



CENTER FOR SPACE MONITORING AND GEOINFORMATION TECHNOLOGIES UNDER
UZCOSMOS SPACE AGENCY

IMPACT OF EARTH OBSERVATION TO SOCIO-ECONOMIC DECISION MAKING

UZBEKISTAN'S EXPERIENCE



SARDORJON SODIKJONOV

Chief Specialist, International Cooperation Department

IN NUMBERS



2022

FOUNDED



15+

COOPERATION



30+

PROJECTS



200+

SPECIALISTS



30+

PRODUCTS

We support government entities, public institutions, and private-sector clients by providing reliable data and analytical tools for informed, data-driven decision-making across multiple sectors.

STATE SPACE MONITORING PROGRAM

STATE SPACE MONITORING SECTORS



EMERGENCY SITUATIONS



GEOLOGY



ECOLOGY



WATER RESOURCES MANAGEMENT



LAND RELATIONS



FORESTRY



AGRICULTURE

MECHANISM



Monitoring Of Non-Metallic Minerals

Violation of the boundaries of the permitted territory



Illegal mining without a permit



Illegal extraction (in the water protection zone)



Identified violations

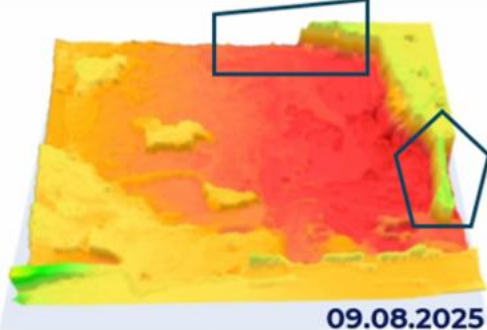
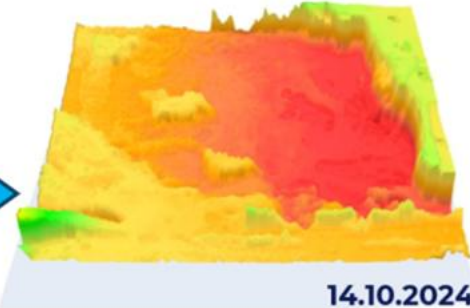
Aerospace Quarry Monitoring

Factors	Classical approach (1:500)	UAV-based
Measurement time	1 month	3-4 days
Processing time	3-4 weeks	5 days
Personnel	10 brigade	1 brigade
Value	100%	30-40%



Scale
1:200

Error rate
1-3%



14.10.2024

09.08.2025

Aerospace surveyor's result

33 909,11 m³

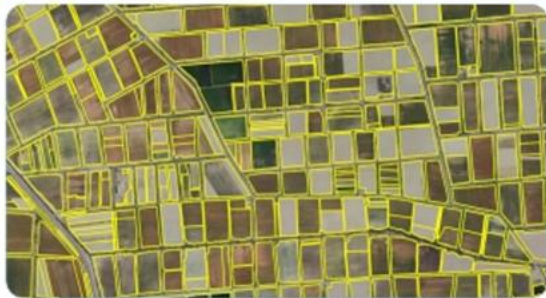
- **Monitoring** of actual production volumes.
 - **Compare** reported data with the **actual state** of the quarry.
 - **Establish a tax base** and ensure transparency in subsoil use.
- Beneficiaries:

