

# Geo-Spatial Technologies for Customs

## *From Information to Informed Actions*



GE-Data

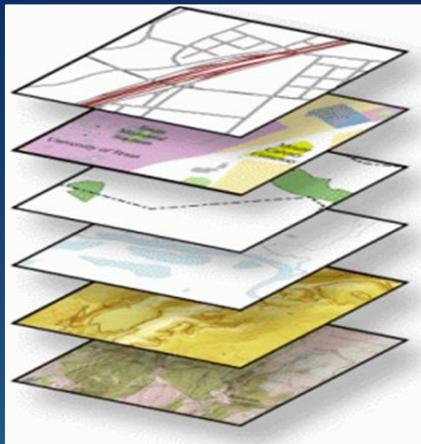
Tokyo, November 1<sup>st</sup> 2017

## 6<sup>th</sup> WCO Technology & Innovation Forum

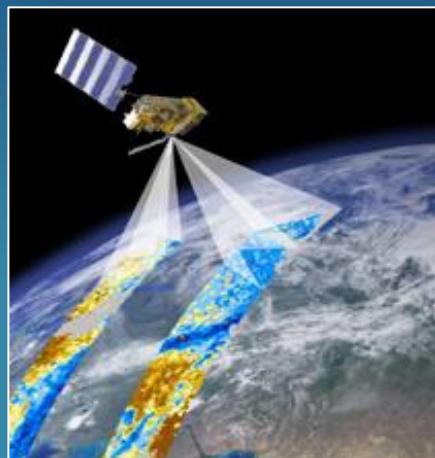
31 October - 2 November 2017 | Tokyo, Japan



# Geospatial Technologies

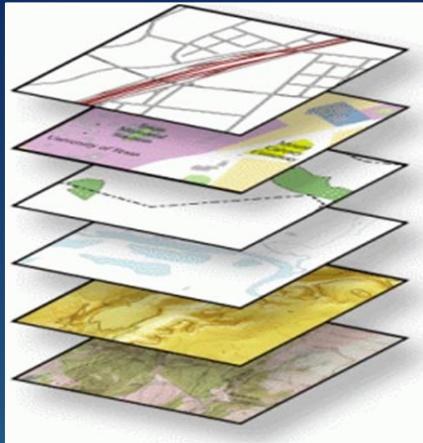


Geographic Information Systems



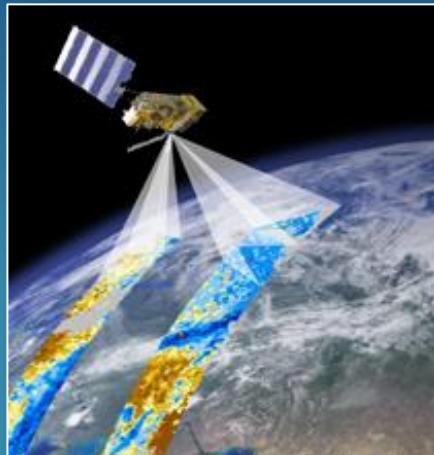
Remote Sensing Examples

# Outline



## Geographic Information Systems

- Concepts
- Requirements
- Tunisia Example



## Remote Sensing Examples

- Truck Traffic assessment
- Informal Trade
- Ports

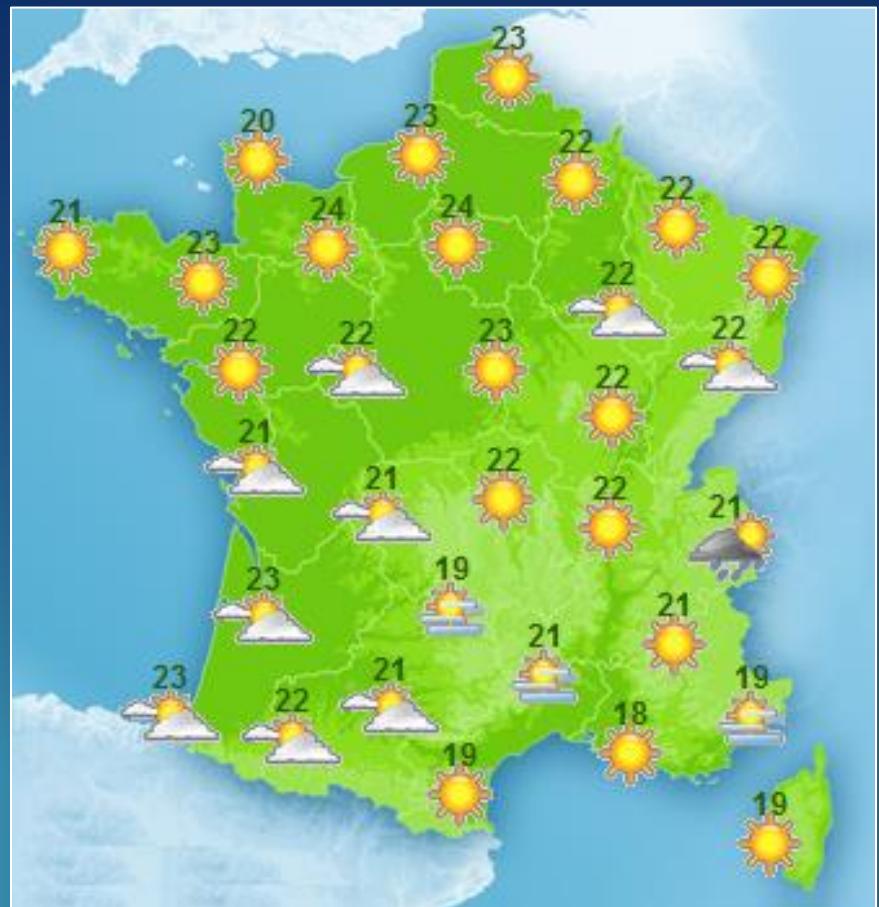
# Geographic Information Systems (GIS)



Main concepts that make GIS so powerful:

# *“A map is worth a thousand words”*

Alsace	22°C	Soleil
Aquitaine Nord	23°C	Variable
Aquitaine Sud	23°C	Variable
Auvergne Nord	22°C	Soleil
Auvergne Sud	19°C	Soleil Voilé
Basse-Normandie Nord	20°C	Soleil
Basse-Normandie Sud	24°C	Soleil
Bourgogne Est	22°C	Soleil
Bourgogne Ouest	23°C	Soleil
Bretagne Est	23°C	Soleil
Bretagne Ouest	21°C	Soleil
Centre	22°C	Variable
Champagne-Ardenne Nord	22°C	Soleil
Champagne-Ardenne Sud	22°C	Variable
Corse	19°C	Soleil
Haute-Normandie	23°C	Soleil
Ile -de-France	24°C	Soleil
Languedoc-Roussillon Nord	21°C	Soleil Voilé
Languedoc-Roussillon Sud	19°C	Soleil
Limousin	21°C	Variable
Lorraine	22°C	Soleil
Midi-Pyrénées Est	21°C	Variable
Midi-Pyrénées Ouest	22°C	Variable
Nord-Pas-de-Calais	23°C	Soleil
Pays de la Loire	22°C	Soleil
Poitou-Charentes	21°C	Variable
Provence-Alpes-Côte d'Azur Est	19°C	Soleil Voilé
Provence-Alpes-Côte d'Azur Nord	21°C	Soleil
Provence-Alpes-Côte d'Azur Ouest	18°C	Soleil
Rhône-Alpes Est	21°C	Risque d'averses
Rhône-Alpes Ouest	22°C	Soleil



# Geographic Information Systems (GIS)



Main concepts that make GIS so powerful:

1. Spatially visualizing information
2. Determine Spatial relationships (inter/intra)

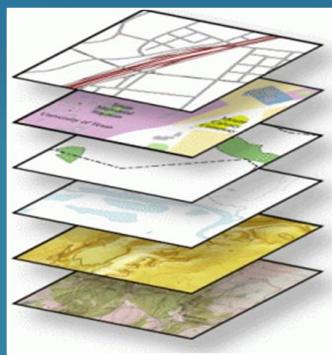


# Geographic Information Systems (GIS)



Main concepts that make GIS so powerful:

1. Spatially visualizing information
2. Determine Spatial relationships (inter/intra)



GIS allows us to

- Handle, view, explore and understand large volumes of data
- Integrate data from widely disparate sources
- Perform spatial analysis by intersecting data (layers)
- Put to evidence phenomena, spatial relations and trends
- Reveal (spatial) intelligence

# Geographic Information Systems (GIS)



ORACLE®

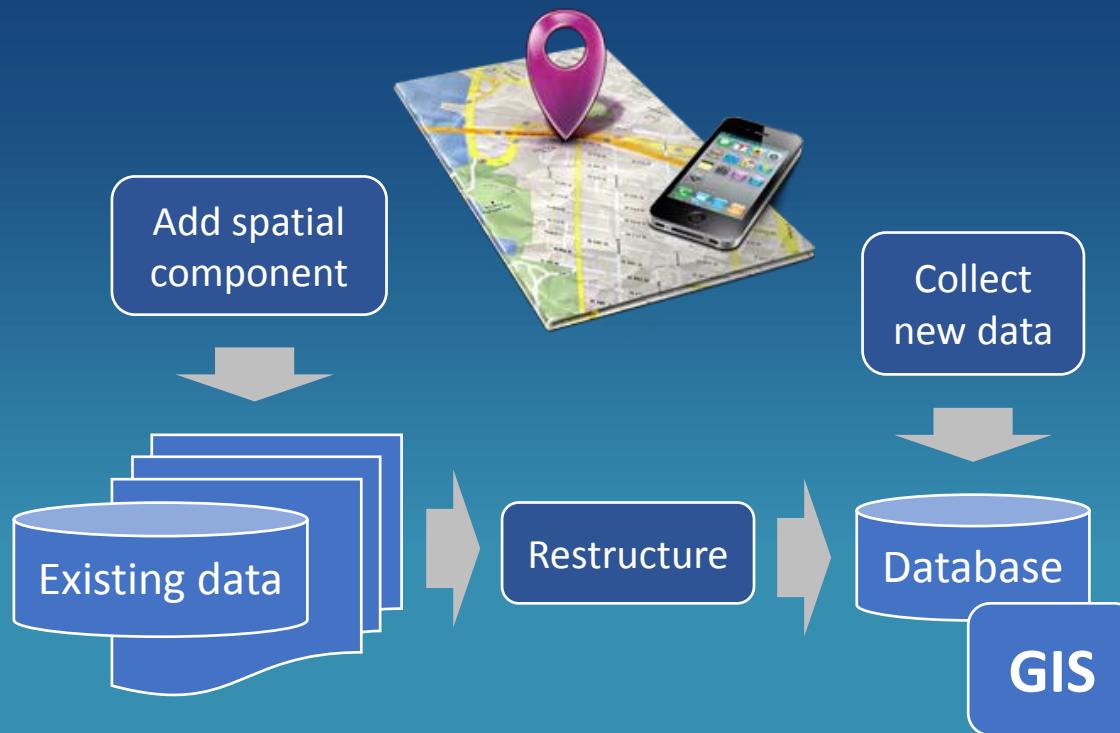


*Only very few industries do not use GIS ...*

# Implementing GIS

## Typical situation

- Already “pre-historic” GIS in place (wall map with pin points)
- Much data available but stored in different formats, databases, paper files....
- Hardware underutilized (smart phones, computers, ...)

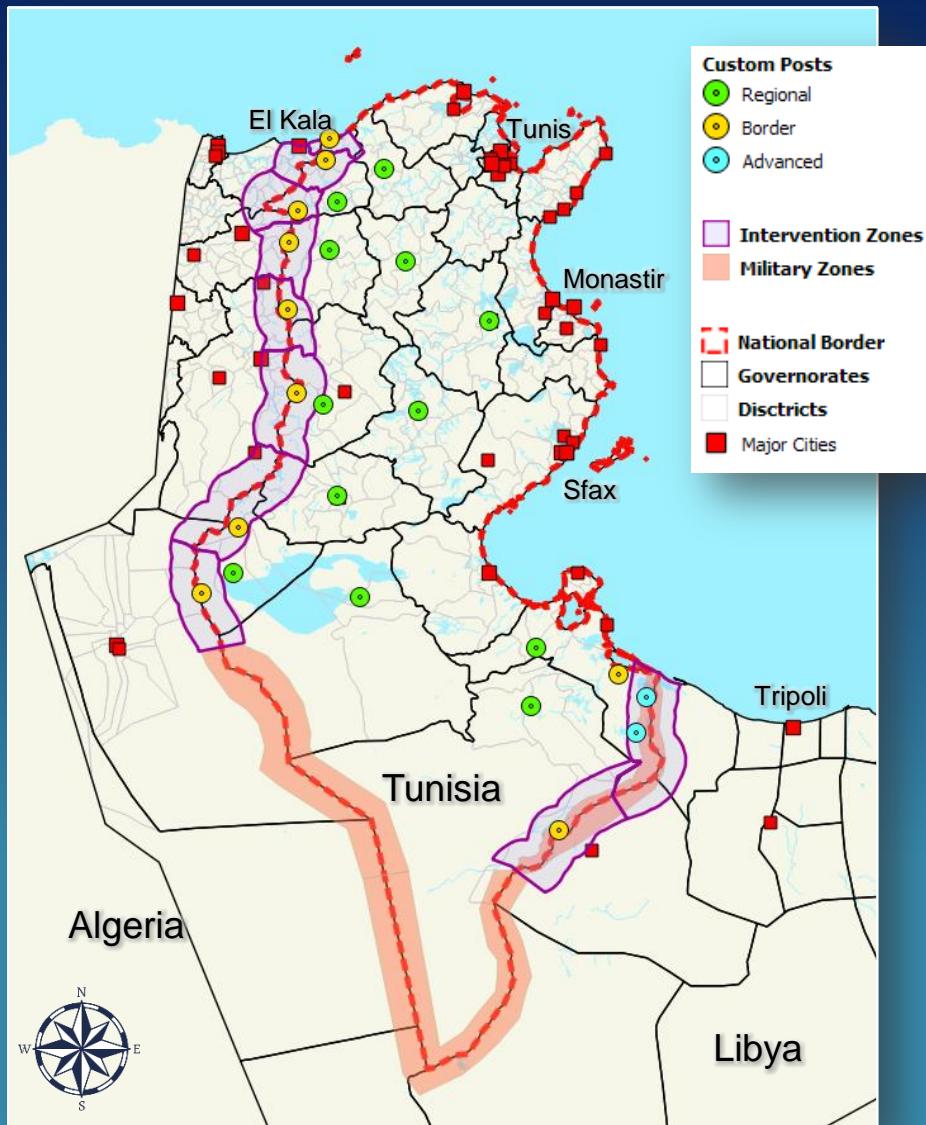


## Access to GIS

- Open Source Software
- Required computer power affordable
- Huge amounts of public georeferenced data
- Technical means to easily collect new data (smart phones..)
- Little investments required (HR, training, ...)

