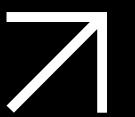




TEAM BARBARIK

PRESENTATION

BARBARIK



NOVEMBER 2024

1 DELHI ARMOURED SQUADRON

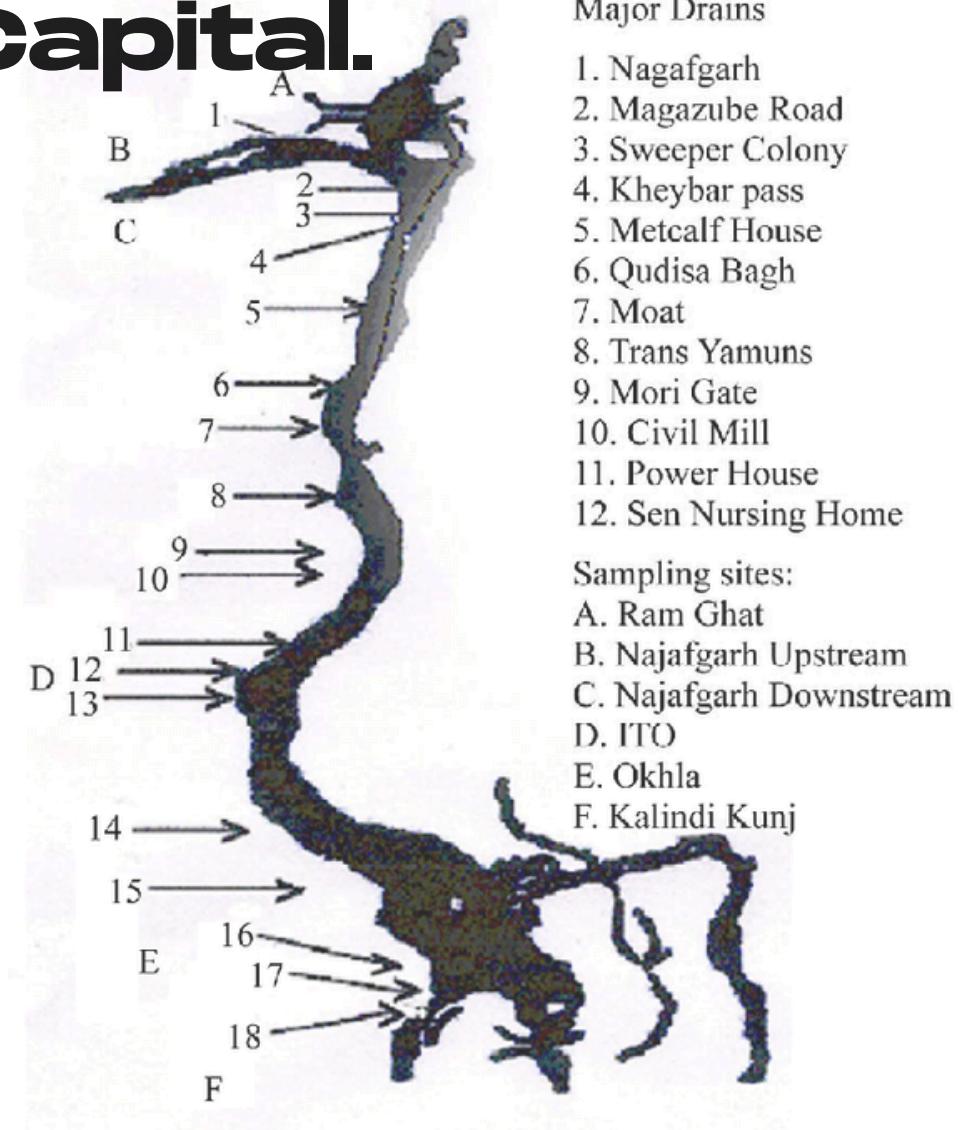


BARBARIK

PURPOSE



2% of the Yamuna accounts for 98% of the river's pollution in the national Capital.



WHY DRONES

↗ Enhanced Life-Saving Capabilities and Faster Rescue

Studies have shown that using drones can reduce search times by up to 50% compared to traditional methods, increasing the likelihood of reaching stranded individuals within critical time windows and potentially saving thousands of lives in disaster scenarios.