Ministry of Geology, Ministry of Ecology, Tax Office, Prosecutor's Office

AGRICULTURAL SECTOR

IMPLEMENTED ACTIVITIES

DIGITALIZATION OF CROPLANDS

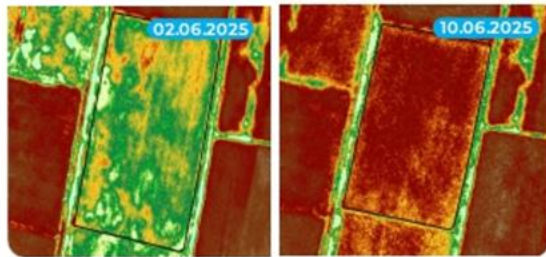


CROP CLASSIFICATION

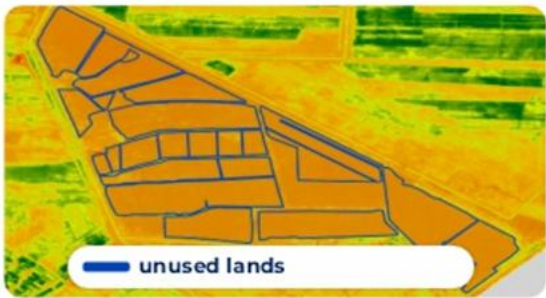


AGROTECHNICAL MEASURES

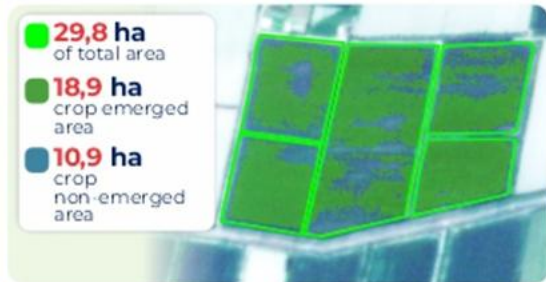
WHEAT HARVEST MONITORING



UNUSED LANDS



CROP EMERGENCE MONITORING



CROP ROTATION MONITORING



STRAW BURNING



21.06.2025

Status
of Harvested Crops



22.06.2025

Burned Land
Condition



24.06.2025

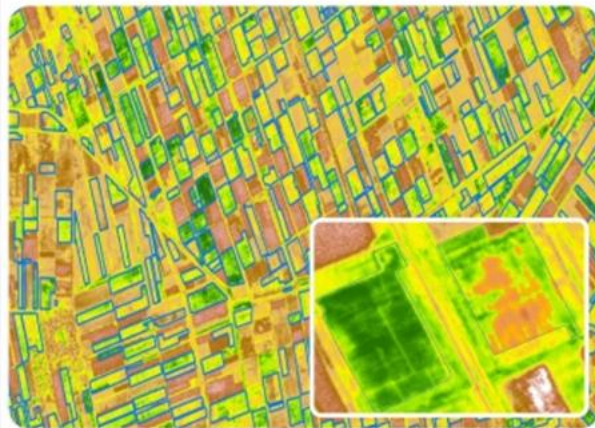
Sown Crop
Condition

PLAN: MONITORING OF CROP HEALTH STARTING FROM 2026

chlorophyll deficiency



nitrogen deficiency



MONITORING OF AGRICULTURAL LAND FIRES



Satellite-based monitoring introduced to **track stubble burning** after the **wheat harvest**



The system provides **24/7 fire detection** and **automatically transmits** data to the relevant authorities

