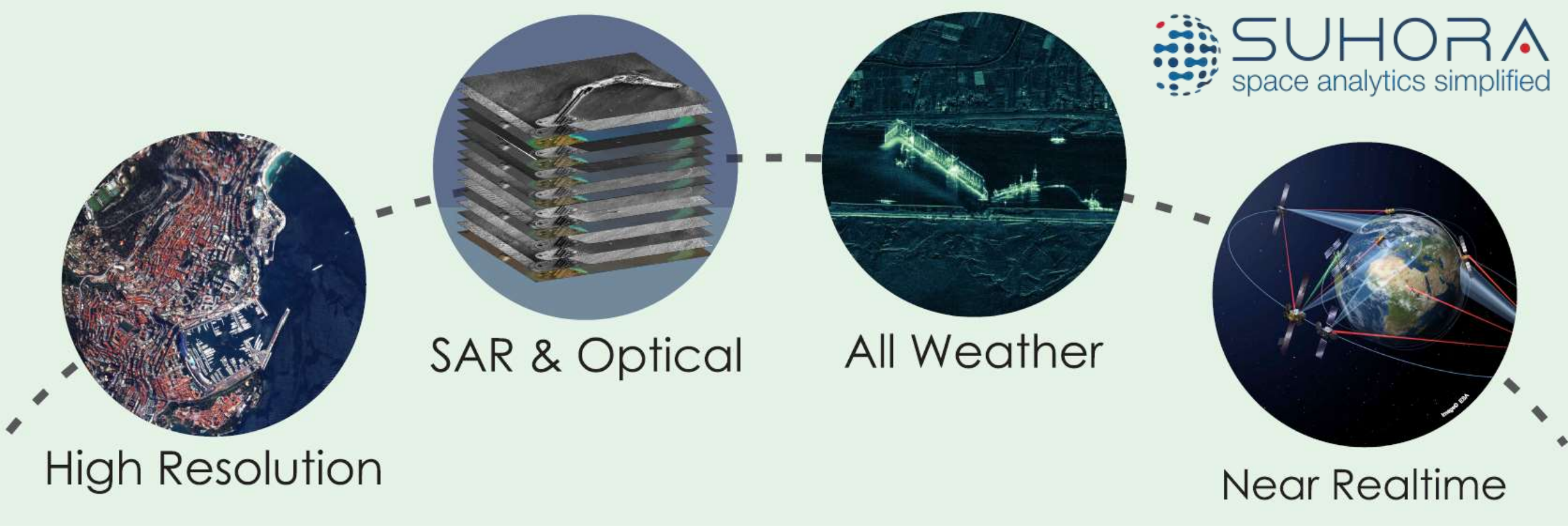

Satellite Analytics for Water Resource Monitoring

Suhora Vision and Mission

Vision

Use Technology to create a Sustainable Planet.

Mission

Make Space Analytics more accessible and affordable by using AI / ML, Big Data and Geo-spatial Technology.

What makes Suhora different?

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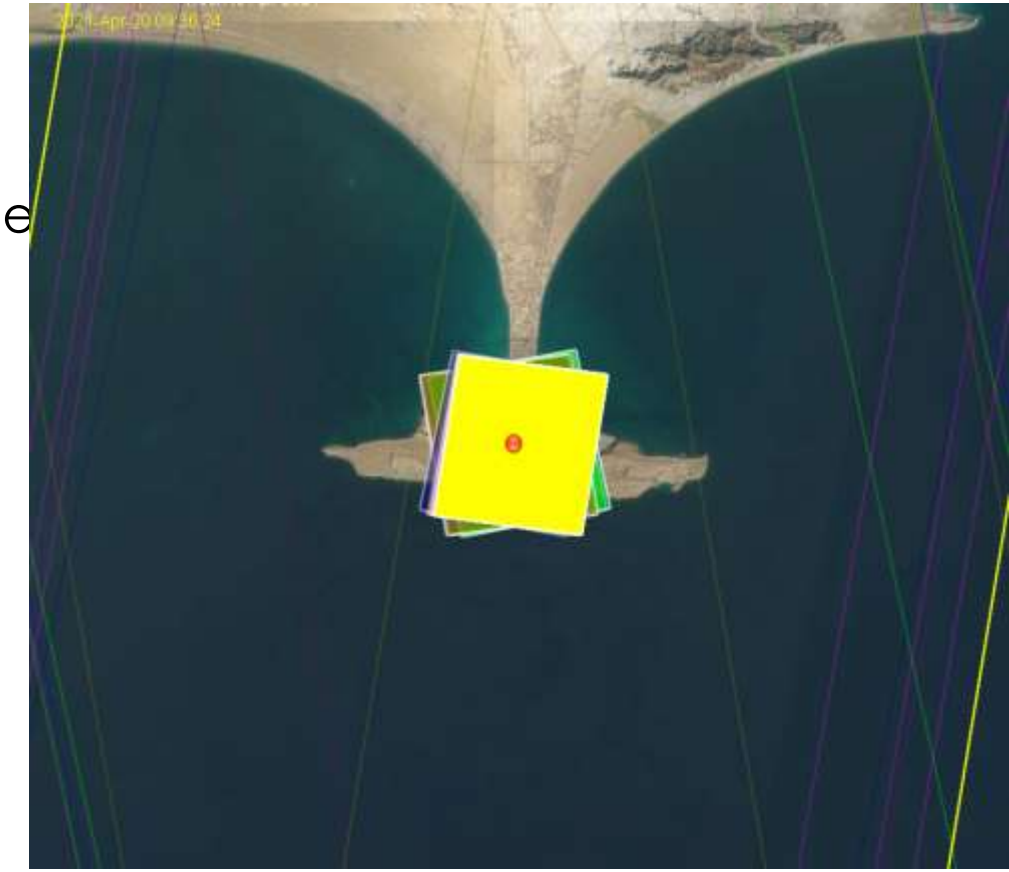
- **Non-ITAR Operation, No Restriction**
- **Holistic Approach with SAR/OPTICAL/THERMAL Data**
- **Capabilities to develop solutions and Analytics in different verticals**
- **Speed and accuracy combined with Cost-Effectiveness**

Current EO Capabilities

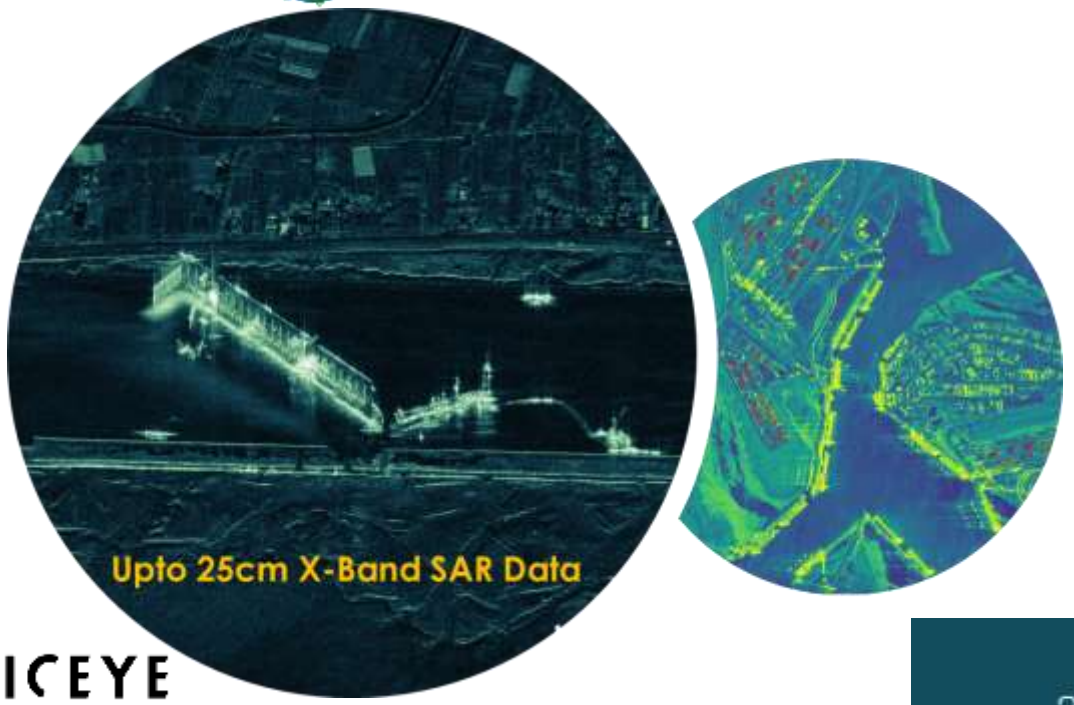
- Dedicated SAR and Optical Satellite
  - 26 Optical Satellite: 70 cm MS / Video
  - 21 SAR Satellites: Up-to 25cm, Wide-Scan, Video Capable
  - Thermal Satellites: 3.5 m resolution, mid-infrared.
- Guaranteed collection, Secure tasking, Secure downlink
- Non-ITAR Operation
- 24/7 all weather Surveillance using Optical and SAR Constellation
- Most Cost-Effective Solution available in Market.
- Proposal to use Existing Ground Assets of ISRO.
- Capability to deliver data within One Hour