↗ Cost Reduction and Resource Optimization

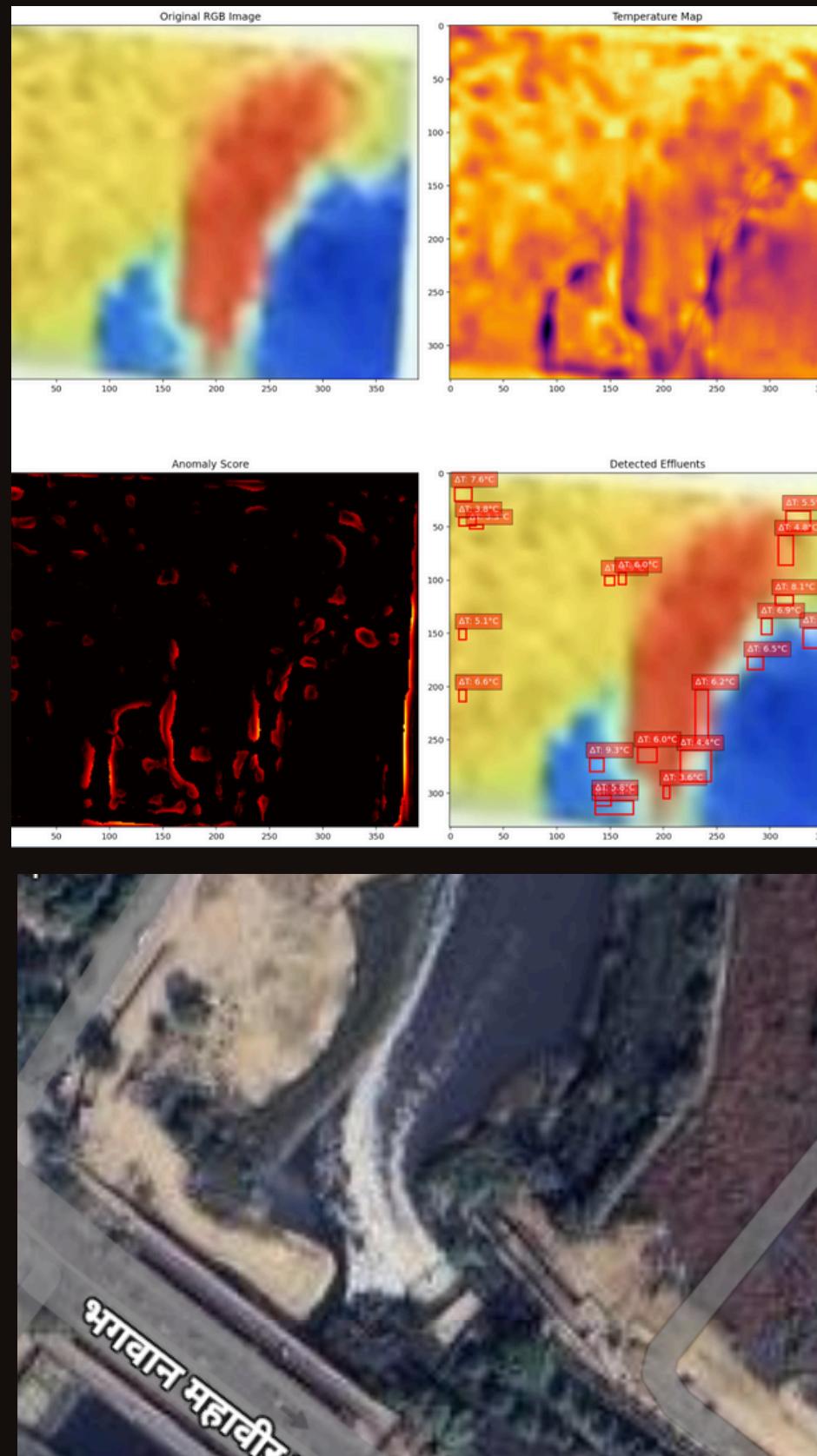
Drone-based rescues can be up to 80% cheaper than helicopter missions, according to disaster management reports. These cost savings allow relief organizations to allocate resources more effectively, extending the scope and duration of rescue efforts.

