



THE REPUBLIC OF AZERBAIJAN



National Aerospace Agency

Remote sensing in the development of the navigation systems in Azerbaijan

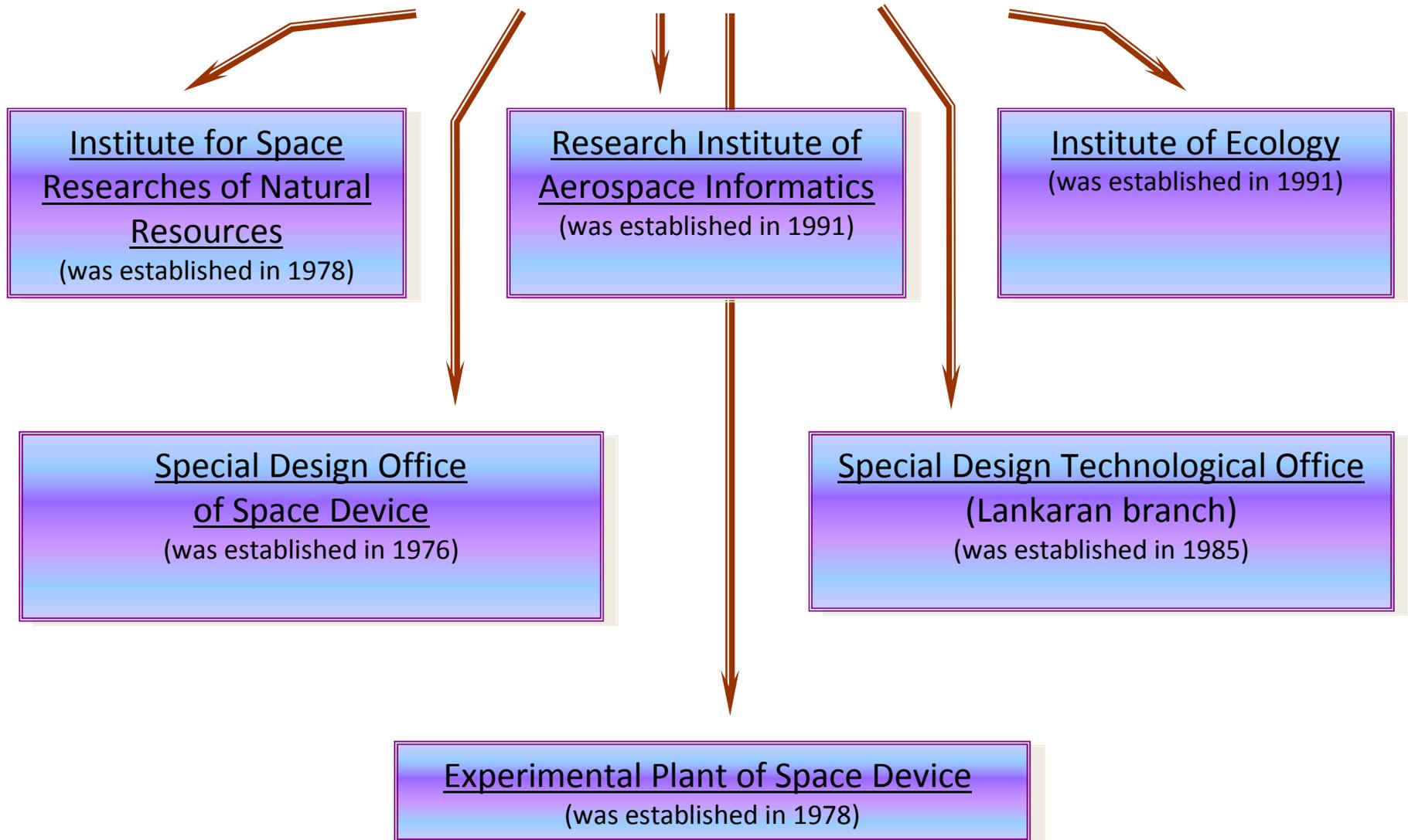


Azerbaijan is an independent country located at the west coast of the Caspian Sea with a population of about 9 million and a territory of 86.6 thousand square kilometers. Azerbaijan is a country of rich mineral resources, including oil and gas and is known as a miraculous country with centuries-old history and ancient culture.

As its well known space activities are the priority of as so called super power countries. National Aerospace Agency (NASA) of Azerbaijan was established in 1974. NASA of Azerbaijan is the main organization among the state organizations, which officially deals with aerospace researches in the Republic. NASA of Azerbaijan carries out works in different scientific fields, including Remote Sensing, astrophysics, development of space and air borne apparatus and equipments, designing of scientific devices.

NASA of Azerbaijan was established to coordinate and establish scientific and industrial base for conducting fundamental and applied investigations in space researches of the Earth and application of results in the national economy of the country. NASA's scientific and industrial activities related with the development of theoretical principles and design works and production of the system for gathering, processing, distribution and application of remote sensing data in order to investigate natural resources, land usage, environmental monitoring and forecasting of disaster events.

Structure of National Aerospace Agency



National Aerospace Agency (NASA) in Azerbaijan

MAIN ACTIVITY AREAS:

- *Remote sensing natural resources of our country;*
- *Prediction of climatic changes and natural destructive processes and creation of the system for on-line monitoring of environment;*
- *Creation of Geographical Information Systems (GIS) for industrial, communication, natural and special-purpose objects;*
- *Development of special hardware and automated control systems for space technologies for needs of defence industry;*
- *Creation of new techniques and technologies for the remote sensing systems and sub-satellite aerospace measurements.*

SPACE INDUSTRY AND NAVIGATION SYSTEMS IN AZERBAIJAN



Commissioning of satellite navigation systems is one of the major problems in Azerbaijan as one of the applications of space industry.

In this regard, is considered more appropriate to create local technological base for the production of telematics modules, which are expected to be installed on mobile vehicles and stationary objects.

First and foremost, should be solved the following problems:

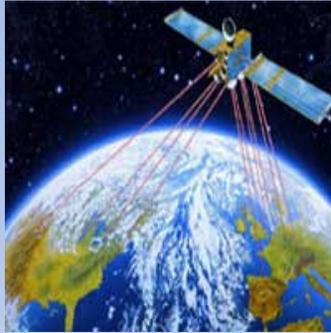
- Development of navigation, information and control systems for transport and transport infrastructure;
- Modernization of existing and creation of new productive enterprises, the exploitation of new technological processes;
- Development of modern information and innovative technologies and manufacturing processes,
- Organization of production activities according to the characteristics used by the satellite system.