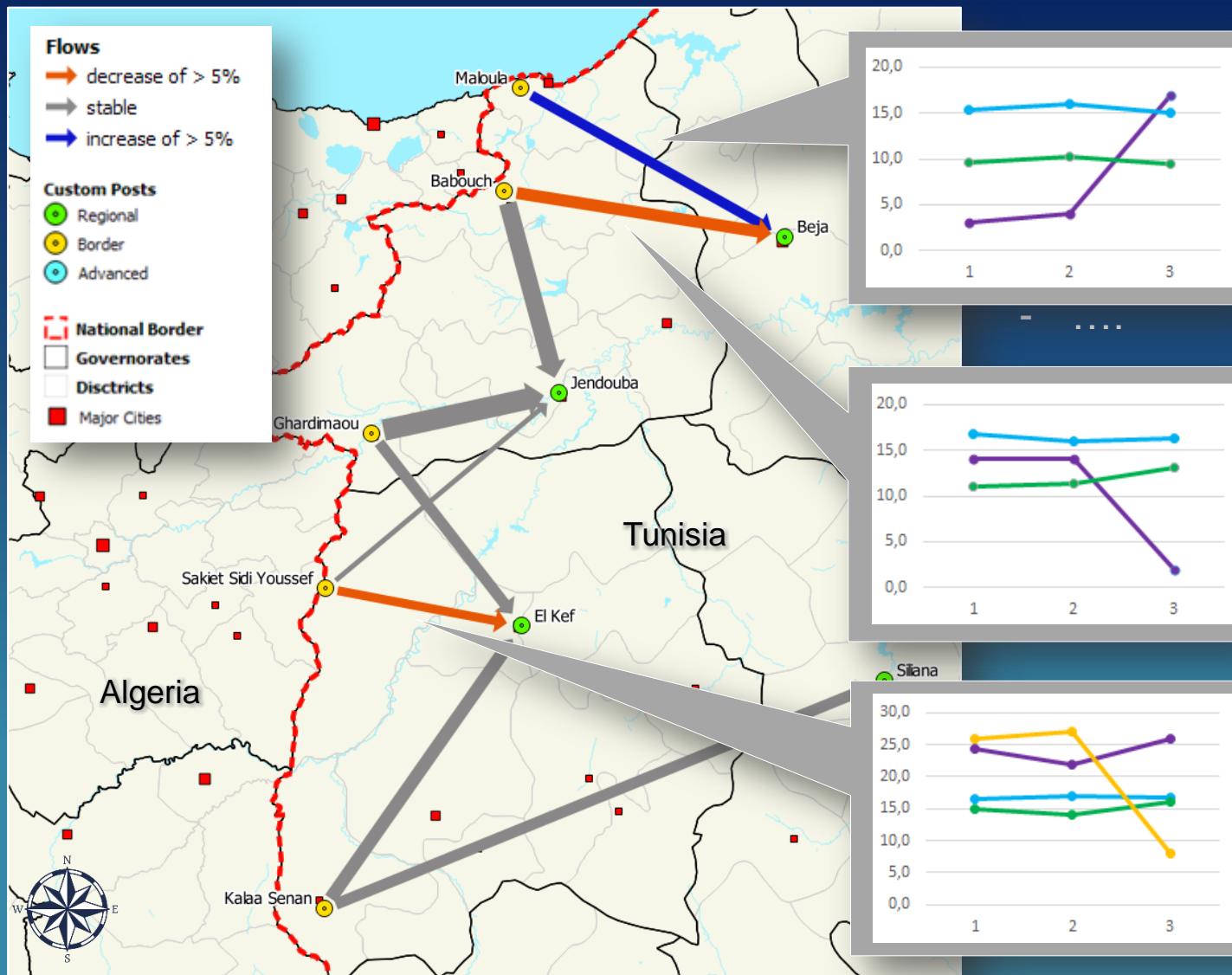
# Tunisia Demonstrator

# Tunisia – Reference Data Layers



- Land & Sea
- Tunisian border
- Water
- Administrative boundaries 1
- Administrative boundaries 2
- Cities
- Road network
- Rail roads
- Customs Posts
- Intervention zones

