# Processing, merging and correlating geospatial data – Achieving valuable information!

Paula Lopes – Geoprocessing Analyst at HEX360

# Who we are and what we do

- A Brazilian company specialized in remote sensing and intelligence

**+ 500 million km² monitored in Brazil**
**+ 195 million km² monitored on land (Radar)**
**+ 100 million km² monitored at sea (Radar)**

- Environment
- Registration
- Agribusiness
- Infrastructure
- Allotments
- Flooding
- Security
- Mining
- Electricity Sector
- Smart Cities
- Command and Control

AIRBUS | DIAMOND DISTRIBUTOR

OMEO

Colect data → Processing → Data fusion → Presents data

Support platform for management skynet

- Collects data with online connection to hundreds of satellites
- Automatically interprets satellite image using artificial intelligence
- Stores all the information in a centralize geodatabase and cross-references it with other existing databases
- Simple and intuitive interface for technicians, secretaries, the mayor and citizens

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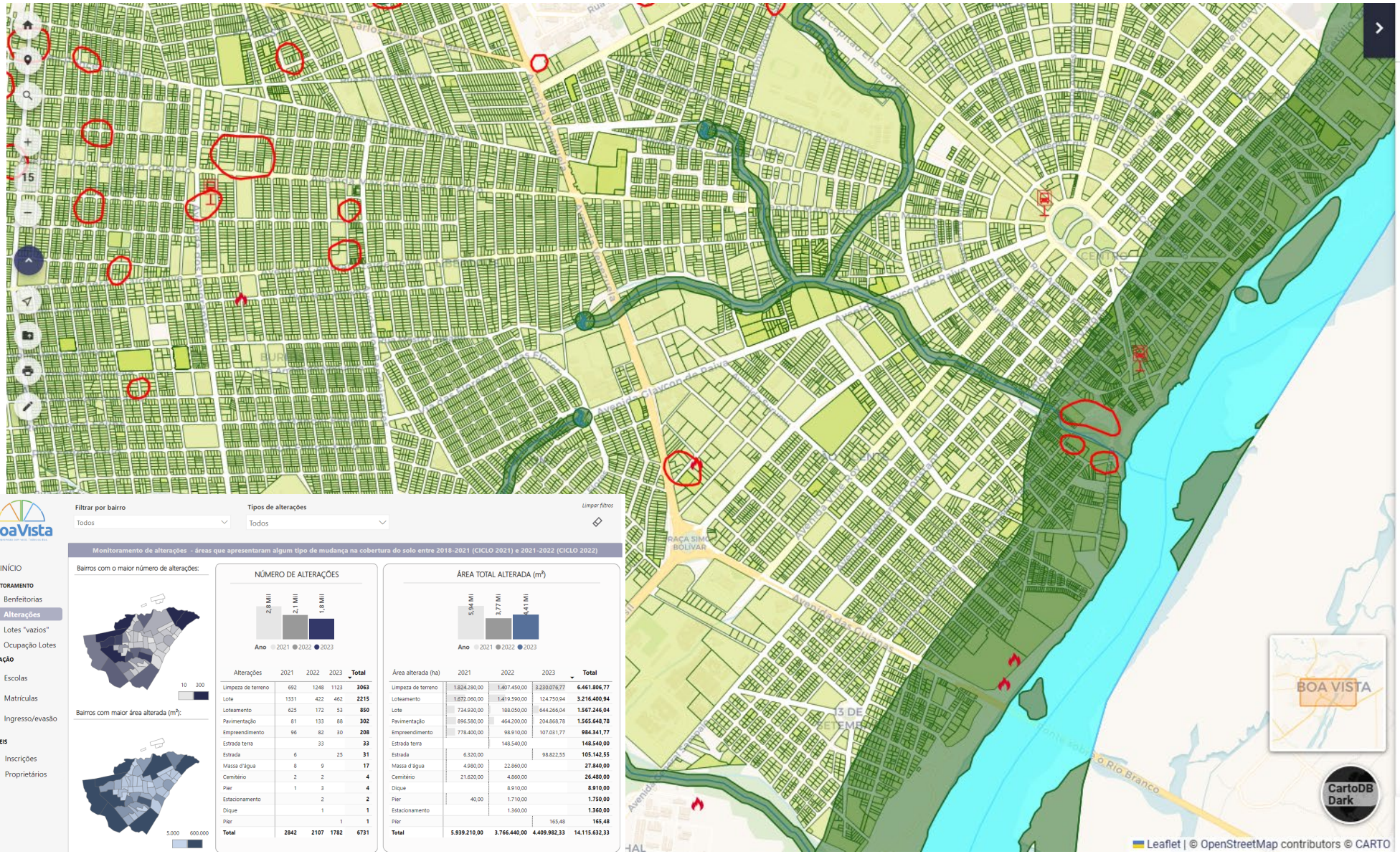
CEDS 2024