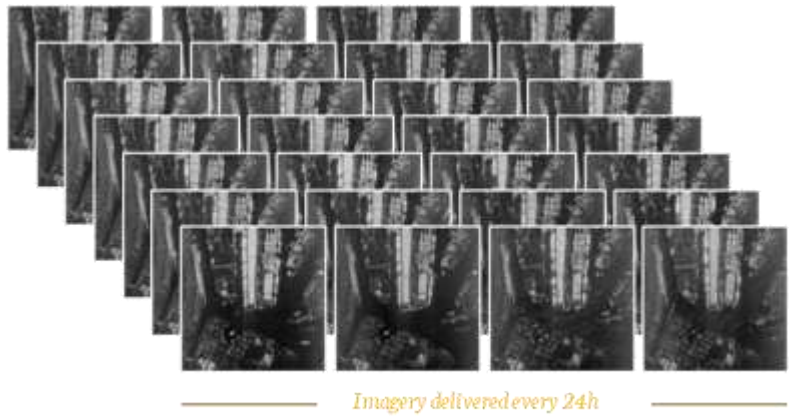
Gwadar Port, Pakistan

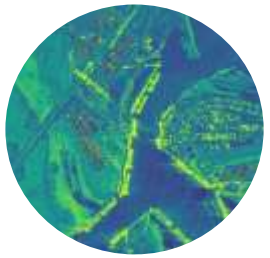


Can cover any point over Dnl target <>10 times per day using Optical and SAR Constellation

SAR Technology Capabilities







Persistent Monitoring

ICEYE's large constellation of new space satellites unlocks new access to valuable data on any location on Earth – **day and night**, through the clouds, and multiple times per day

High Resolution and Swath

Very High resolution up to **25 cm** and continuous monitoring of up to **10,000** square kilometers in a single image

Mission Ready

Task ICEYE SAR satellites to access critical data on any location on Earth – day or night and in any weather. The process is simple, and images are usually delivered within **1* hour** of initial request.

* In ideal Condition

Optical Technology Capabilities

SATELLOGIC

Roadmap

	2021	2022	2023	2024	2025+
SATELLITES IN ORBIT	17	34	63	139	202
SATELLITE CHARACTERISTICS (GSD RESOLUTION)	0.99m at 470 km	0.70m at 470 km		0.40m at 440 km	0.30m at 330 km
DAILY REVISITS OF POINTS OF INTEREST	4	7	13	28	40
PRODUCT LAUNCHES	DSC	Data Platform	Weekly World Remaps		Daily World Remaps

Perfect Combination

Up to 4 daily revisits of any point. Patented technology delivers multispectral imagery at **sub-meter resolution**. Industry's **most competitive price** point

Future Proof

Satellogic offer different metered subscription models to deliver data bundles for different industry verticals based on region, end-use, and volume. Satellogic also commits to bring **upto 300+ Satellited by 2025**

Mission Ready

Gain **direct access** to Satellogic's high-frequency, high-resolution satellite imagery, search our image library, order new captures, and stream or download imagery Near Real Time all via web app or API.

Thermal Capabilities (Upcoming)

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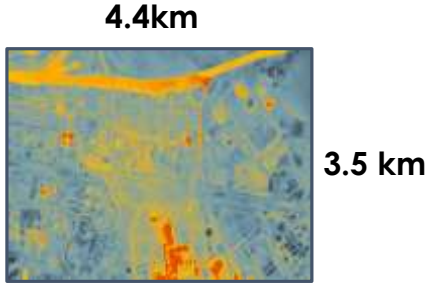
Unique Infrared Constellation

- High Resolution – 3.5m
- Mid-infrared - 3.4-5.0 µm
- Sensitivity - <2K
- Video - up to 60 sec @ 25 frames/sec
- Day & Night Imaging

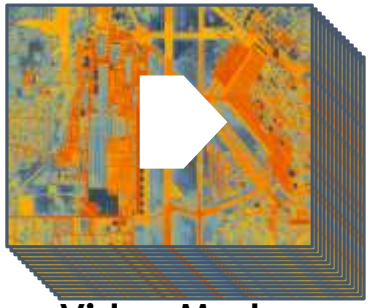
CONSTELLATION

- Launching May 2023
- 8 Satellite constellation - 2 in Polar, 6 in MIO
- 10 – 20 revisits/day over same target
- Global coverage
- Agile bus/camera
- Fully tasked from web-based platform

