

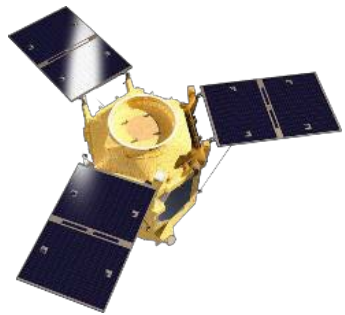
Azercosmos
Earth Observations
Capabilities

Azercosmos

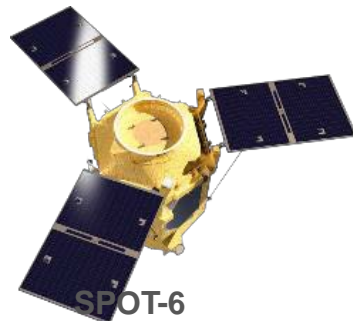
- The first and only satellite operator in the South Caucasus.
- Established by the Decree of His Excellency Mr. Ilham Aliyev, President of the Republic of Azerbaijan, dated May 3, 2010.
- Functions:
 - Provides satellite-delivered telecommunication and Earth observation services to customers in both the public and private sectors,
 - Is an official representative of the Republic of Azerbaijan at the UN COPUOS, ITSO, EUTELSAT-IGO and Intersputnik .
- Operates **three satellites**:
 - Telecommunication Satellite Azerspace-1 (2013)
 - Optical Earth Observation Satellite Azersky (2014)
 - Telecommunication Satellite Azerspace-2 (2018)

Earth Observation Satellites

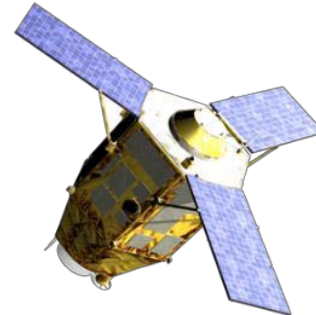
- Within the cooperation framework between Azerbaijan and France in the space industry, in 2014, Azercosmos signed a strategic cooperation agreement with Airbus DS to take over the rights to operate and commercialize the SPOT-7 high resolution (1.5m) optical Earth observation satellite



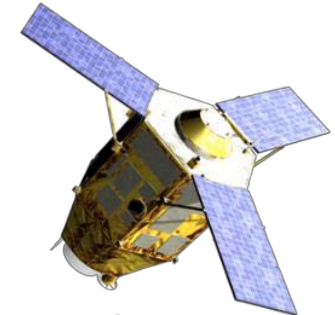
Azersky
(1,5 m panchromatic and pansharpening / 6 m multispectral)
Azercosmos, Azerbaijan



SPOT-6
(1,5 m panchromatic and pansharpening / 6 m multispectral)
Airbus DS, France



Pleiades 1A
(0,5 m panchromatic and pansharpening / 2 m multispectral)
Airbus DS, France



Pleiades 1B
(0,5 m panchromatic and pansharpening / 2 m multispectral)
Airbus DS, France

Earth observation satellite, Azersky

- Today, owing to Azersky, there is a direct and unconditional access to any high-resolution satellite imagery of any part of the world.
- Over the past period, Azersky satellite services have been used in agriculture, cartography, urban planning and monitoring, updating cadastral data, study of oil pollution in sea and seaside, defense, security and other areas.

Azersky, main features:

- 6 000 000 km² per day
- Tasking plan update up to 6 times/day
- Very-low revisit time
- Single pass stereo and tri-stereo acquisition
- Geolocation accuracy 6-10 meters



Universal Ground Control Station

It is technically possible to obtain images from any satellite passing over Azerbaijan via the Universal Ground Control Station

The most advanced software is available for processing the satellite images.

There is an extensive archive database of images covering several years.

There is also a GIS Center, consisting of qualified specialists trained by foreign experts.

There is an opportunity to be trained on various subjects. Curriculum and thematic trainings are regularly conducted.



