

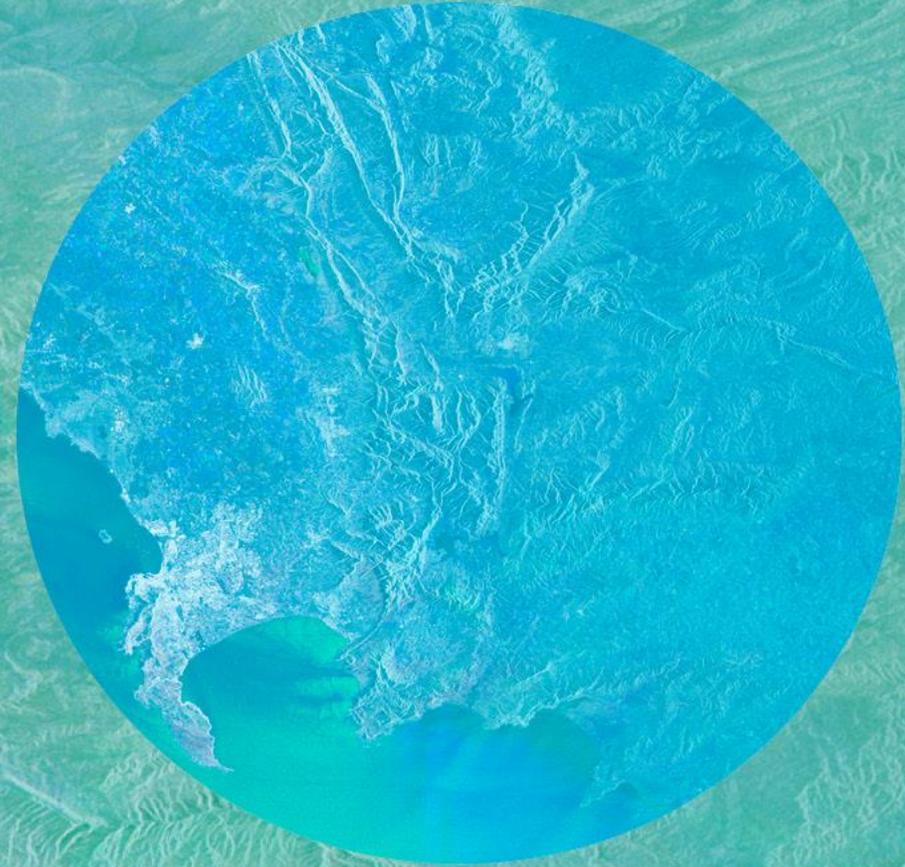
# GEO WEEK & MINISTERIAL SUMMIT 2023

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Flash Talk

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#TheEarthTalks



science & innovation

Department:  
Science and Innovation  
REPUBLIC OF SOUTH AFRICA



GEO WEEK  
2023 MINISTERIAL  
SUMMIT

GEO GROUP ON  
EARTH OBSERVATIONS

# Leveraging satellite imagery for a sustainable future

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**Monitoring the effect of agriculture on deforestation**

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06.11.2023 (14:10)



**James  
Saunders**

# OUTLINE

The issue

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An Earth Observation perspective

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Data types and fusion

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Validation and data presentation

## The issue

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- 38% Earth's land mass is covered by agriculture
- 31% Earth's land mass is covered by forest
- Agricultural expansion continues to be the main driver of deforestation
- Deforestation occurs at SCALE, often in remote areas



