

# IN SEARCH OF THE POTENTIAL OF SENTINEL 1

## MASTER THESIS

MASTER EN  
TECNOLOGIES DE LA  
INFORMACIÓ  
GEOGRÀFICA

POL FORNÉS LLOBET



# COPERNICUS PROGRAMME

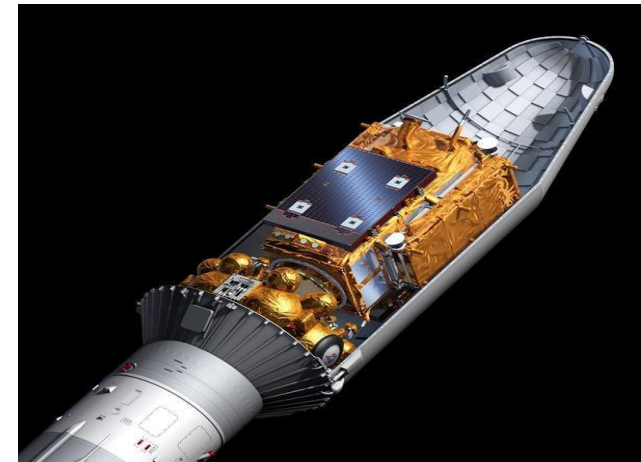
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Copernicus is the new name for the Global Monitoring for Environment and Security programme

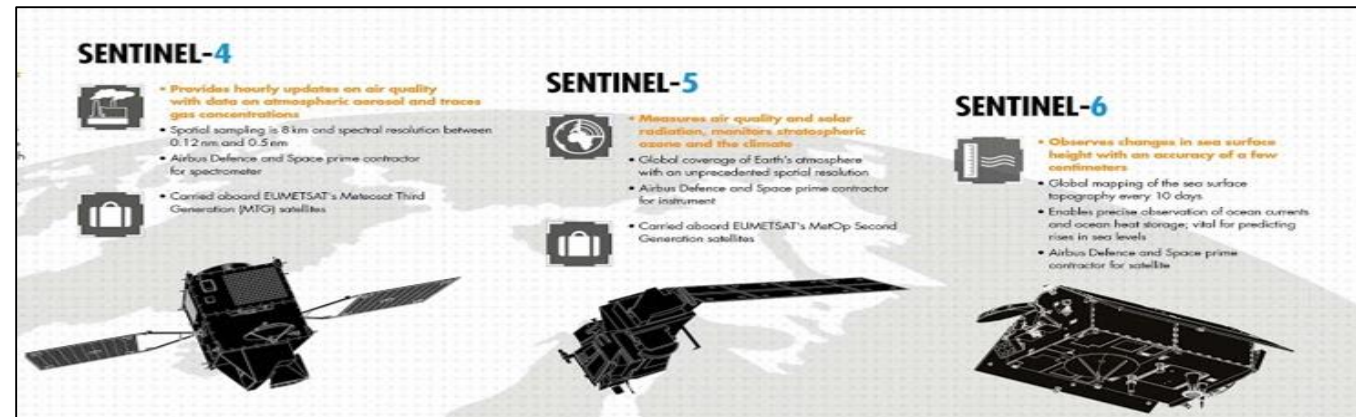
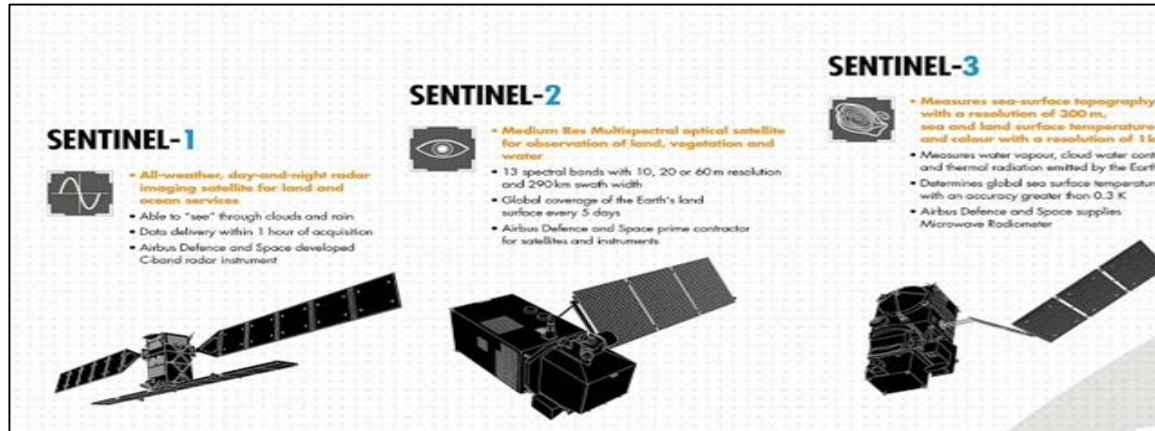
ESA coordinates the delivery of data from 30 satellites