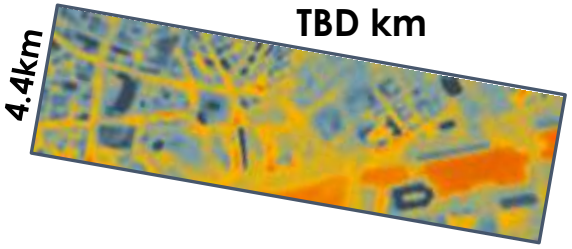
Imaging Modes



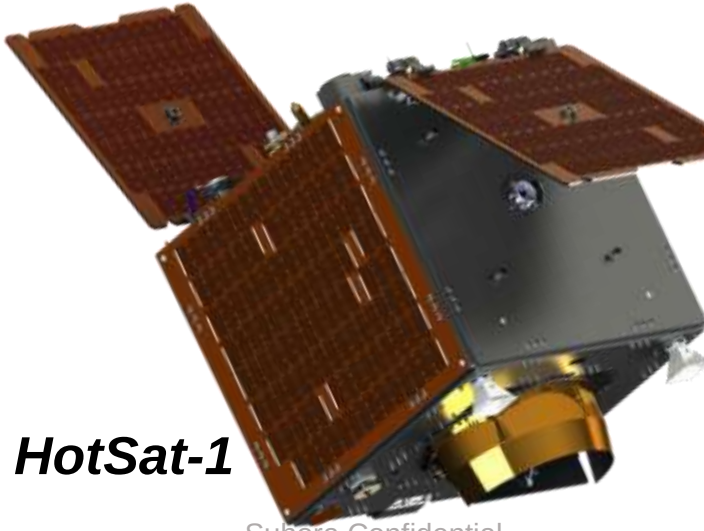
Single Image



Video Mode

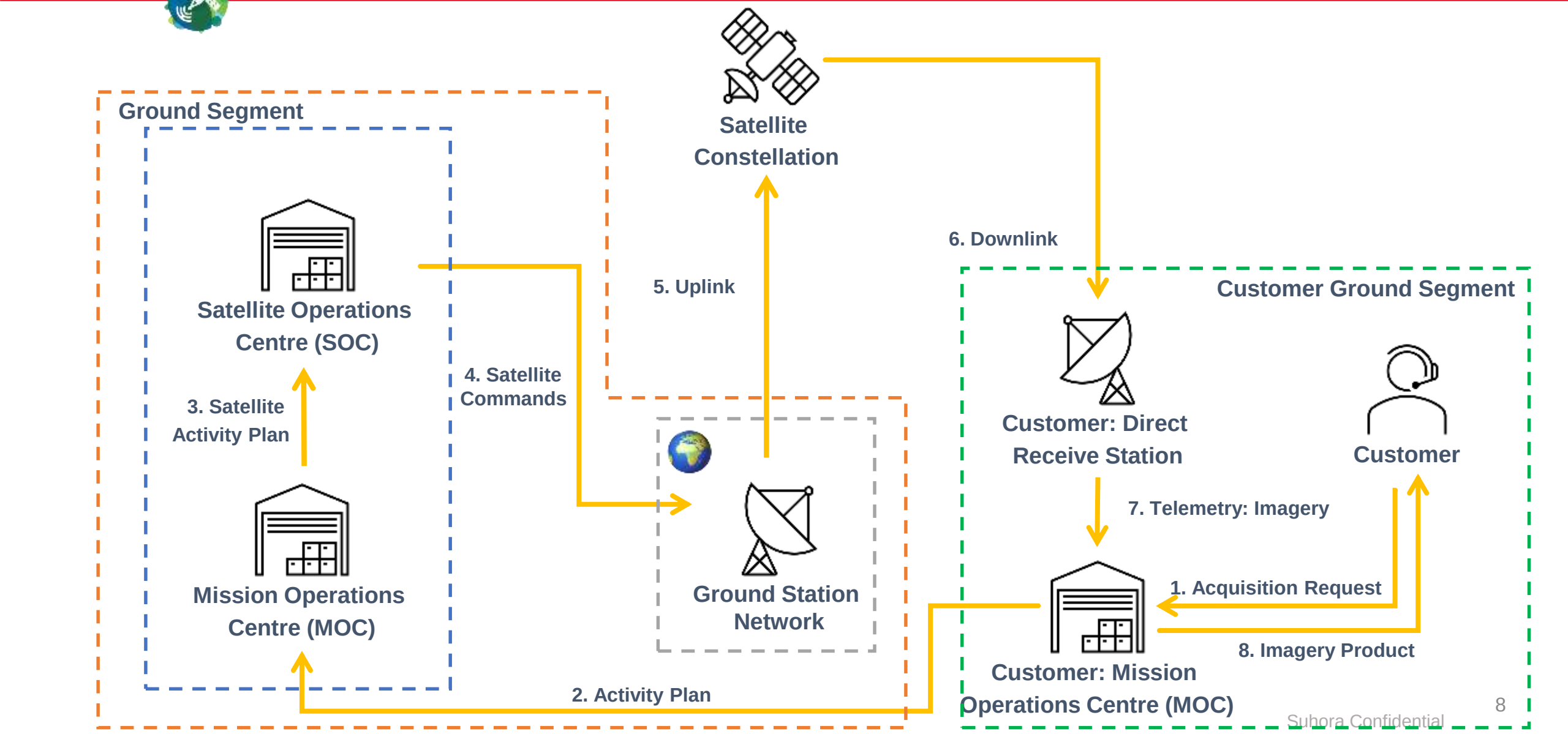


Strip Mode



HotSat-1

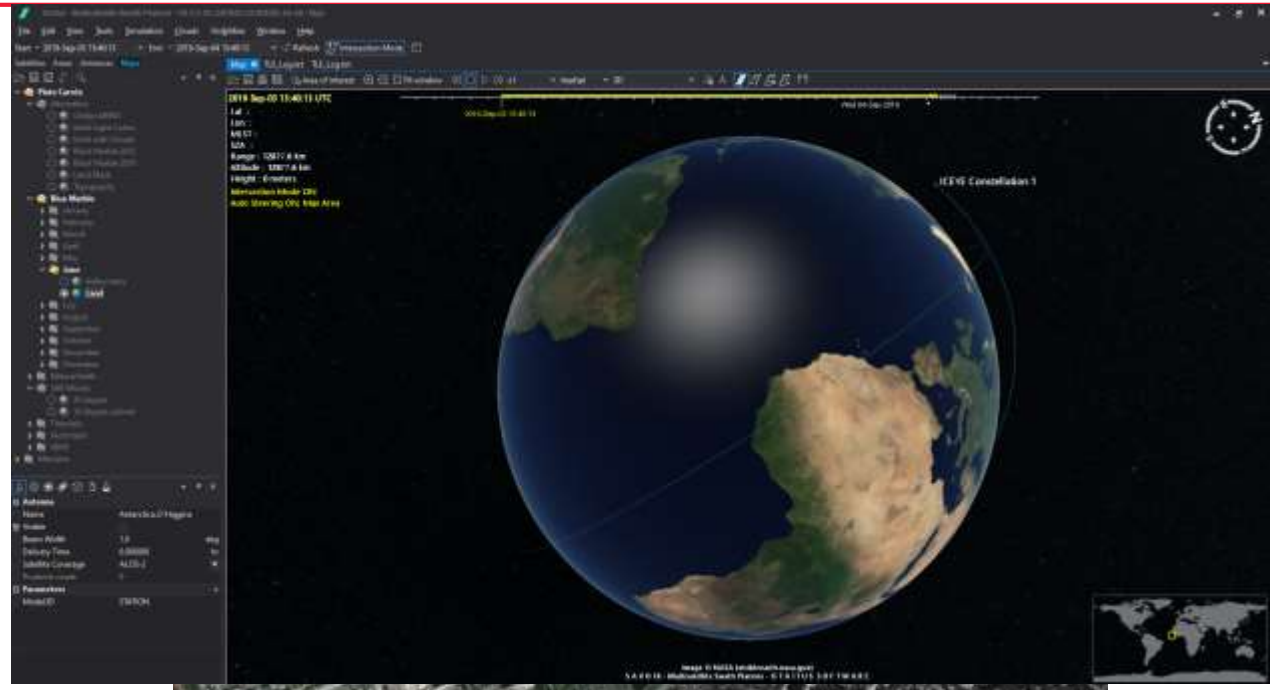
Direct Downlink Capability



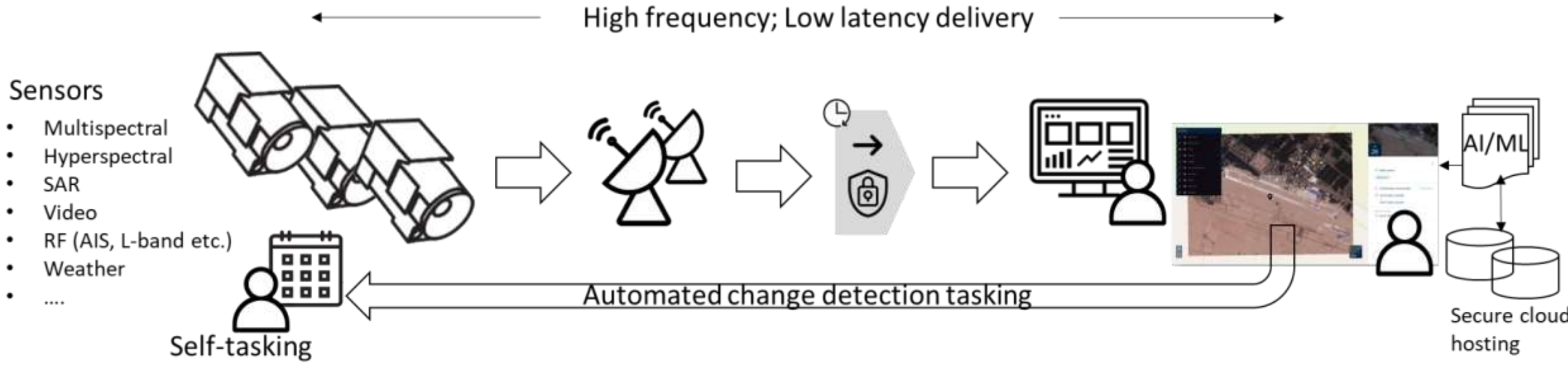
SPADE: Analytics Platform

Intuitive **Tip-n-Cue Platform** works seamlessly to Task, Download & Process multiple satellite Data

1. International borders, maritime boundaries and Strategic Site Monitoring.
2. SAR and Optical Image combination-based information and analysis
3. Flooding Extent, depth and Vulnerability Solutions
4. Coherent Change Detection
5. Dark Vessel Detection and alert system
6. Mining Oil and Gas Monitoring
7. Oil spill detection and Monitoring
8. Soil Moisture Mapping
9. Infrastructure and slope Stability Monitoring.



Smart Tip-n-Cue: Workflow



- Smart Tip-n-cue Platform with seamless and intuitive capabilities to task, download and process multiple satellite data.
- Direct Tasking
- Analytics
- Pay Per Use

SOLUTIONS AND ANALYTICS

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International borders, maritime boundaries and Strategic Site Monitoring.

SAR and Optical Image combination-based information and analysis

Flooding Extent, depth and Vulnerability Solutions

Coherent Change Detection

Dark Vessel Detection and alert system

Mining Oil and Gas Monitoring

Oil spill detection and Monitoring

Soil Moisture Mapping

Infrastructure and slope Stability Monitoring.

Water Resources Monitoring Solutions

- Lake Mapping and Monitoring
- River Basin Management: Water Budget Estimation
- Water Quality Monitoring
- Drought Monitoring (Soil Moisture Assessment)

River Basin Management

Monitoring water availability in a basin basin — water flow in streams within the requires information/observations/modeling of water budget components in the basin.

Water flow in a stream/river depends on the following components in the watershed contributing to the flow:

- Precipitation
- Evaporation and Transpiration
- Infiltration
- Surface water, soil moisture, reservoirs, and groundwater storage
- Runoff

Environment Monitoring

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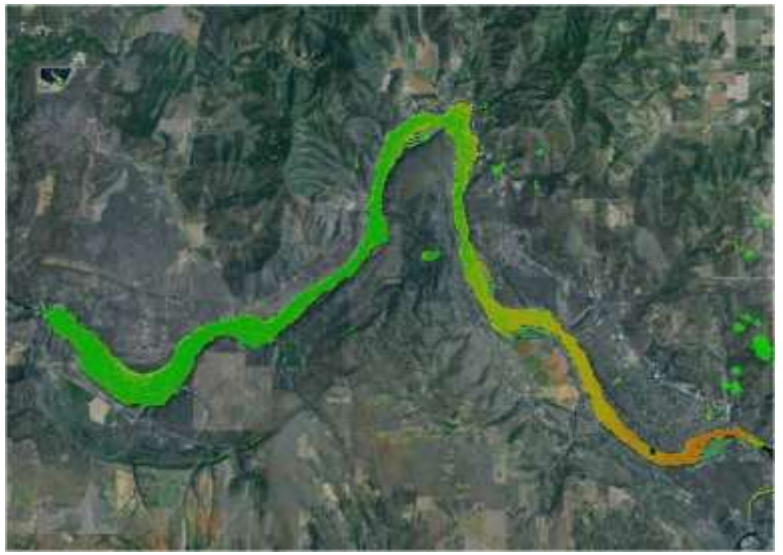
Suhora will provide Monthly Insights to Statewide Environment Monitoring Parameters like Waterbody water content, Water Quality etc.