## An Earth Observation perspective

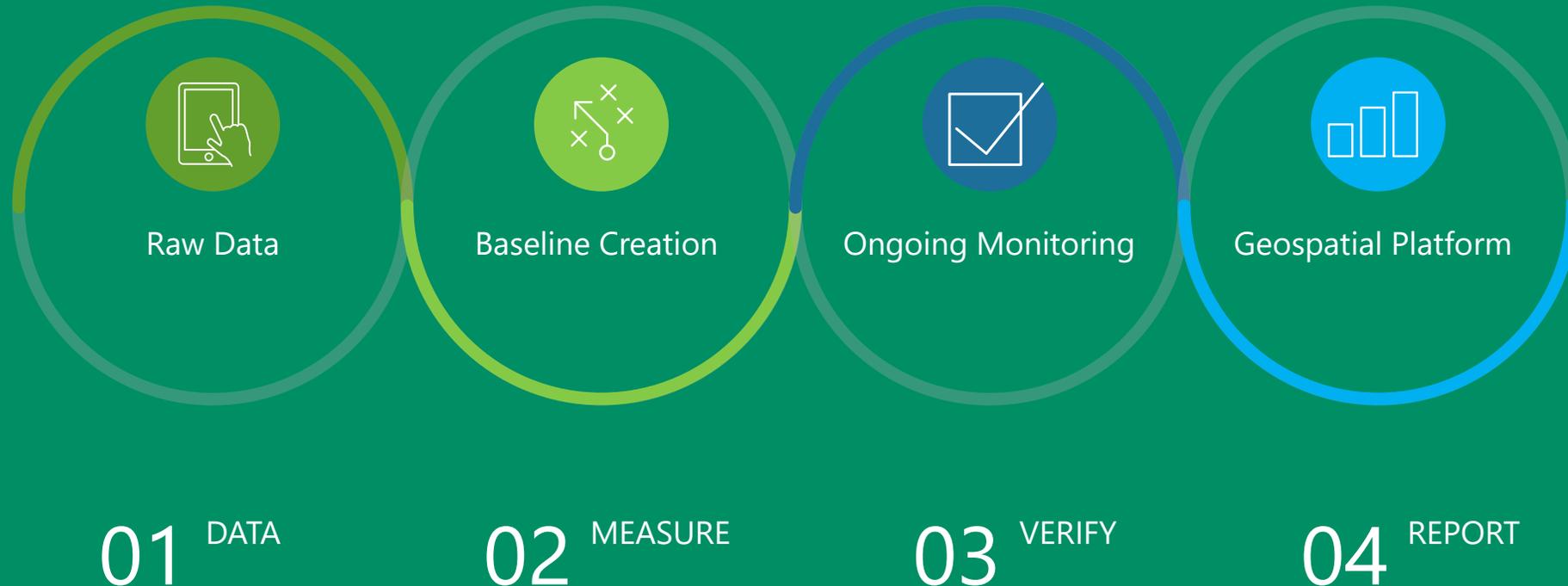
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- Satellite data explosion
- Multiple sensors, multiple applications
- Over 100TB collected per day
- Modern computing makes processing easier
- Continual collection = analytics time machine



# Data types and fusion

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## Data types and fusion

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- Optical high resolution
- RADAR medium resolution
- Optical low resolution
- Optical medium resolution



# Data types and fusion

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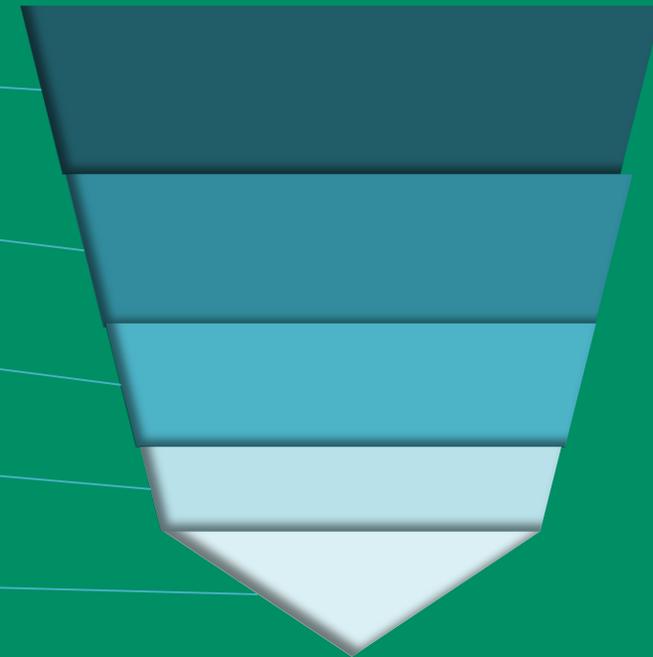
3<sup>rd</sup> Party Generated Deforestation Alerts –  
**Country Wide Analysis**

Sentinel-1 and/or Sentinel-2 satellite  
imagery verification

PlanetScope hot spot analysis and  
verification. **Smaller areas to be  
targeted.**

