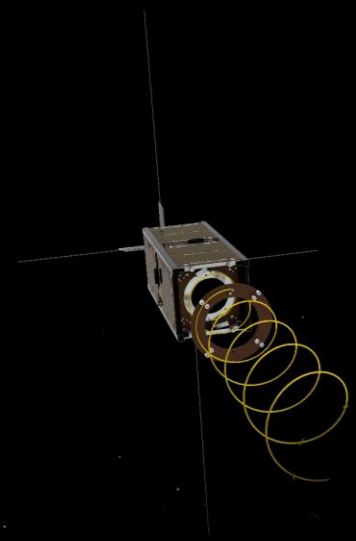
AISTECH
Access to Intelligent Space Technologies



Access to Intelligent Space Technologies

Luis José Salazar-Serrano

luis.salazar@aistechspace.com

EPIC Meeting on New Space at European Space Agency

Noordwijk, The Netherlands 12-13 September 2019

About Aistech

AISTECH
Access to Intelligent Space Technologies

Aistech Space is a **geospatial intelligence** company working to generate valuable information through data fusion and analytics.

Generating valuable information in various sectors

- Maritime
- Agriculture
- Transport
- Environment
- Energy
- Weather
- Insurance
- Firefighters
- Oil & Gas
- Aerial
- Mining
- Infrastructure/Construction

About Aistech

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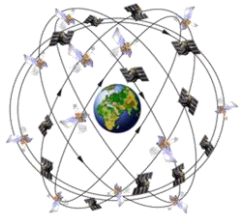
1 Sourcing of data

1. External space data
2. Ground data
3. Data from proprietary Aistech Space satellite constellation



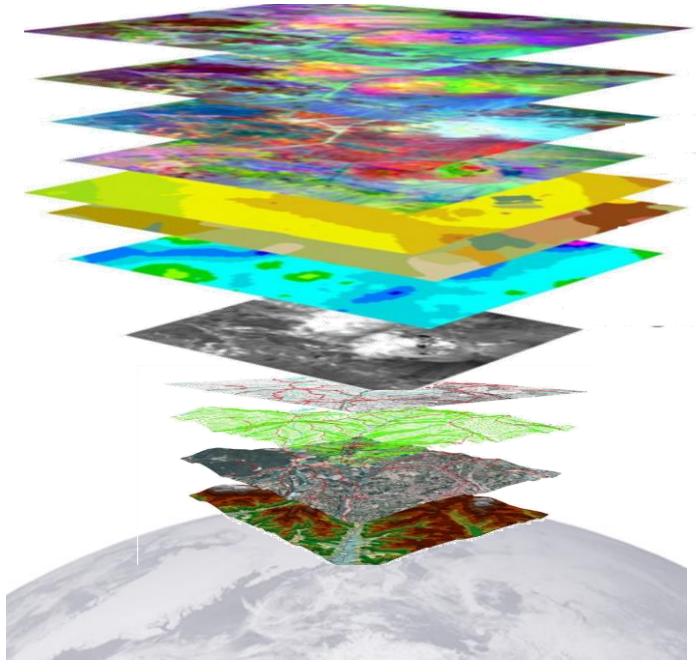
Aviation tracking and monitoring

Asset tracking and monitoring by M2M communication

Multispectral space images (VIS, NIR, LWIR)

2 Model Generation & Processing

Multiple data integration & fusion using our own internal models



3 Delivering

Recurrent and customized information business addressed

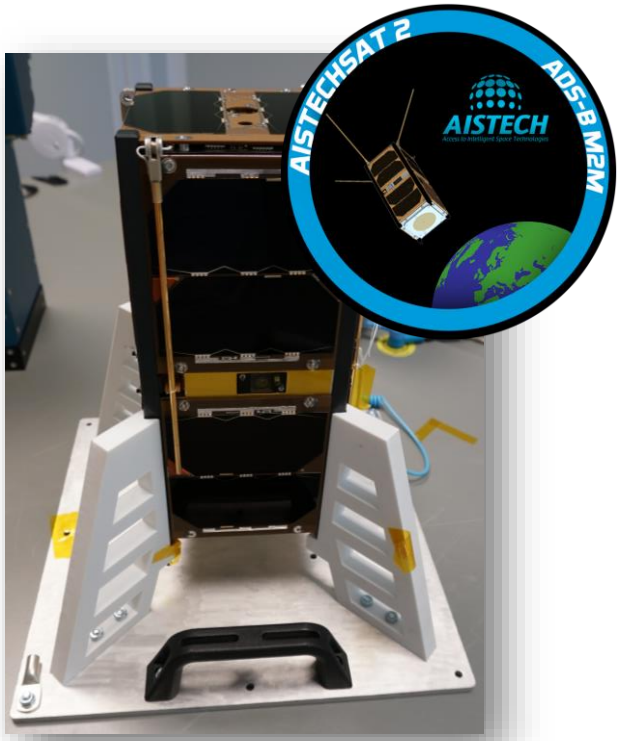
Different layers of information

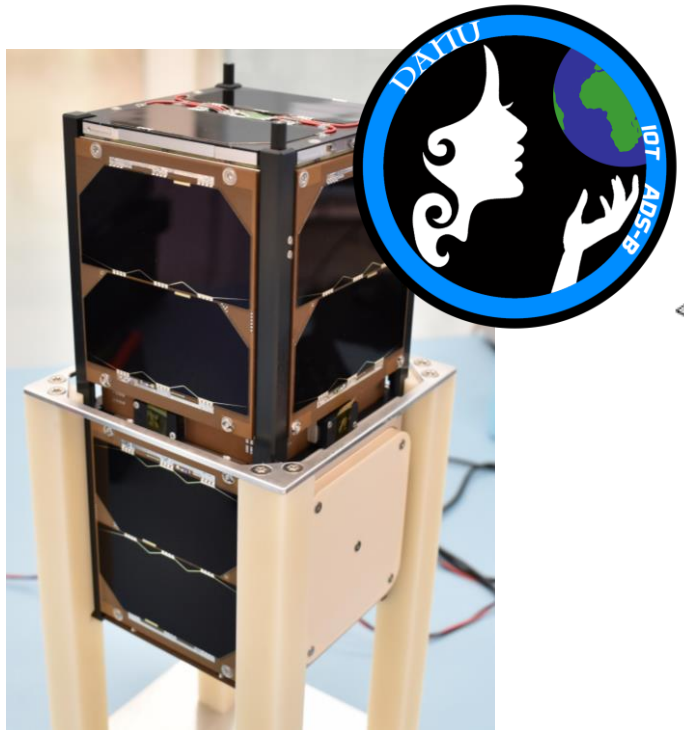
Levels of complexity according to business needs