| Alterações | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|
| Limpeza de terreno | 692 | 1248 | 1123 | 3063 |
| Lote | 1331 | 422 | 462 | 2215 |
| Loteamento | 625 | 172 | 53 | 850 |
| Pavimentação | 81 | 133 | 88 | 302 |
| Empreendimento | 96 | 82 | 30 | 208 |
| Estrada terra | | 33 | | 33 |
| Estrada | 6 | | 25 | 31 |
| Massa d'água | 8 | 9 | | 17 |
| Cemitério | 2 | 2 | | 4 |
| Pier | 1 | 3 | | 4 |
| Estacionamento | | 2 | | 2 |
| Dique | | 1 | | 1 |
| Pier | | | 1 | 1 |
| Total | 2842 | 2107 | 1782 | 6731 |

| Área alterada (ha) | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|
| Limpeza de terreno | 1.824.280,00 | 1.407.450,00 | 3.230.076,77 | 6.461.806,77 |
| Loteamento | 1.672.060,00 | 1.419.590,00 | 124.750,94 | 3.216.400,94 |
| Lote | 734.930,00 | 188.050,00 | 644.266,04 | 1.567.246,04 |
| Pavimentação | 896.580,00 | 464.200,00 | 204.868,78 | 1.565.648,78 |
| Empreendimento | 778.400,00 | 98.910,00 | 107.031,77 | 984.341,77 |
| Estrada terra | | 148.540,00 | | 148.540,00 |
| Estrada | 6.320,00 | | 98.822,55 | 105.142,55 |
| Massa d'água | 4.980,00 | 22.860,00 | | 27.840,00 |
| Cemitério | 21.620,00 | 4.860,00 | | 26.480,00 |
| Dique | | 8.910,00 | | 8.910,00 |
| Pier | 40,00 | 1.710,00 | | 1.750,00 |
| Estacionamento | | 1.360,00 | | 1.360,00 |
| Pier | | | 165,48 | 165,48 |
| Total | 5.939.210,00 | 3.766.440,00 | 4.409.982,33 | 14.115.632,33 |