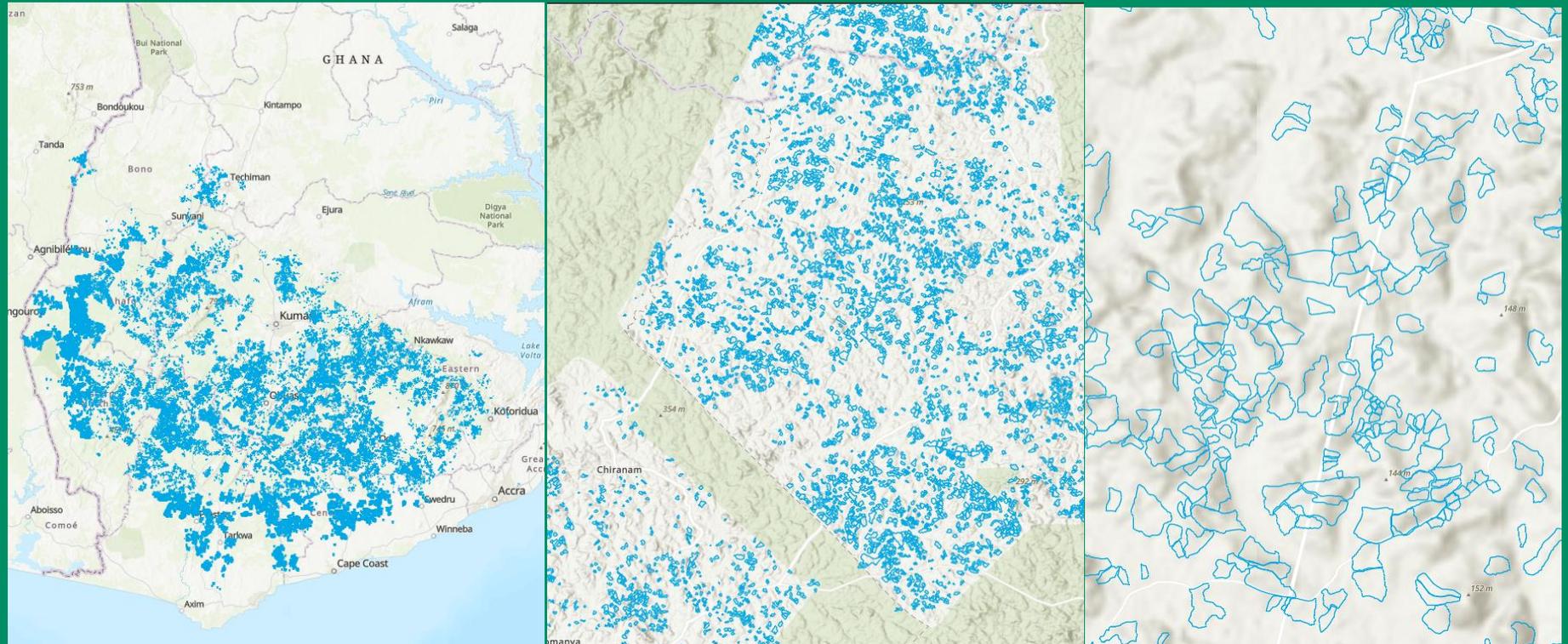
High resolution 30cm/50cm further  
verification for **small-scale deforestation**

Field teams to be sent to problematic  
areas with **in-field surveys to be  
conducted**



## Validation and data presentation

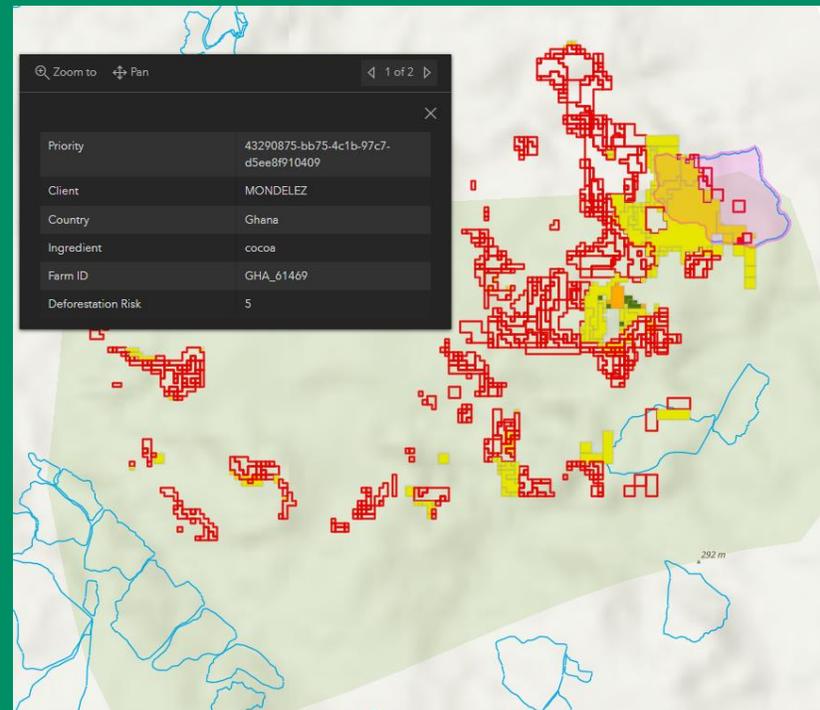
+/- 165 000  
fields within  
Ghana and  
over 550 000  
worldwide