Monitor Lakes and Reservoirs using Remote Sensing

Shakoor Lake at India-Pakistan Border in Gujarat

Water Quality

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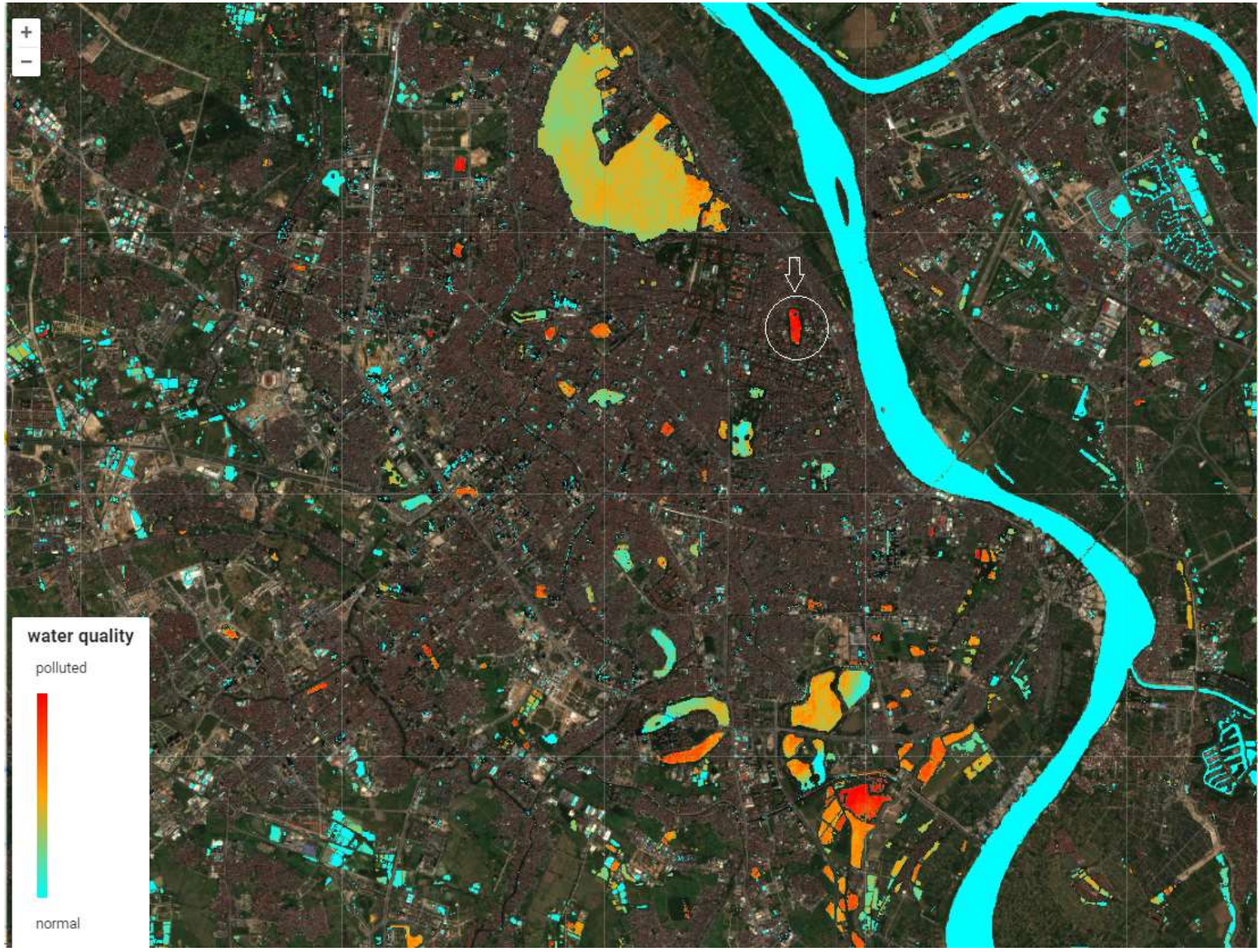
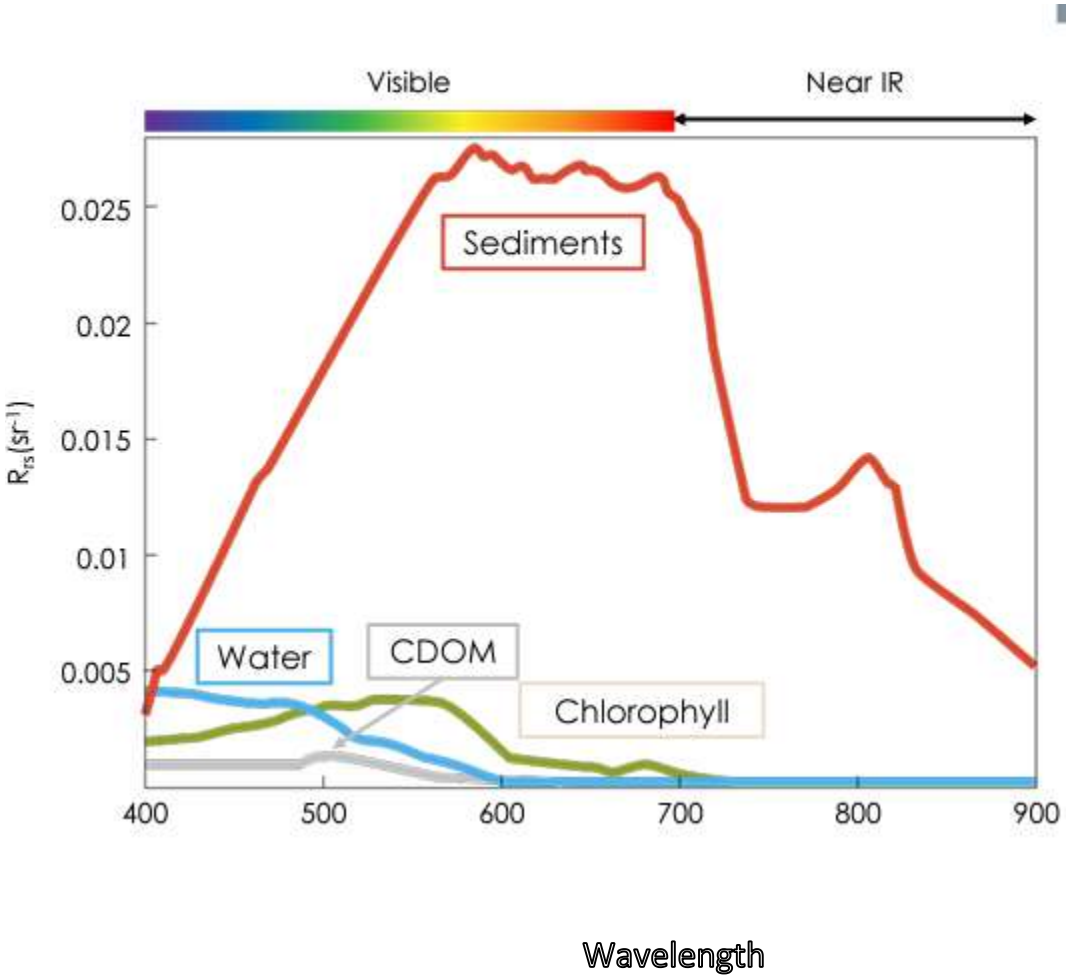
Satellite Based Water Quality Monitoring can be used for corrective and legal actions. Subscription based low CAPEX Solution, complementary to high-cost Sensor approach



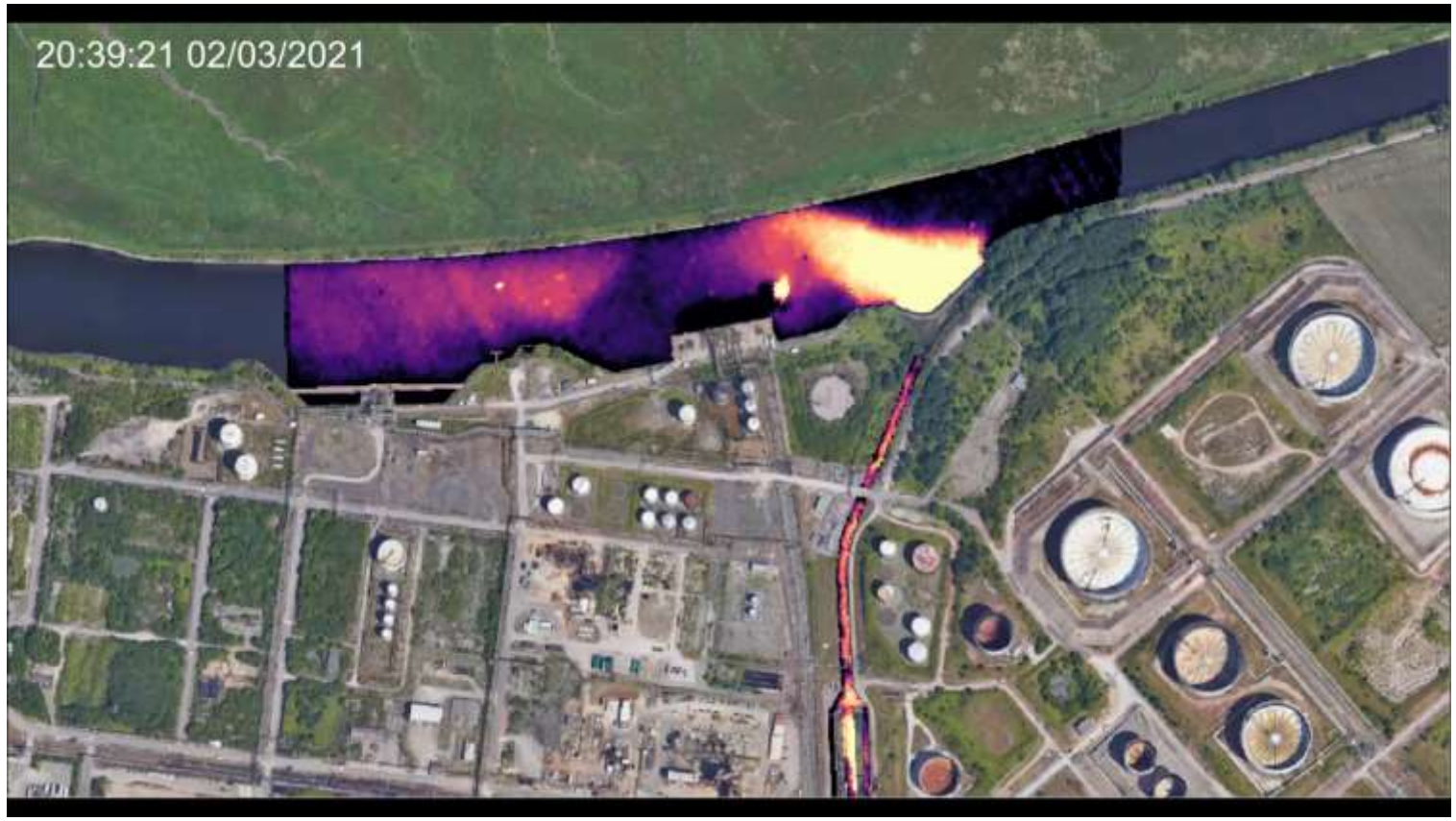
Water Quality

Natural water contains material that is optically active. Monitoring light reflectance from the water surface with remote sensing can indicate the quality of the water.

