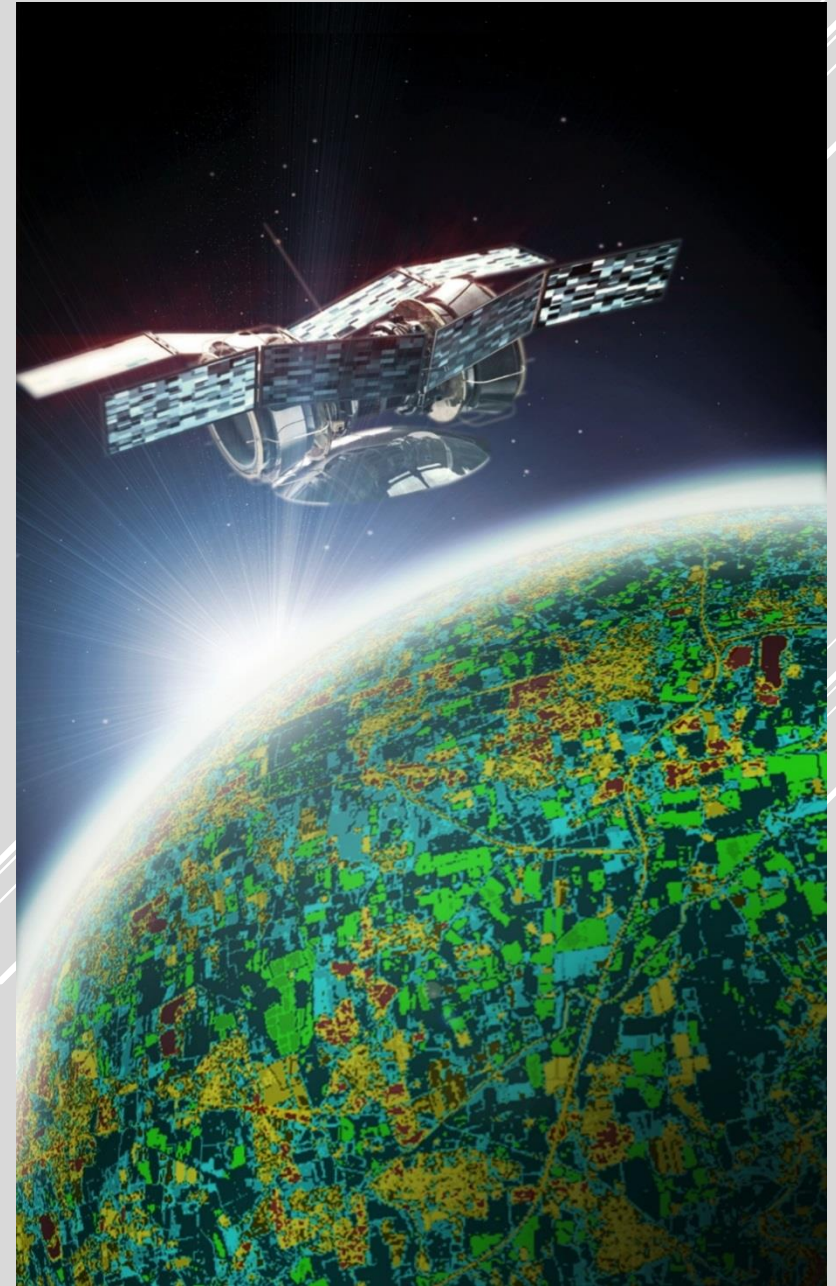


*Presented at the FIG Working Week 2020,
10-14 May 2020 in Amsterdam, the Netherlands*



The Republic of Azerbaijan
The State Committee on Property Issues

LAND COVER MONITORING SYSTEM





ADVANTAGES OF LAND COVER MONITORING SYSTEM

Obtaining satellite images of the territory of Azerbaijan every 5 days

Monitoring of changes on the land cover as a result of comparing of satellite images and classification maps generated manually and automatically

Images of the land cover in infrared short waves, normalized water difference index, normalized flora difference index, etc.

Discovery of new installations and their locations (coordinates)

Automatic generating of flora classification map of the country

Generating of report (in tables and graphics) on annual and quarterly changes



ADVANTAGES OF LAND COVER MONITORING SYSTEM

Monitoring of crops planted in agricultural land

Discovery of forest fires and monitoring of damages to the nature during emergency cases