↗ Improved Data Collection for Future Disaster Preparedness

The system also continuously collects valuable data on flood patterns, human movement in crisis zones, and operational outcomes, building a dataset to enhance future disaster response strategies.



TECHNICAL APPROACH



We are analysing thermal and HD images of the the drainsstreams to detect entry of pollutants based on thermal signatures and frothing

This is an efficient system and we are using ML for the analysis

The Algorithm is described as:-

- Sobel Operator (Gradient-Based Edge Detection): To identify transitions in temperature that indicate thermal anomalies.
- Contour Detection: To find and isolate regions of interest where temperature gradients and anomalies coincide.
- Thresholding: Both temperature and gradient thresholding are used to detect significant anomalies.
- Bounding Box Calculation: Used to define the size and location of detected inlet regions.
- Confidence Scoring: A heuristic approach to prioritize more likely inlet regions based on temperature differences and gradient strength.



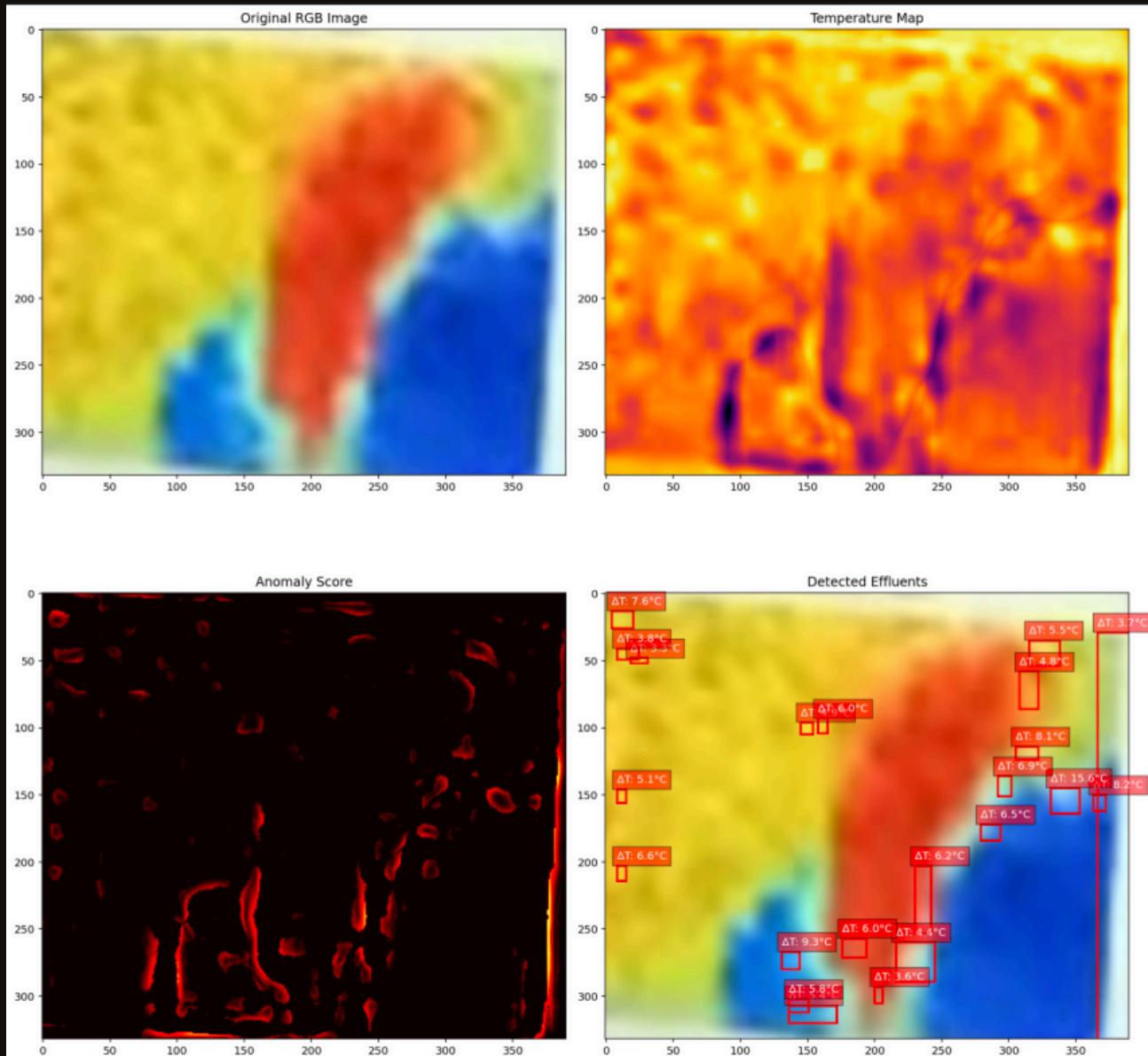
TECHNICAL APPROACH



Thermal

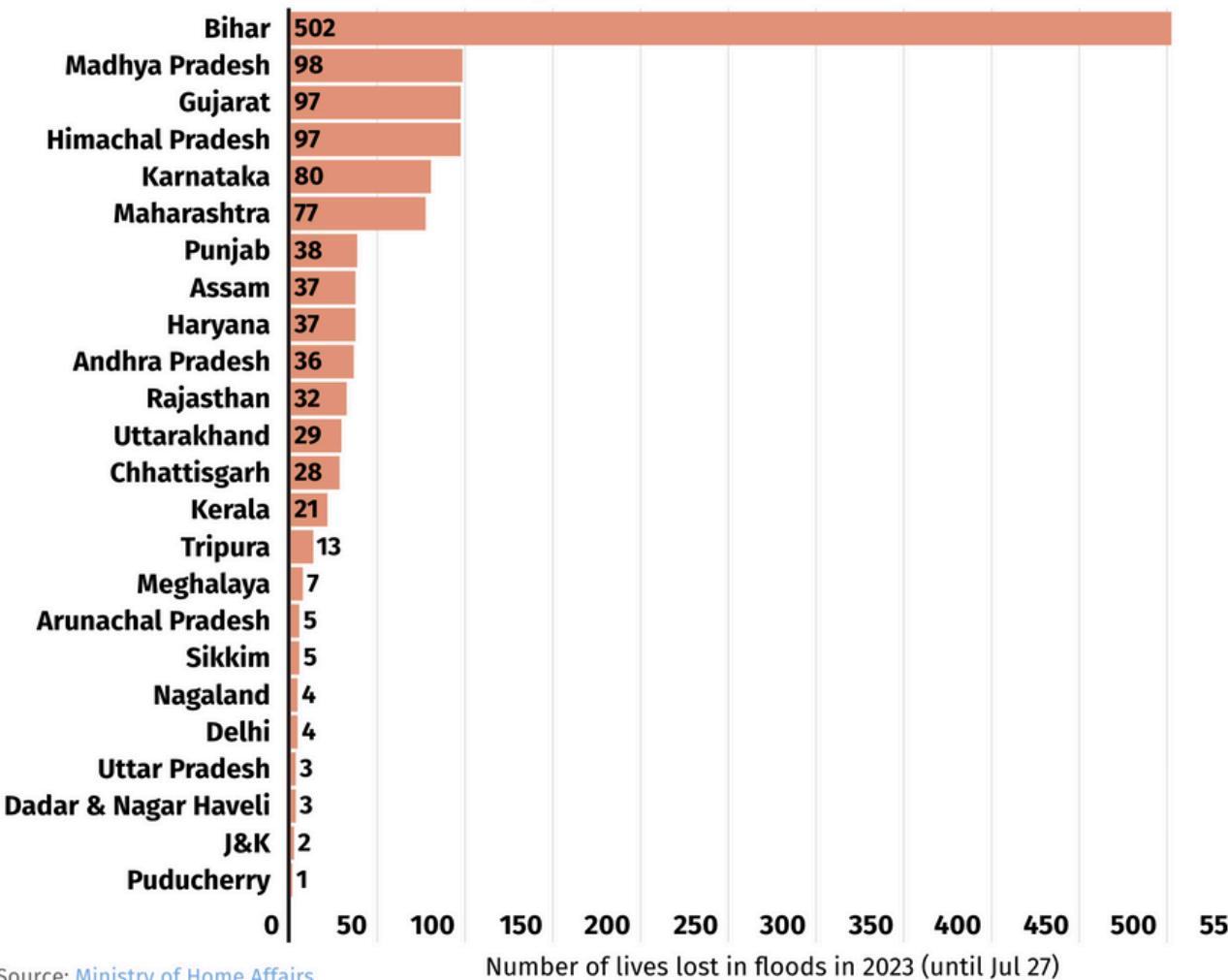


AI

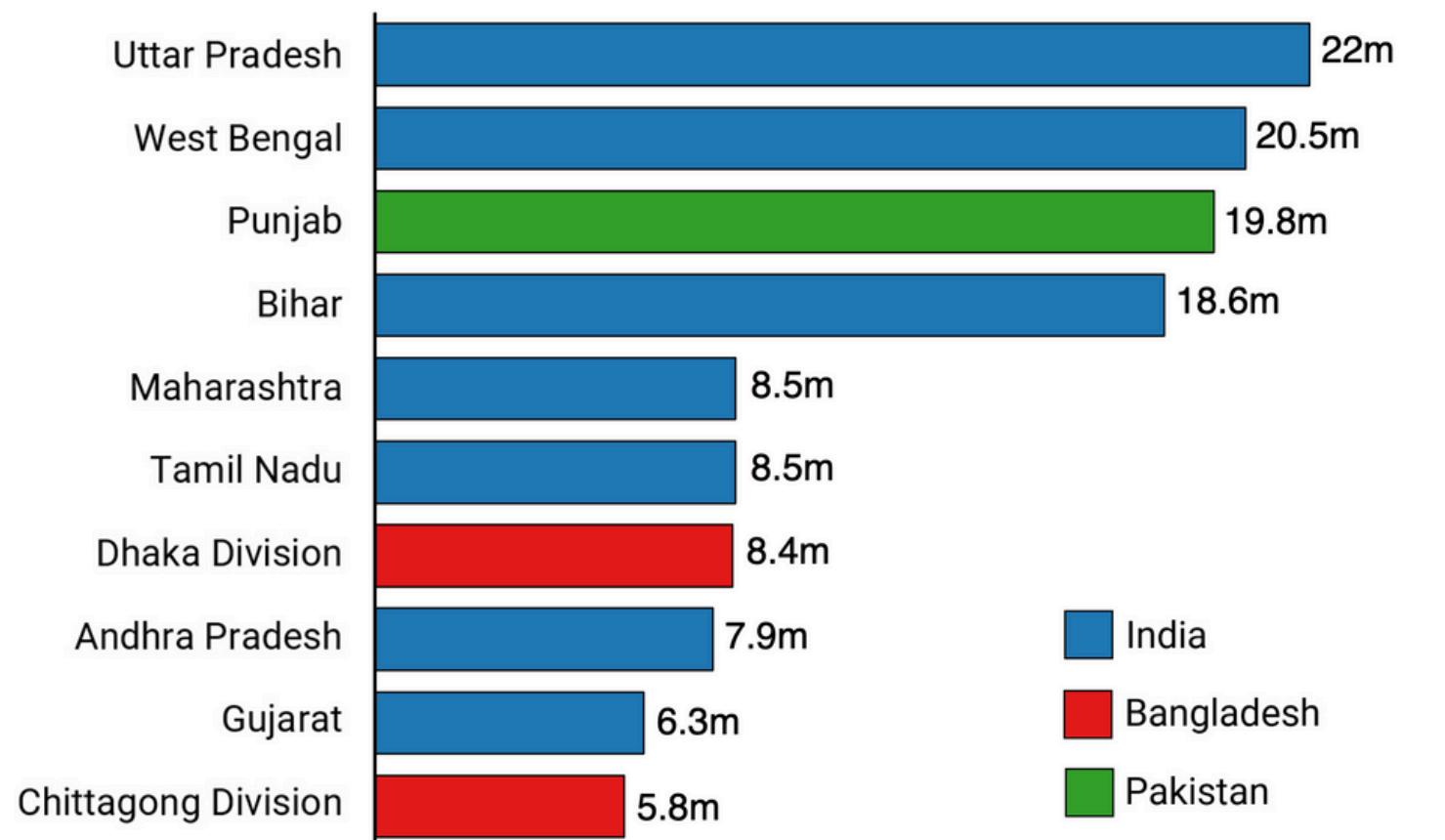
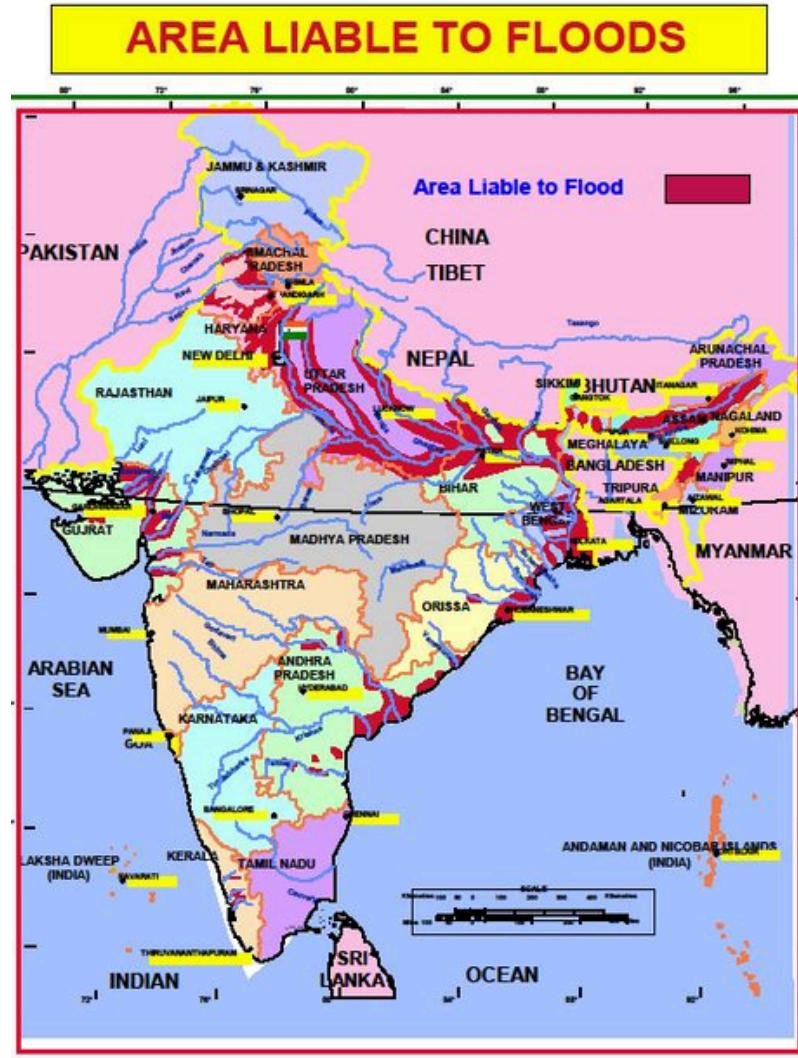