In late 2009, the President of the Azerbaijan Republic has approved the State Program for the creation and development of space industry in the Republic. Under this program the first telecommunication satellite to be launched in Azerbaijan in mid-2012. International Telecommunications Union in a geostationary orbit allotted Azerbaijan two positions for local and one position for international use. Responsible organizations in the creation of the space industry and launch telecommunications satellites are the Ministry of Communications and Information Technology of the Republic, as well as the National Aerospace Agency of Azerbaijan. Our Agency has been entrusted with creating the space industry, reception and processing of space information.

The main provisions and arrangements for the next 5 years, associated with the solution of these issues are reflected in the developed program of National Aerospace Agency on the creation and development of space industry in Azerbaijan.

Space Information Receiving Ground Complex.

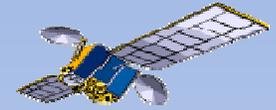
Solving tasks



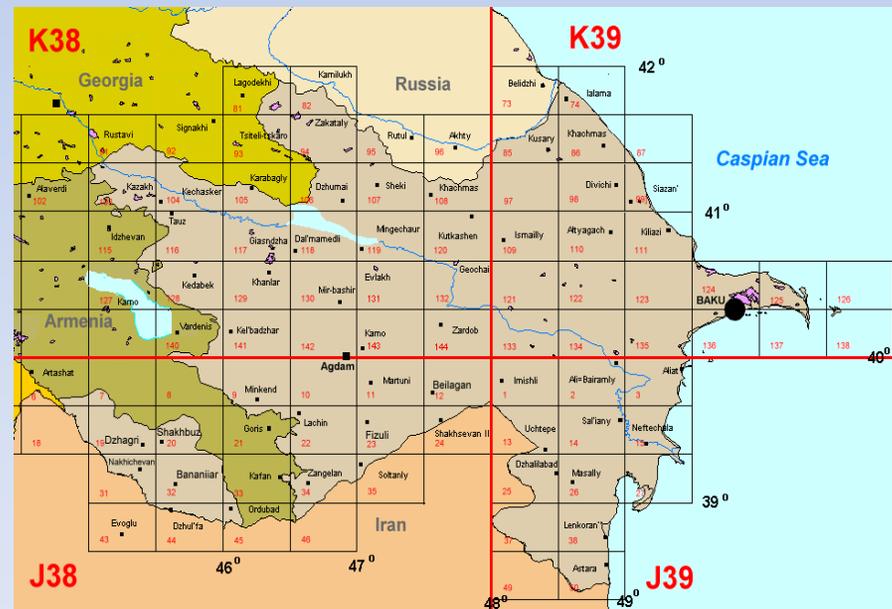
Operative monitoring of the land cover and water surface of Azerbaijan Republic

1. Emergency situations
2. Monitoring of state borders
3. Agriculture
4. Mapping
5. Environmental monitoring
6. Transport management
7. Navigation

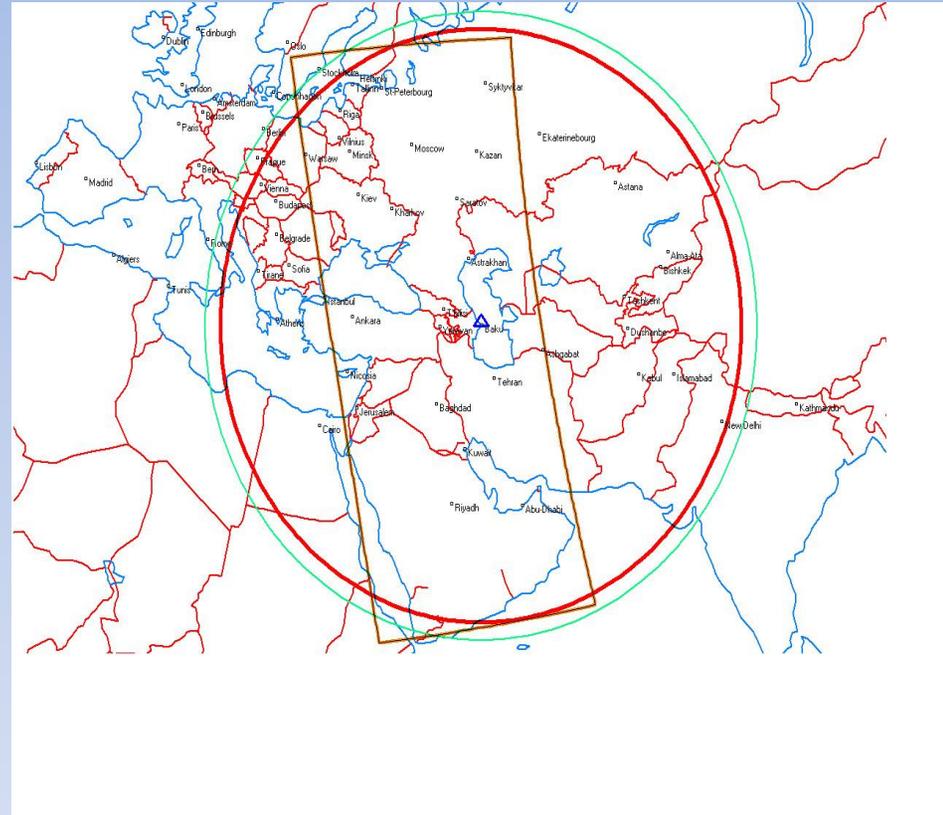
Purpose of the complex



The receiving, processing, archiving and transferring to users of the information received from various satellites