Discovery of changes in forest areas

Discovery of changes in water volume in rivers and reservoir storages

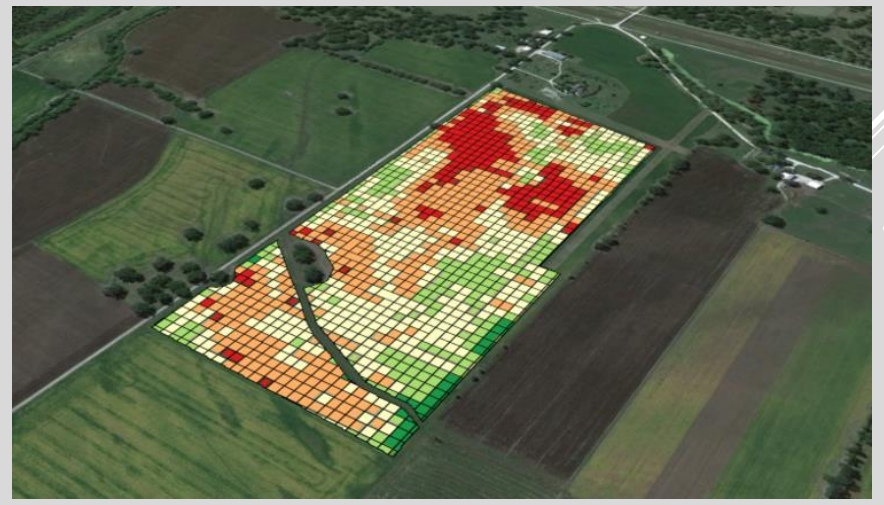
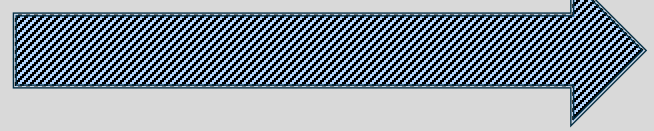
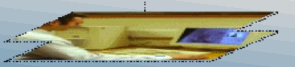
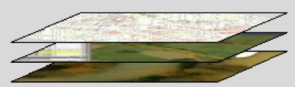
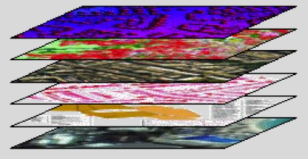
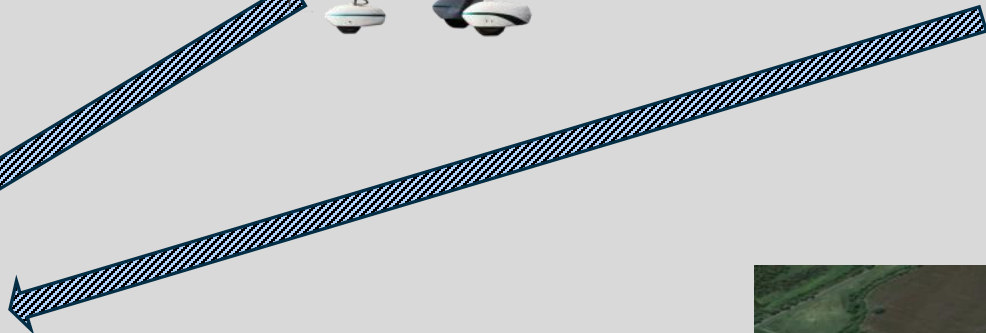
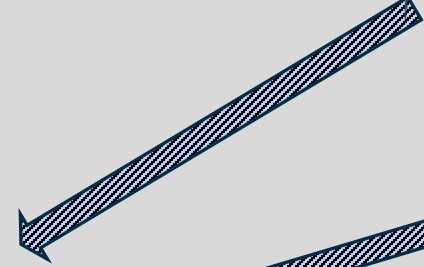
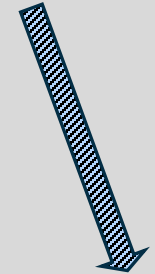
State control on land use

Advantages for central and local power authorities to monitor areas



TECHNICAL ADVANTAGES OF LAND COVER MONITORING SYSTEM

Automatic processing of images taken with different equipment and applying the, in other GIS systems

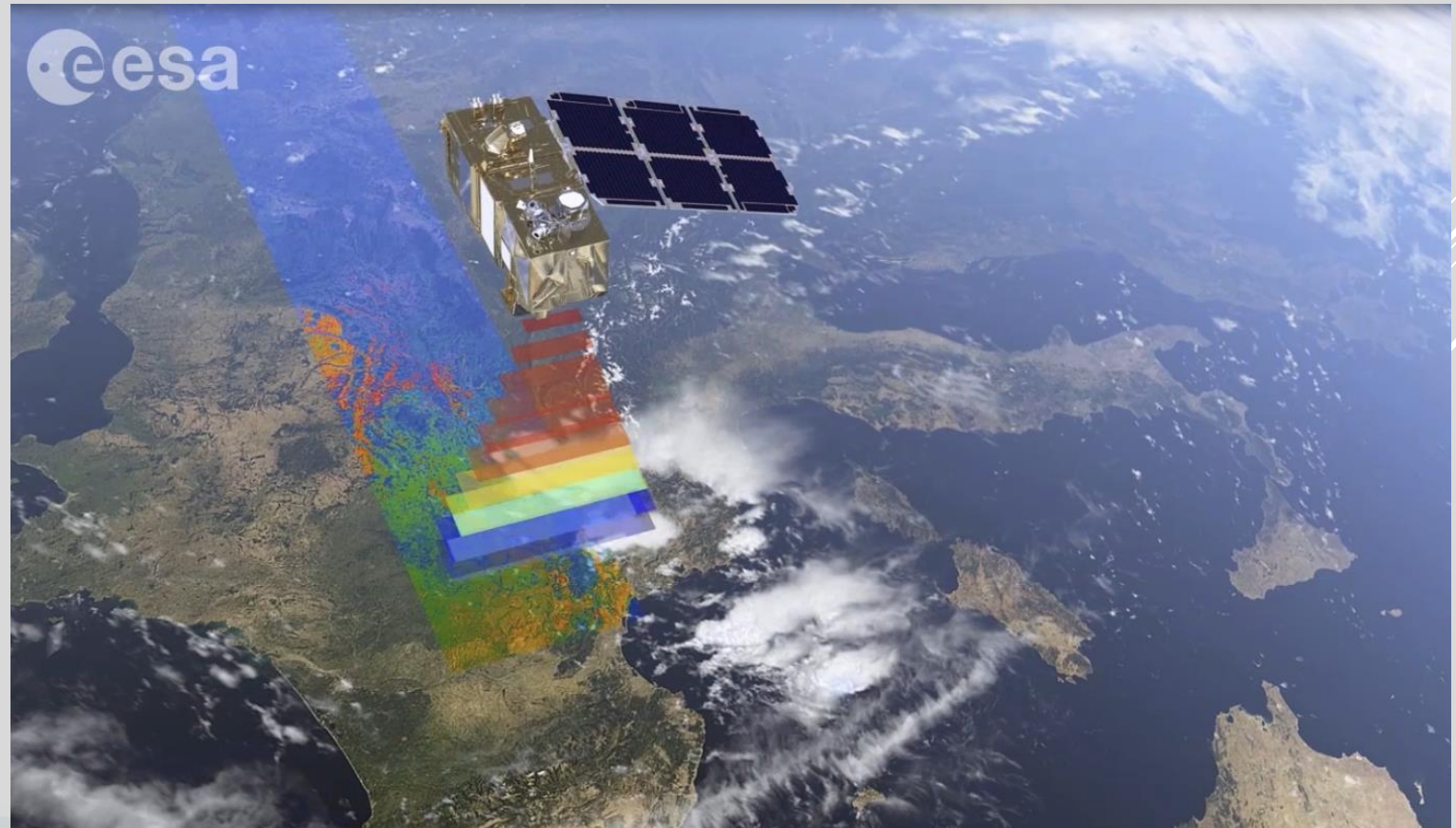




DATA SUBMITTED TO LAND COVER MONITORING SYSTEM

Images from Sentinel – 2, **Landsat** and “Azersky” satellite of Azerbaijan

Humans often change their land plots, erect new installations, soil is polluted, agricultural land becomes construction areas, forests are destroyed and so on. This is why it is necessary to monitor all these processes to discover potential problems and illegal cases.