Satellite services play crucial role in both the formation and transmission of the digital data

- We provide satellite images to a number of government agencies including but not limited to:
 - Ministry of Agriculture,
 - Ministry of Ecology and Natural Resources,
 - Ministry of Culture,
 - State Agency on Alternative and Renewable Energy Sources,
 - Azerbaijan Railways
 - Ministry of Economy
 - Institutes of Azerbaijan National Academy of Sciences
 - Ministry of Foreign Affairs

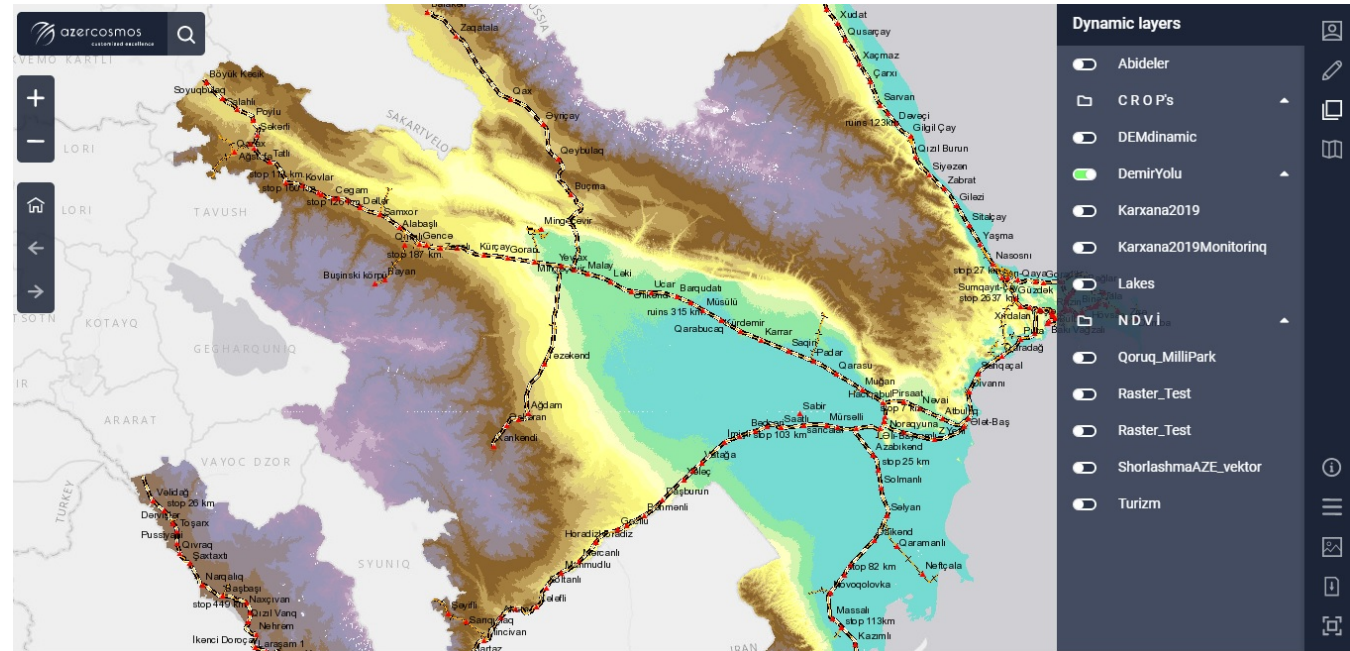
on the following activities:

- WebGIS,
- Detection of Greenhouses by Means of Deep Learning Techniques,
- Electronic Agricultural Information System (EAIS)