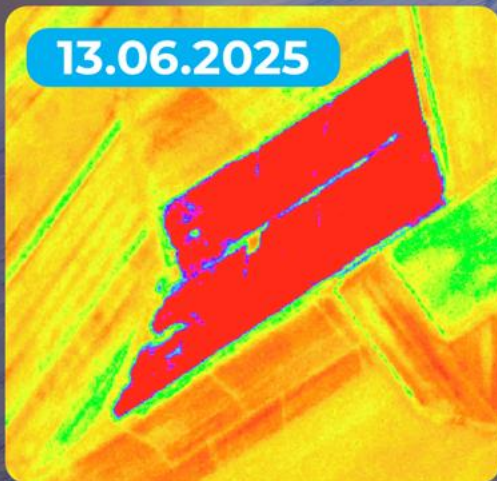


36% reduction in field burning achieved within one year

12.06.2025



13.06.2025



13.06.2025



14.06.2025

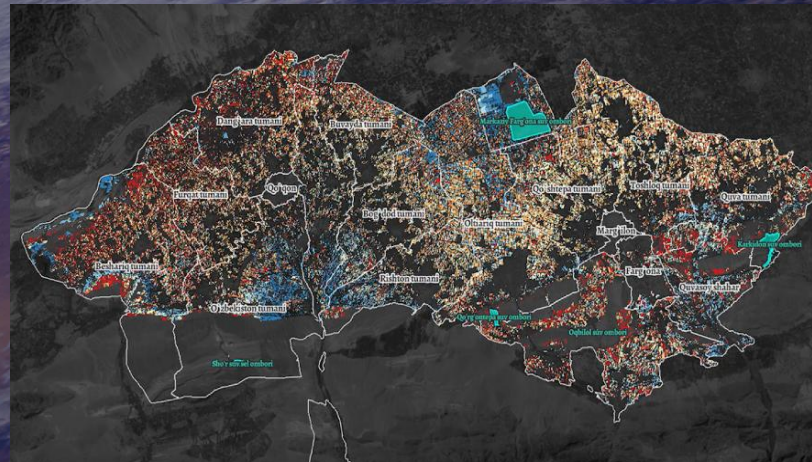
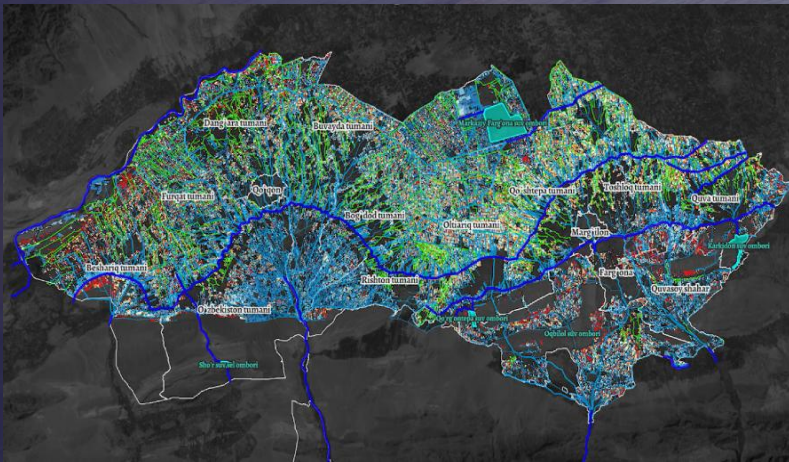