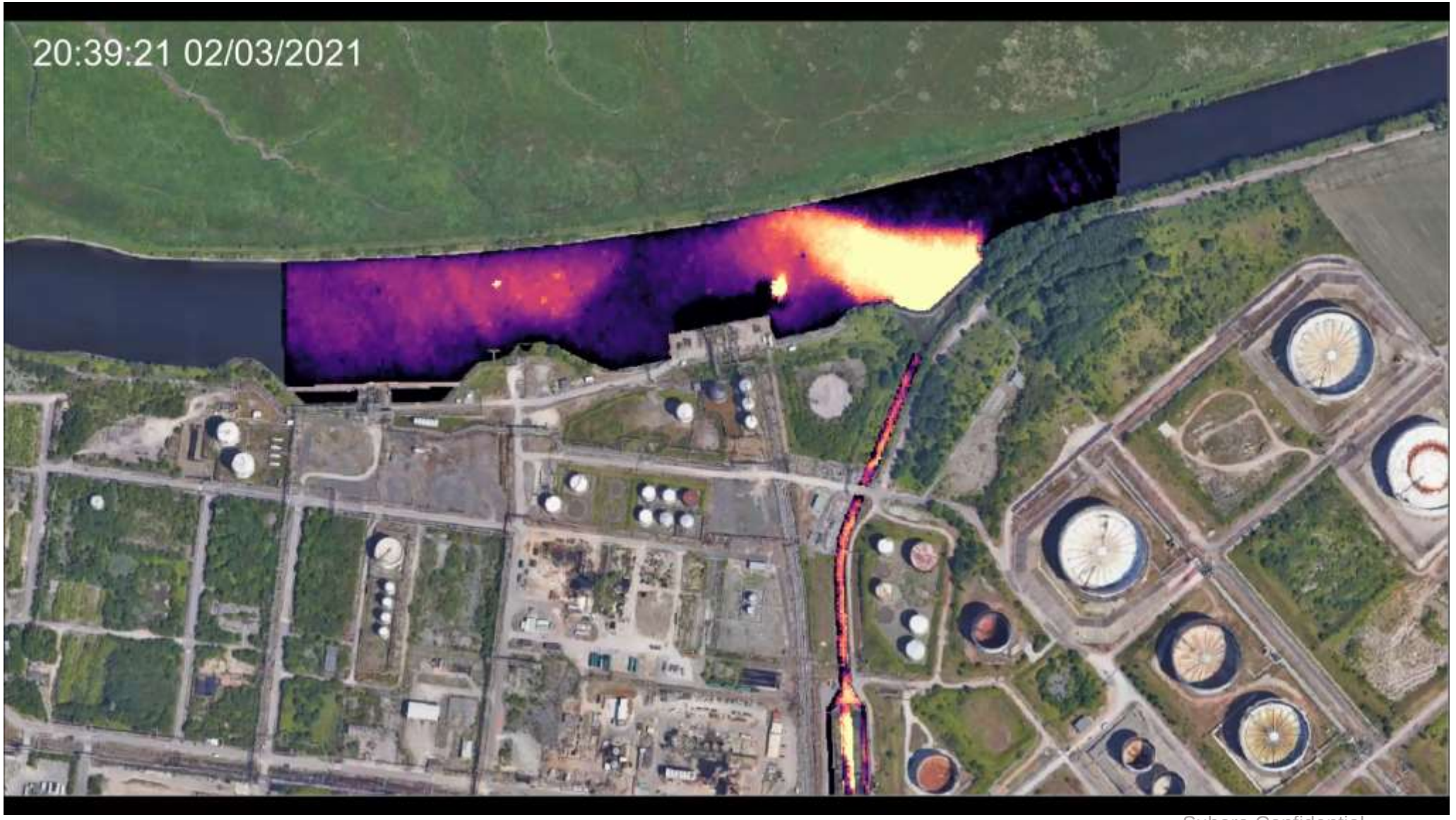


Industry Pollution Monitoring

Suhora can provide periodical report for Polluting industries for Environmental Impact Assessment using Thermal bands at a resolution of 3.5 m.