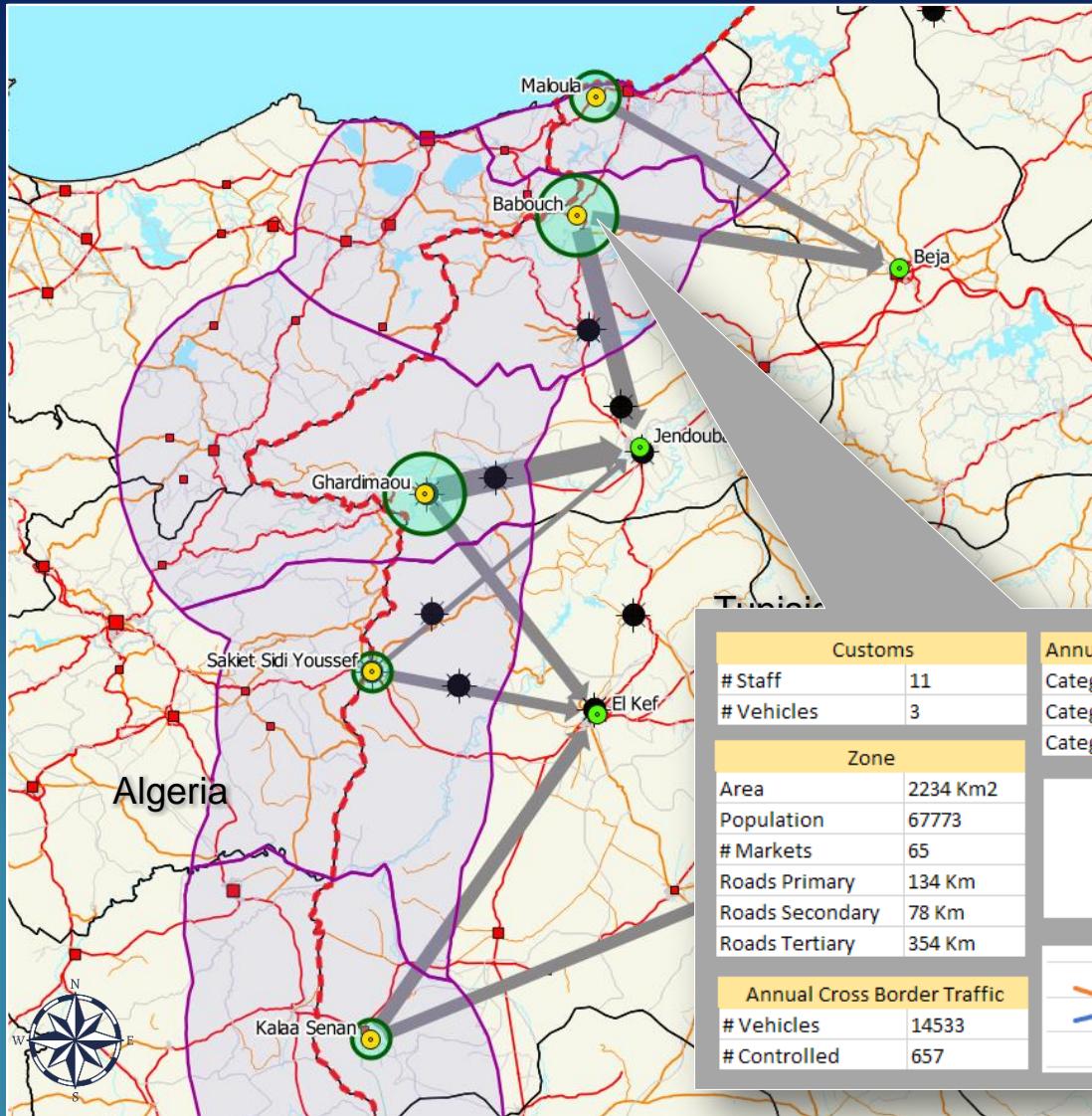
# Tunisia – Monitoring Flows



flows:  
of goods  
s  
tions

February 2017  
March 2017

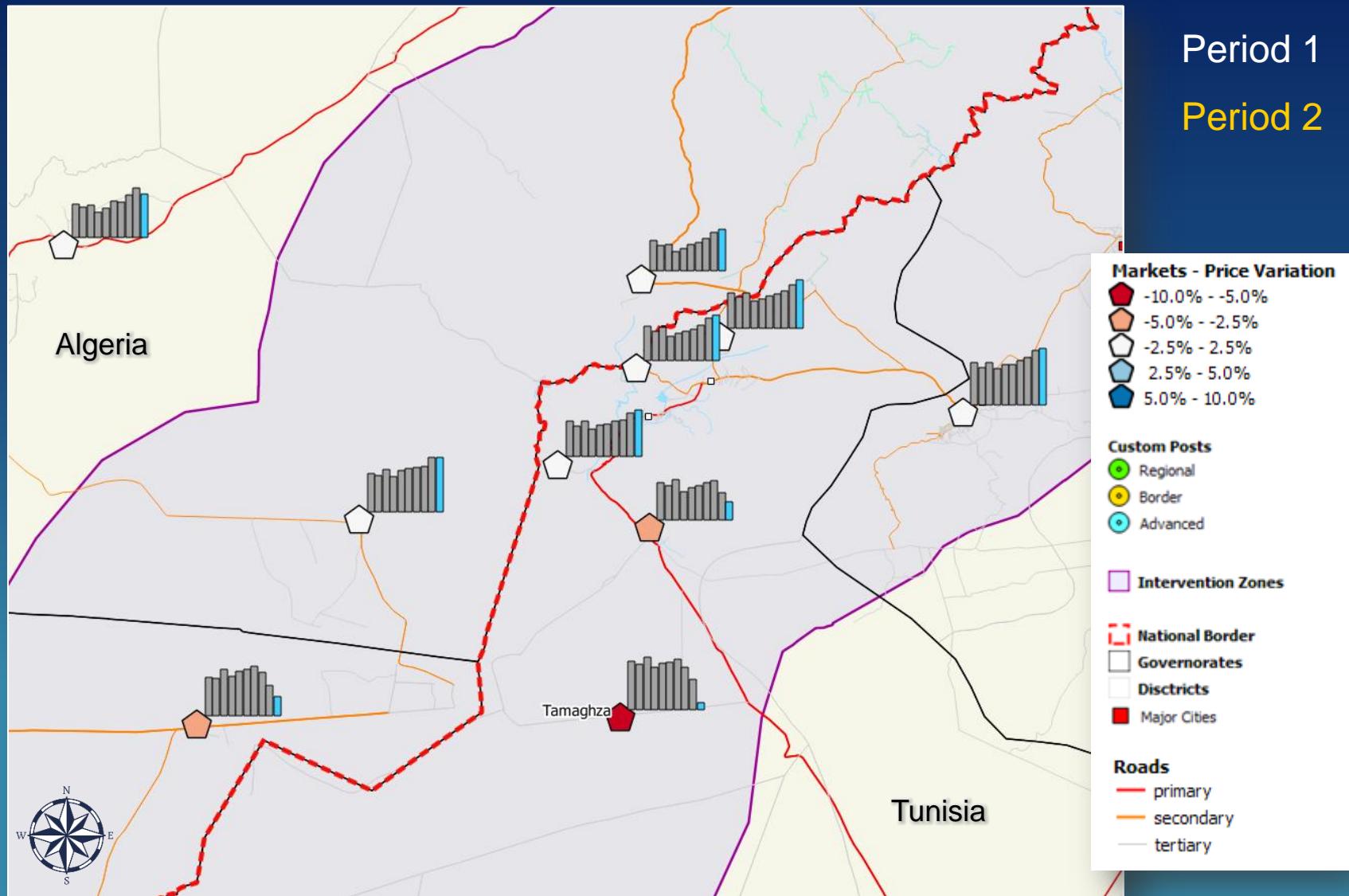
# Tunisia – Delimitation of Intervention Zones



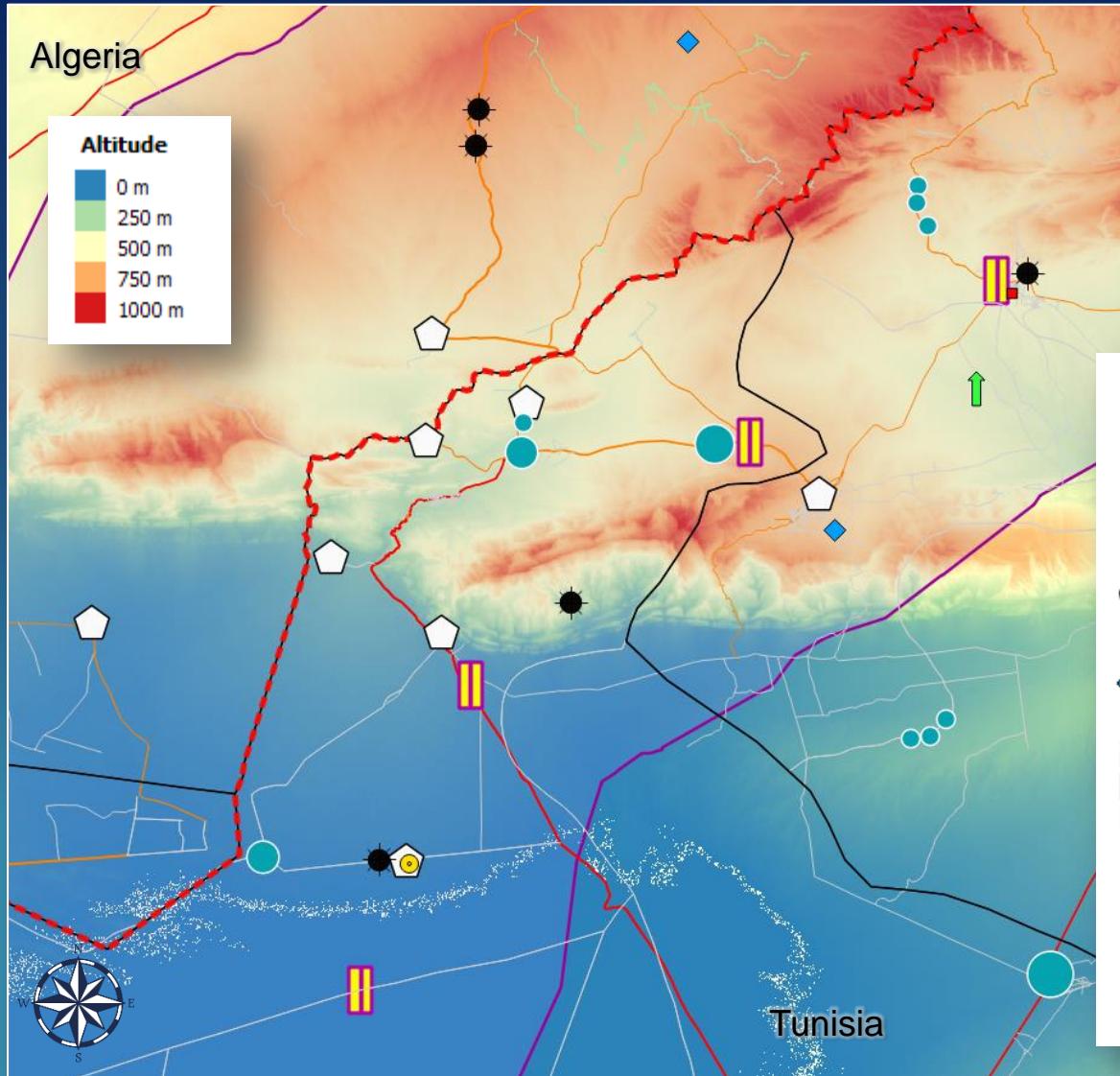
Rationalize delimitation of intervention zones, based on geo-spatial criteria:

- Flows
- Activity
- Incidents
- Road network length

# Tunisia – Monitoring Markets

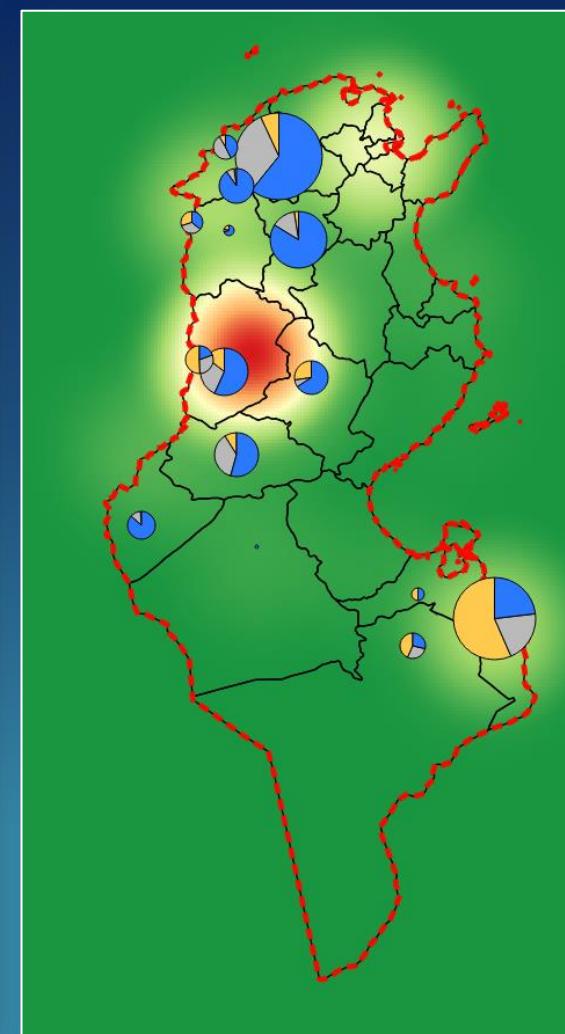
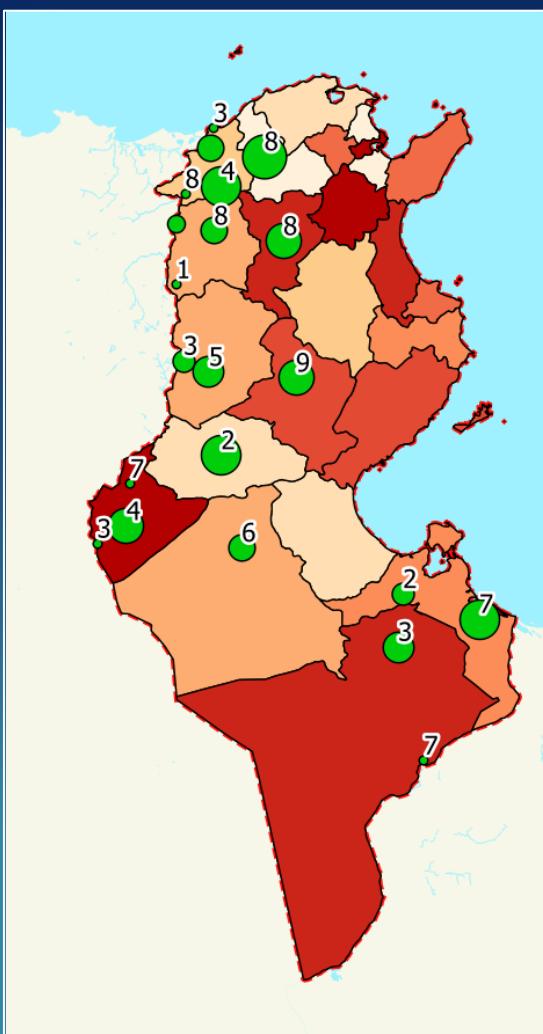


# Tunisia – Local Operations & Logistics



- Plan patrol tours
- Position road blocks
- Assess security
- .....

# Reporting

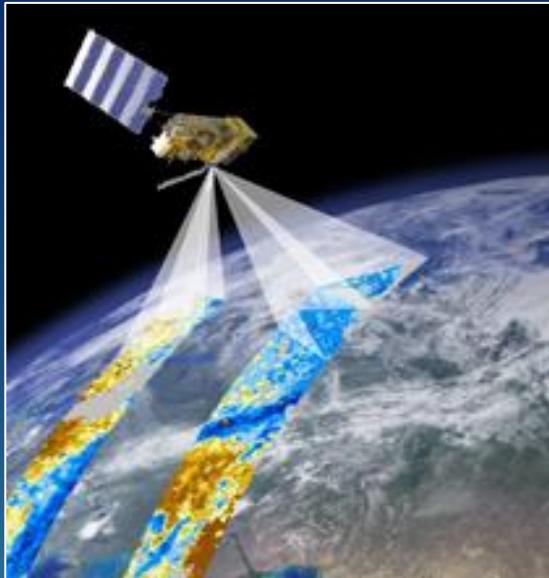


# Conclusions

- Huge gain by introducing geography
  - Strategy, Tactics, Operations
  - Create (reveal) geo-intelligence
  - Detect irregularities (monitoring)
  - Decision Aid: assess performance, reallocate resources, organize operations
  - Communication
    - Internally
    - Externally
    - Cross border: map are universal (bypass language barrier)
  - Capture and store field knowledge/expertise, build historical database
- Easy to establish, step by step...
- Opportunity to restructure existing data(bases)

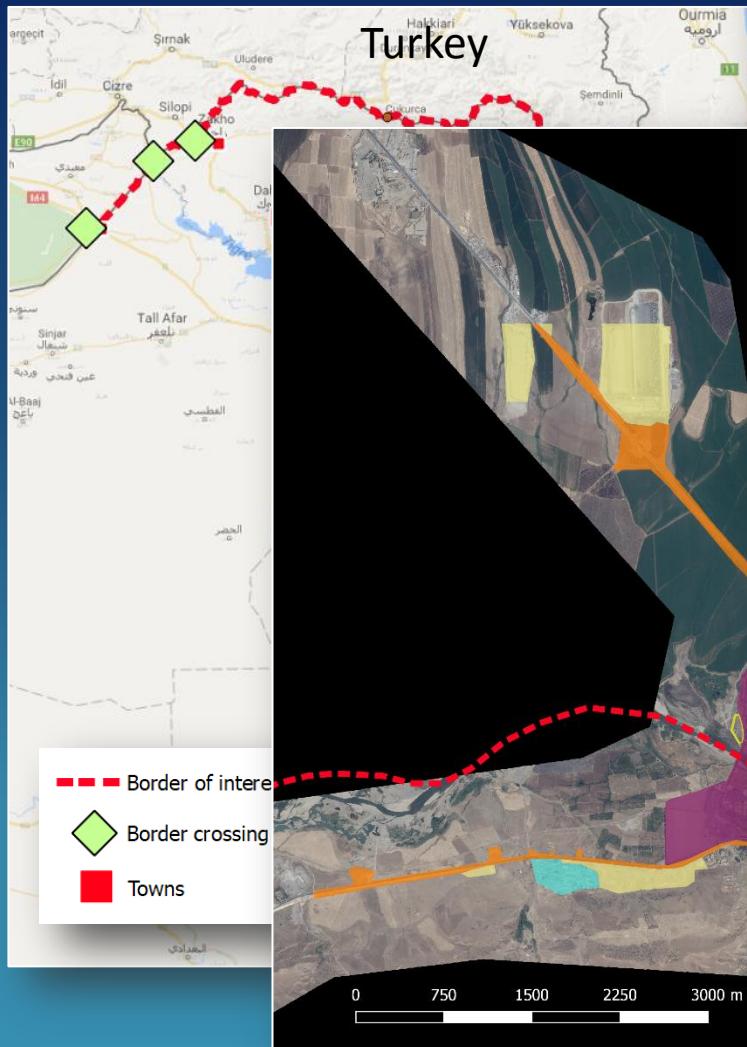
# Remote Sensing

# Remote Sensing



- Earth Observation by imaging the earth surface from the sky
- Water, Environment, Meteorology, Agriculture, Military, Urban, ....
- 1100 operational satellites, of which 25% for EO
- Different characteristics
  - *Orbit/Altitude*
  - *Image size/resolution*
- RS is acquiring the right images, processing and extracting information
- Objectif and fact based source of information
- Access to remote / dangerous areas