There are currently two series of satellites: Sentinel 1 and Sentinel 2

In a near future Copernicus missions will launch a new generation of Sentinel satellites



# COPERNICUS AND ITS SENTINELS



# SENTINEL 1

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- **CONTEXT**
- **MAIN CHARACTERISTICS**
- **THEMATIC INFORMATION SERVICES**

# SENTINEL 1: CONTEXT

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Sentinel-1 is the result of close collaboration between the ESA, the European Commission, technology companies, service providers and data users

Sentinel 1-A was launched in April 2014 and Sentinel 1-B was recently launched in April 2016.

Sentinel 1 was designed taking as a referent the previous ESA satellite programme's (GMES) and its satellites ERS-1, ERS-2 and ENVISAT.





# SENTINEL 1: MAIN CHARECTERISTICS

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It is a constellation of two satellites

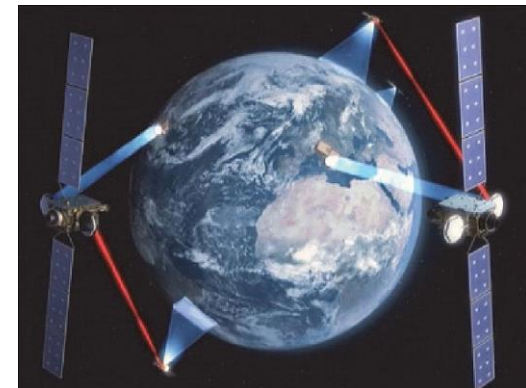
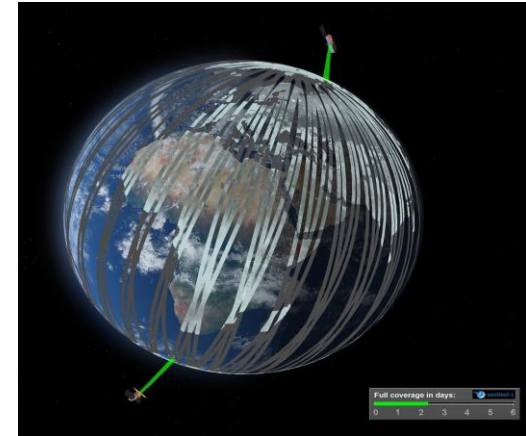
It carries an advanced radar instrument to provide an all-weather, day-and-night supply imagery of Earth's surface

It transmits data to a number of ground stations around the world for rapid dissemination.