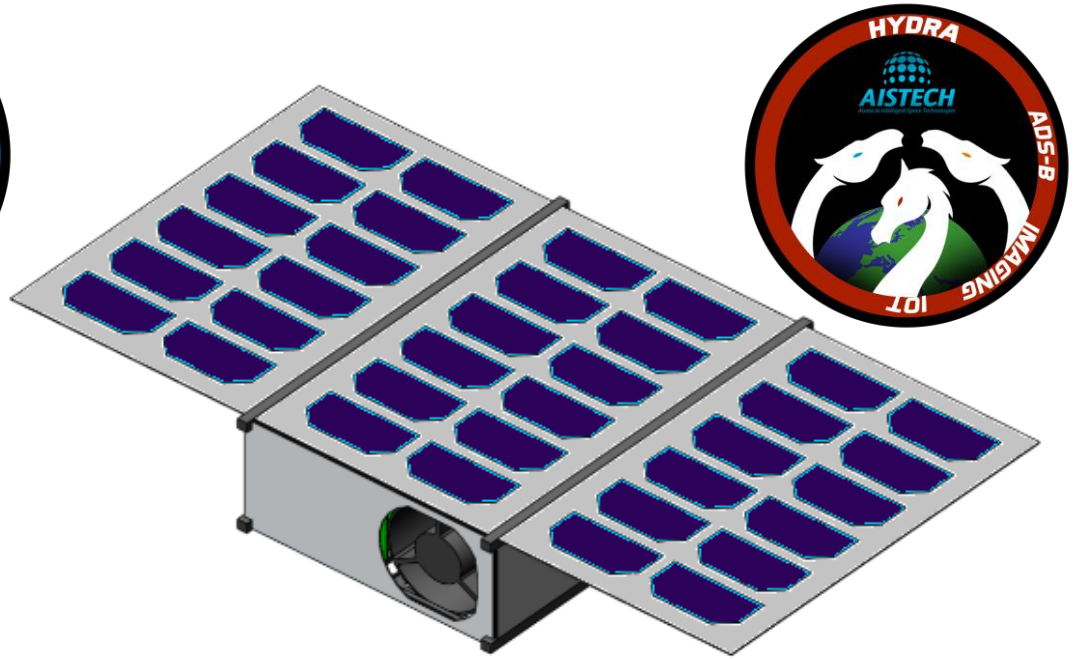
Real-time unique space data

Easy way of visualization

Aistech's Fleet





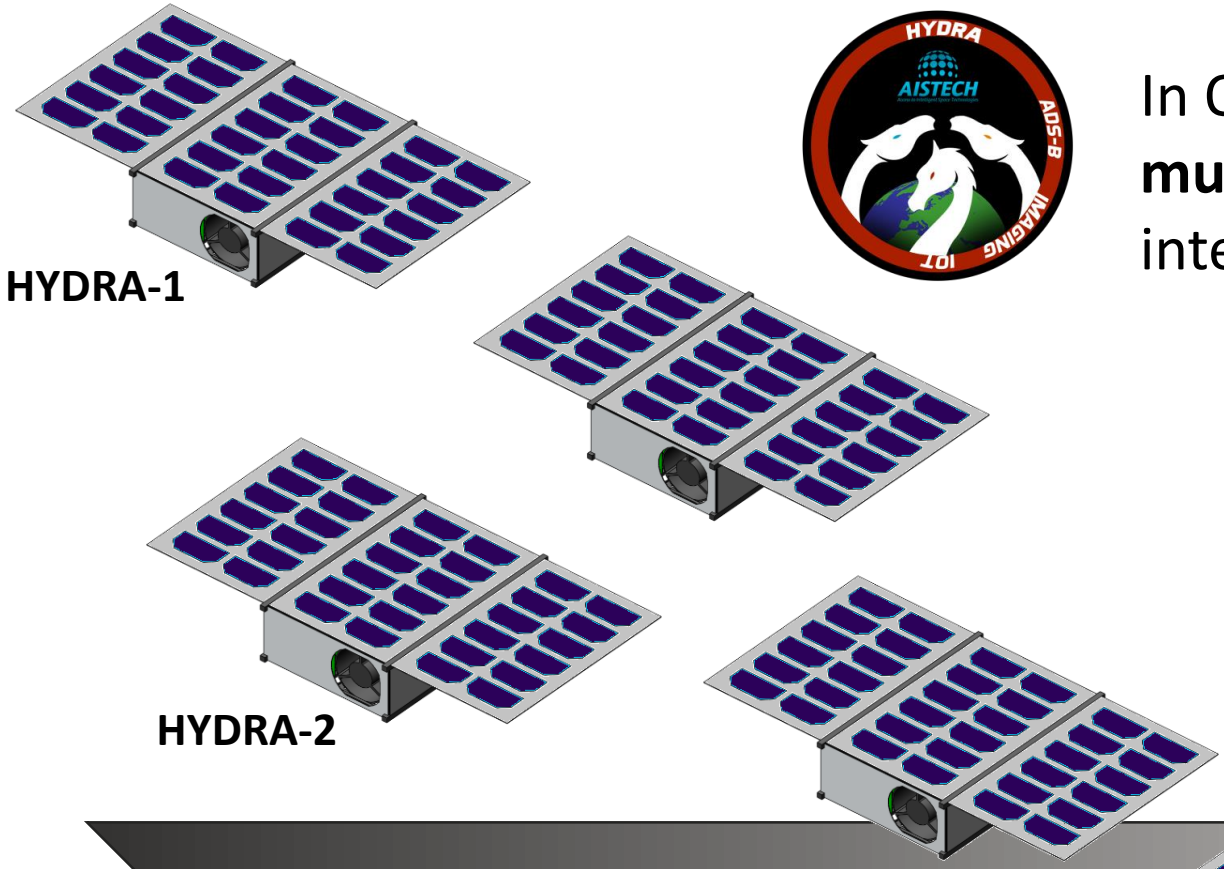


DEC 2018
(Space X)

APR 2019
(PSLV)

Q2 2020
(Integration and testing)

Aistech's Fleet



In Q2 2020 we expect to start deploying our **25 multi-payload** nanosatellite constellation intended for:

- Remote Asset Management (M2M)
- Aircraft Tracking and Monitoring (ADSB)
- **Multi-Spectral Imagery (VIS, NIR, LWIR)**

Q2 2020
(Integration and testing)

Multispectral Telescope (MST)