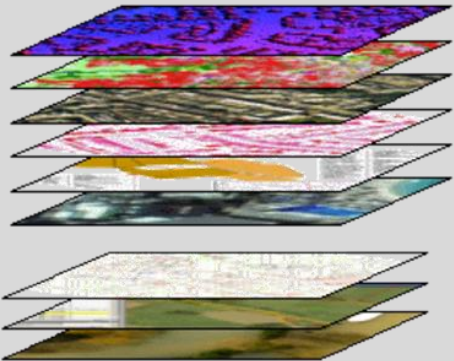




OBSERVATION PLATFORM OF LAND COVER MONITORING

DARA SOURCES

Azersky, Sentinel-1, Sentinel-2, Landsat images

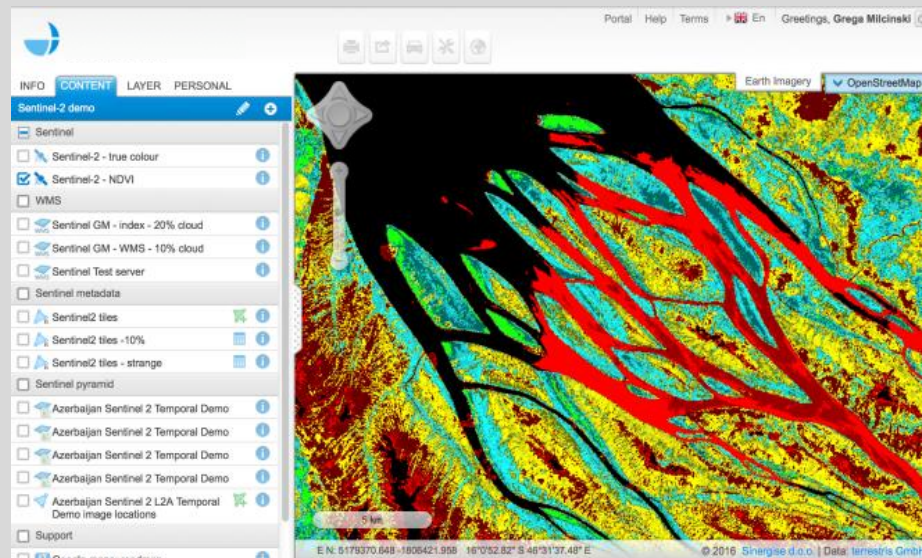


Aircraft orthophoto images



UAV images

AUTOMATIC PROCESS OF DATA AND DELIVERING OF RESULTS



USERS

State Committee on Property Issues

Ministry of Agriculture

Ministry of Ecology and Natural Resources

Ministry of Emergency

State Committee on Urbanization and Architecture

State Tourism Agency

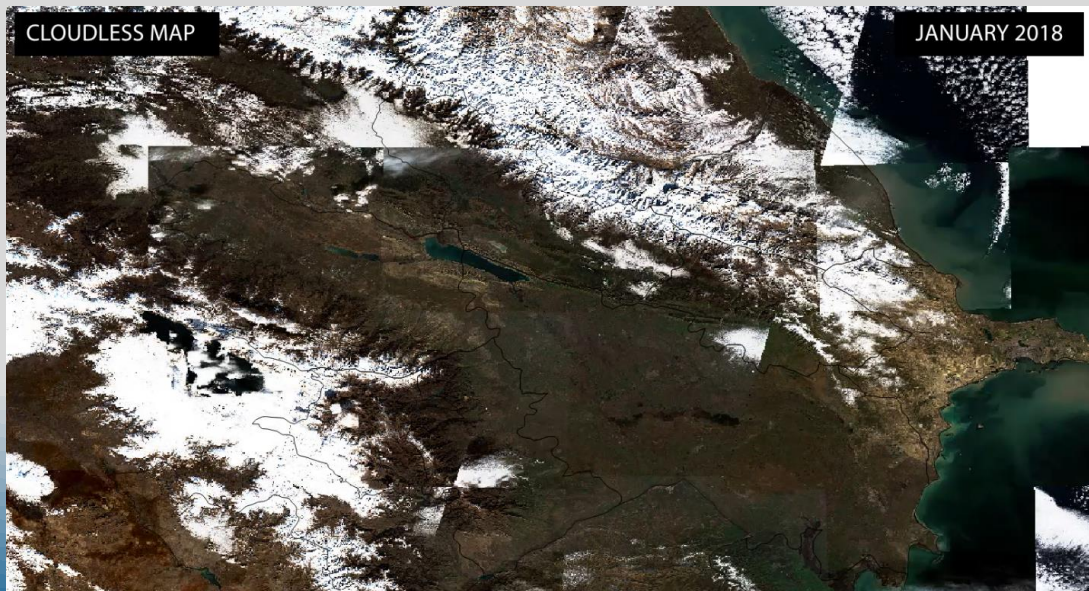
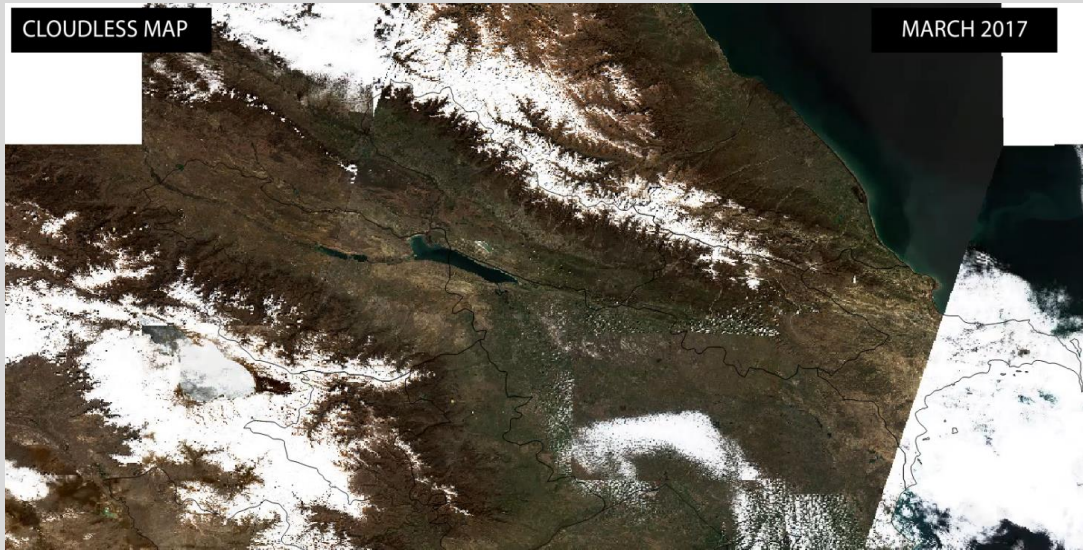
Local Power Authorities

Municipalities

Etc.