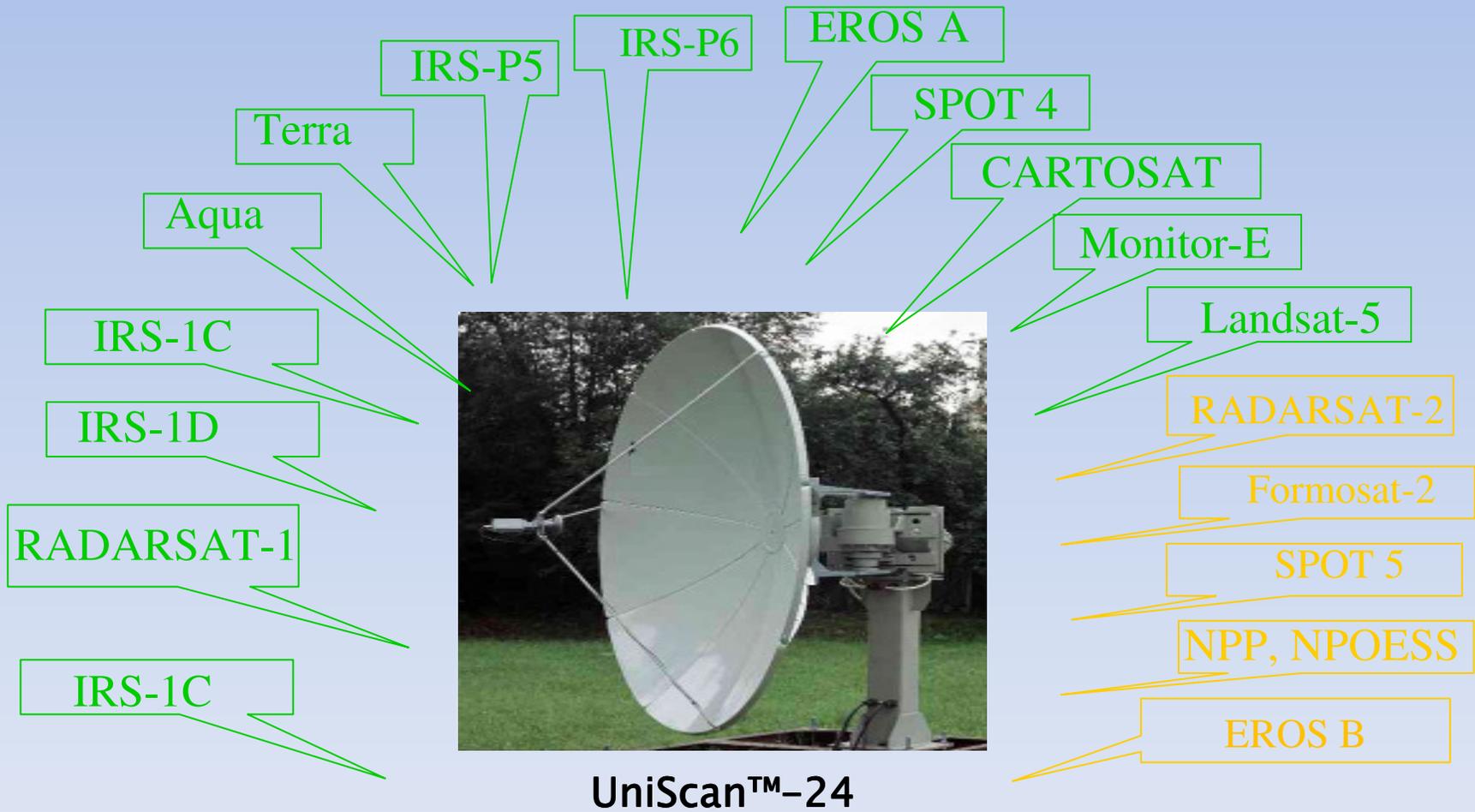


Areal UniScan™-24



The station receives from various satellites images within a radius of 2.5 thousand km.

Possibilities of Ground Receiving Station NASA of Azerbaijan

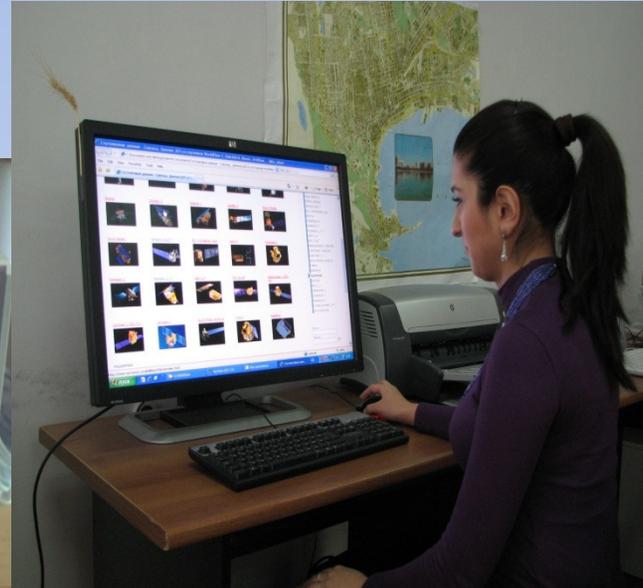


Features ground receiving station NASA of Azerbaijan

(receiving and processing of information transmitted with low-orbit satellite radio channels on the range of 8.4 GHz speeds up to 170 Mbps)