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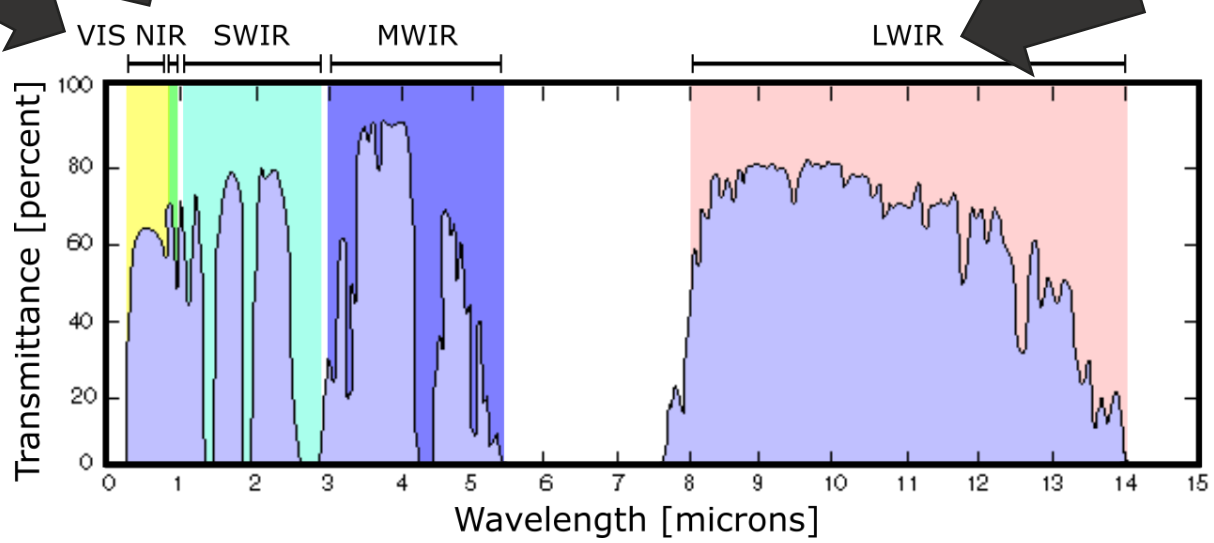
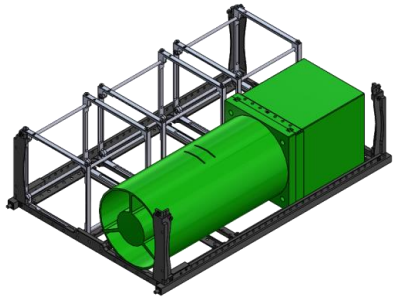
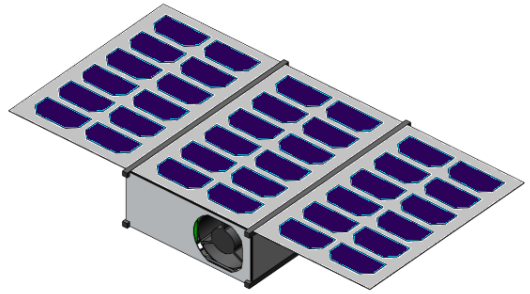
MST Main Characteristics	
Spectral Channels	3
Mechanical Envelope	95 x 95 x 270 mm
Mass	2360 gr
Power Consumption	5.5 W
Operating temperature	[-35°, +30°]
Non-Operating temperature	[-45°, +70°]

MST Optical Performance	
FOV (Full Field, diagonal)	1.0 deg
Swath @ 550km	8 km
GSD (VIS / NIR)	4 m
GSD (LWIR)	35m

Earth Atmosphere Transmittance







Multispectral Telescope (MST)

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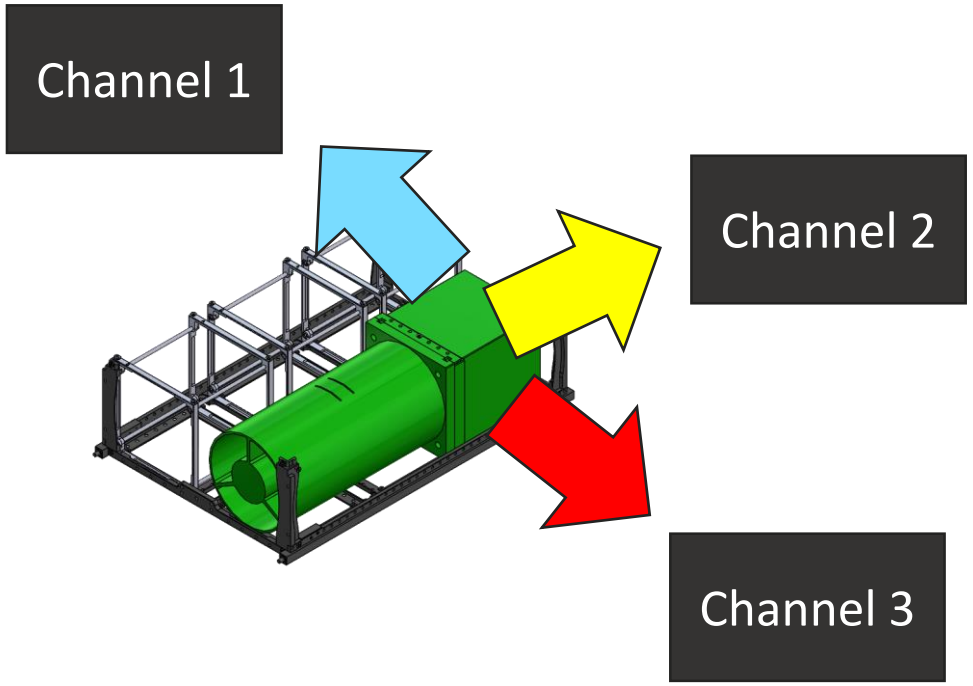
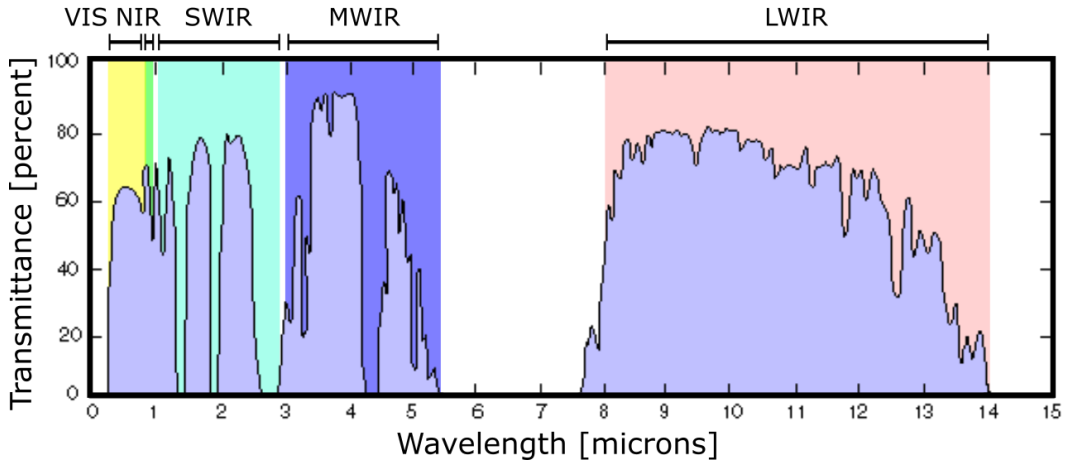


Channel 1	Channel 2	Channel 3
PAN	VIS	NIR
VIS	SWIR	LWIR
VIS	**NIR**	**LWIR**
…	…	…
VIS	LWIR 1	LWIR 2

Market

Technology



Why are we here?