It provides imagery every 6/12 days

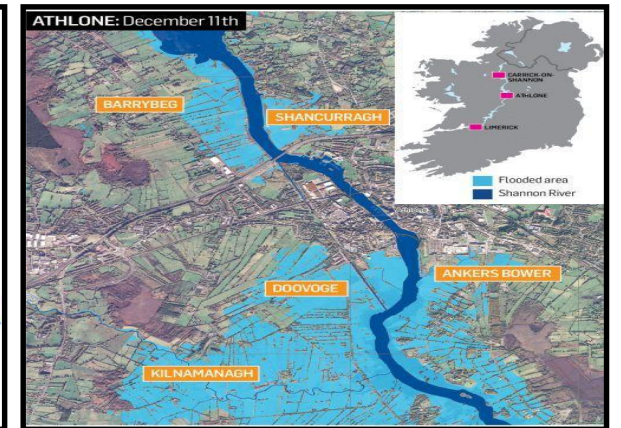
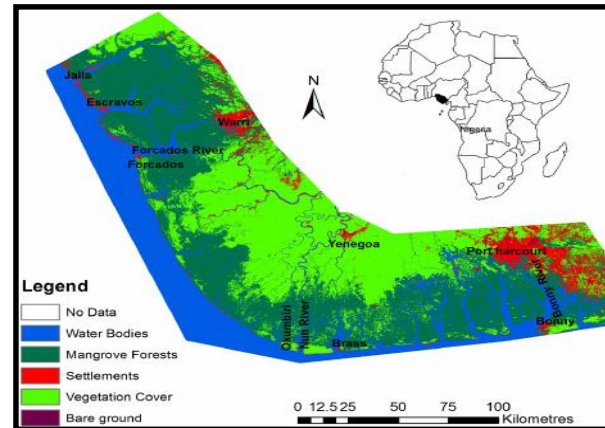
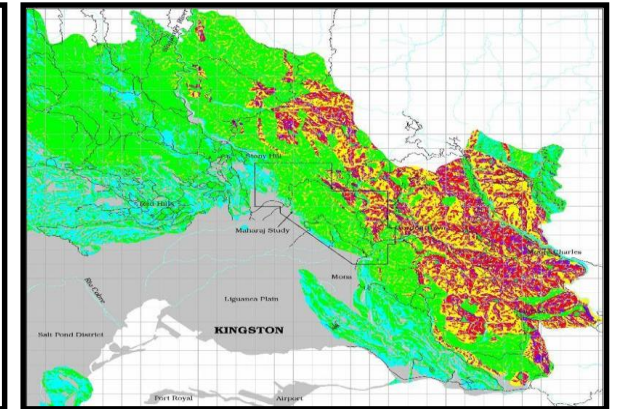
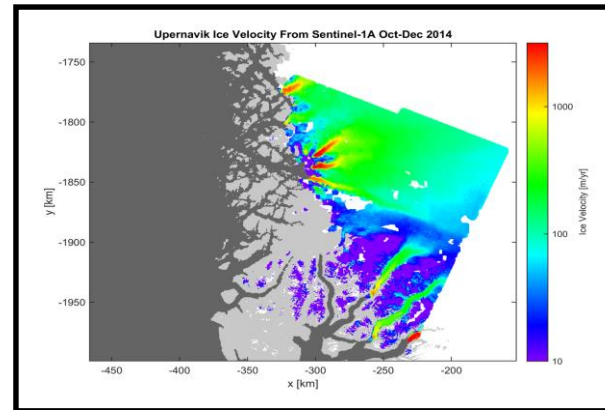
It has global coverage

It allows to provide very accurate and detailed measures of the surface



# THEMATIC INFORMATION SERVICES

- Land management
- The marine environment
- Atmosphere
- Emergency response
- Security and climate change



# INTERNSHIP

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- OBJECTIVES
- METHODOLOGY
- RESULTS