INDIA

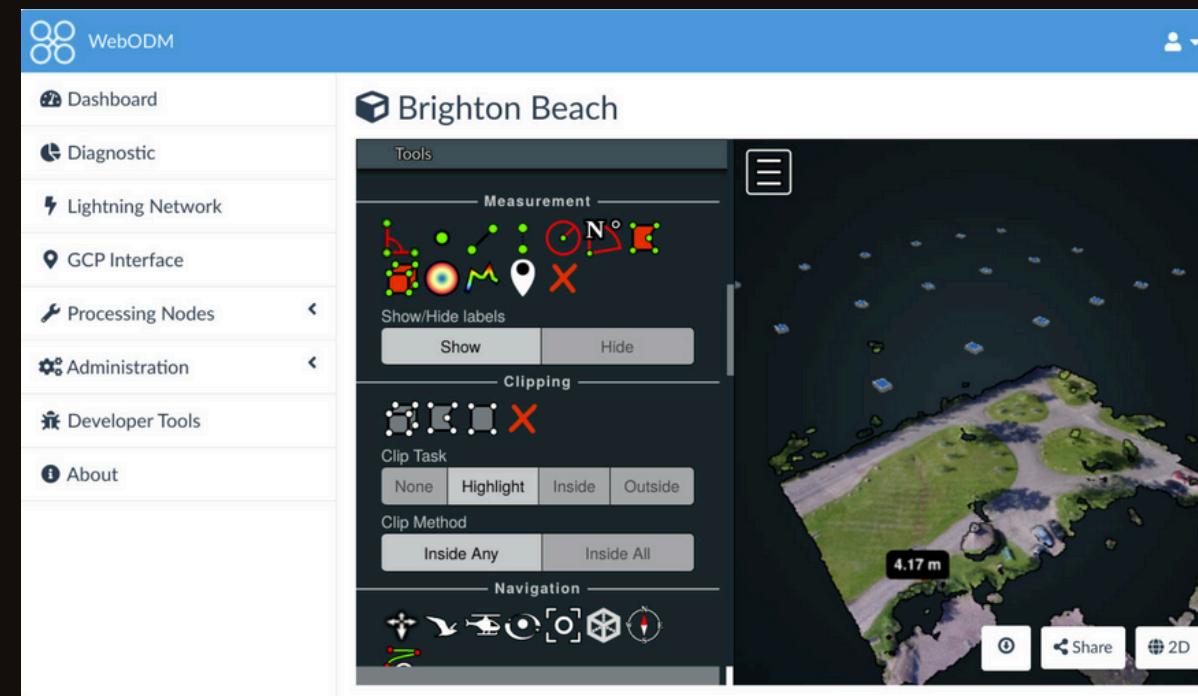
By July 27, 2023 Hydro-Meteorological Disasters Killed 1,256 In India

Source: [Ministry of Home Affairs](#)

Graphic: Nupur Maley



TECHNICAL APPROACH



Orthomosaics

- Georeferenced, orthorectified maps for accurate representation of the surface.

Point Clouds

- Georeferenced, filtered, and classified dense point clouds for detailed 3D modeling.

Elevation Models

- Georeferenced Digital Surface Models (DSMs) and Digital Terrain Models (DTMs).

3D Models

- Textured 3D models in .OBJ and OGC 3D Tiles format for immersive visualizations.

Measurements

- Easy volume and area measurements, including stockpile tracking.

Plant Health

- Calculate various vegetation indexes such as NDVI, VARI, and GNDVI.

Ground Control Points (GCPs)

- Create and utilize GCPs for enhanced georeferencing accuracy.

Contours

- Preview and export elevation contours to AutoCAD, ShapeFile, and GeoPackage formats.

Any Camera

- Compatible with any camera type, from consumer phones to professional models (standard, fisheye, 360°), single or multi-camera setups.

Any Format

- Supports JPG and TIFF images (8-bit and 16-bit), with or without EXIF data.

Any Orientation

- Process both aerial and ground images, captured in nadir or oblique orientation.



TECHNICAL APPROACH



Aerial Image



AI(sample)



IOT TRACK WINNER





REFERENCES

DRONE SURVEILLANCE FOR SEARCH AND RESCUE
—SCIENCE DIRECT

DRONES IN DISASTER MANAGEMENT
—SCIENCE DIRECT

FLOOD STATISTICS
—NDMA

INDIA NEEDS FLOOD PREP
—INDIASPEND

BENEFITS AND COSTS OF DRONE USE FOR DISASTER RESPONSE
—AMERICANRED CROSS

AI-BASED DRONE ASSISTANCE
—SPRINGER



DRONACHARYA

PRESENTATION

**THANK
YOU.**



NOVEMBER 2024

1 DELHI ARMOURED SQUADRON