UniScan™-24



Aerial

Receiving

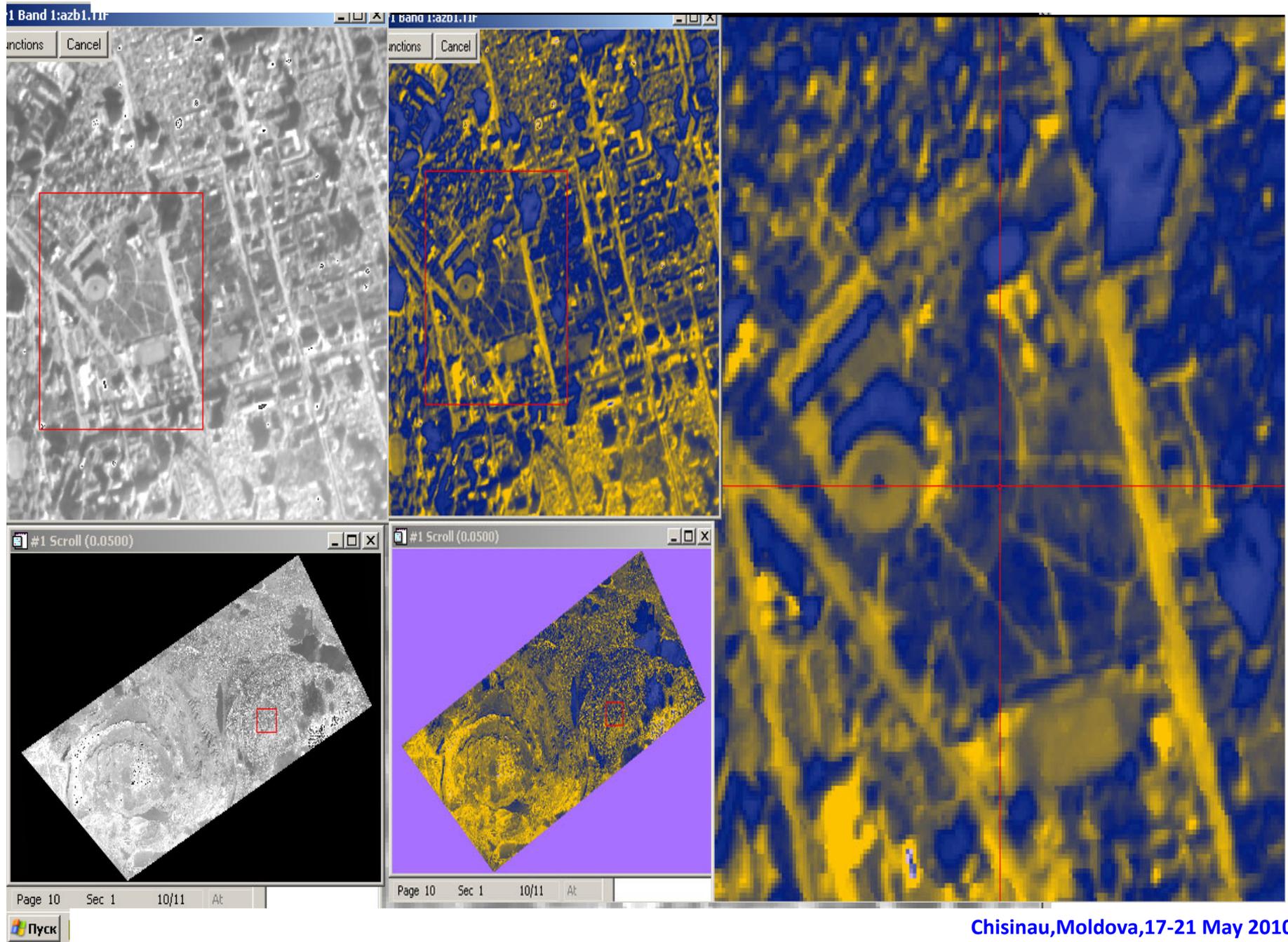
Processing

Archiving

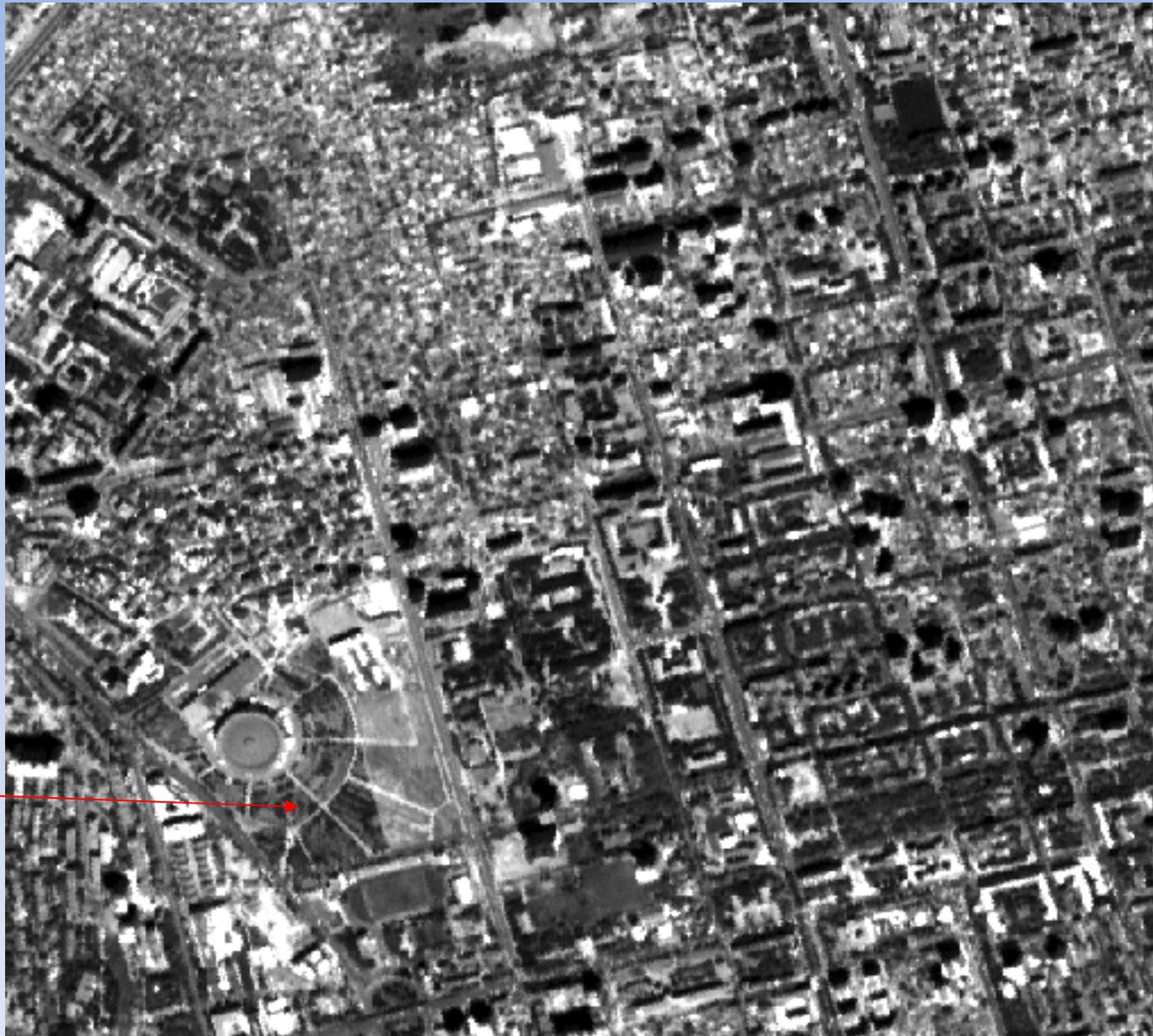
The data from the satellites
low,
medium and
high resolution

1. Low cost information
2. Selection of any territory of Azerbaijan
3. Frequency shooting
4. Different levels of information processing