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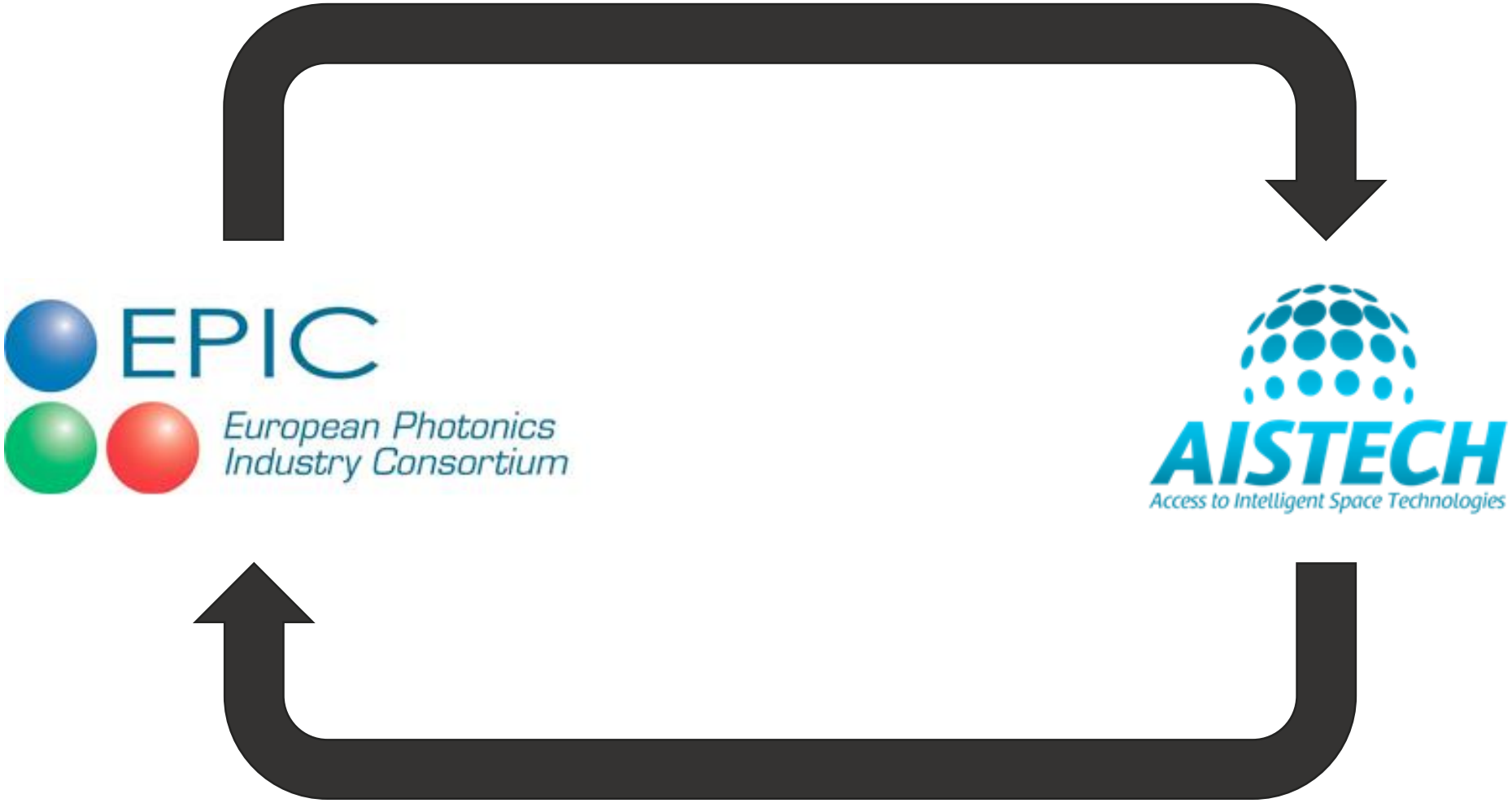
Access to Intelligent Space Technologies

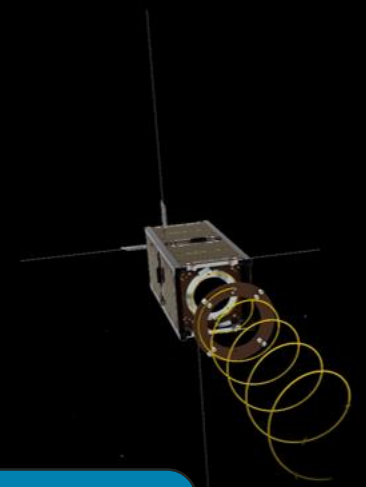


Why are we here?: Suppliers wanted

Technology is continuously evolving.

We require components that can survive the harsh conditions of space: high vacuum, high radiation, varying temperatures, among others.

- Glass Optics
- Sensors
- Mirror Optics
- Electronics
- Beam Splitters
- Cables / Harness



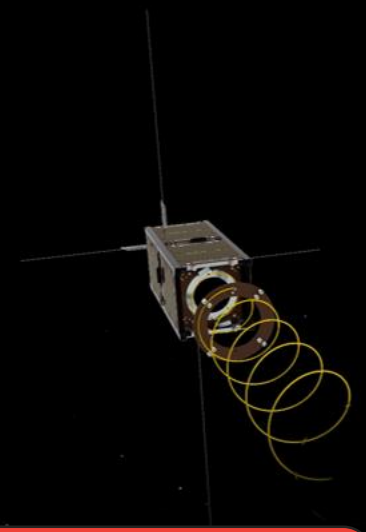
- Design Software
- Laboratory Equipment
- Alignment Equipment

We also require resources to build and test the systems that will eventually fly.

Why are we here?: Partnership

Technology is continuously evolving.

We require components that can survive the harsh conditions of space: high vacuum, high radiation, varying temperatures, among others.



Glass Optics

Sensors

Mirror Optics

Electronics

Beam Splitters

Cables / Harness

Qualification

Sensors

Electronics

We can be part of a collaboration to **build the bridge** between traditional and space qualified components.

Why are we here?: Applications

With our current resources we can monitor the air quality for different locations using space-based images.