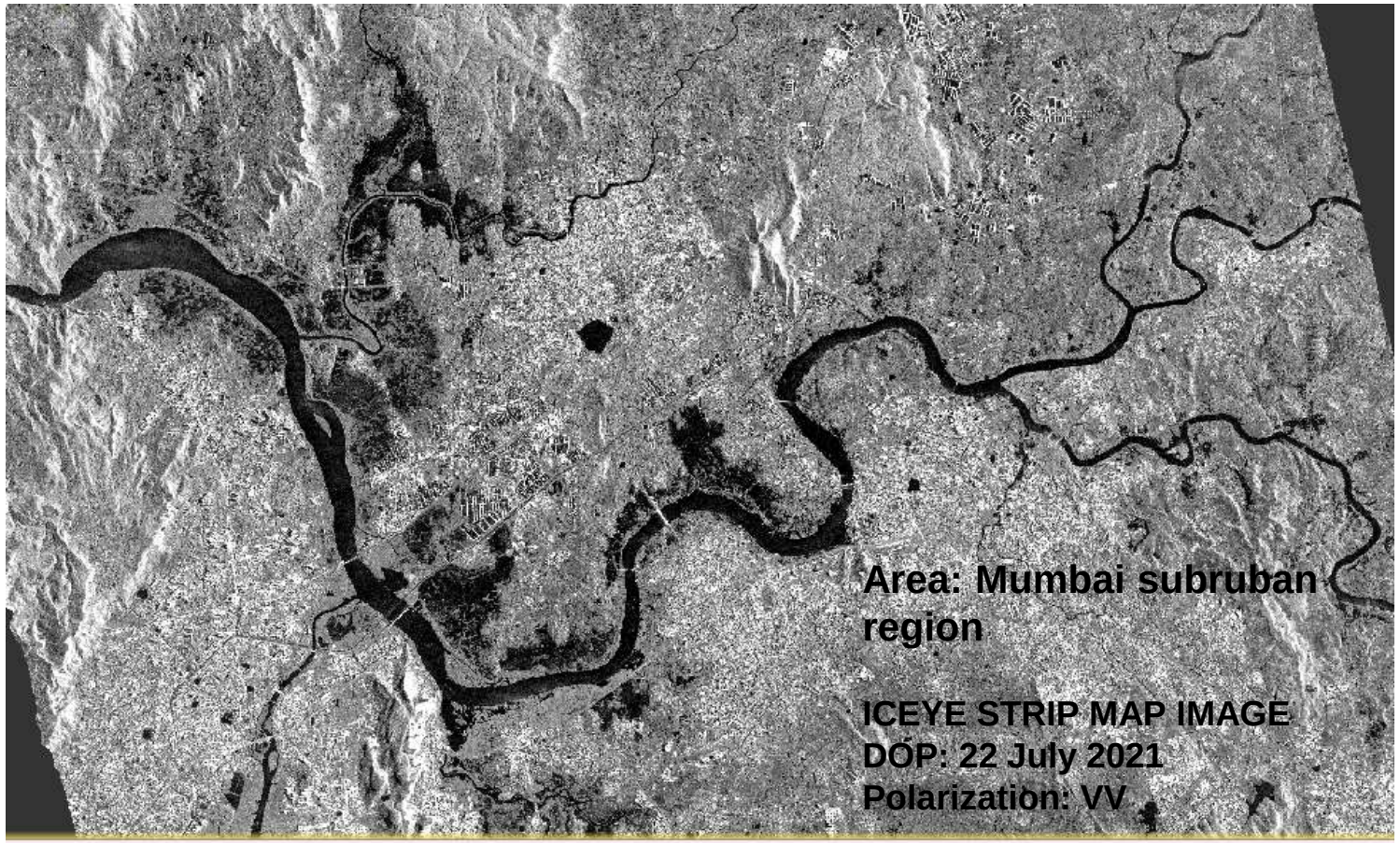


Water Quality Assessment



Flood Inundation and Depth

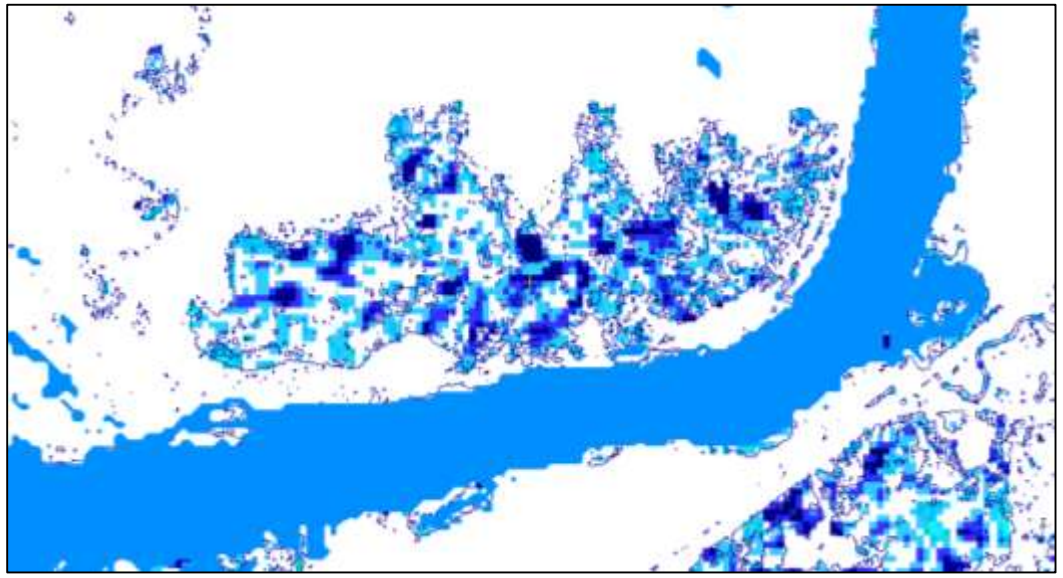
CASE 1: Mumbai Floods:2021



Created by ICEYE

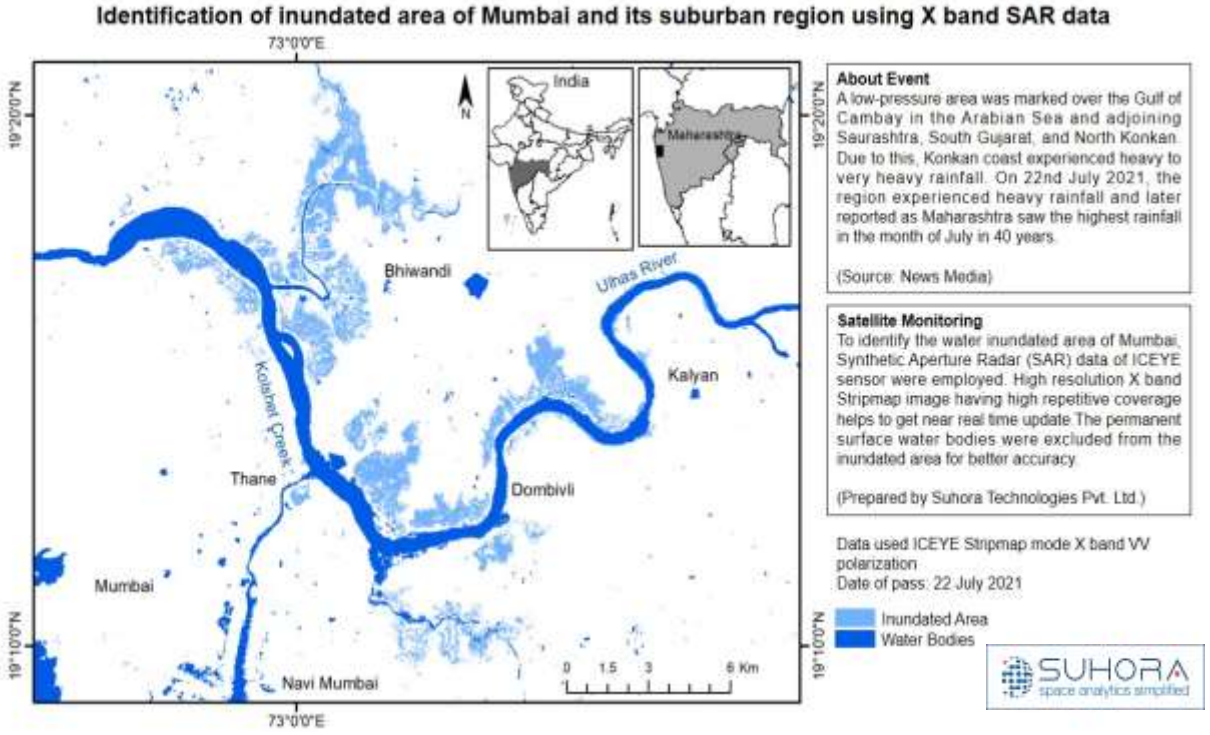
Flood Inundation and Depth

- Flood Inundated areas identified in Mumbai and its suburban region



Depth of inundated water (m)

- 0 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



Multi-Parametric Flood Assessment

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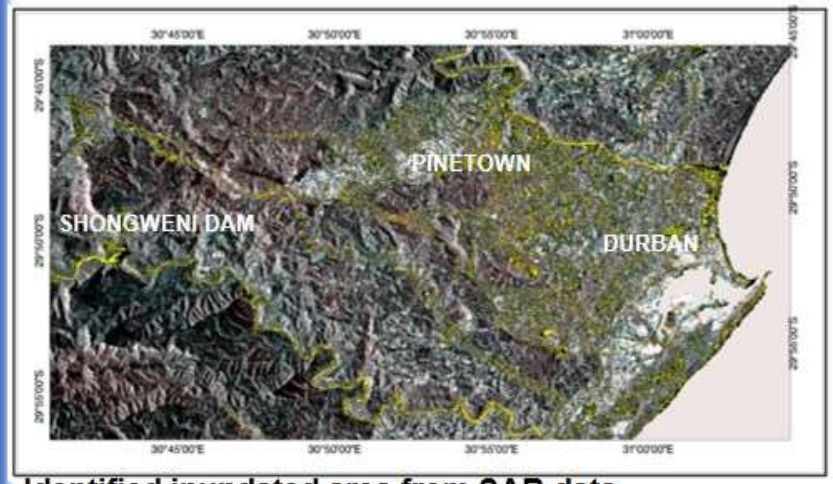
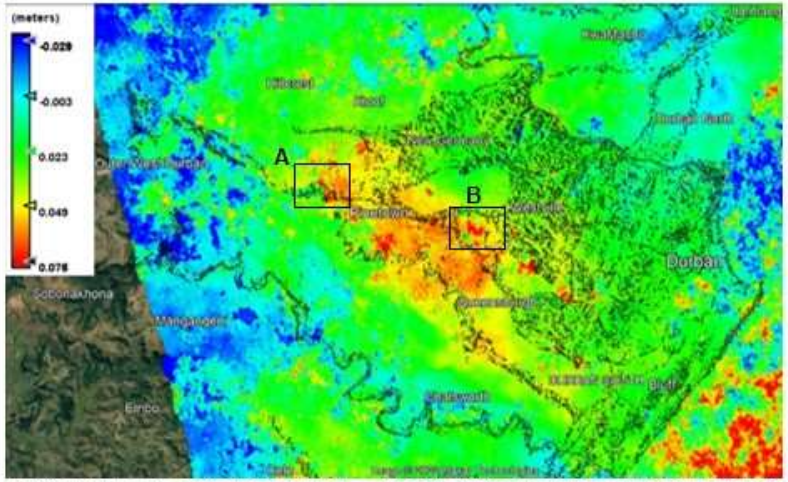
Multi-parametric analysis to monitor the impact of natural hazards



Identified inundated area from SAR data

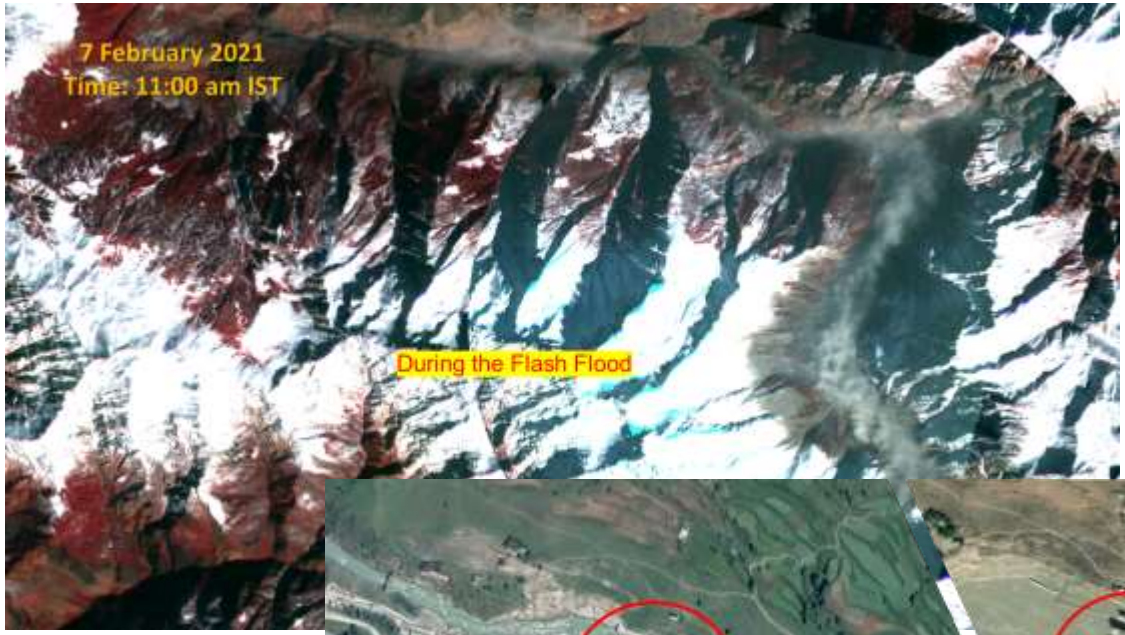


Displacement analysis - inundated area overlapped

Flash flood caused opening up of the river couses in most affected areas. SAR data helped to identify these widen river banks around the Durban region