FIELD VERIFICATION

THE RISK OF FIRE SPREADING TO ADJACENT AGRICULTURAL LANDS

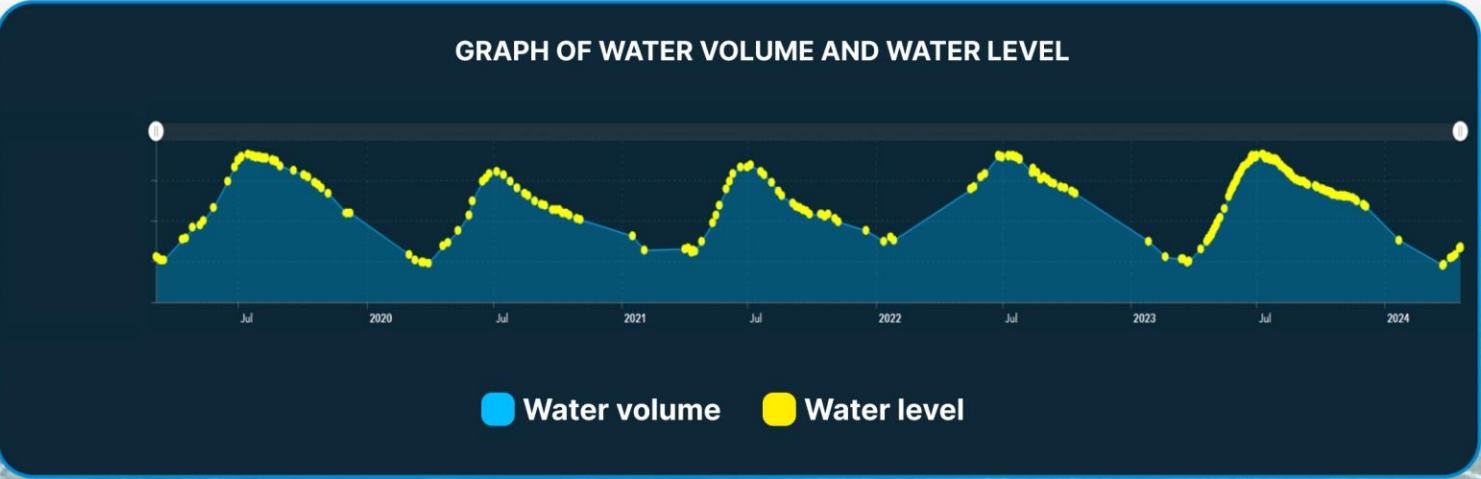
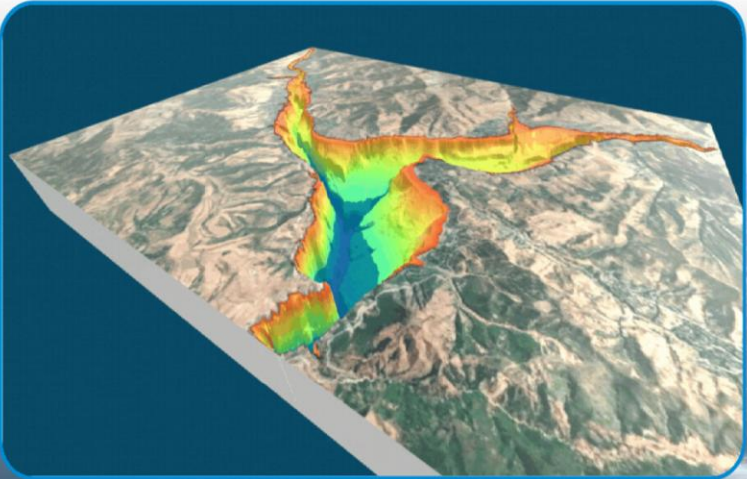
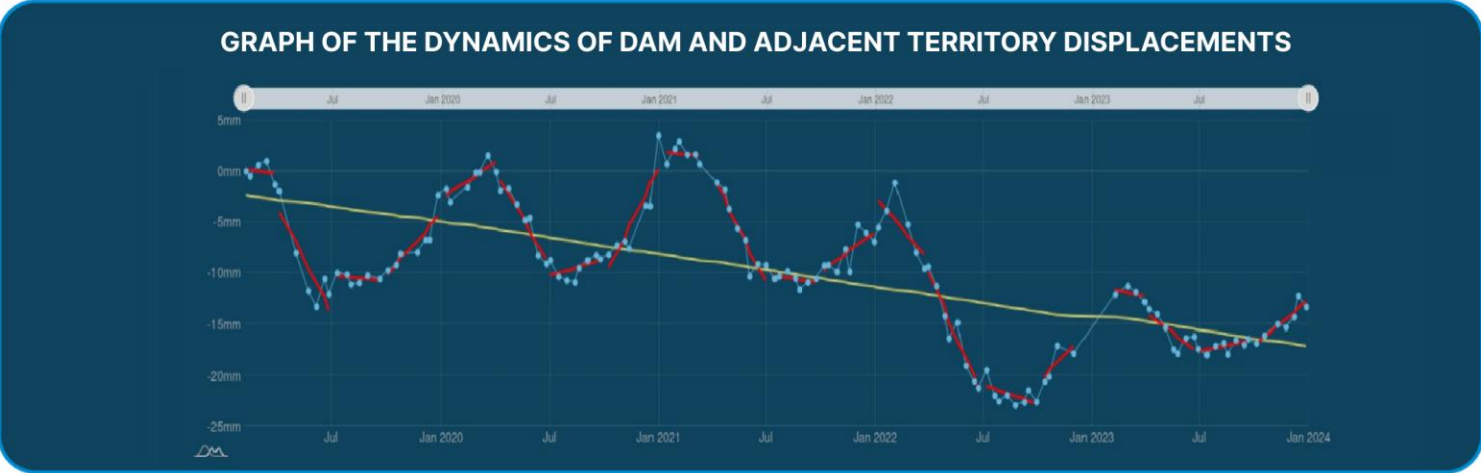