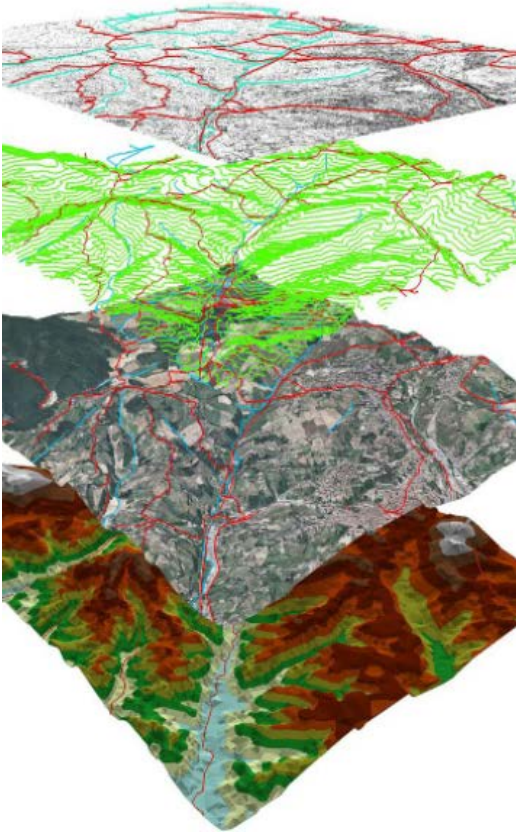
WebGIS platform

- Through Earth Observation Satellite Azersky, we do not only get image of any part of the world but also form a large volume of information. We get, store and process data directly from the satellite.
- Through WebGIS, developed by Azercosmos Research and Development Centre, all government agencies can use the satellite data, create and store information layers. The data, provided in WebGIS, is in the form of web services for both internal and global market participants.

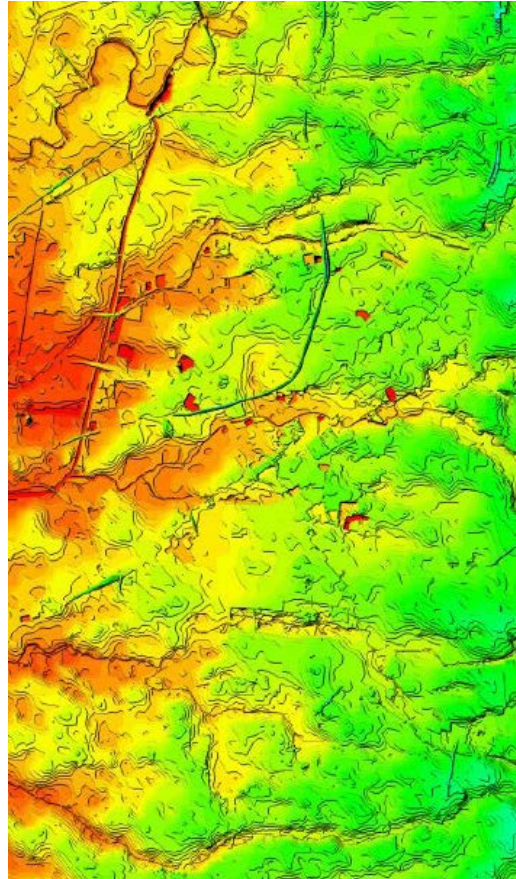


Value added products and services

Ortho rectification



Digital Elevation Model



Mosaicking



Change detection




CHANGES IDENTIFICATION



N
Tbilisi city

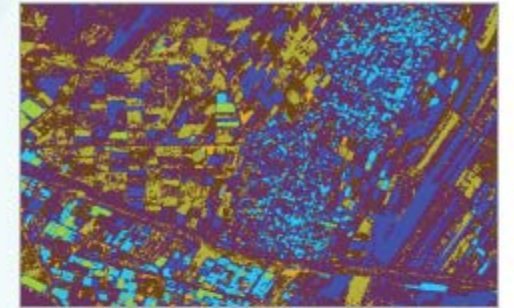
Symbols

-  New objects
-  Under construction
-  Destroyed
-  Other changes

Changes were detected through images from Pleiades satellite obtained on 4 November 2015 and 6 February 2017

Inventory of greenhouses through satellite imagery, Azerbaijan

- Easily obtained information provides opportunity for companies and agencies to make quick and precise decisions. Taken this for granted, one of the key areas of development for Azercosmos is automation of image processing and data acquisition.
- Today, the latest technologies, artificial intelligence, neural networks, machine learning are used for satellite image processing, object identification and detection of changes. Research is underway in this direction at the Research and Development Center of Azercosmos.
- For example, the detection of greenhouses using AI solutions resulted with 90% + accuracy.