BoaVista

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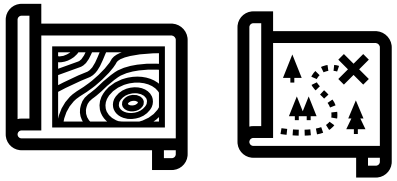
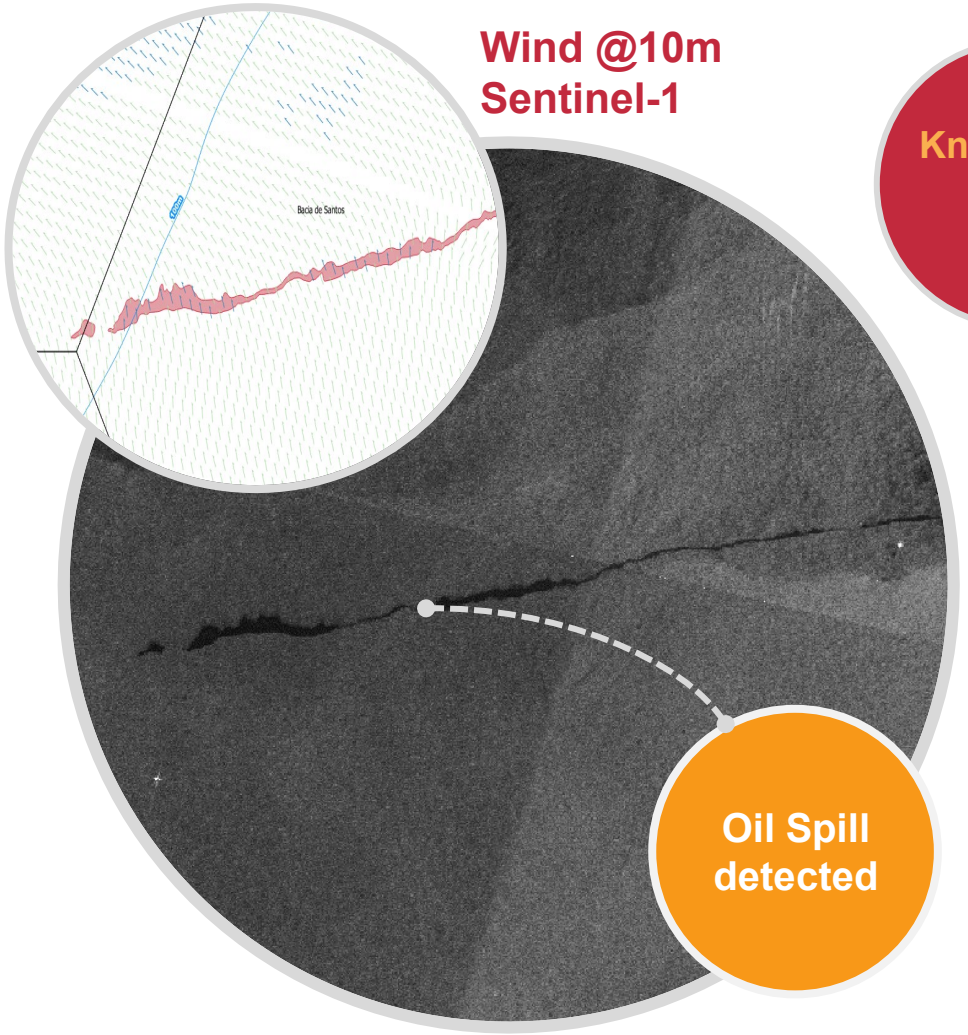
# Delivering Valuable Information in Brazilian Challenging Projects