Remote Sensing

Data Analytics

In-Situ Sensing

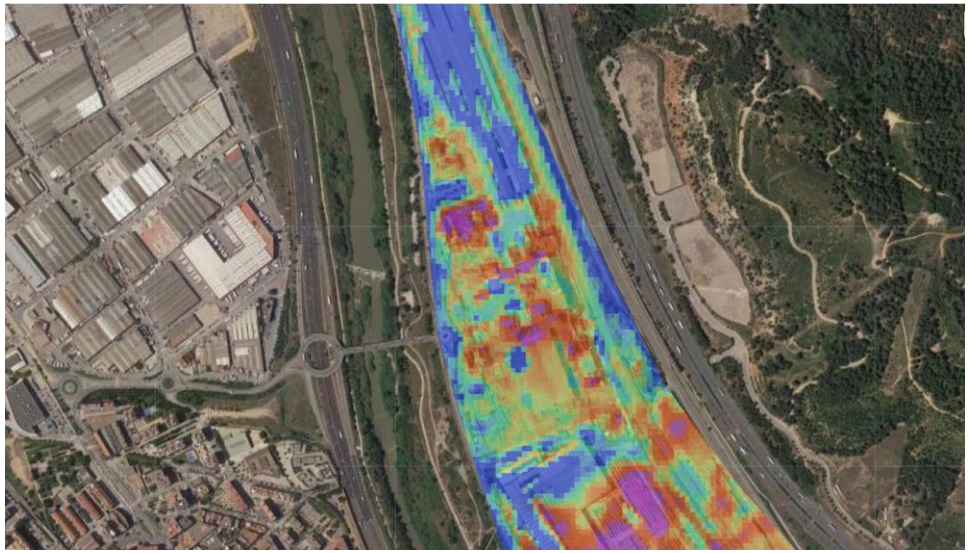
- **Pollution levels**
- **Aerosol types**
- **Weather monitoring**
- **Alerts and Risks**

Why are we here?: Applications

AISTECH
Access to Intelligent Space Technologies

For CELSA factory and surroundings in Barcelona we carried out a study on pollution awareness:

- Dust density
- Historical wind and pressure analyses
- Alert thresholds



- Locate pollution hot spots
- Ground truth with sensors
- Weather influence
- Alert generation

Why are we here?: Applications

AISTECH
Access to Intelligent Space Technologies

We have a developed a fully interactive client-side website, where we offer our full suite of analytics tools

Monitoring (NDVI and other vegetation indices)

Nutrition (Foliage Nitrogen content)

Water Content (Soil moisture at 6 cm^3/cm^3 res.)

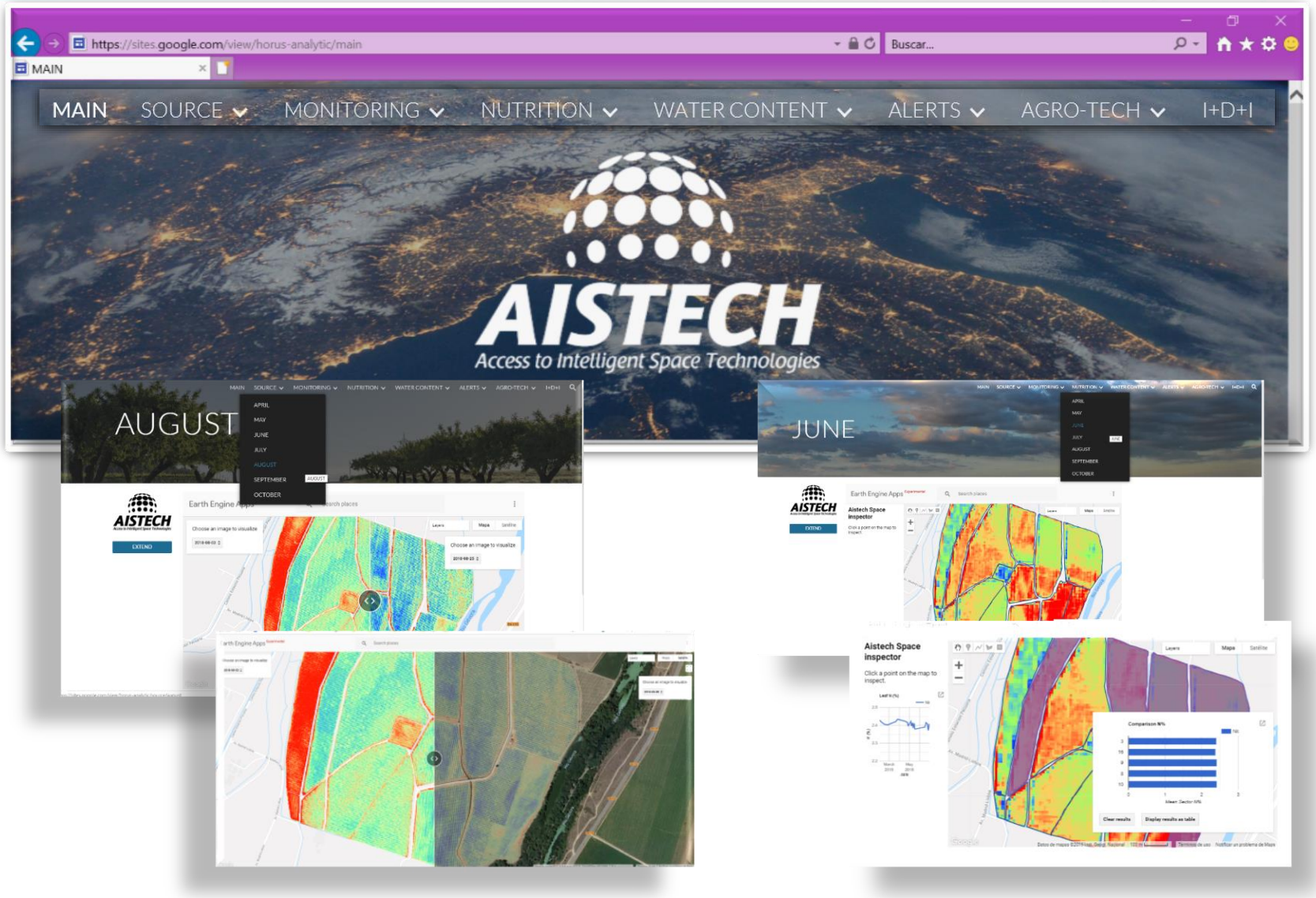
Alerts (Based on specific parameters)

Agro –Tech (Daily temperature monitoring)

R&D (Cloud removal for satellite images)

Yield Estimation (calibrated with in-situ data)

BRIX estimation (calibrated with in-situ data)



Summary

AISTECH
Access to Intelligent Space Technologies

- Aistech Space is a global geospatial intelligence company working to generate valuable information through data fusion and analytics.
- Even though we are data agnostic, Aistech is developing its own 25 satellite constellation intended for Earth Observation, plane tracking and asset management.
- The Multispectral Telescope (MST) is a very flexible optical payload that provides simultaneous 3-band imagery between four spectral bands available: VIS, NIR, SWIR and LWIR.
- Since technology is rapidly evolving, Aistech is continuously looking for partners to improve the capabilities and performance of the MST.
- Aistech is open to help to build the bridge between traditional and space qualified equipment. To us is very important to make sure that the hardware on board in our satellites has flight heritage or is space compliant.