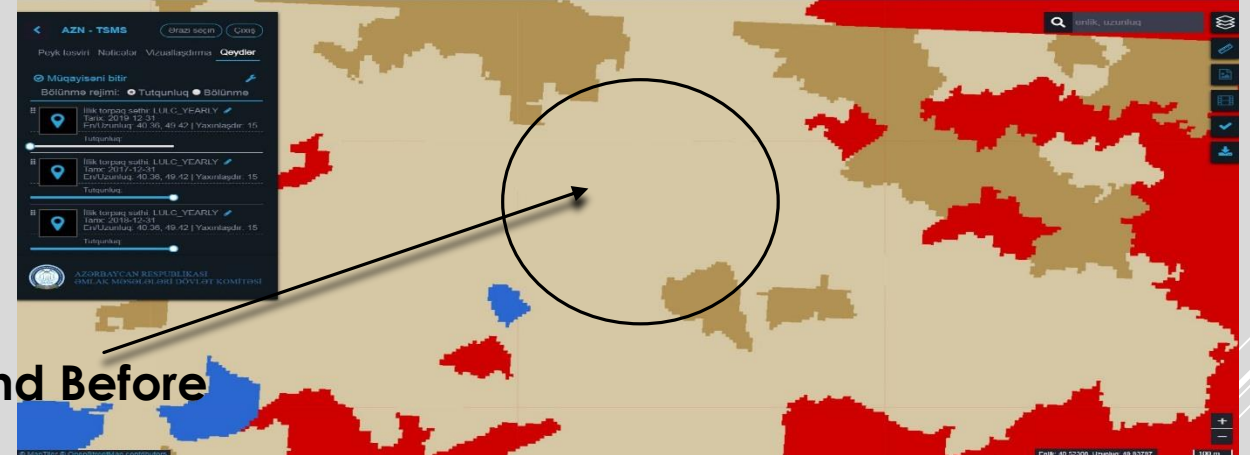
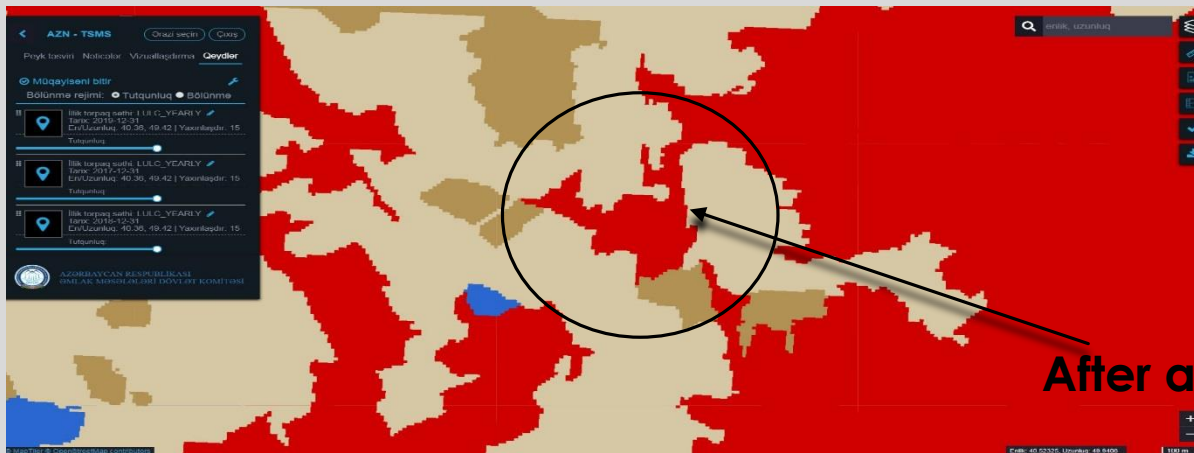
SATELLITE SHOOTING IN DIFFERENT MONTHS





DISCOVERY OF NEW INSTALLATIONS (BAKU)

Automatic discovery of new installations and construction areas



After and Before



Real images
after and before



CHANGES IN PLANTED AREAS (AGHJABADI DISTRICT)