# Oil Spill Monitoring

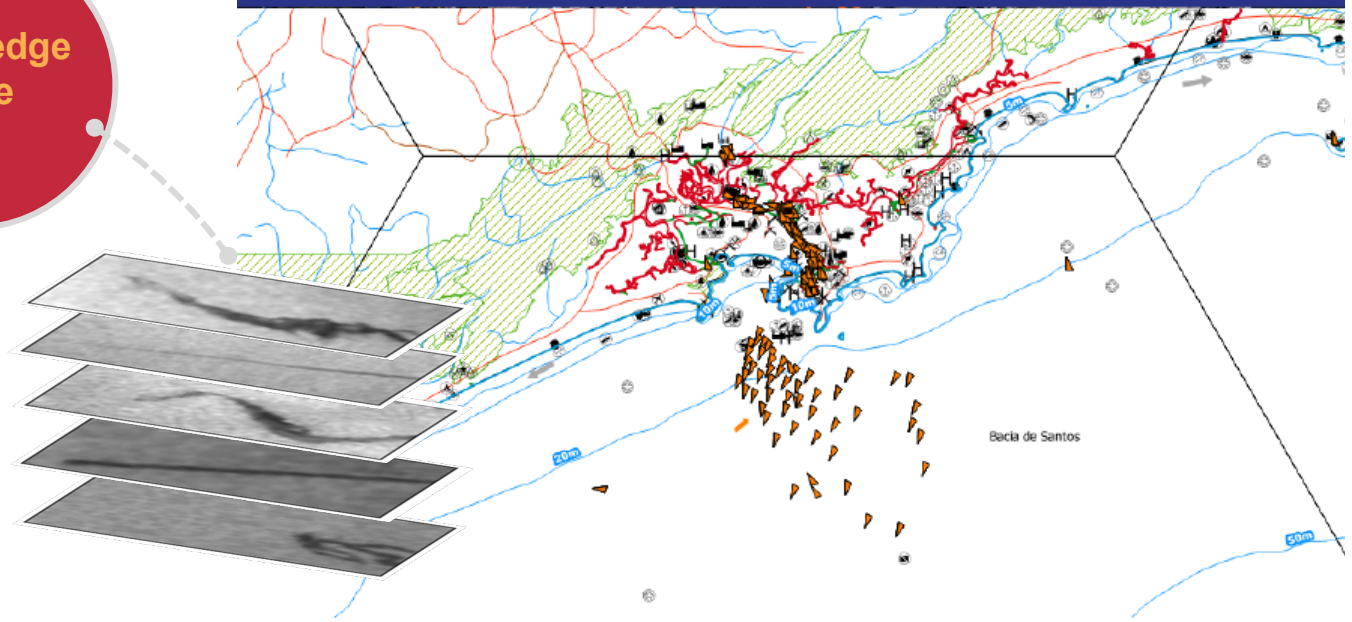
Wind @10m
Sentinel-1

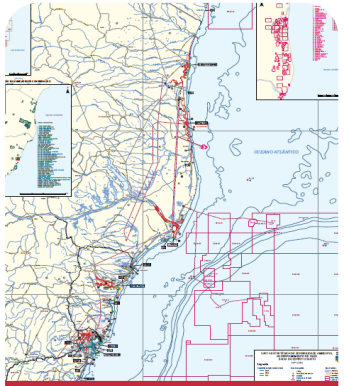



Knowledge base

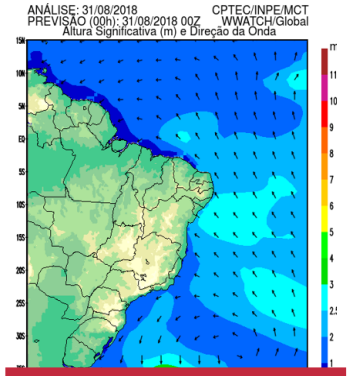
Interface Fusioned & Processed Data

skynet

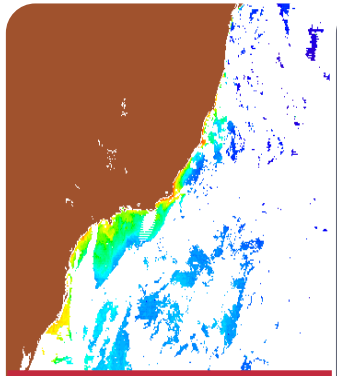