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Access to Intelligent Space Technologies

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Access to Intelligent Space Technologies

Backup Slides

Aistech Team

AISTECH
Access to Intelligent Space Technologies

Aistech Team

Team of 27 people

95% Engineers

8 Nationalities

30% Female

25% PhD

Founders	Administration
Applications team	Business Development
Technical team	Ground segment

Multispectral Telescope (MST)

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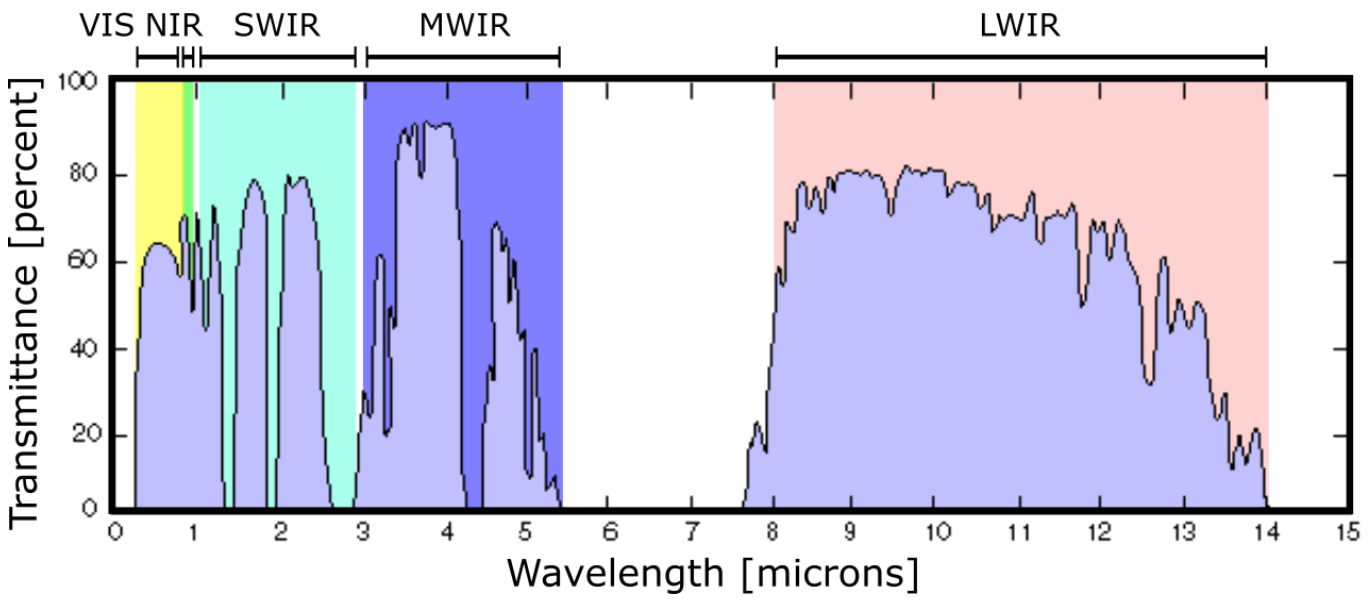
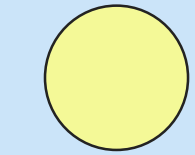
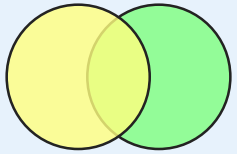
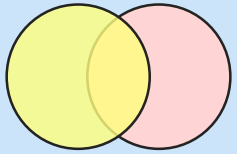
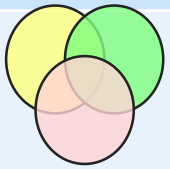
Earth Atmosphere Transmittance



Spectral Band	Application
	Urbanism
	Agriculture Mining
	Agriculture Fire prevention
	Ship detection Defense / Security

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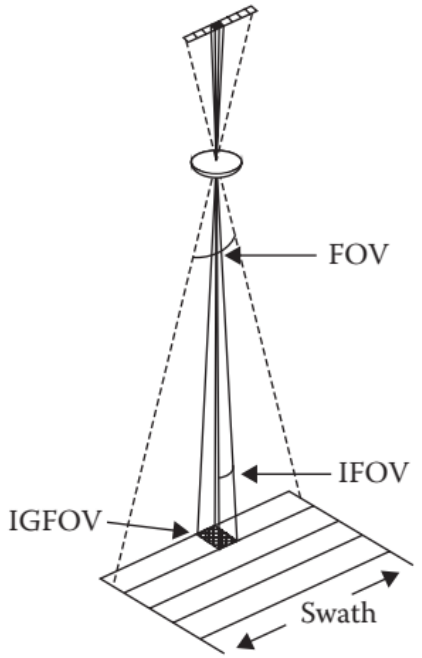
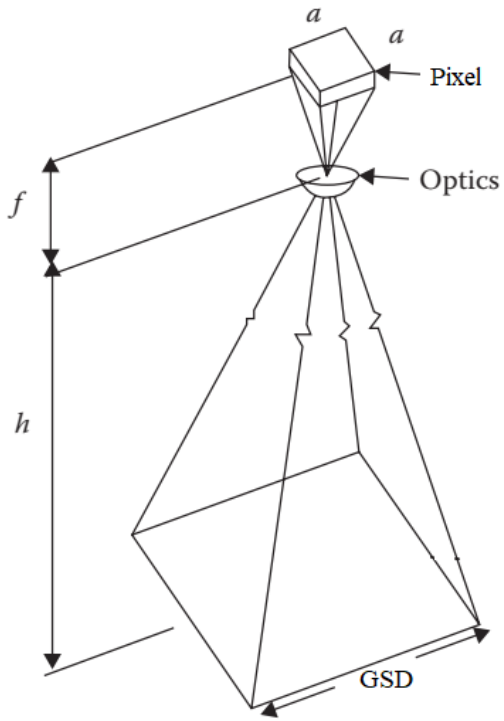
MST Optical Performance	
Field of View (Full Field, diagonal)	1.0 deg
Swath @ **550km**	8 km
GSD (VIS / NIR)	4 m
GSD (SWIR)	15 m
GSD (LWIR) @ 8um / 12um	26 m / 39 m