Real Time Monitoring during Disaster

- High Frequency Monitoring Using SAR and Optical During Disaster
- During Disaster Imagery Collection Request and Downloading facility
- Tip and Cue using High Frequency SAR and Optical Satellites
- SAAS based Image Exploitation and Change detection tool for decision Making
- Tip and Cue Using Optical and SAR data for any Weather, Day ad Night monitoring ~10 shots per day in standard conditions
- Flood Depth



Slope Stability-Infrastructure Monitoring

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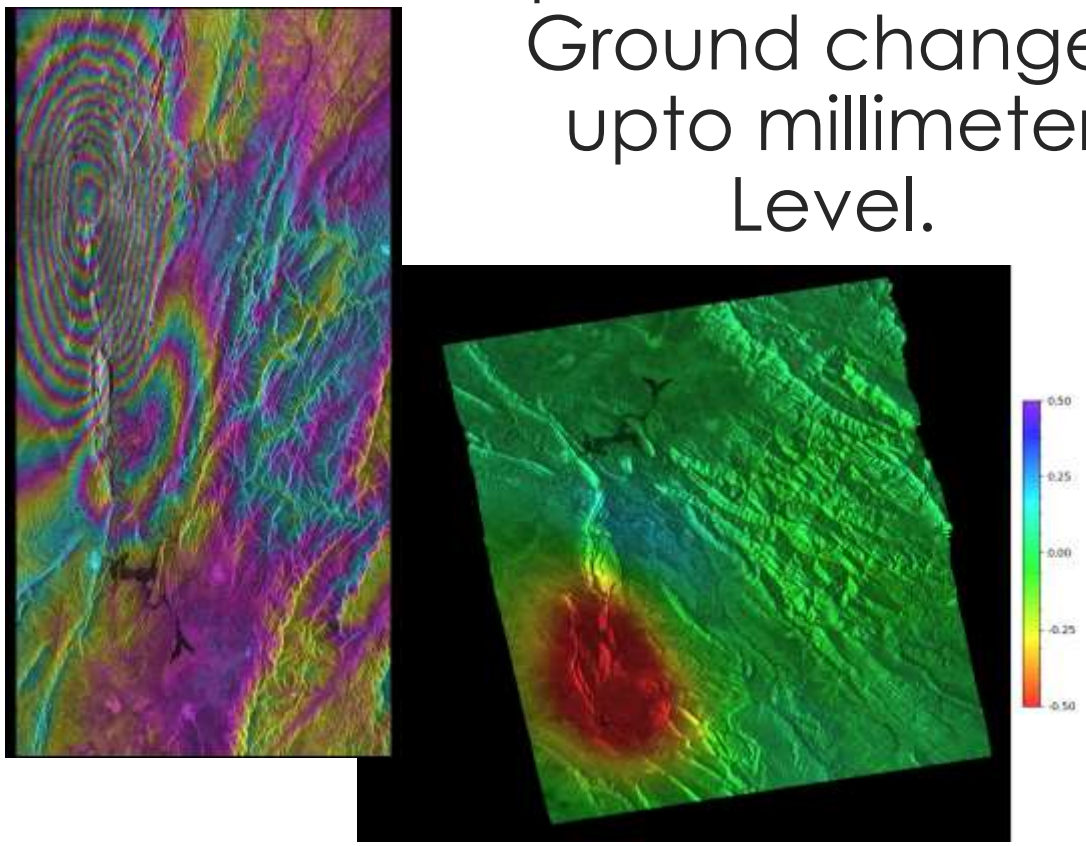
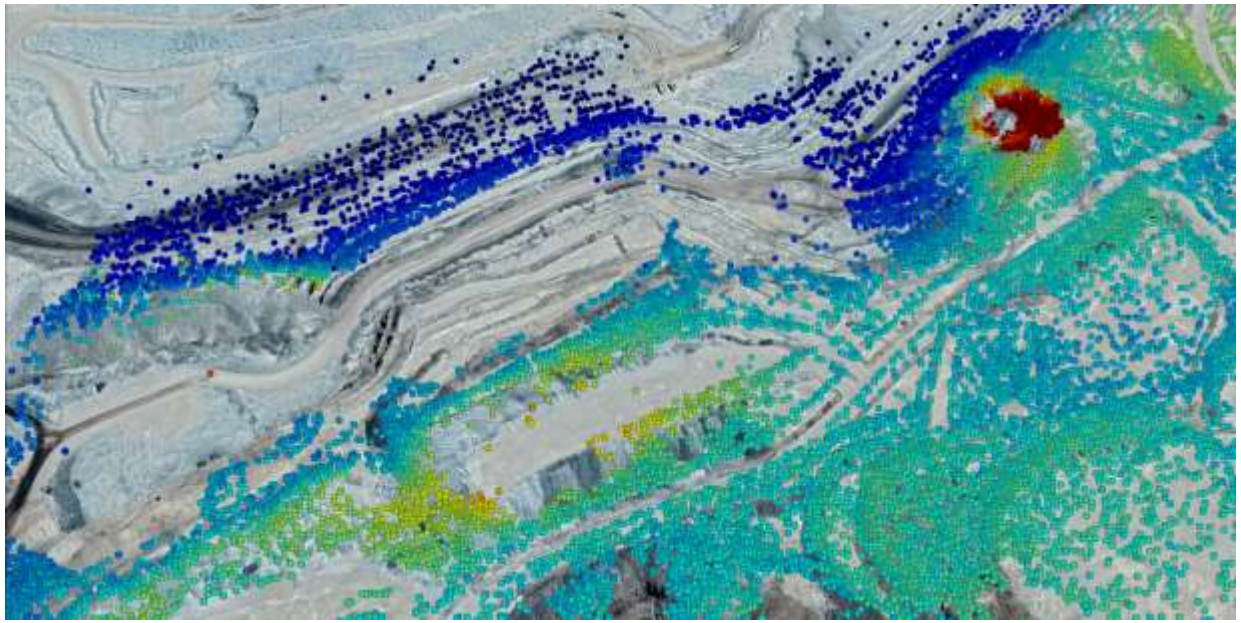
Get actionable reports and Measure Ground changes upto millimeter Level.

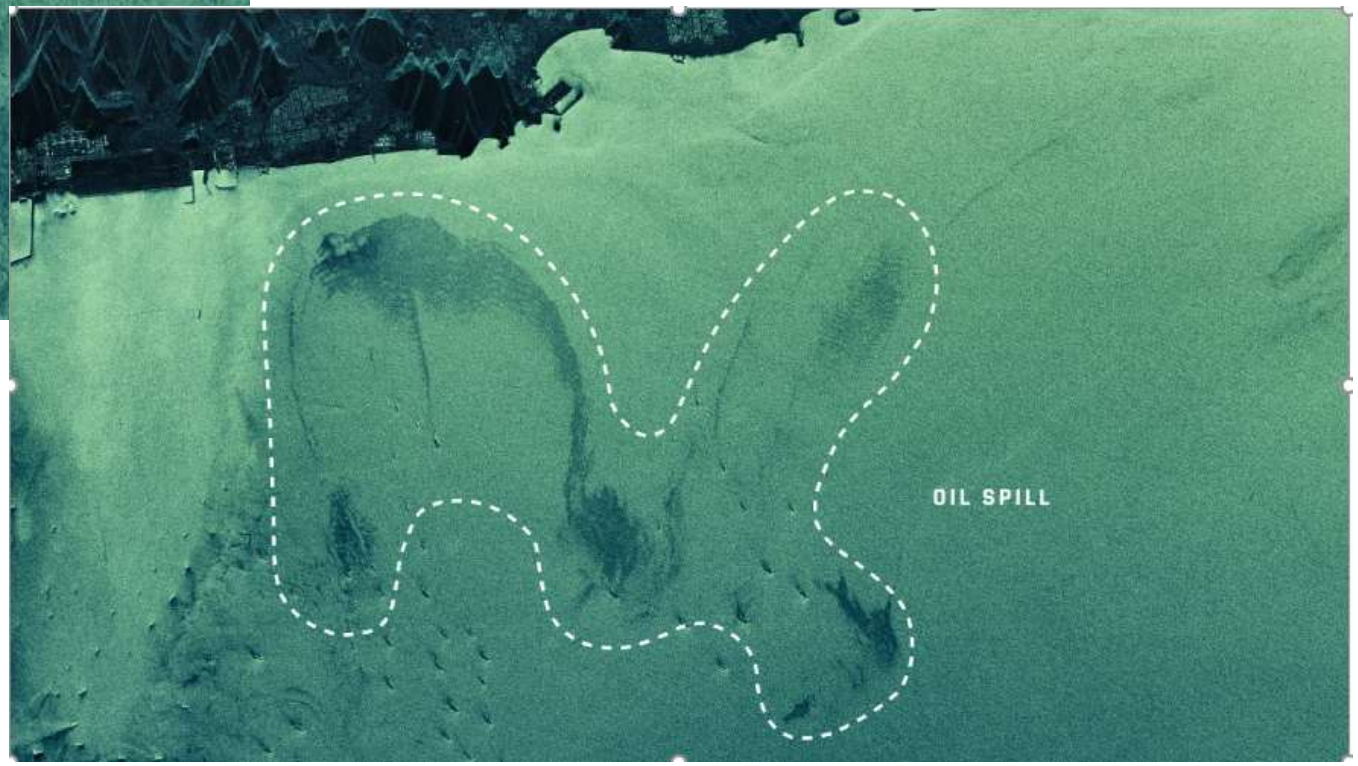


- Ground Deformation and Land Subsidence Monitoring using InSAR Techniques.
- Mine caving/ DAM Stability Monitoring using PS-InSAR Techniques