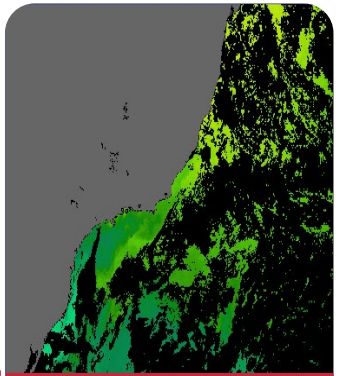
Environmental Sensitivity




WAVES



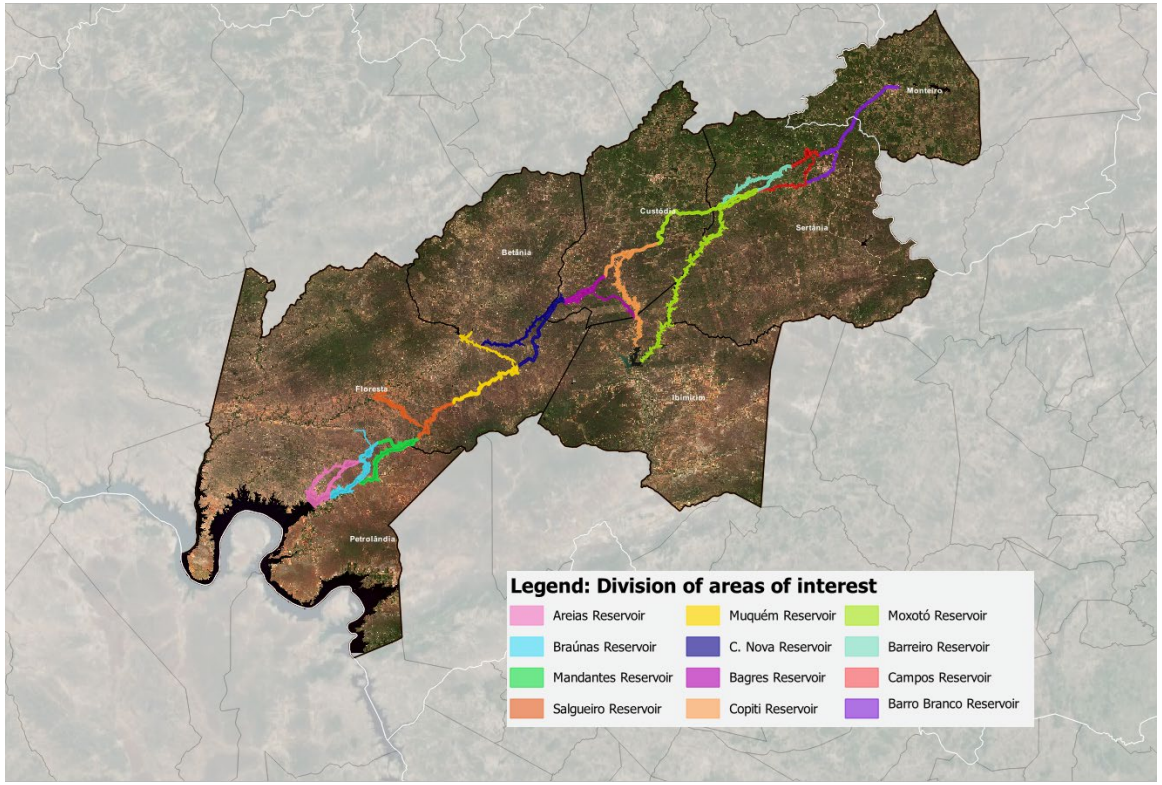
Sea Surface Temperature



CHL-A

- Brazilian EEZ: Blue Amazon **4.5mi** sq km
- Brazilian coastal line: **7.000+** km