GSD: Ground Sampling Distance

Why are we here?: Applications

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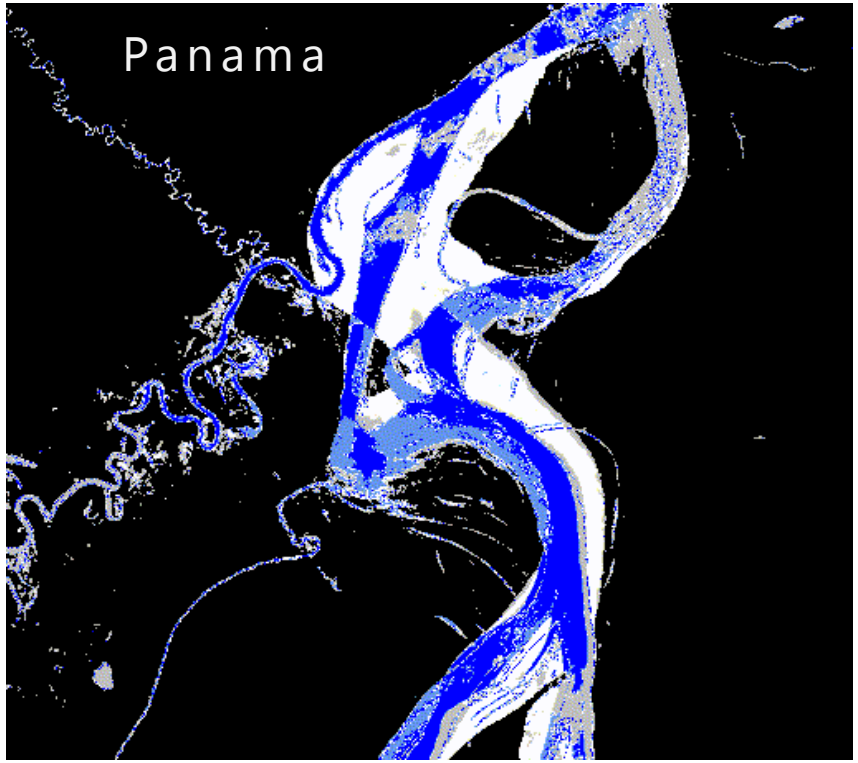
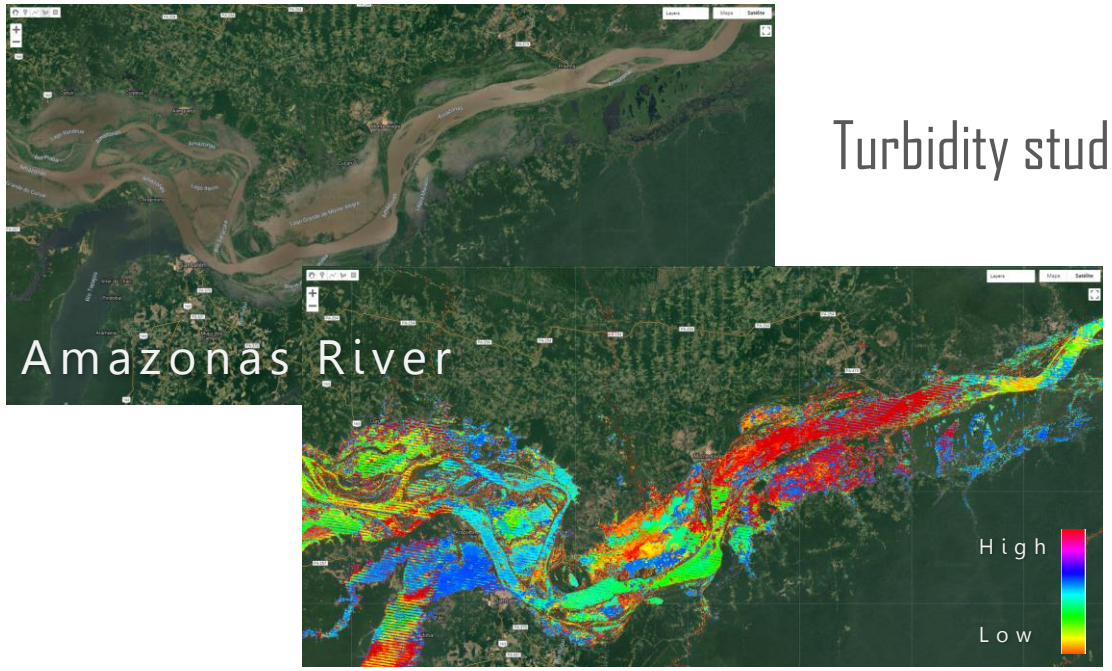
We developed a system to study changes in river directions in order to generate alerts and mitigate potential risks.



Temperature monitoring



Turbidity study

- Estimations of river capacity and deviations
- River temperature and turbidity
- Environmental impact and flood risk
- Pollution hazard alert
- In situ river health - ground sensors

Why are we here?: Applications

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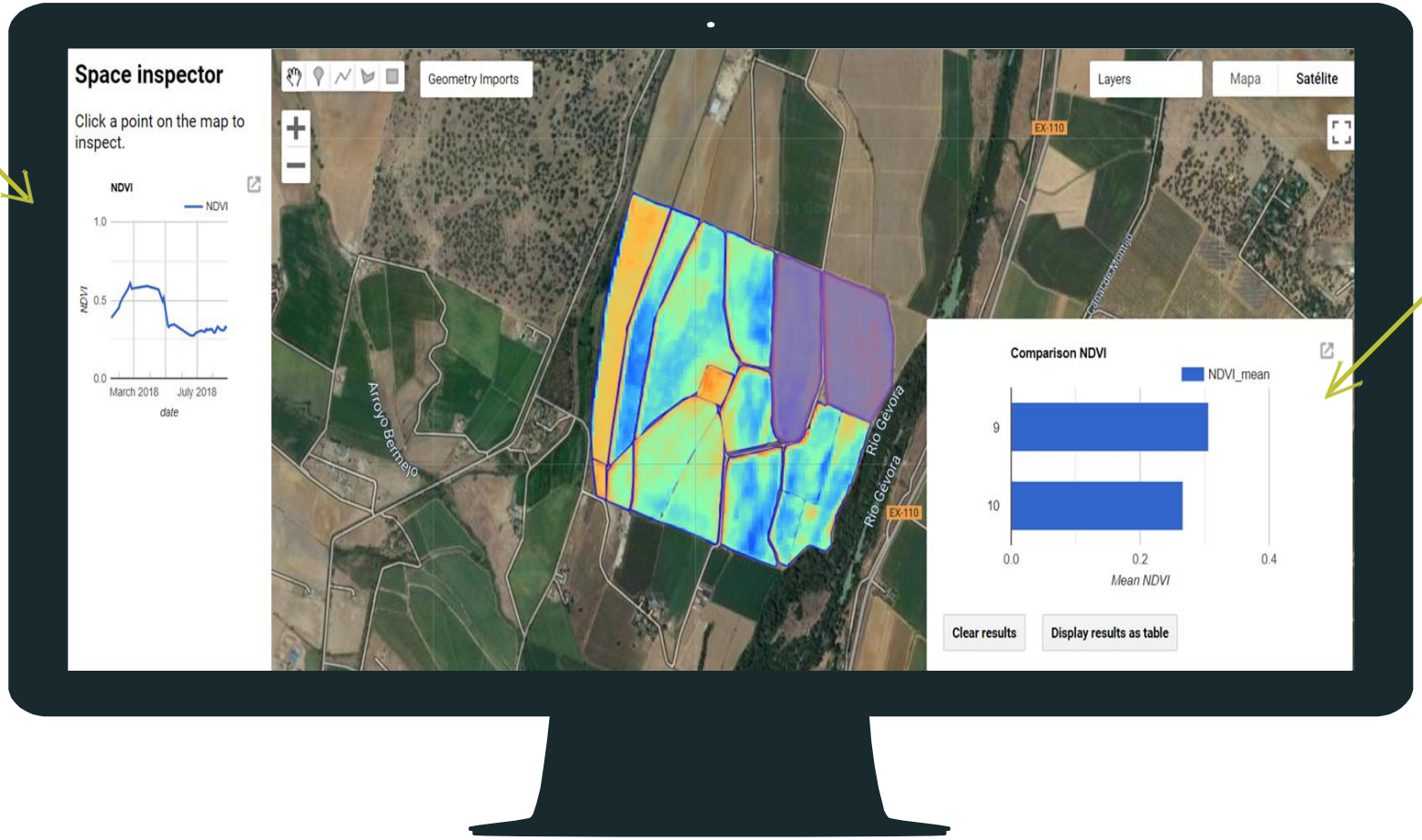
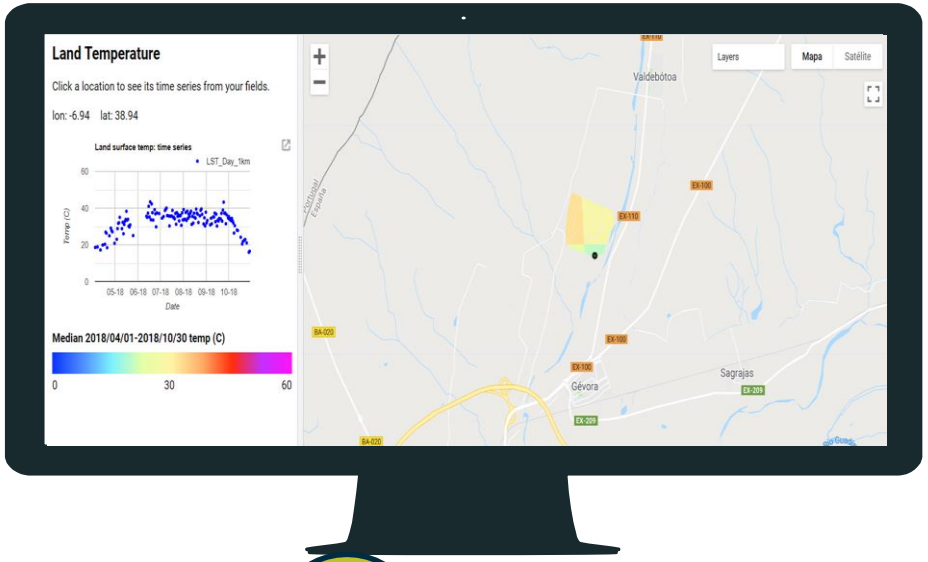
Evolution every 5 days