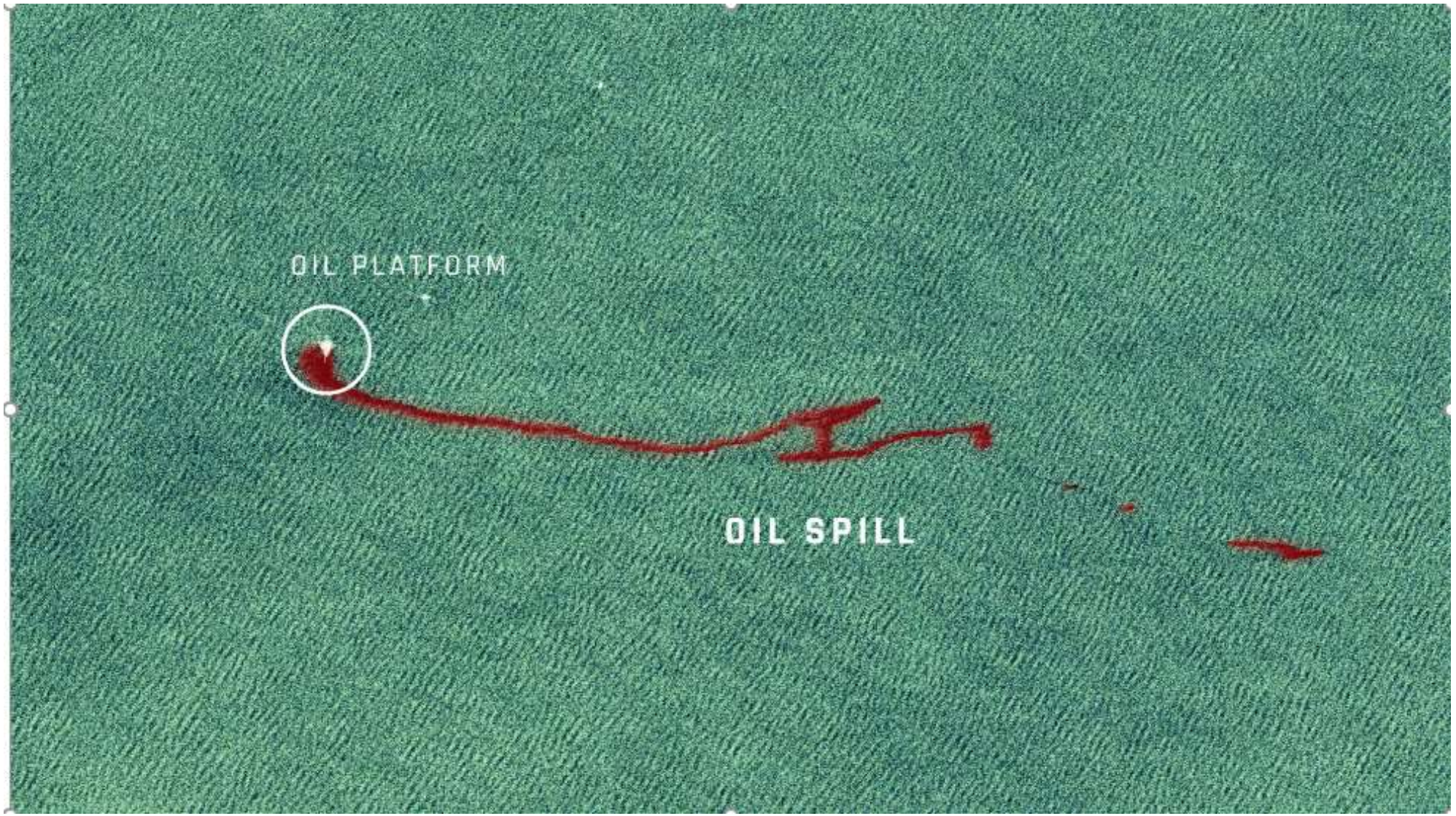
PSI deformation map showing points colorized by deformation rate at Rossing Uranium Mine in Namibia. One location (red) shows significant and continuous deformation on the steeply sloped edge of the mine.

Detect Vessels causing Oil Spills

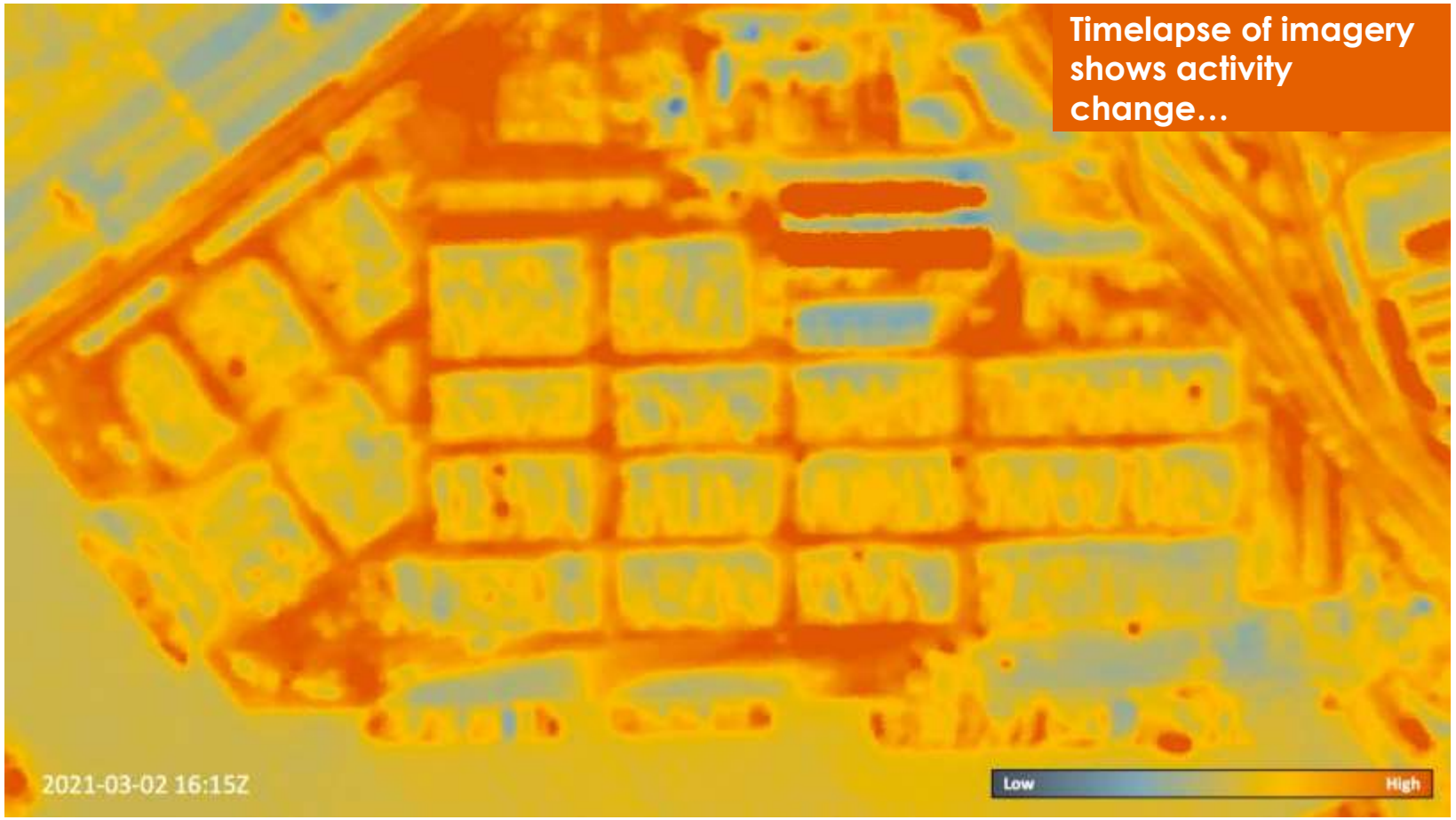


A damaged crude oil tanker causes a large oil slick in the Gulf of Oman. The dark water areas indicate oil.

Offshore Drilling Oil Spill Detection



THERMAL IMAGING BASED MONITORING



Team Suhora thanks you..

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