# INTERNSHIP: MAIN OBJECTIVES

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## PROSPECTION

Funding

Consortiums

Partnerships

## COMMUNICATION

➤ Brochures

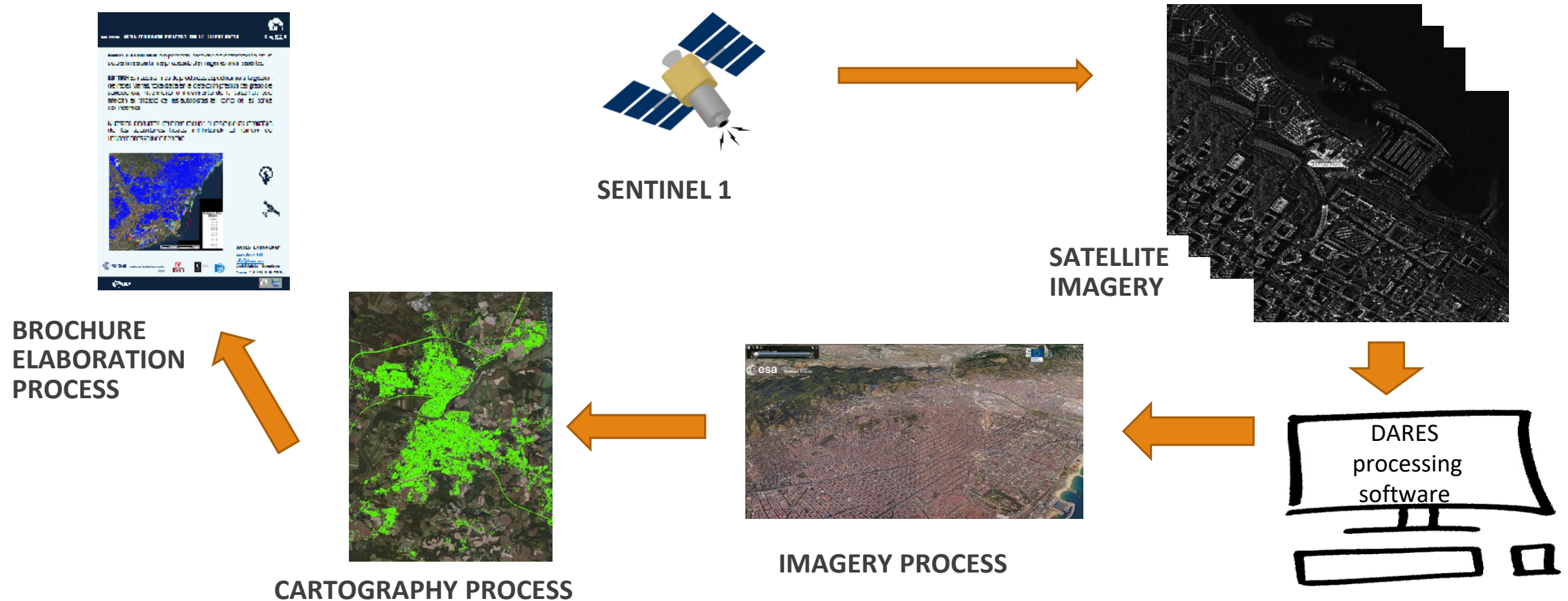
➤ Meetings

## SME INSTRUMENT

➤ EU calls

➤ Research projects

# METHODOLOGY APPROACH

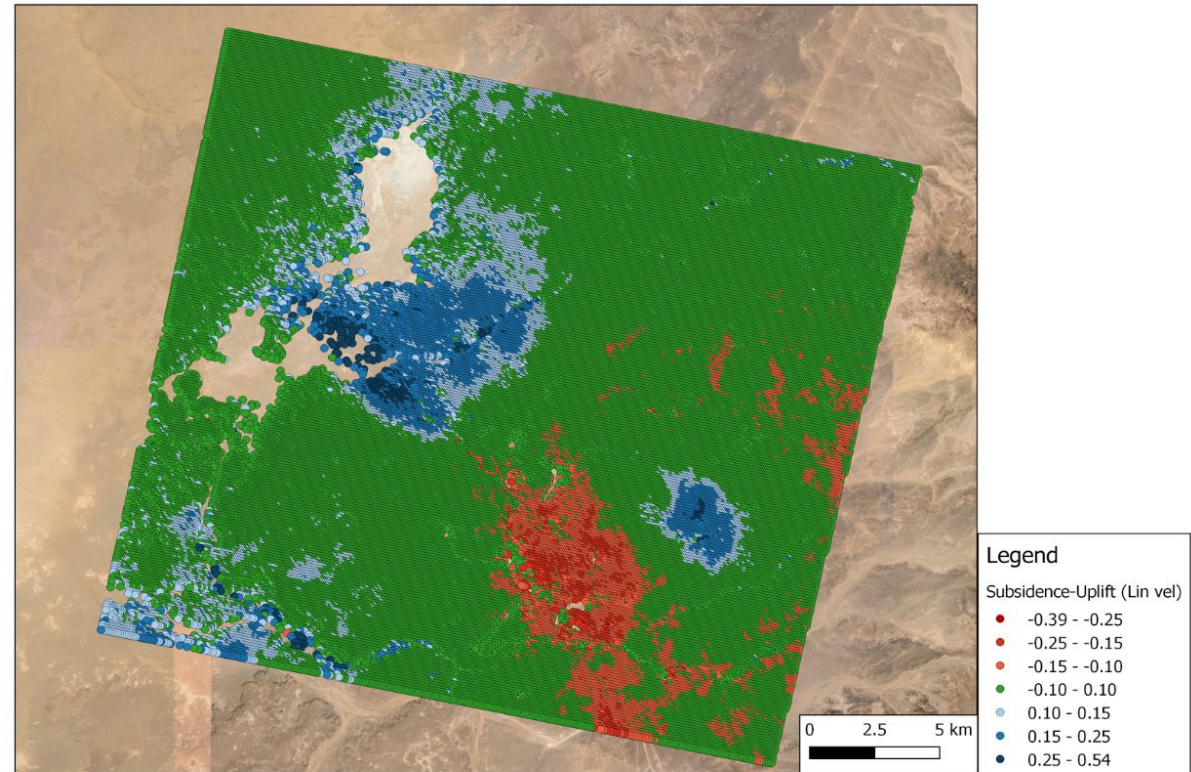


# RESULTS: TEST CASE

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GROUND DEFORMATION MAP