Automatic discovery



After and Before

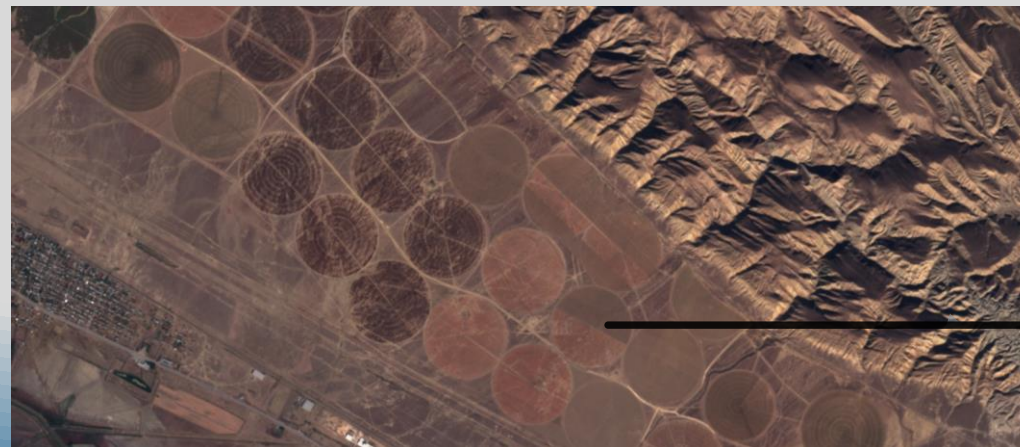


Real image After and Before



CHANGES ON LAND COVER

Discovery of new installations and any changes on land cover



**ARTIFICIAL
IRREGATED
PLANTED AREA**



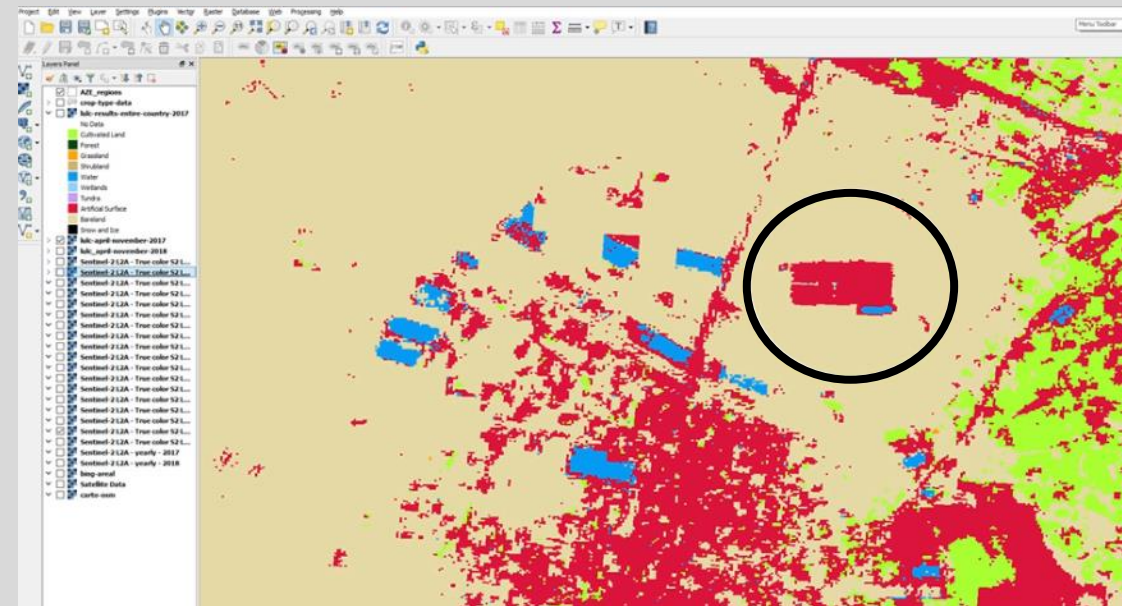
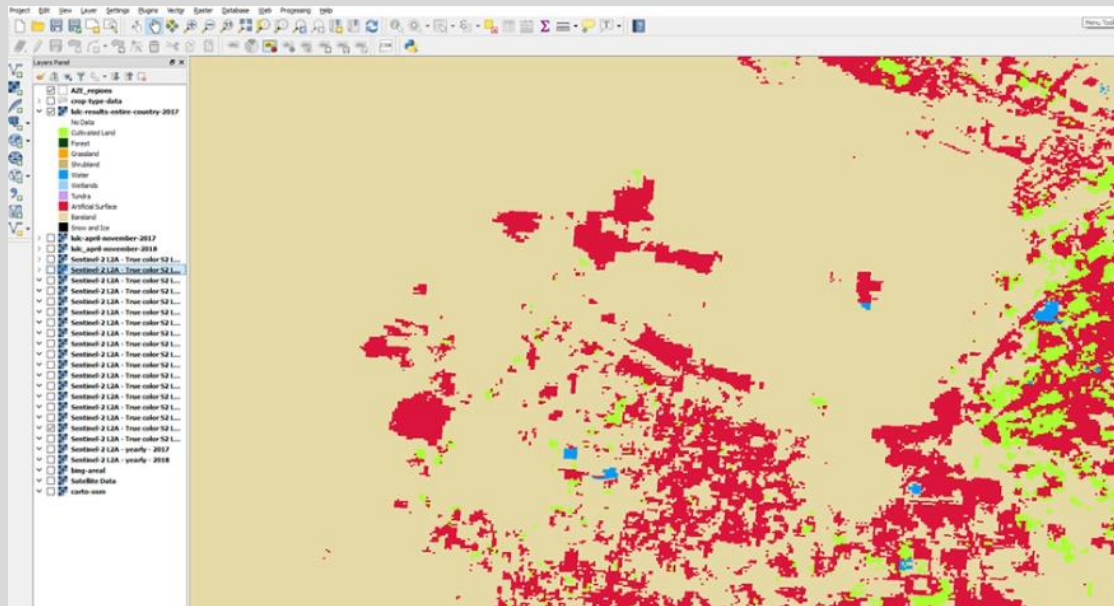
DISCOVERY OF NEW INSTALLATIONS

Automatic discovery of new installations, construction areas and damaged parts of forests

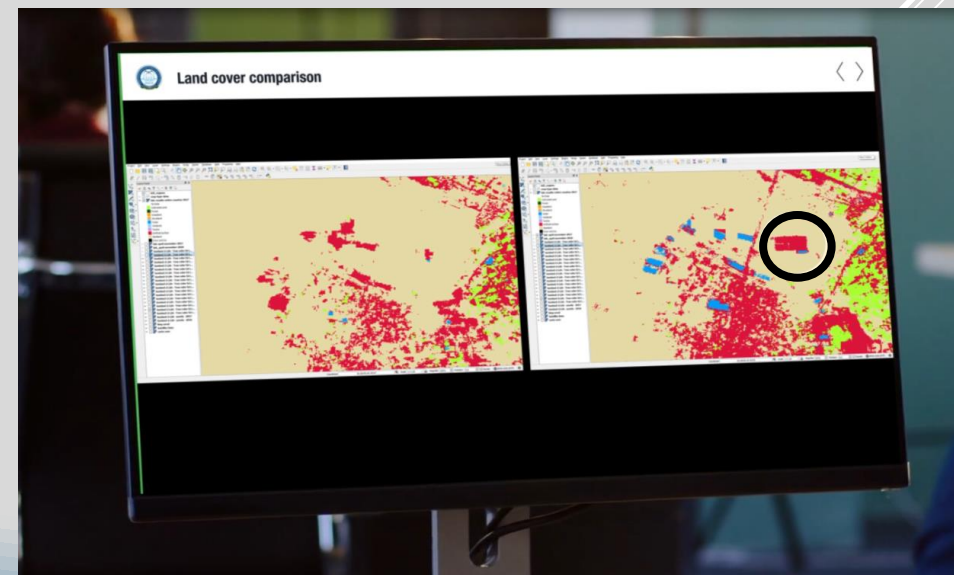




NEW INSTALLATIONS ARE DISCOVERED VIA SYSTEM'S ARTIFICIAL INTELLIGENCE



INFORMATION ON DISCOVERED INSTALLATION IS AUTOMATICALLY DELIVERED TO OPERATOR, AND OPERATOR SUBMIT COORDINATES OF THE INSTALLATION TO LAND INSPECTOR TO FURTHER CHECK