Crop Mapping and Yield Forecast Program for Azerbaijan, 2019

Map using Azersky Satellite imagery the following crops:

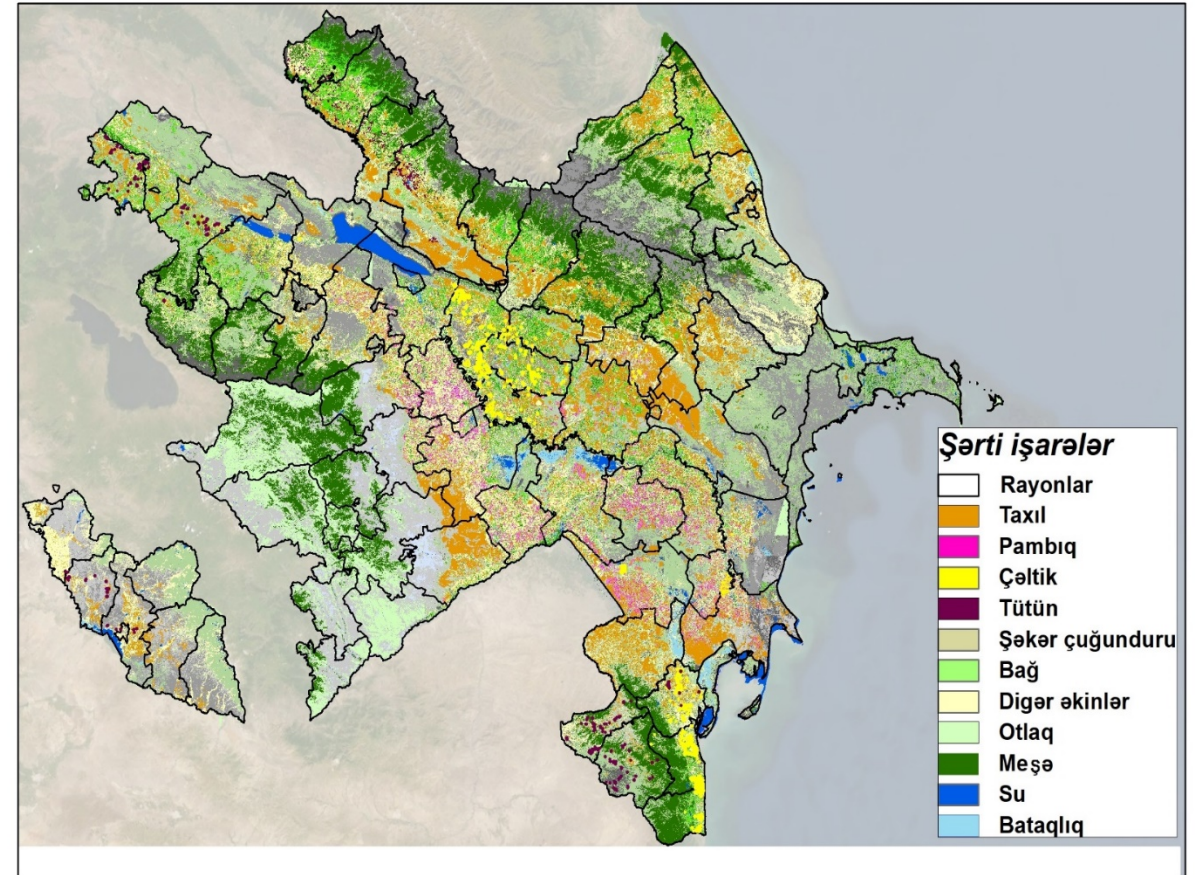
1. Barley
2. Cotton
3. Tobacco
4. Wheat

Land cover of the mentioned crop types for whole Azerbaijan:

1. Yield Forecast with 90%+ accuracy
2. Crop map on country level

Project Objectives

1. Control Subsidiaries;
2. Ensuring food security and improved nutrition and promote sustainable agriculture;
3. Inventorize pastures and other plant areas;
4. Increase proactivity and better utilization of the agricultural pastures;



Monitoring of railway lines in the digital format, 2019-2020

- According to the cooperation agreement signed between Azercosmos and Azerbaijan Railways, the Project on the Development of Railway Lines in the digital format is being implemented since 2019.
- Electronic graphical images will be prepared with the help of satellite images received from Azersky, showing the boundaries of railways of the country, the railway line, the boundaries of the special protection zone, the turning points and their coordinates.