Averages by sectors

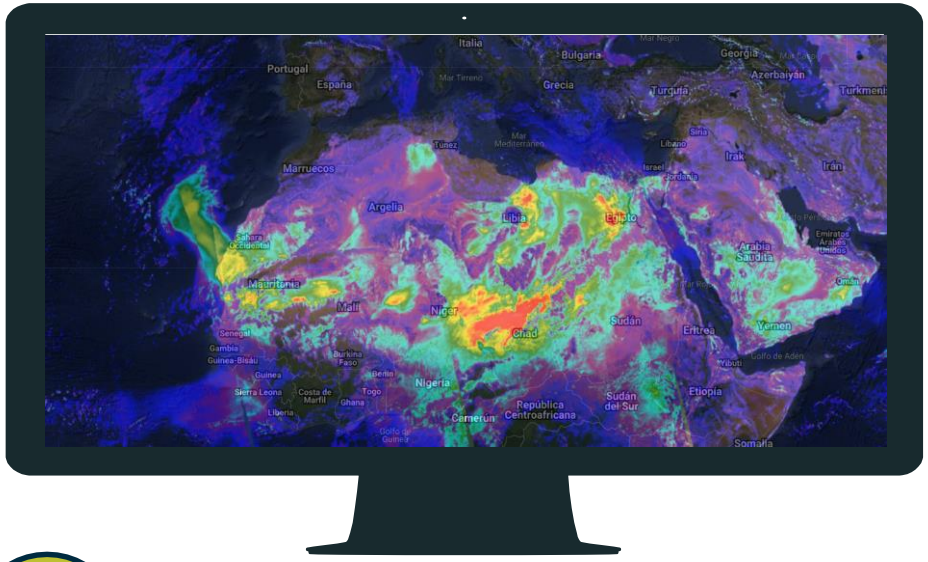
Why are we here?: Applications



Temperaturas diárias 1 km

Precipitación acumulada / hora. (Satélite)

Precipitación mensal média. (Satélite)



Previsiones meteorológicas (Satélite)

Precipitación Temperatura

6 horas -15 dias

Why are we here?: Applications

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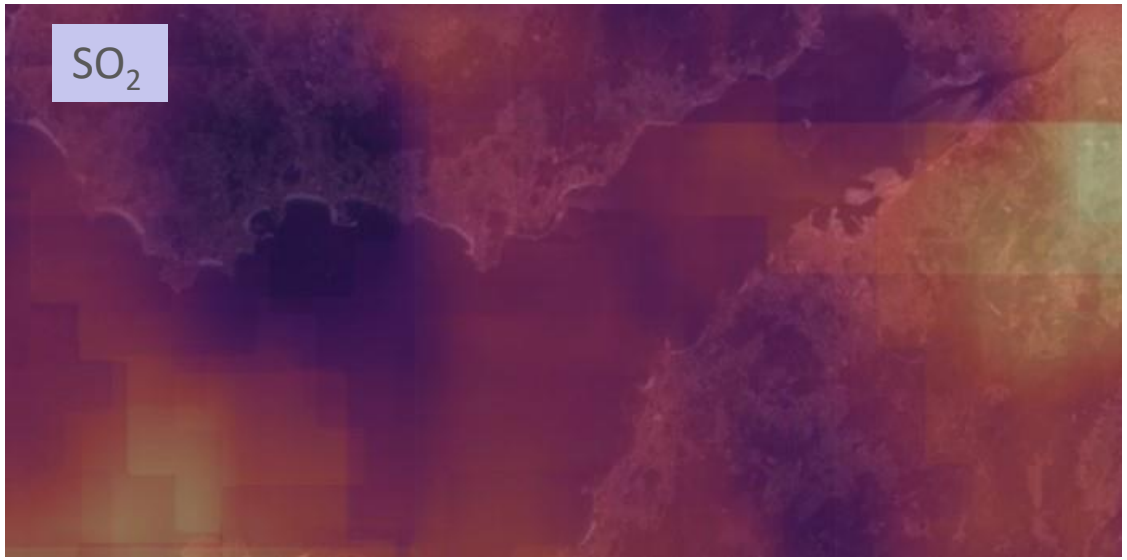
Earth Observation of ENCE factory

For ENCE factory and surroundings in Pontevedra:

- SO_2, NO_2, HCHO density, amongst others
- Historical wind and pressure analyses
- Alert thresholds



- Locate pollution hotspots
- Ground truth with sensors - accuracy
- Weather influence
- Alert generation

This presentation was presented at EPIC Meeting on New Space 2019

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