# Infrastructure Monitoring

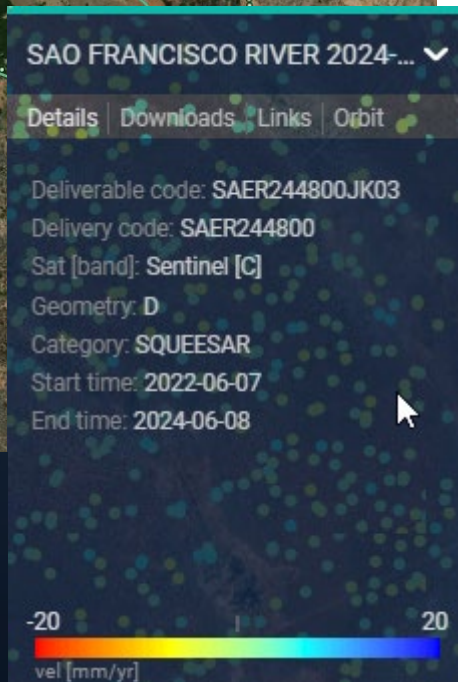



**Transposition of São Francisco river**

- 12 dams
- 220 km extension
- InSAR with Sentinel-1 to monitor surface movement
- Change detection with Sentinel-2 for land use
- Water bodies monitoring with NDWI (Sentinel-2)

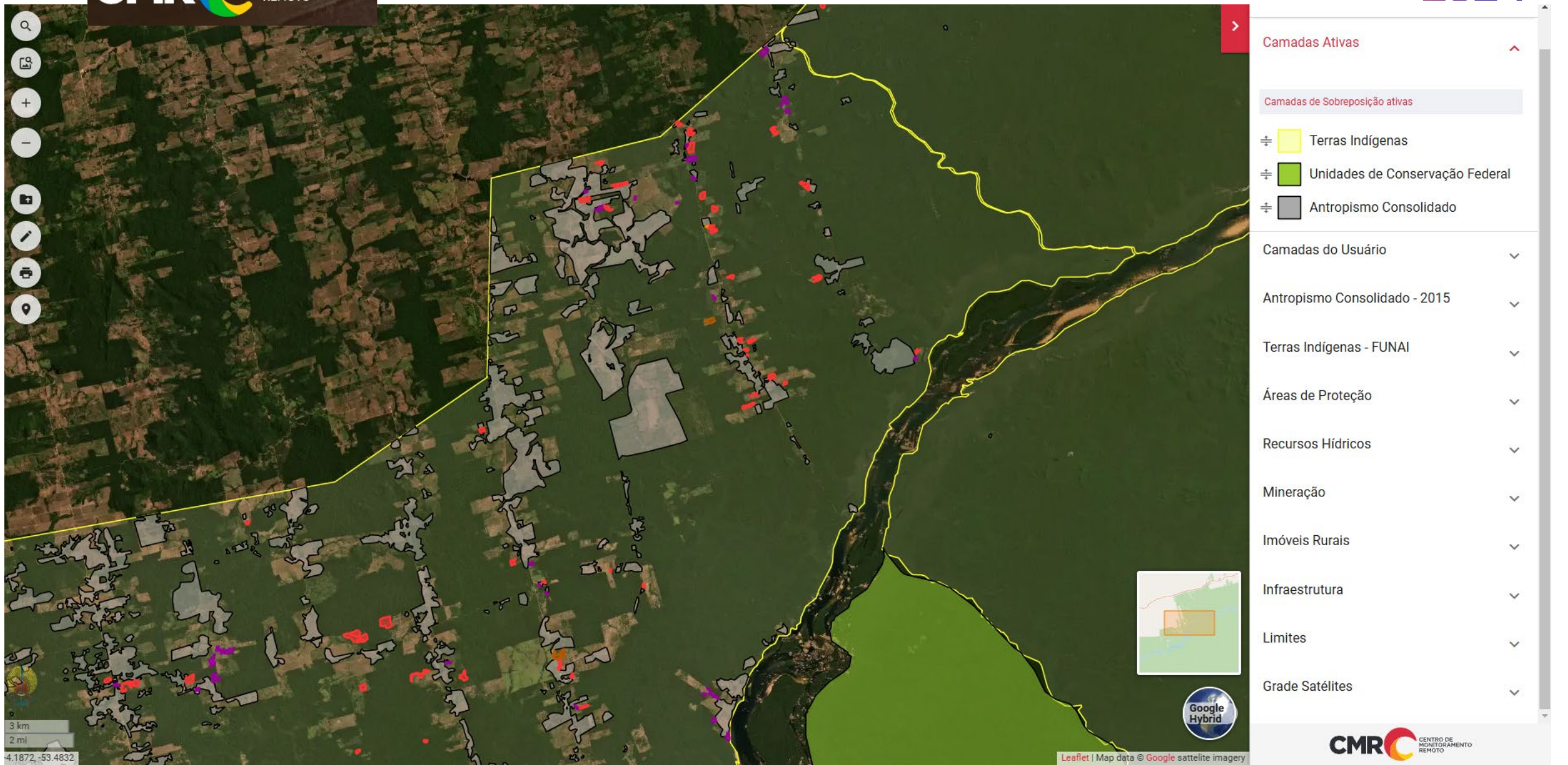
- Remote Sensing solution required to monitor huge infrastructure for integrity analysis and changes in land use.
- Mature technologies integration applied, InSAR, Artificial Intelligence.