MONITORING OF CROPS IN AGRICULTURAL LAND

Before

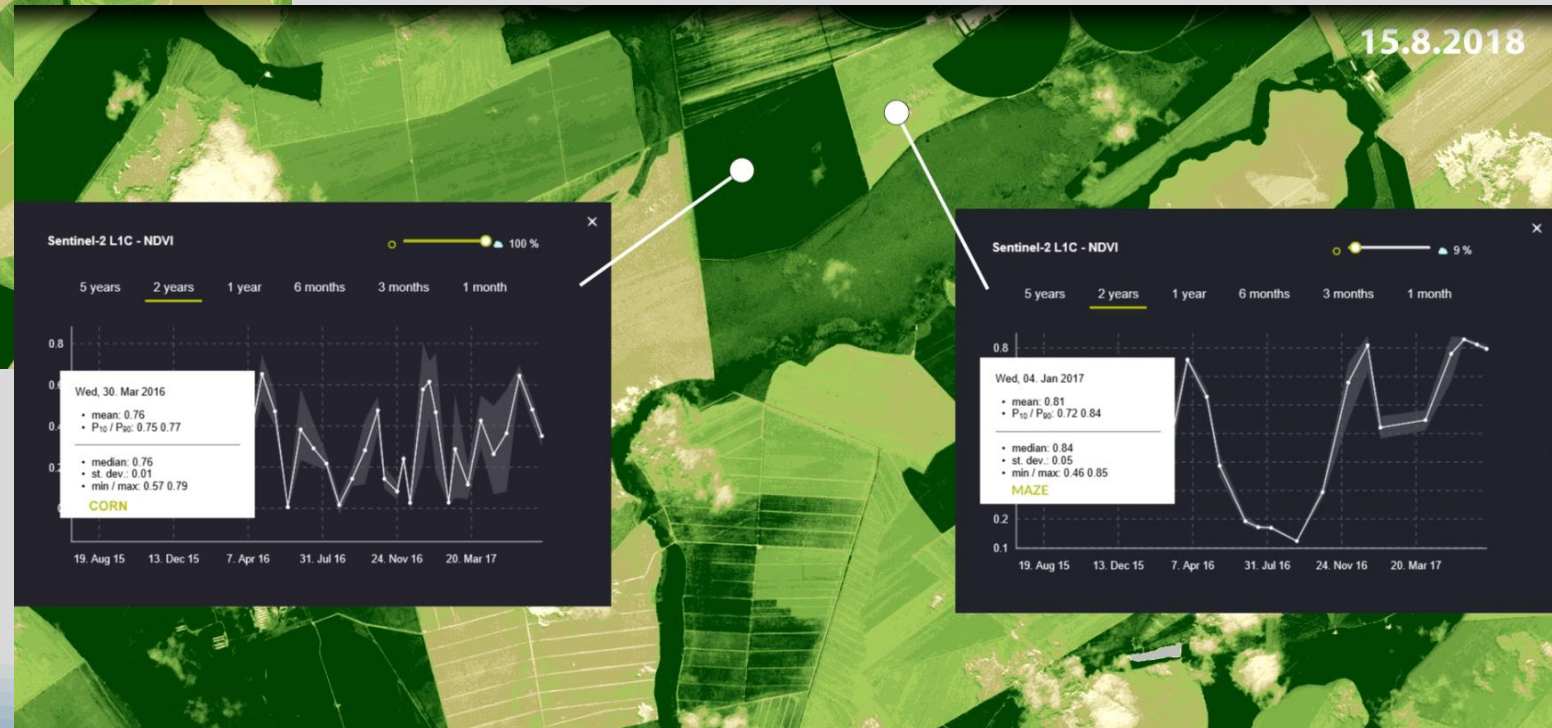
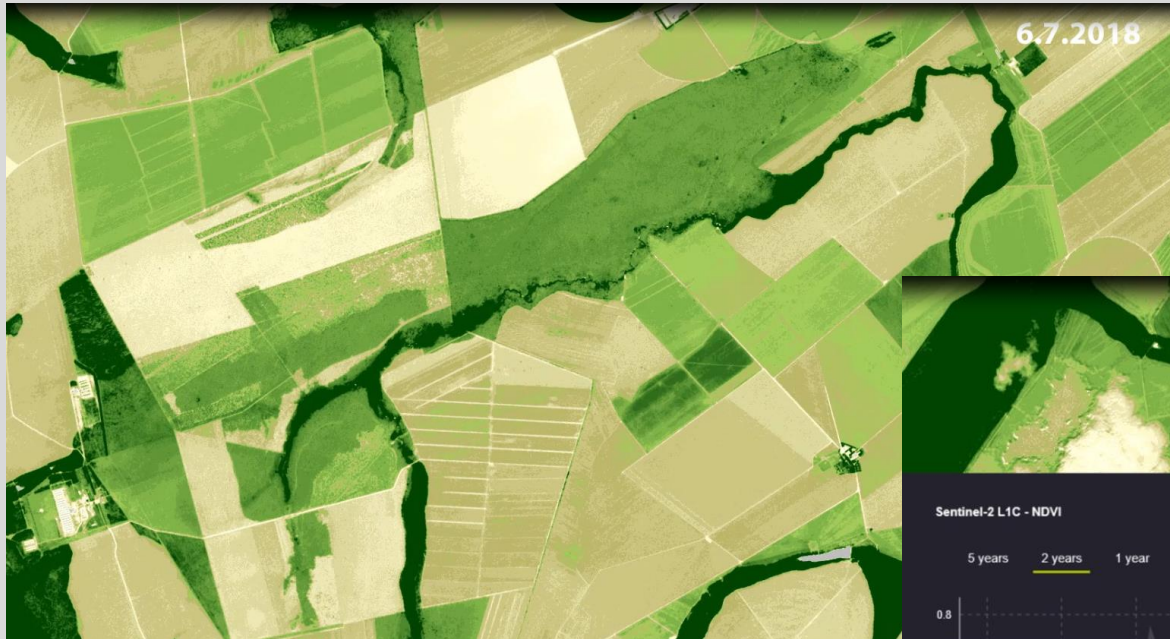