FOR **GAS & OIL** sector

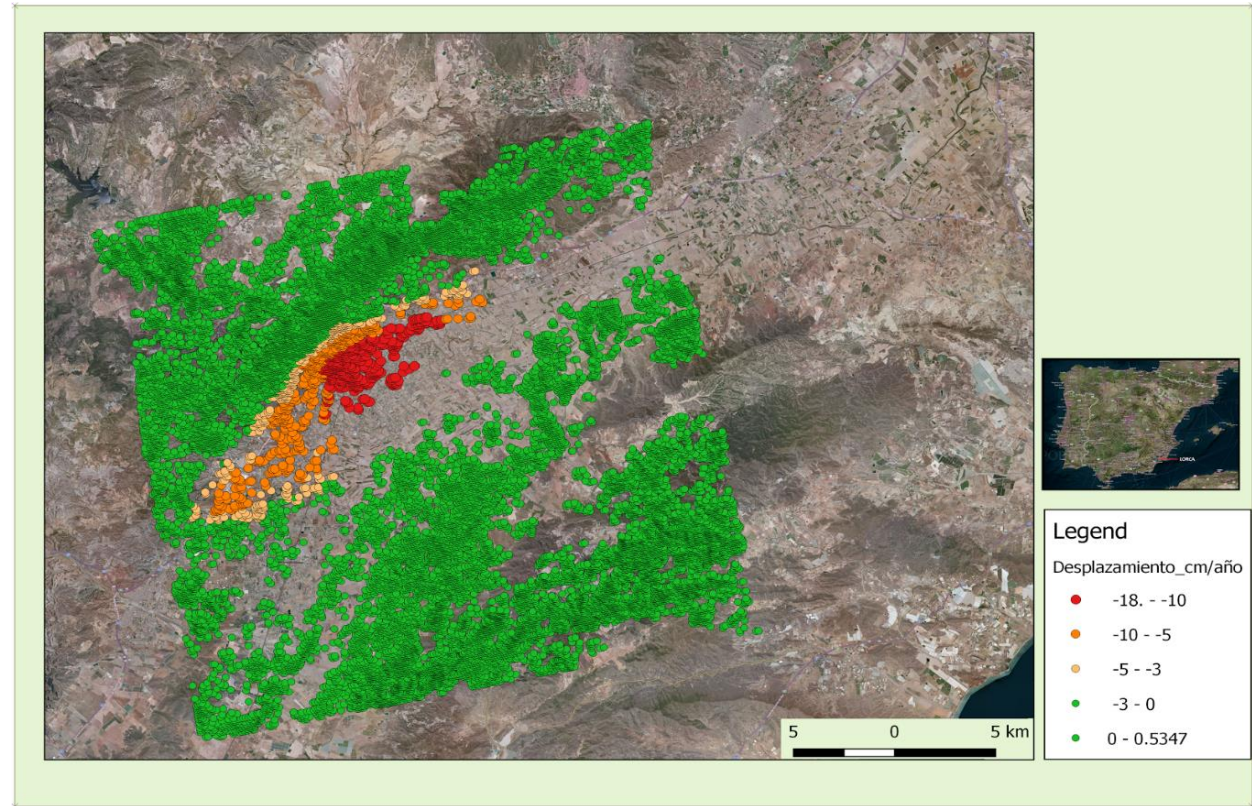




# RESULTS: TEST CASE

MAP OF SUBSIDENCE AQUIFER

FOR WATTER SUPPLIERS

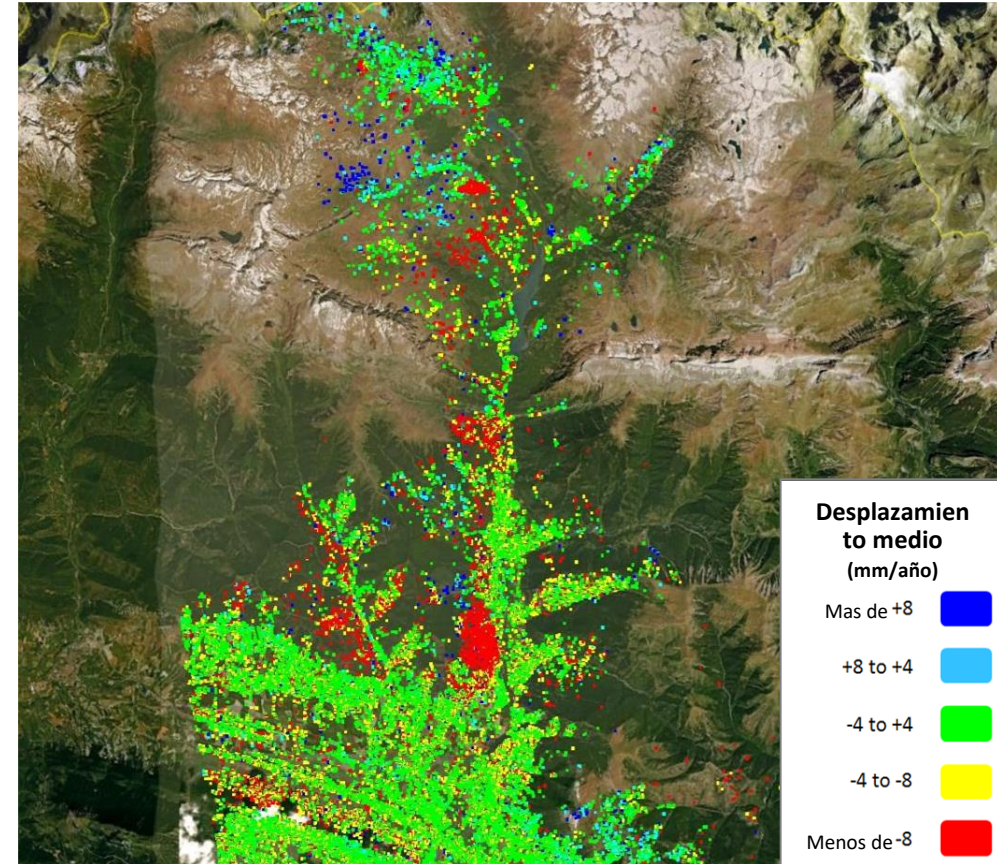


# RESULTS: TEST CASE

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ACCUMULATED SUBSIDENCE MAP

FOR **CIVIL ENGINEER** SECTOR



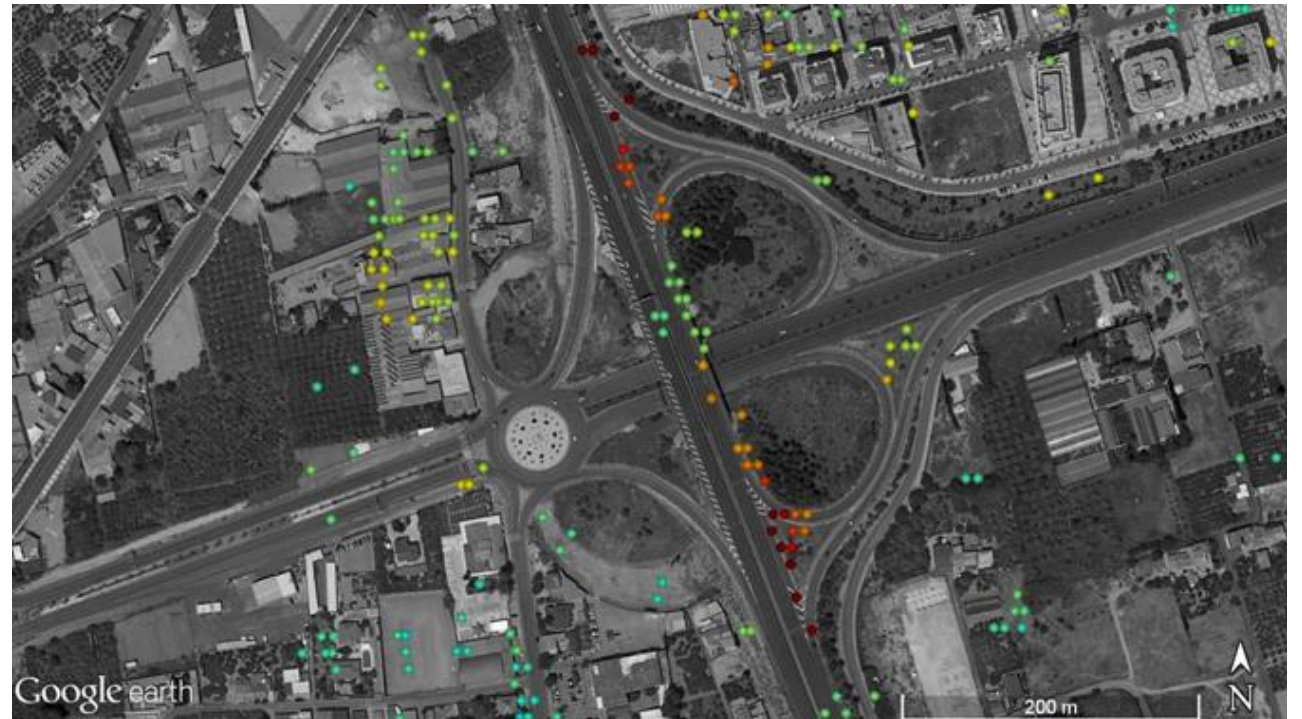