# Infrastructure Monitoring

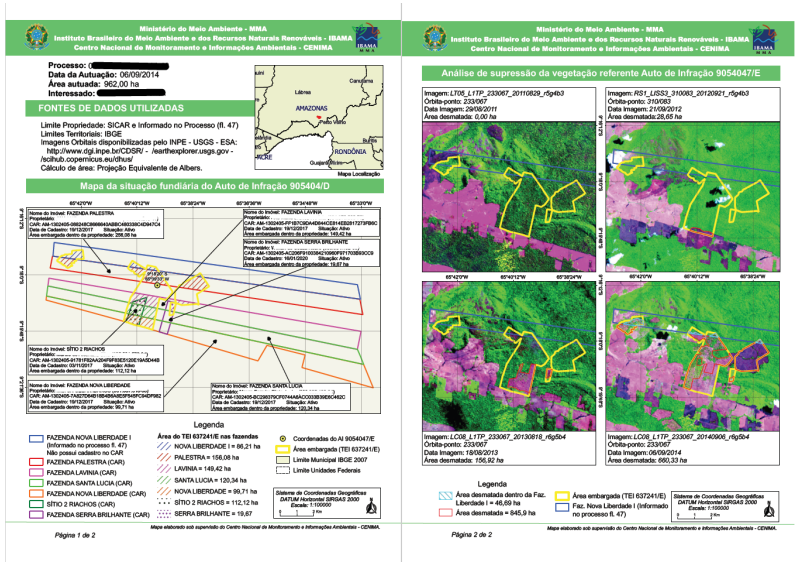



TRE ALTAMIRA
A CLS Group Company

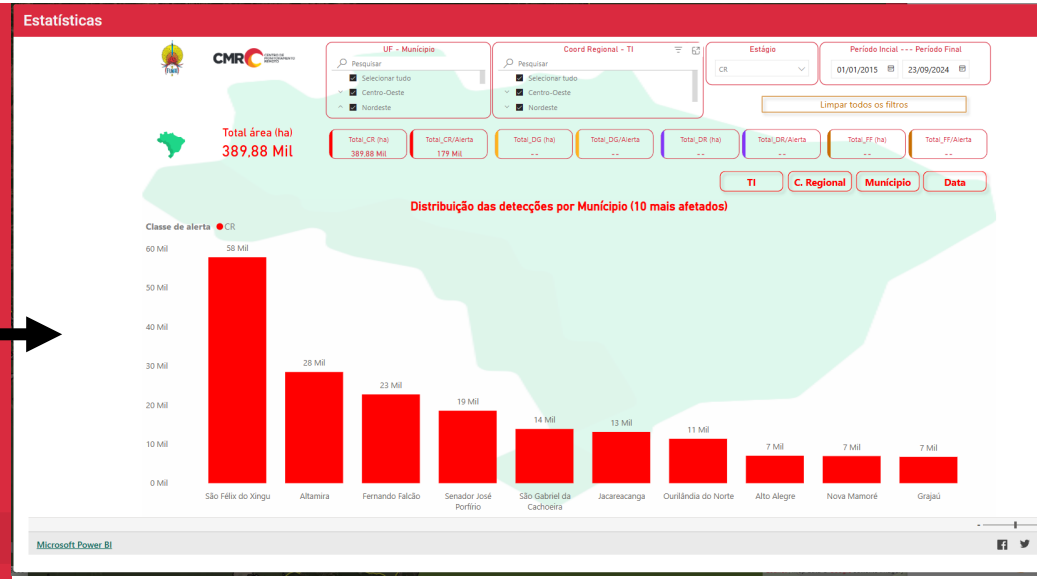
# Environmental monitoring

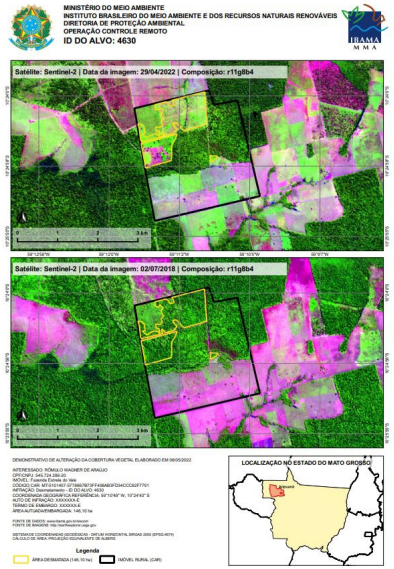


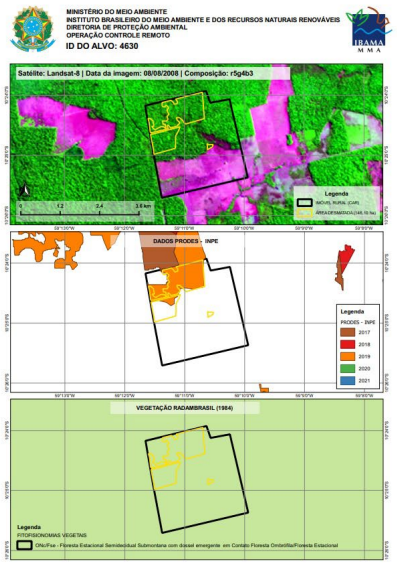
# Environmental monitoring

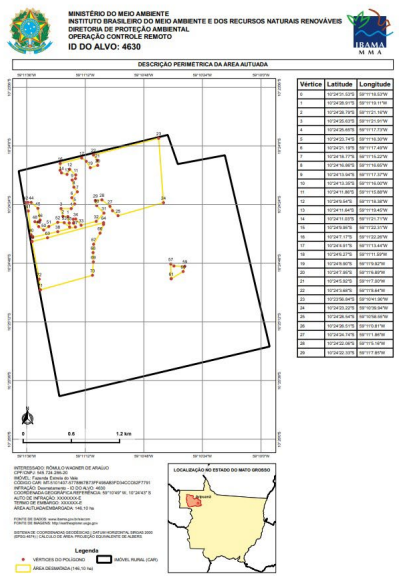


- Camadas de Sobreposição
- Polígonos Prioritários
- Monitoramento Diário
- Alta Resolução e Mosaicos
- Risco de Fogo e Focos de Calor (INPE)
- Uso e Ocupação do Solo
- PRODES (INPE)
- Documental
- Meu acervo de imagens
- Deter
- Analítico




CMR CENTRO DE MONITORAMENTO REMOTO

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# CEDS 2024

eventos.cmm.uchile.cl/ceds2024

Global Gateway

UNIVERSIDAD DE CHILE

fcfm FACULTAD DE CIENCIAS FÍSICAS Y MATEMÁTICAS UNIVERSIDAD DE CHILE

CMM Center for Mathematical Modeling

Copernicus LAC Chile