After





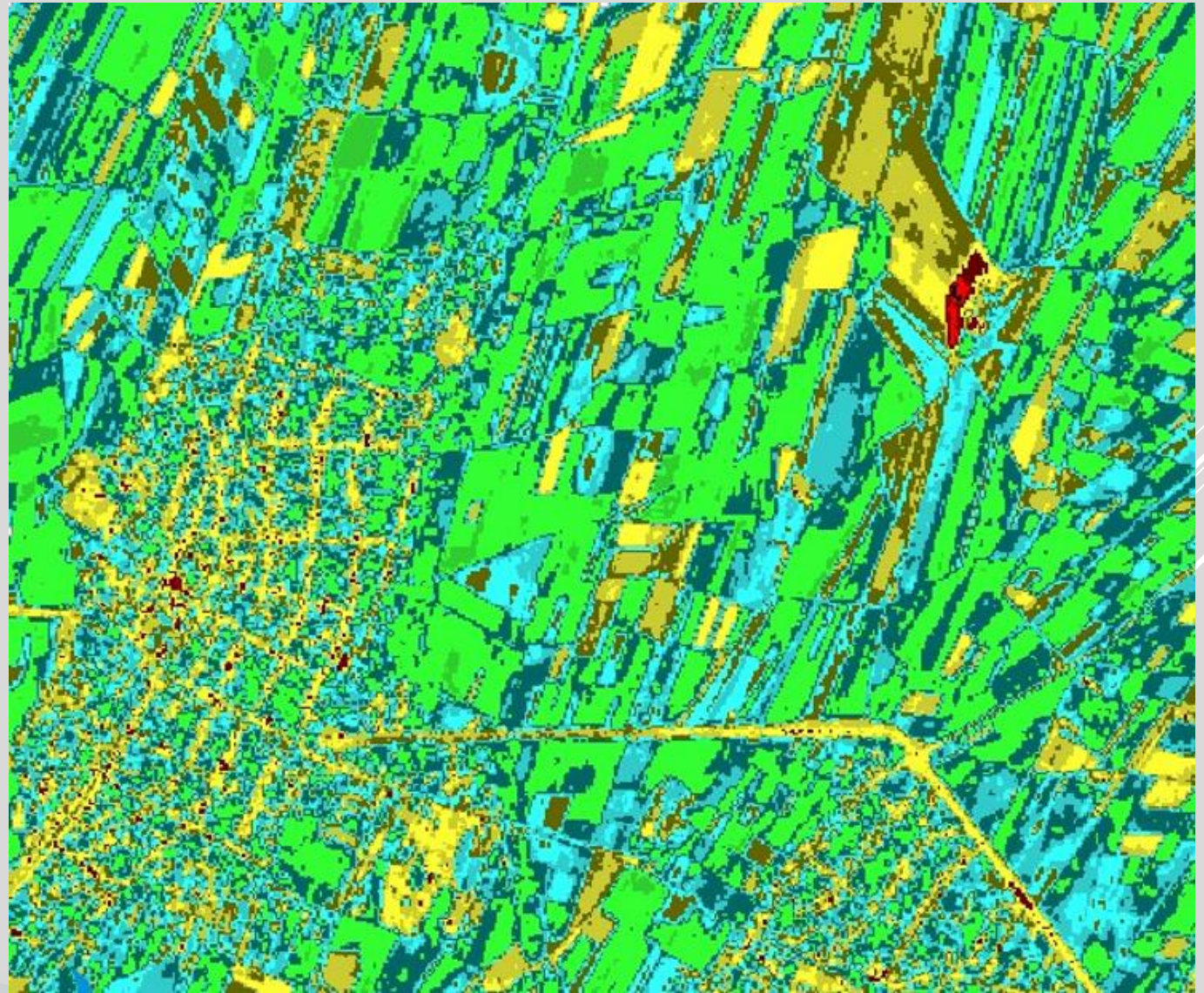
MONITORING OF CROPS' DEVELOPMENT DYNAMICS





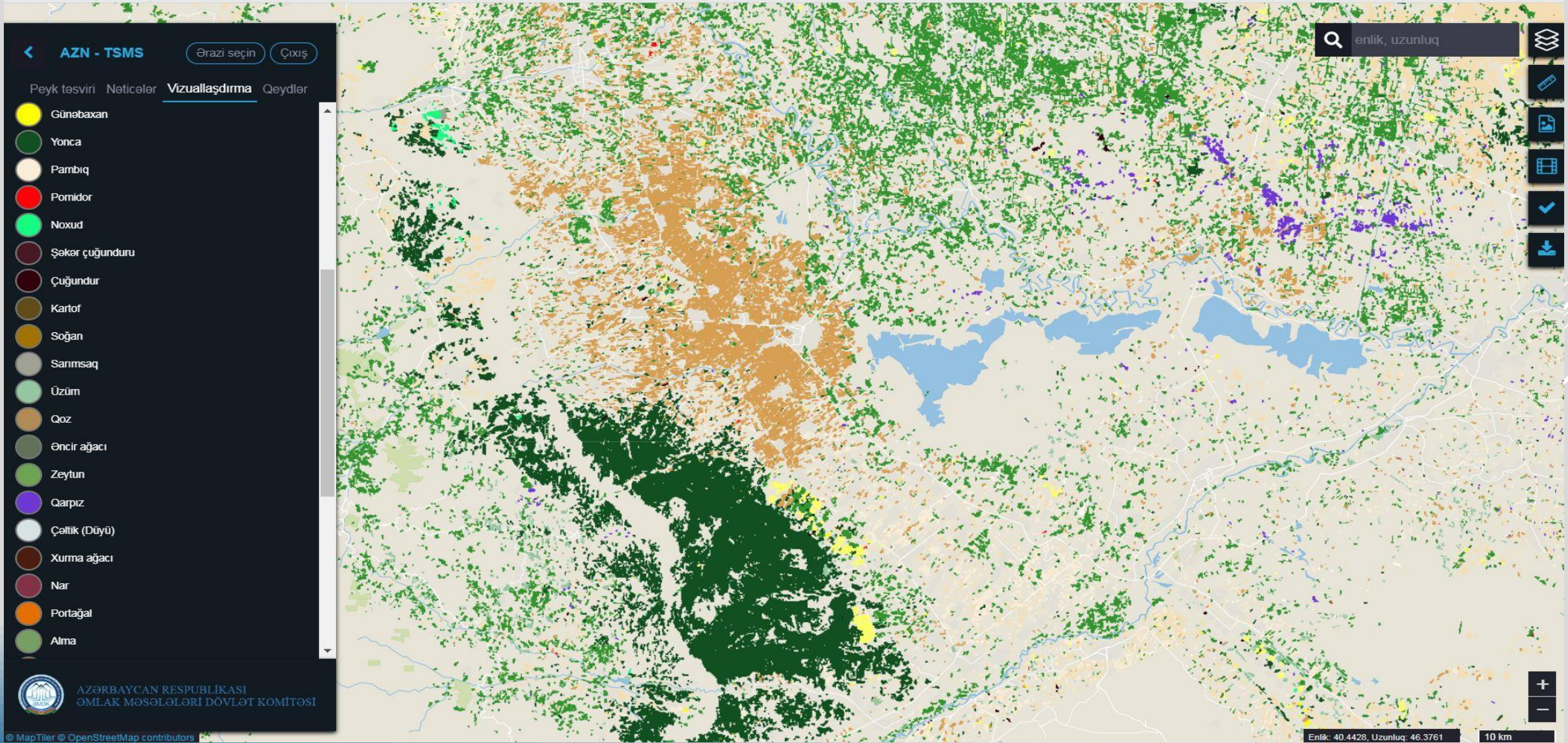
LEASED AGRICULTURAL LAND PLOTS (GANJA)