Sport complex. Urban cadastre



Air photo from satellite EROS



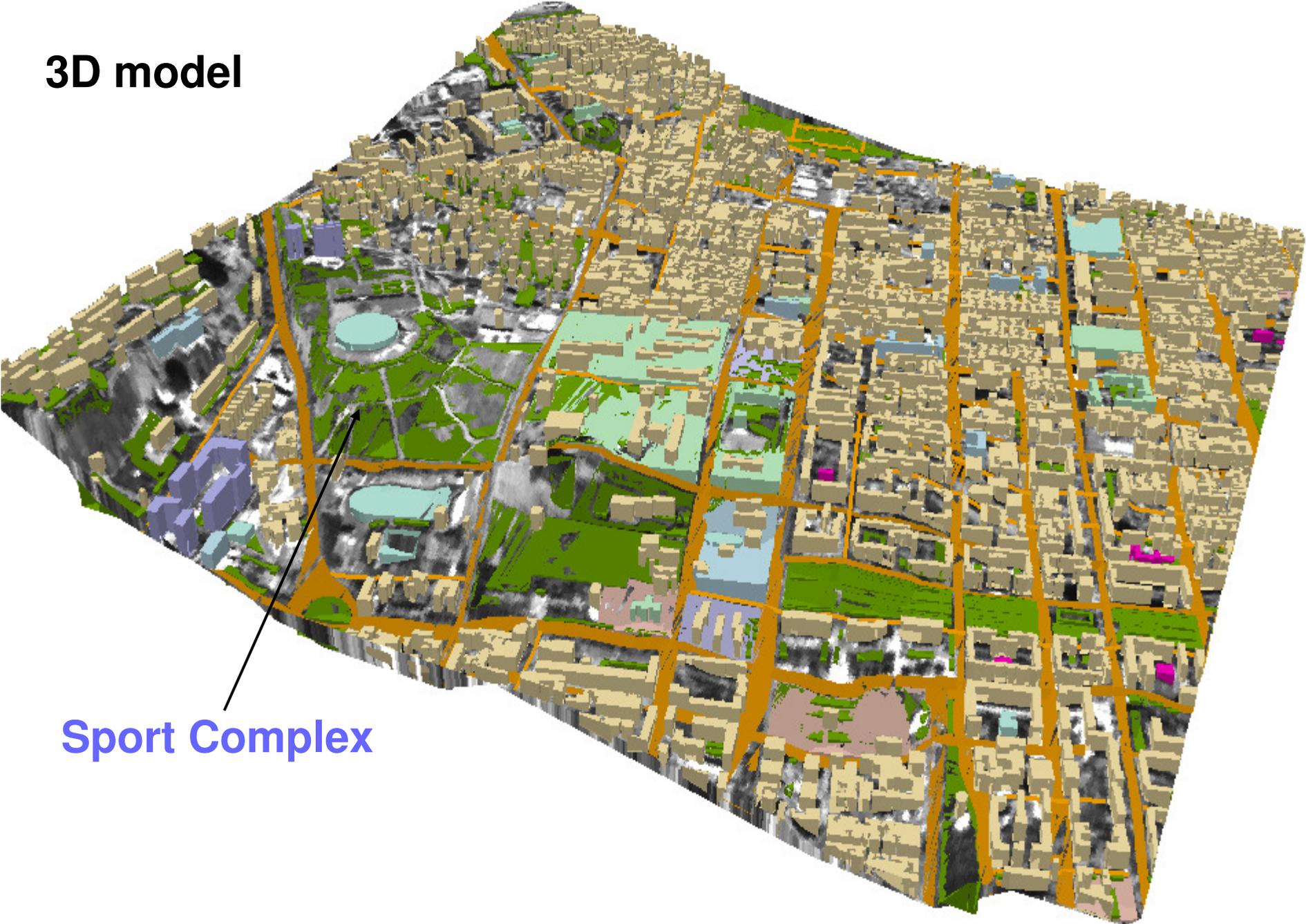
Sport Complex

Digital vector map

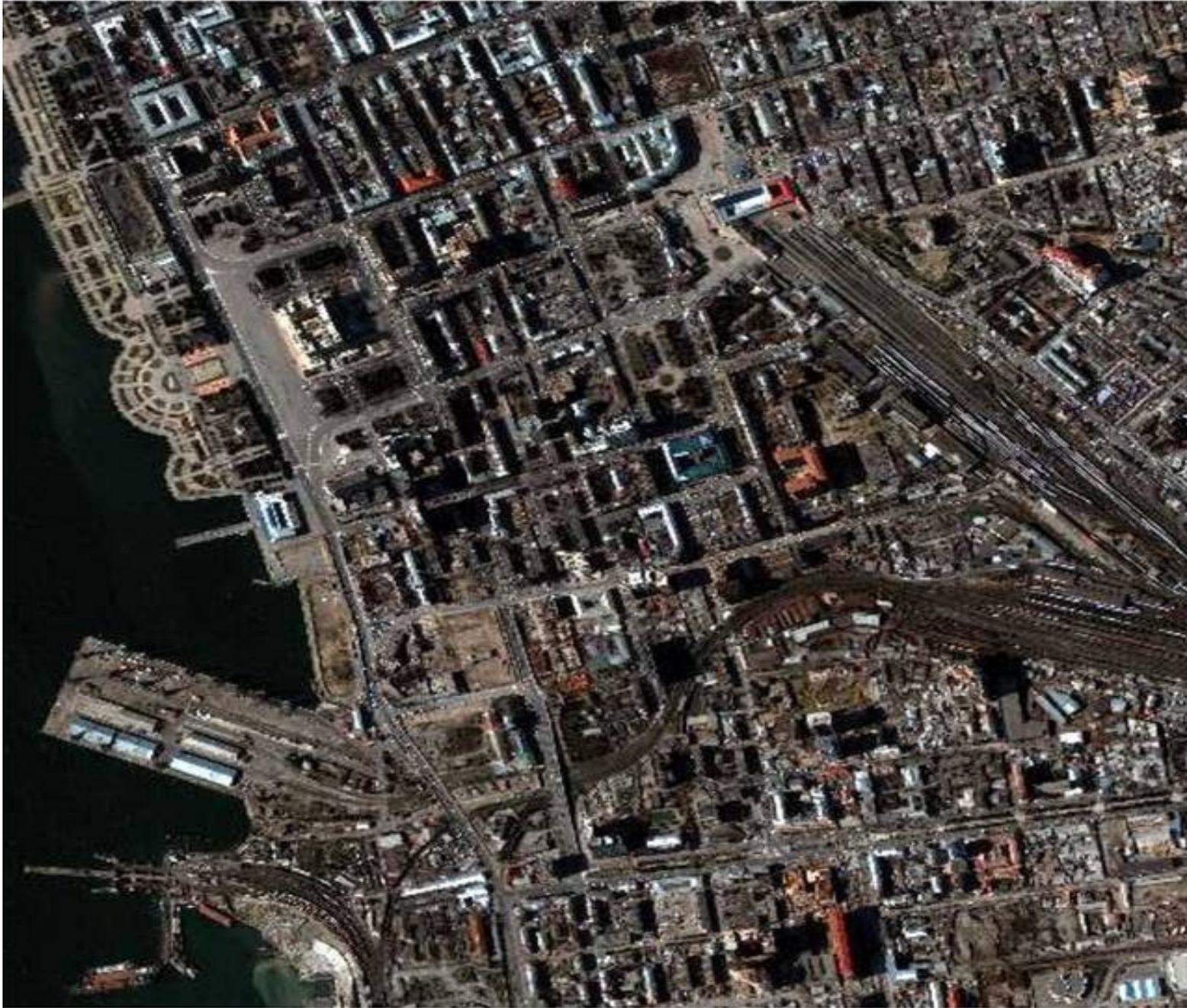
