00	☁️ Light rain: < 5 mm/hr ⚡️ Light Thunderstorms with maximum surface wind speed less than 40 kmph (In gusts)	Yellow
SRIKAKULAM	2021-08-25	Time of issue: 13:00 Valid up to: 16:00	☁️ Light rain: < 5 mm/hr ⚡️ Light Thunderstorms with maximum surface wind speed less than 40 kmph (In gusts)	Yellow
VISHAKHAPATNAM	2021-08-25	Time of issue: 13:00 Valid up to: 16:00	☁️ Light rain: < 5 mm/hr ⚡️ Light Thunderstorms with maximum surface wind speed less than 40 kmph (In gusts)	Yellow
VIZIANAGARAM	2021-08-25	Time of issue: 13:02 Valid up to: 16:00	☁️ Moderate rain: 5-15 mm/hr ⚡️ Moderate Thunderstorms with maximum surface wind speed between 41 - 61 kmph (In gusts)	Orange
WEST GODAVARI	2021-08-25	Time of issue: 13:00 Valid up to: 16:00	☁️ Light rain: < 5 mm/hr ⚡️ Light Thunderstorms with maximum surface wind speed less than 40 kmph (In gusts)	Yellow
CUDDAPAH	2021-08-25	Time of issue: 13:01	🚫 No Warning	Green





Andhra Pradesh State Disaster Management Authority
Revenue (DM) Department - Government of Andhra Pradesh
AP Day to Day 2021



New Active Alerts

Active Alerts | Published/Reviewed Alerts

Search | Clear Search | All Alerts | All Priorities

Event Date & Time	Alert Type	Priority	Place of Event	Description	Attachments
10/12/2021 08:57:44	Reservoir	Alert	Vizianagaram (VZN)	THOTAPALLI REGULATOR / BARRAGE is at storage capacity of 81.27% against the gross capacity of 2.51 TMC as on 10-12-2021 08:00:00	
10/12/2021 08:57:44	Reservoir	Watch	Vizianagaram (VZN)	VENGALRAYA SAGARAM is at storage capacity of 74.0% against the gross capacity of 1.5 TMC as on 10-12-2021 08:00:00	
10/12/2021 08:57:44	Reservoir	Warning	YSR Kadappa (YSR)	CHITRAVATI BALANCING RESERVOIR is at storage capacity of 93.5% against the gross capacity of 10.0 TMC as on 10-12-2021 08:00:00	
10/12/2021 08:57:44	Reservoir	Warning	Krishna (KR)	PRAKASAM BARRAGE is at storage capacity of 100.0% against the gross capacity of 3.07 TMC as on 10-12-2021 08:00:00	
10/12/2021 08:57:44	Reservoir	Warning	Chittoor (CTR)	ADAVIPALLI RESERVOIR is at storage capacity of 100.0% against the gross capacity of 1.418 TMC as on 30-11-2021 10:51:00	
10/12/2021 08:57:44	Reservoir	Warning	Anantapur (ANT)	JEEDIPALLI RESERVOIR is at storage capacity of 96.45% against the gross capacity of 1.69 TMC as on 09-12-2021 10:51:26	
10/12/2021 08:57:43	Reservoir	Warning	Guntur (GUN)	NAGARJUNA SAGAR is at storage capacity of 97.9% against the gross capacity of 312.05 TMC as on 09-12-2021 16:00:00	

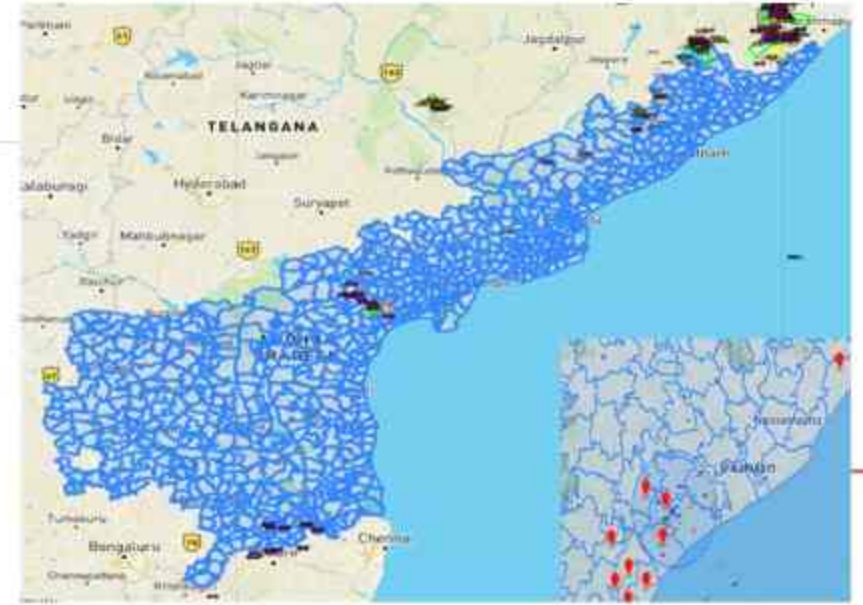


Best Practices: Lightning and Heat Wave

Once the Situation arises:

Alerts from the Nodal agency (IMD, CWC, INCOIS, etc.)

- BSNL bulk SMS
- Savdhan Messaging System
- Whatsapp



Once the Situation is critical:

- Letters via emails to Collectors, DROs, D-section, SDRF, NDRF, Fire and Line departments.



Thank You