Green is normal crops





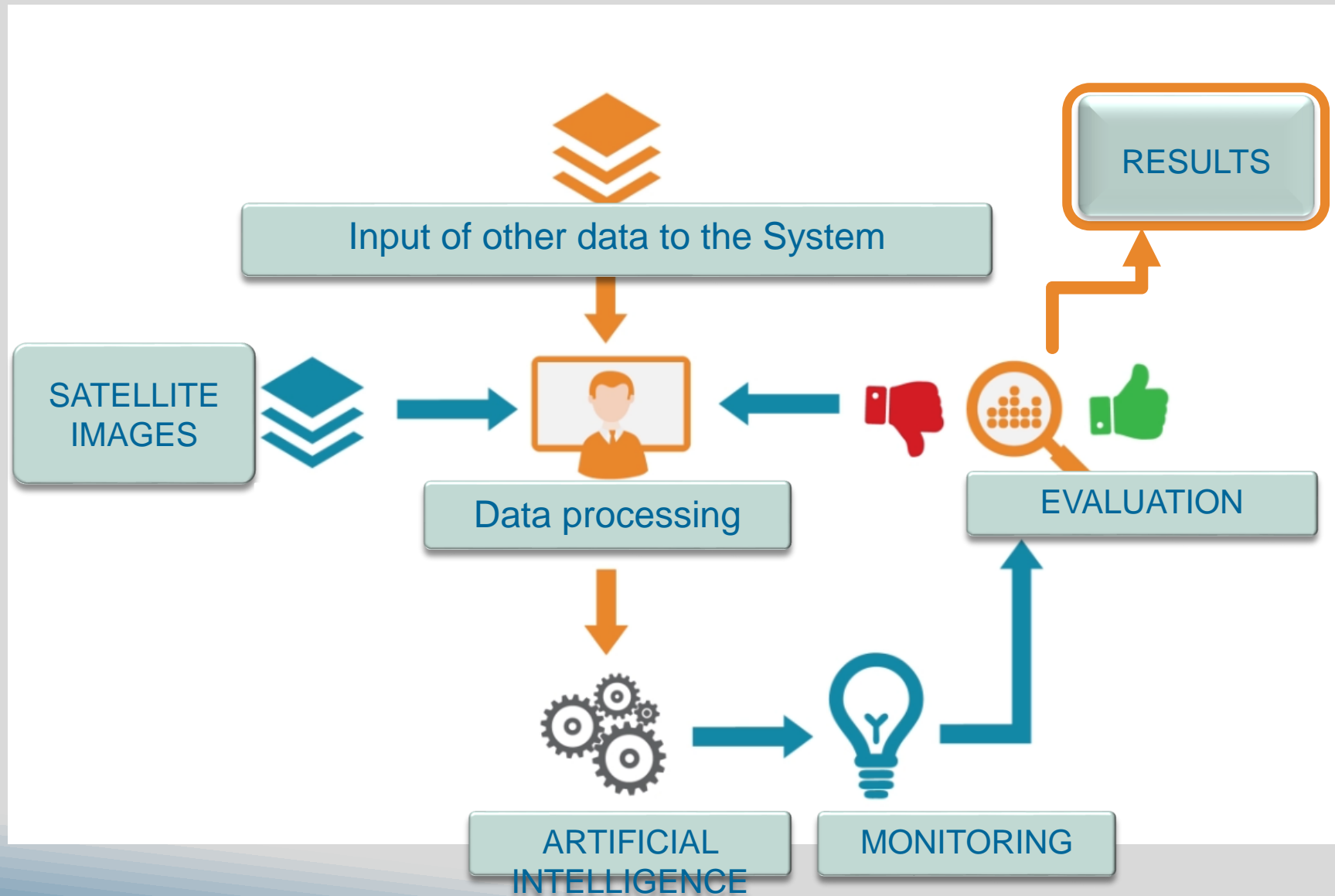
CROP BREAKDOWN MAP IS PREPARED AS A RESULT OF MONITORING





PERFORMANCE PRINCIPLE OF SYSTEM'S ARTIFICIAL INTELLIGENCE

Satellite, aircraft or UAV images are input to the System, and the System's artificial intelligence starts analyzing images (automatic processing). The differences between images shot before and after (i.e. land cover changes and their coordinates) are automatically discovered by the System.





SYSTEM OUTCOMES

Obtaining satellite images of Azerbaijan's territory

Efficient land use by applying innovative technologies

Creation of centralized control platform in order to avoid illegal use of lands

Optimization of agricultural land use

Automatic discovery of area(s) in case of natural disasters and emergency cases

THANK YOU FOR YOUR ATTENTION!