Sport Complex



3D model

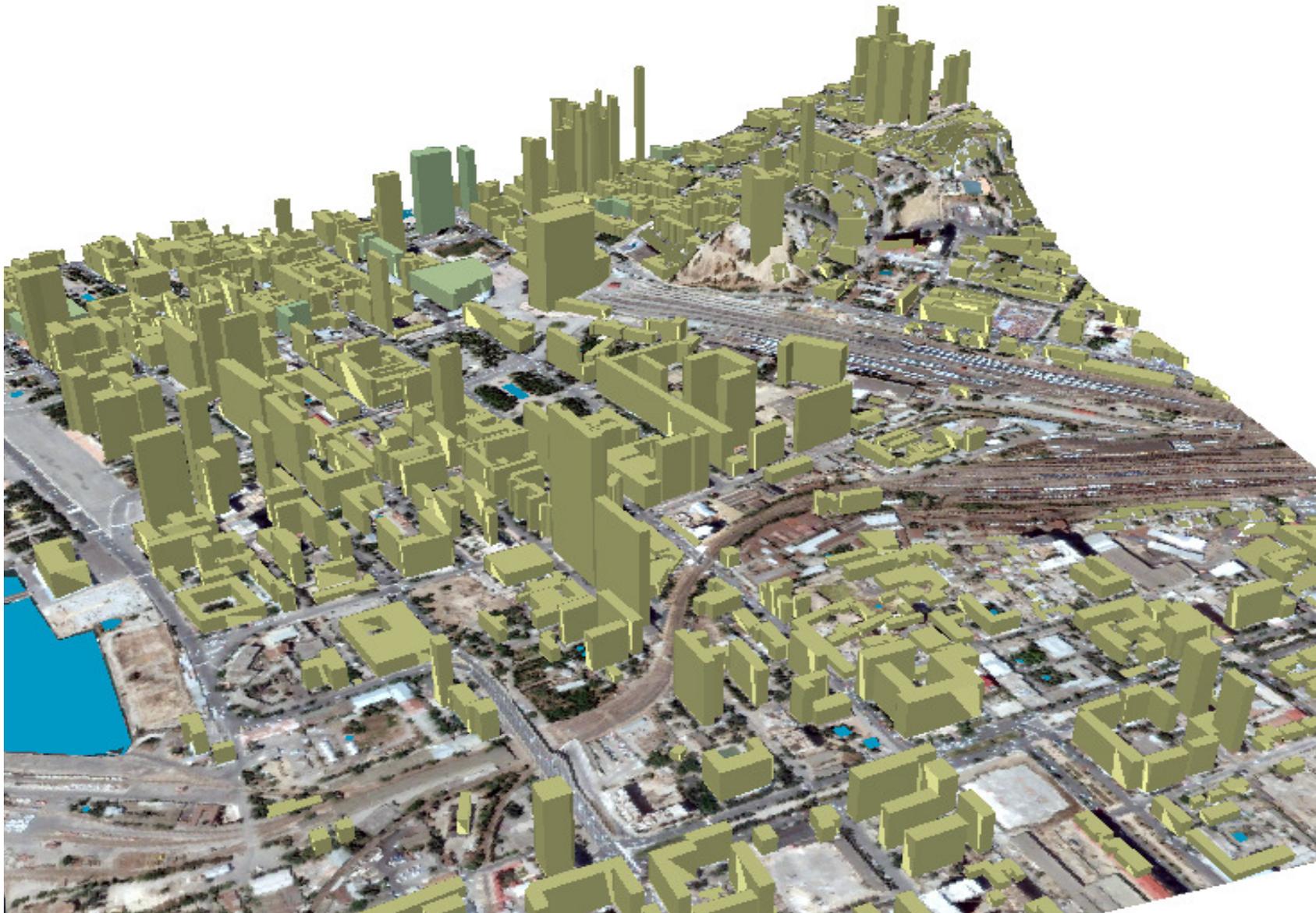


Sport Complex



On this slide is shown the space image of the famous Baku boulevard.