# RESULTS: TEST CASE

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DEFORMATION RATE IMAGE

FOR MONITORING OF **BRIDGES** AND  
**TUNNELS**

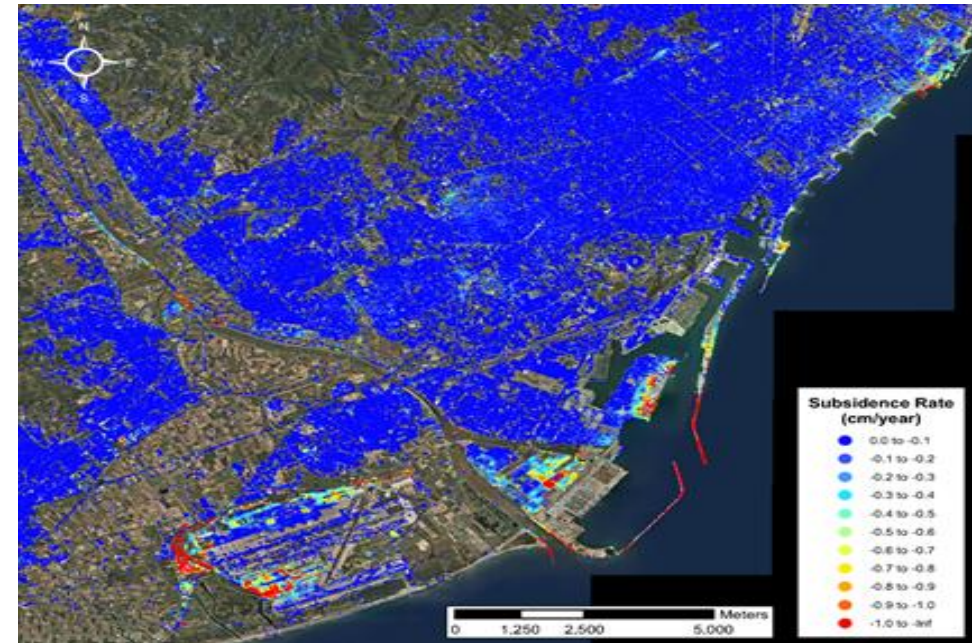


# RESULTS: TEST CASE

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SUBSIDENCE RATE IMAGE

FOR MONITORING **NEW CONSTRUCTIONS**



# CONCLUSIONS

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The innovative solutions that this technology can provide are disrupting the current market framework

Satellite imagery allows to create a wide variety of thematic information services

The adoption of OPEN DATA policy has generated a great impact on the satellite imagery sector

The potential of sentinel 1 applications is very high and it is laying the foundations of future commercial activities

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# **THE END**

THANK YOU  
GRÀCIES  
GRACIAS