## The issue

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### Disturbance Heat Map Analysis – Drill Down



Low resolution  
optical and radar



Medium resolution  
optical and radar



High resolution  
optical



In field survey

# Validation and data presentation

🌳 BC Ghana Alerts
Select a date  
None
Deforestation Risk  
No category selected
Warehouse Selector  
No category selected

### Farm Information

Farm ID: GHA\_58828  
Farmer Code: WS/054/AM/01-015  
Plantation: 0-10163286-1  
Warehouse: AGONA AMENFI DISTRICT  
Certification: COCOA LIFE  
Ingredient: cocoa  
Deforestation Risk: 3

Farm ID: GHA\_58840  
Farmer Code: WS/054/AM/03-61  
Plantation: 0-10163382-2  
Warehouse: AGONA AMENFI DISTRICT  
Certification: COCOA LIFE  
Ingredient: cocoa  
Deforestation Risk: 2

Farm ID: GHA\_58842  
Farmer Code: WS/054/AM/03-74  
Plantation: 0-10163404-1  
Warehouse: AGONA AMENFI DISTRICT

### Disturbance Alerts

🚩	Date: 21/09/2023 Area: 0.08 ha Source: GLAD-L Farm: GHA_61469
🚩	Date: 21/09/2023 Area: 0.08 ha Source: GLAD-L Farm: GHA_61469
🚩	Date: 03/09/2023 Area: 0.01 ha Source: RADD-3 Farm:
🚩	Date: 03/09/2023 Area: 0.01 ha Source: RADD-3

### Alerts within Plots

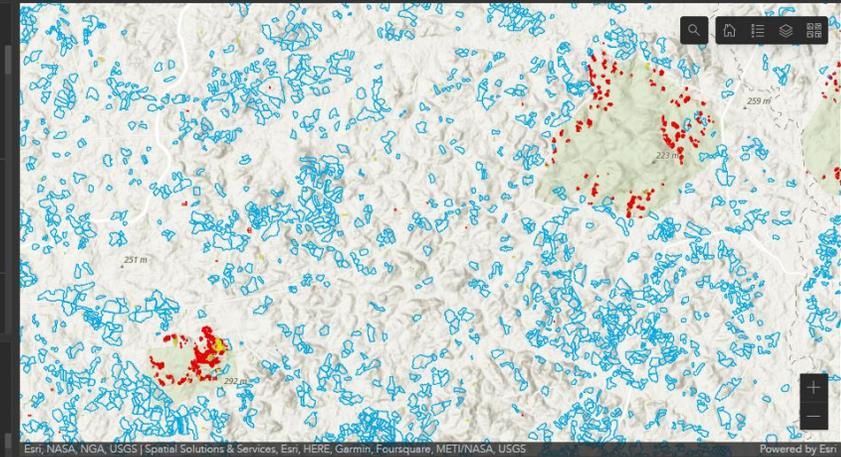
50

4.5 Ha

### Alert Regions



- Within 1109 Alerts
- 100m 9081 Alerts
- 250m 37204 Alerts
- 500m 169182 Alerts



Esrri, NASA, NGA, USGS | Spatial Solutions & Services, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS  
Powered by Esri

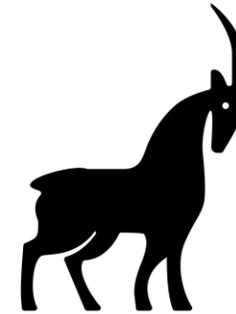
### Disturbance Total Area Ha



Year	Month	Area (Ha)
2021	Jan	3.2
2021	Apr	3.2
2021	Jul	1.2
2021	Oct	0.4
2022	Jan	1.5
2022	Apr	0.4
2022	Jul	4.3
2022	Oct	2.4
2022	Jan	2.7
2022	Apr	1 Ha
2022	Jul	1.1
2022	Oct	0.3
2022	Jan	5.5
2022	Apr	0.8
2022	Jul	2.5
2022	Oct	0.1
2023	Jan	2.5
2023	Apr	2.1
2023	Jul	1 Ha
2023	Oct	1.2
2023	Jan	5.9
2023	Apr	2.2
2023	Jul	11.4
2023	Oct	6.5
2023	Jan	2.6
2023	Apr	4 Ha
2023	Jul	3.3
2023	Oct	0 Ha
2023	Jan	0.1
2023	Apr	0.4
2023	Jul	0.2

## Partners and Affiliations

**MAXAR** | Authorized Reseller



Capella Space



**esri**

Partner Network  
Silver



#TheEarthTalks



6-10 NOVEMBER

CAPE TOWN, SOUTH AFRICA

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Science and Innovation  
REPUBLIC OF SOUTH AFRICA