3D model of the considering territory

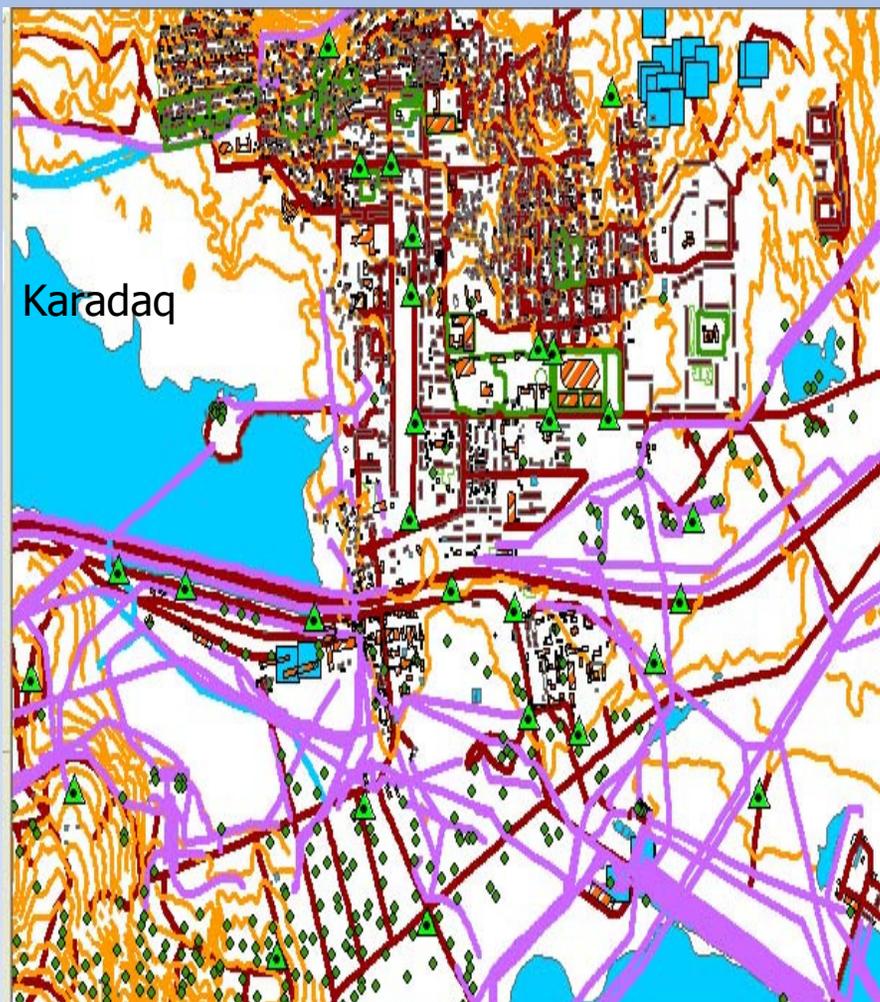


Binagadi

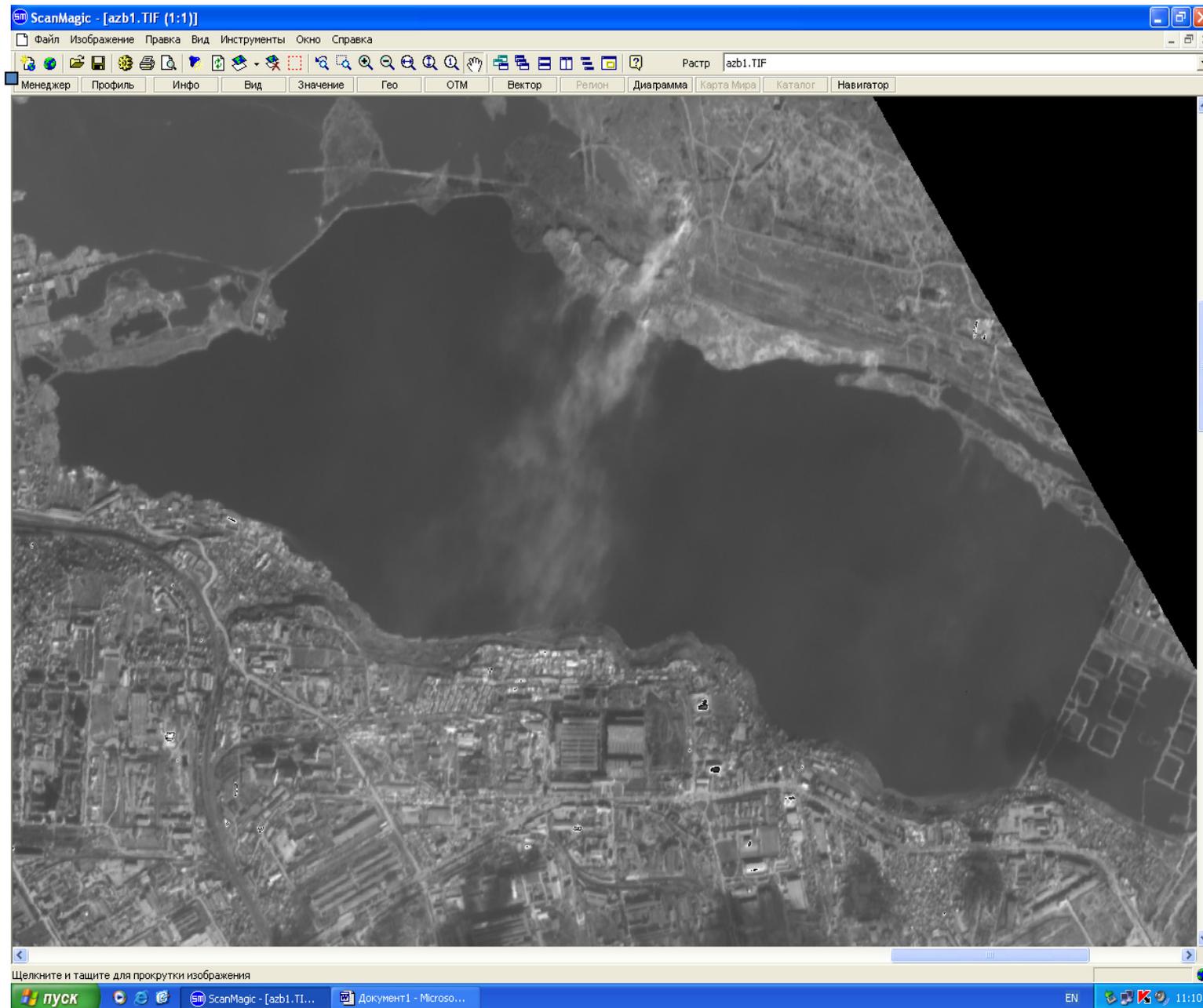


Theme electronic map Binagadi district

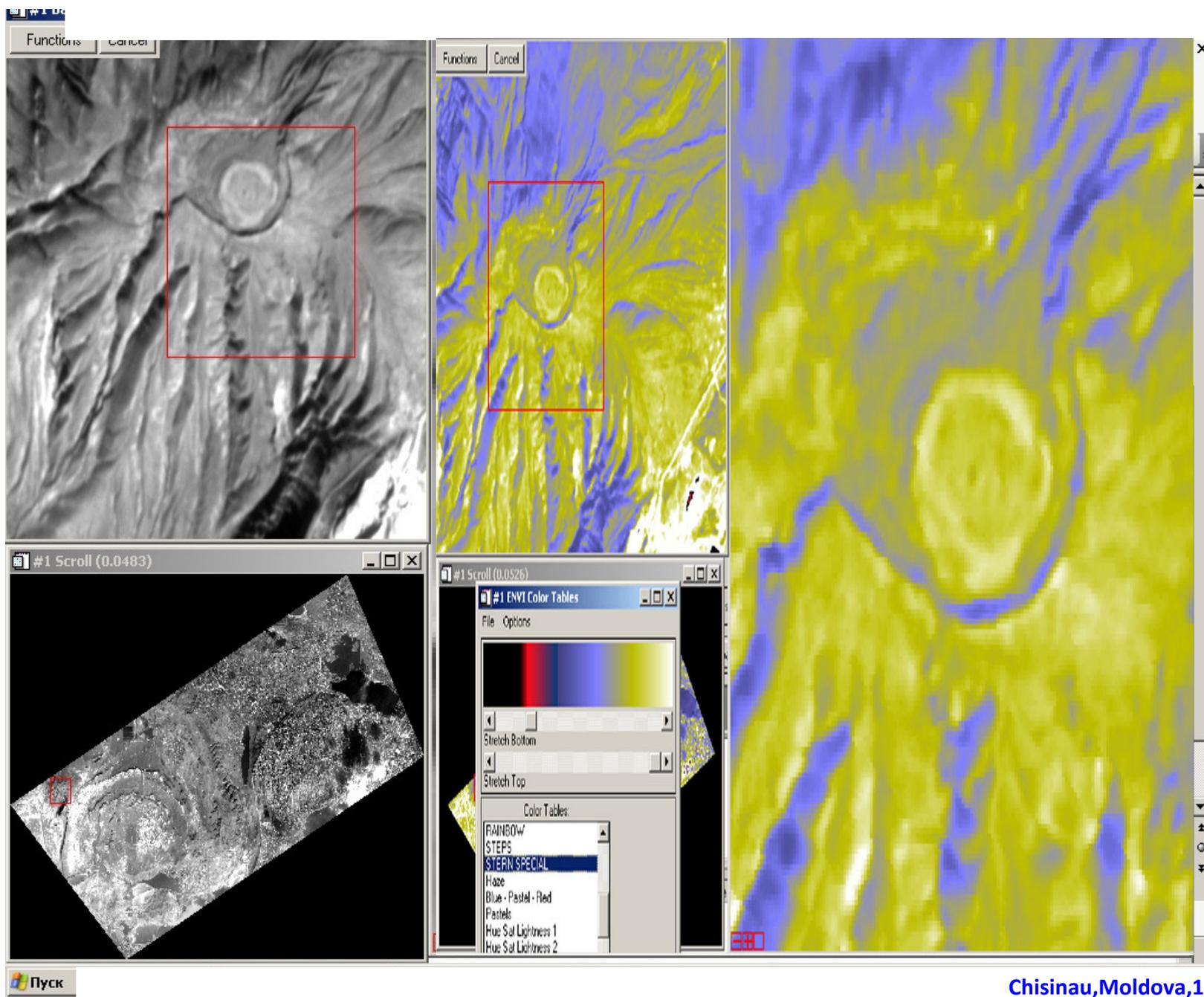
Electron-thematic map Karadag region



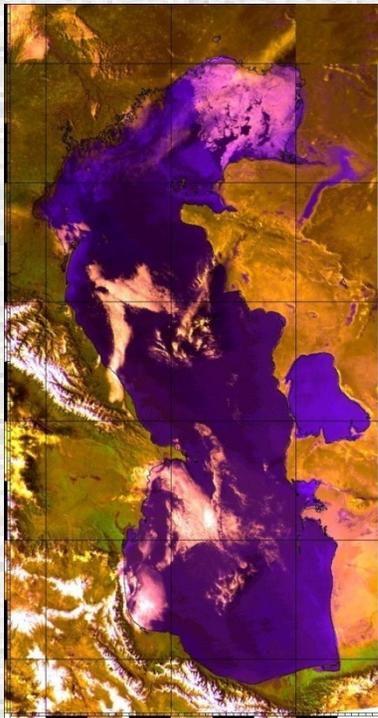
The lake Boyuk Shor. Possibility of pollution definition of the city atmosphere



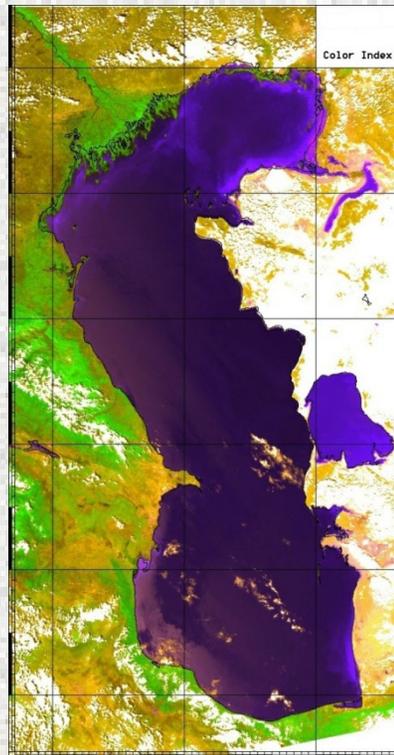
The mud volcano. Objective monitoring of mud volcanoes



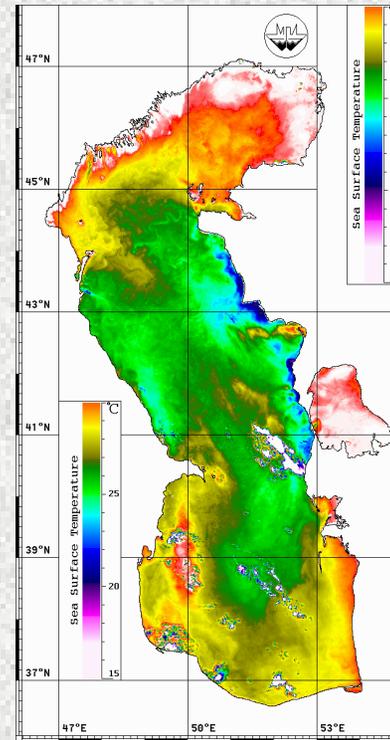
Monitoring of the Caspian Sea allows determine of temperature, quantity and movement of phytoplankton and also changing of sea coast line



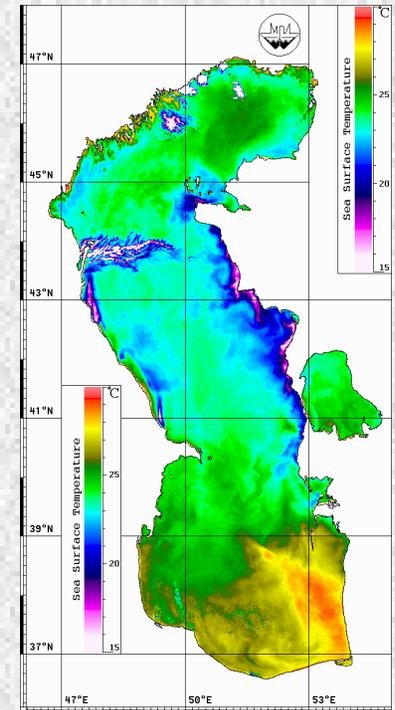
February



March



July



August

CARTOSAT 2

Imagery

Detail of the image



Chisinau, Moldova, 17-21 May 2010

New information technologies for the control of airport security and the environment

GIS airports based on ArcGIS Server

Interactive spatial information system airport, will provide a convenient centralized access to geographic data on the infrastructure facilities and the wide possibilities of GIS INTRANET Airport

Development a network Geoportal user interface provides tools for navigation, positioning of buildings and other facilities, as well as for data visualization in an interactive mode

GIS system controls the issuance of building permits and development of urban sprawl imposes stringent requirements to comply with security measures in the air and the erection of buildings in the airport

The integration of RS and GIS technologies

Navigational problems are solved with the use of modern computer technology



High resolution image

Navigation solution based on: satellite image + vector map

Nautical charts allow to plan the route to the destination and with the ability to route on the map



3D Model

Ability to navigate the city on three-dimensional maps

The near future plans of NASA in Azerbaijan

- Creation and development of the Space Industry;*
- Launching of telecommunication satellites into orbit in 2012;*
- Education of highly-skilled personnel for the defense and space industry;*
- Creation of super computer center for receiving and processing of satellite information;*
- Updating and creation of industrial base for the Space Industry;*
- Creation of a ground infrastructure for management and tracking space means.*

Thank You for your attention!

United Nations/Moldova/United States of America

Workshop on the application of Global Navigation Satellite Systems (GNSS)

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