# Cross Border Truck Traffic Assessment



# Cross Border Truck Traffic Assessment



2013, AUG 7



2014, SEPT 27

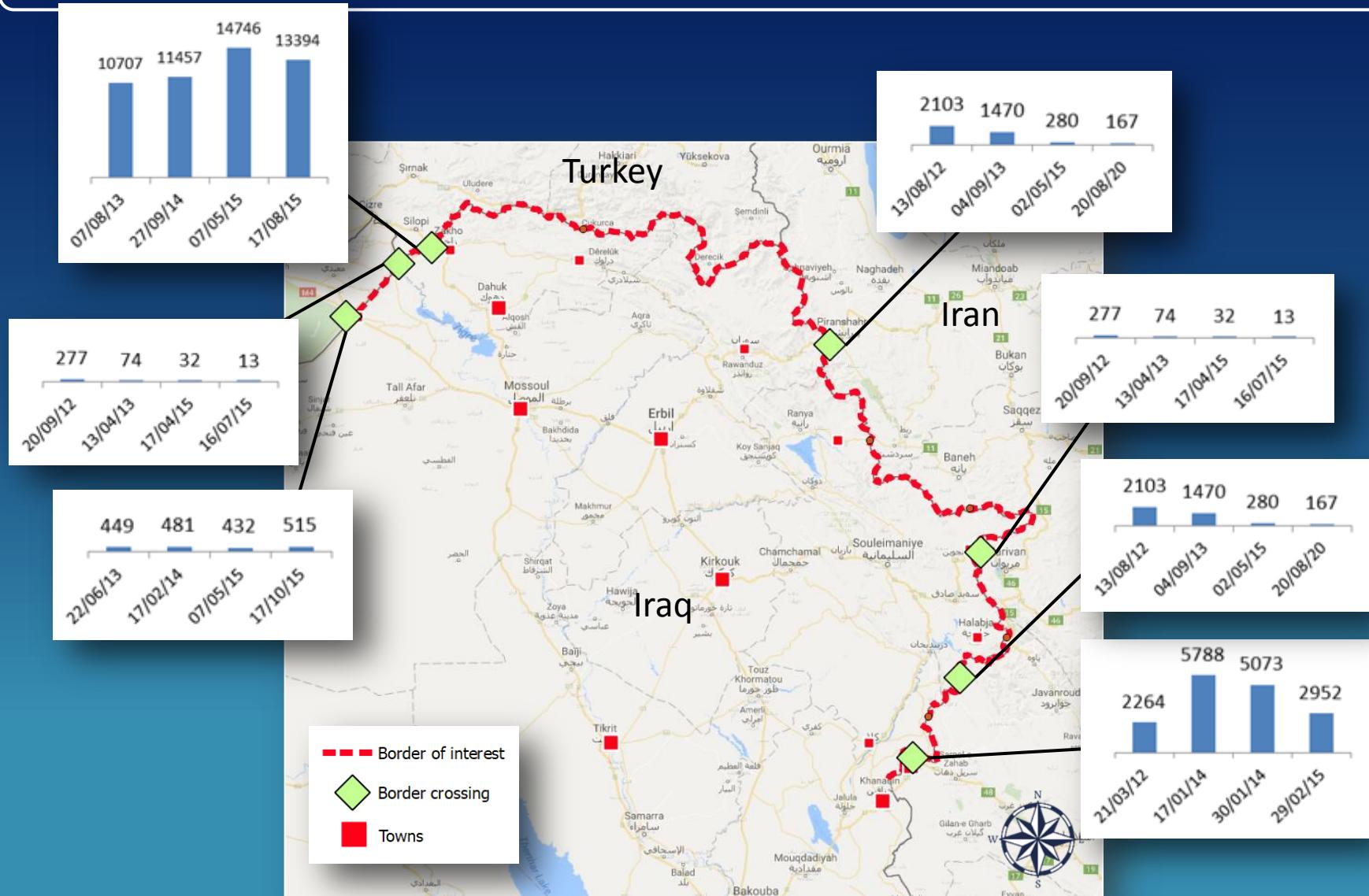


2015, MAY 7

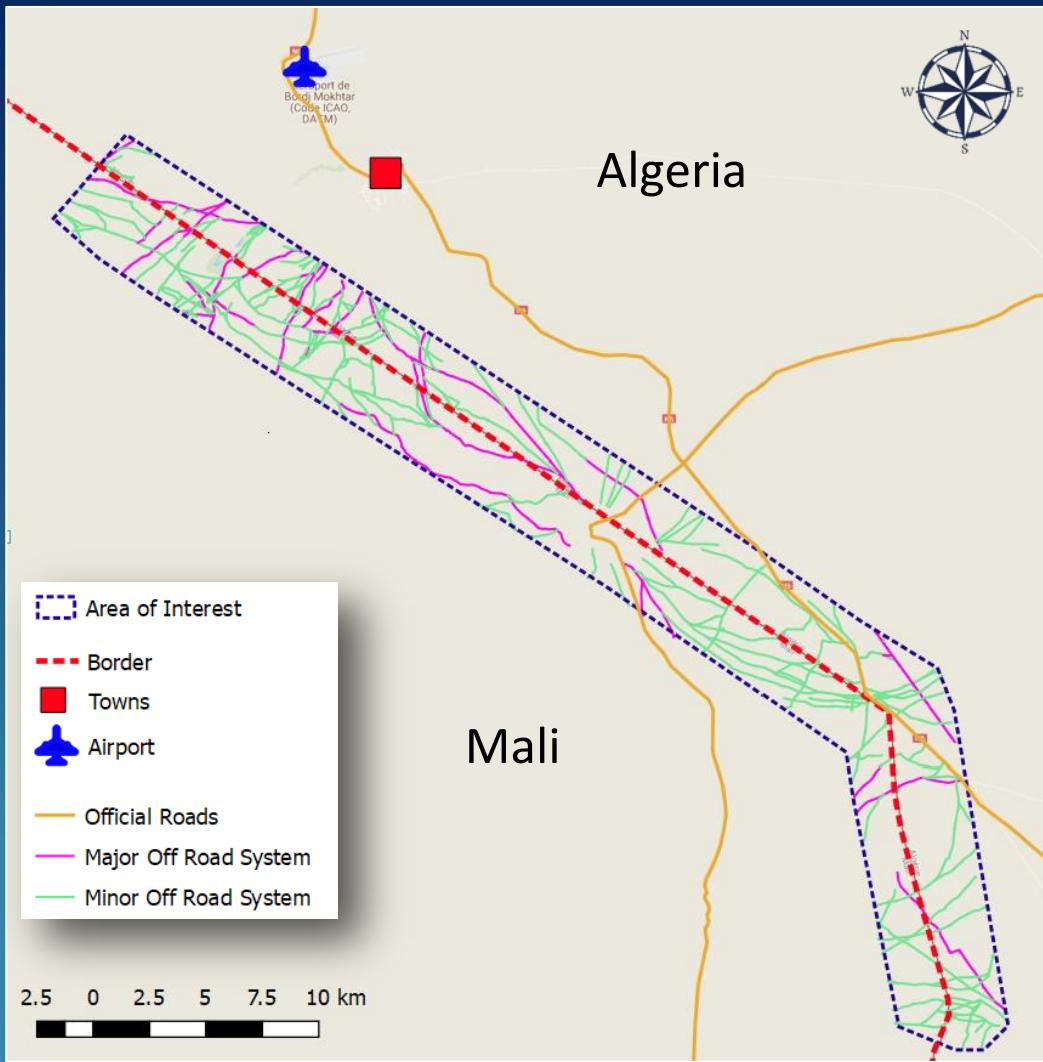


2015, AUG 17

# Cross Border Truck Traffic Assessment

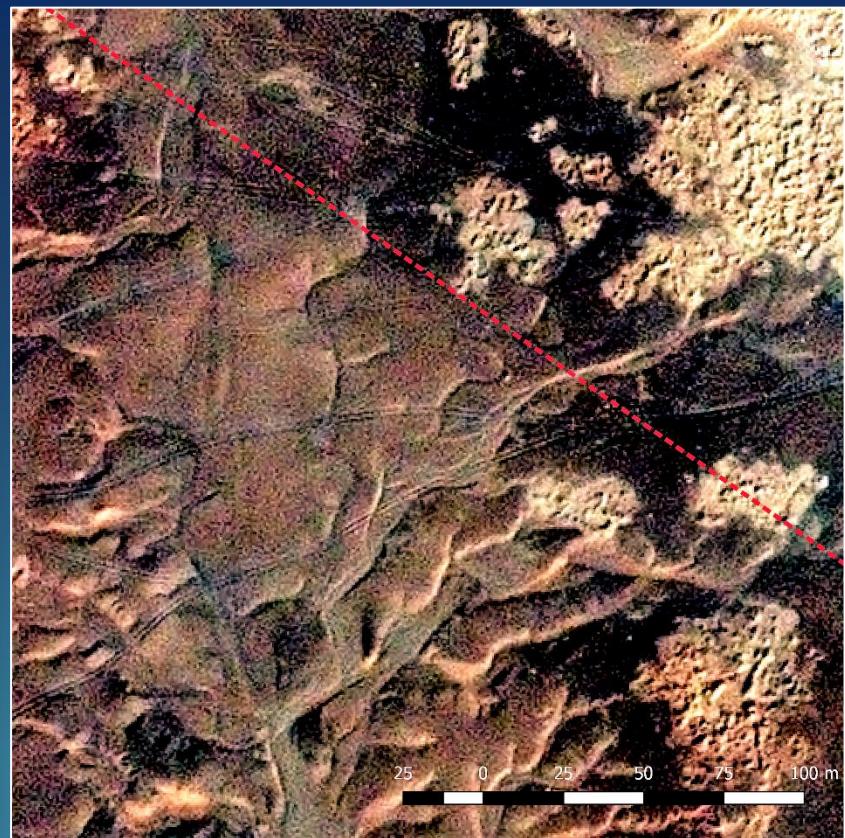
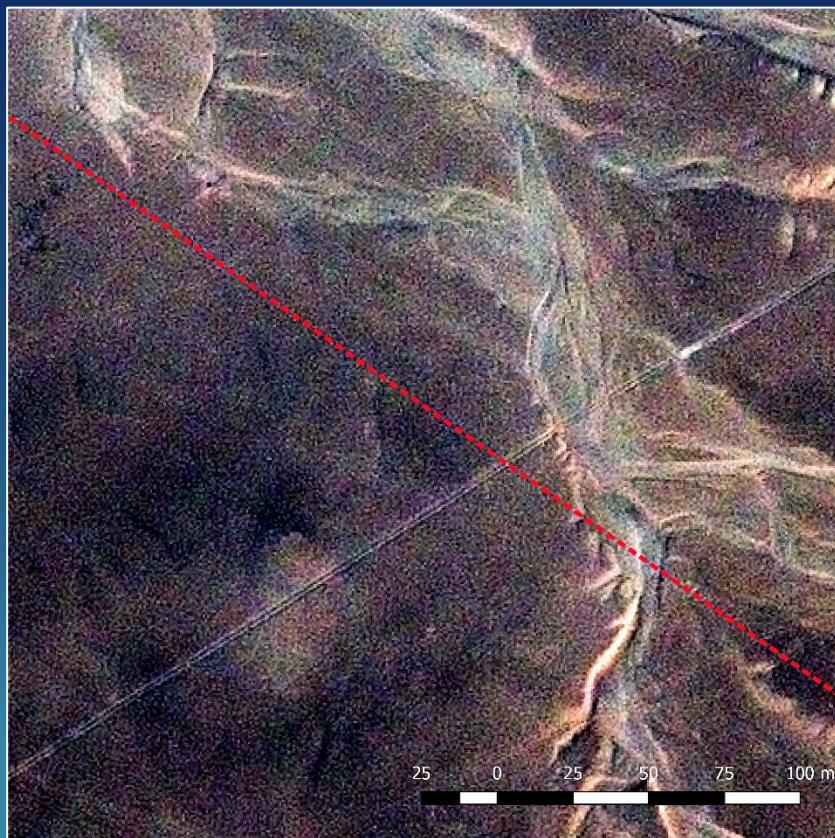


# Informal Roads Detection



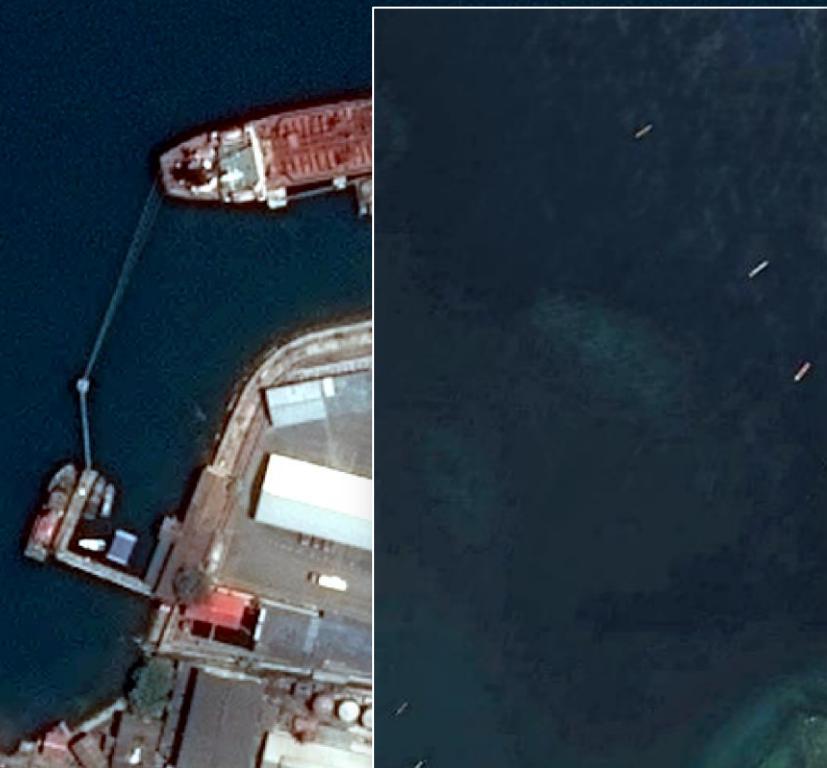
- Assessment of informal roads on the border between Mali and Algeria
- Semi-automatic interpretation of 50 cm resolution satellite images
- 41 informal border crossings identified over a border length of 70 Km

# Informal Roads Detection



# Monitoring Ports

*Inventory existing infrastructure type and position*



*Count containers and storage capacity*



*Evaluate boat waiting times from number and size of boats waiting outside the port*

Image © 2014 DigitalGlobe

# Questions? |

Contact:

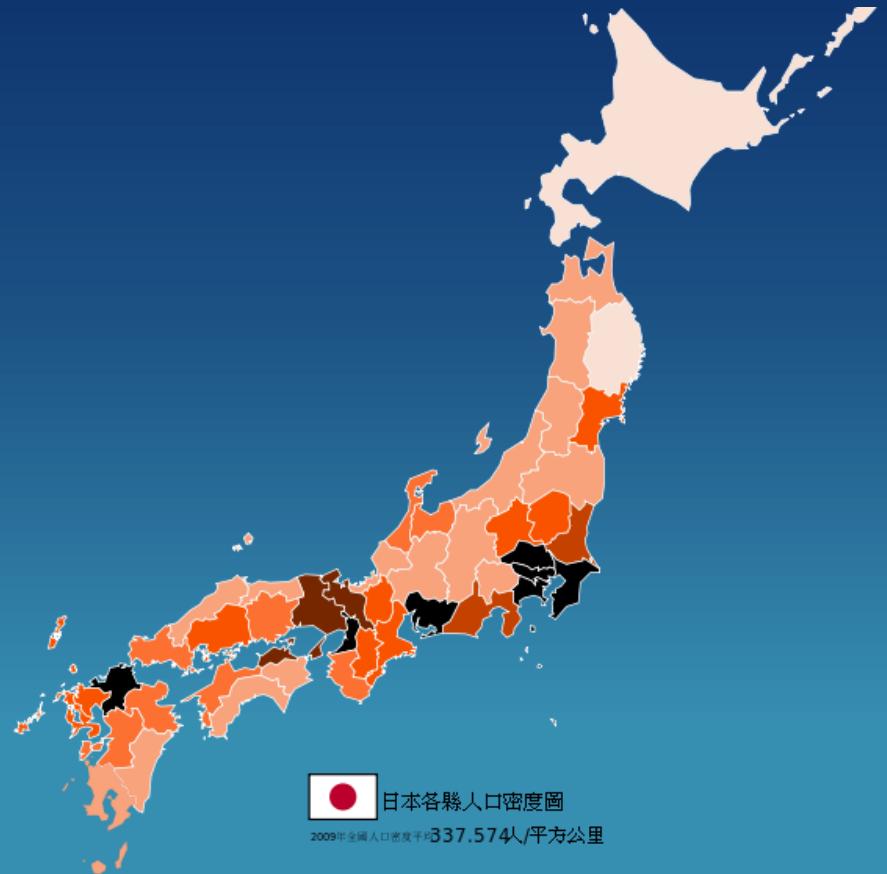
Daan van Setten

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Tel +33 6 23 87 32 09

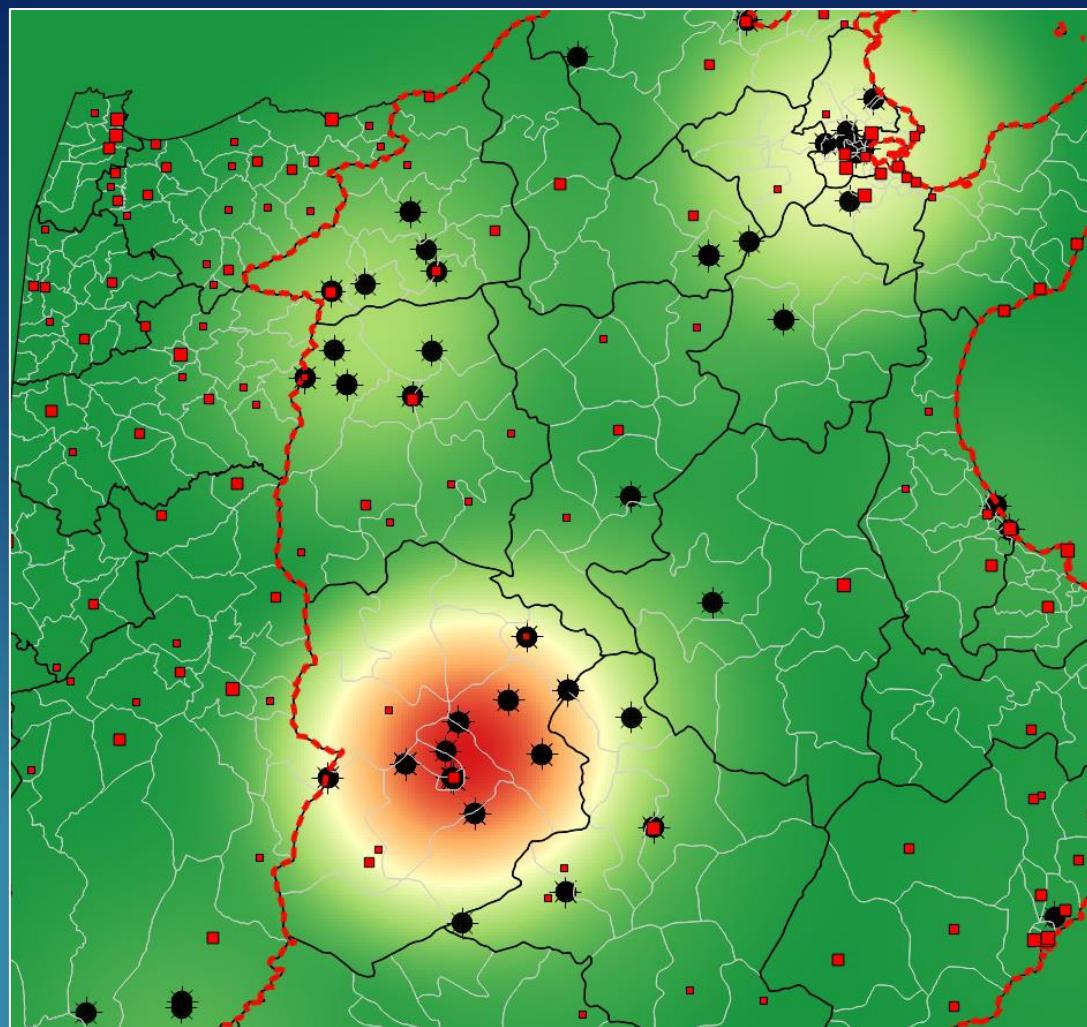


**GE-Data**



## Back-up slides

# Heatmap Incidents

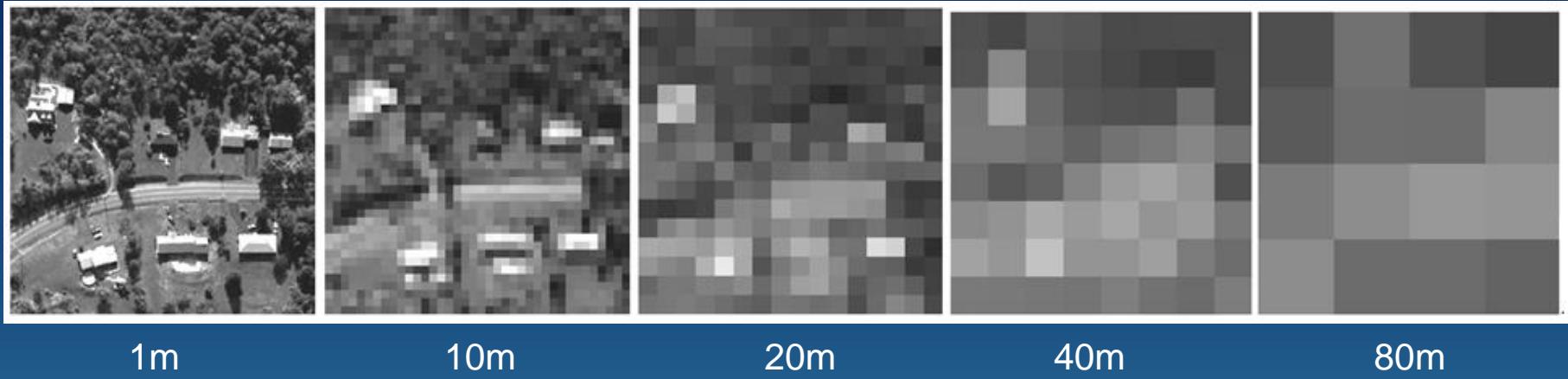


# Remote Sensing



# Remote Sensing

## Image Resolution



## Land use mapping / Classification



# GE-Data factsheet

- Private and independent consulting company of 4 International experts
  - Specialized in geospatial technologies
  - Based in France and USA
  - 25 years of experience
  - In more than 30 countries
  - Clients in Private and Public sector
  - Turnover 2016: 890 K\$
- 
- Contact: Daan van Setten, [vansetten@ge-data.com](mailto:vansetten@ge-data.com), +33 6 23 87 32 09