A wide panoramic view of Earth from space, showing the curvature of the planet and the blue oceans. The horizon line is visible, separating the dark space from the bright blue of the Earth's surface. The image is a horizontal strip, likely a section of a larger circular or spherical view.

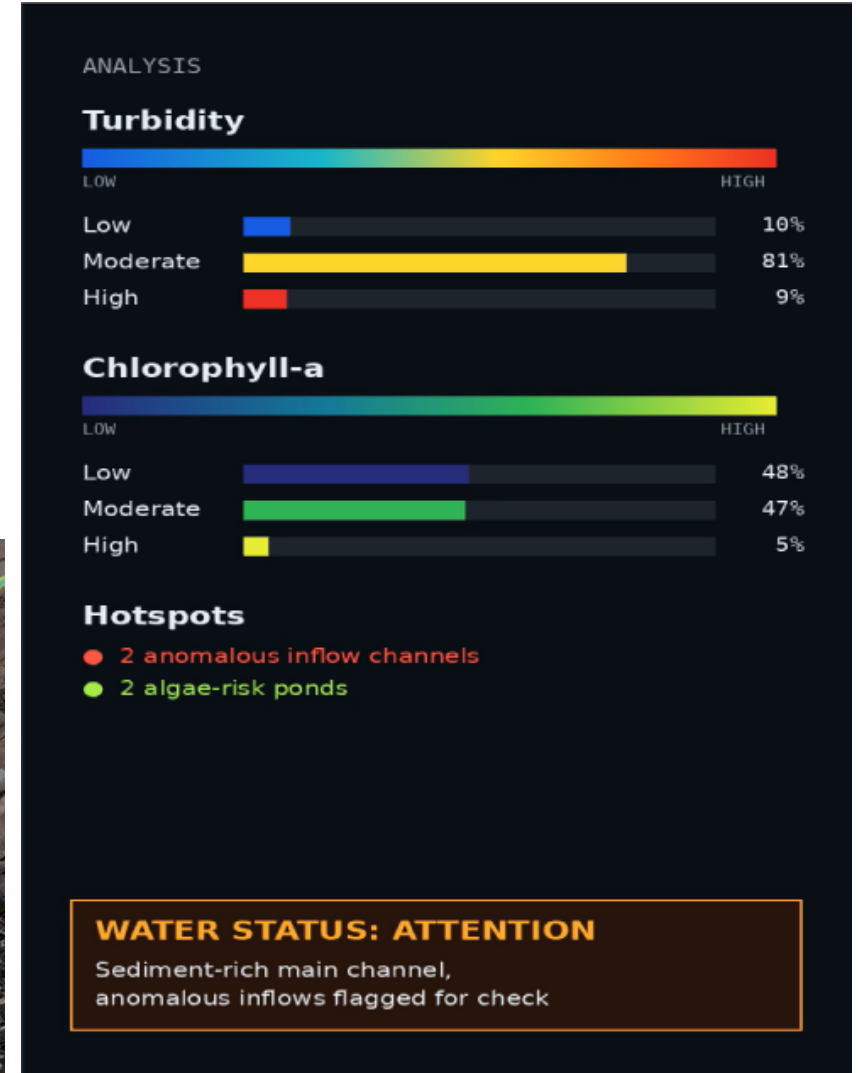


Improving agricultural efficiency and water conservation

USING THE EXAMPLE OF CHARVAK RESERVOIR



DETERMINING QUALITY OF WATER USING SATELLITE IMAGERY



DETERMINATION OF OPTIMAL LOCATIONS FOR SOLAR PANELS USING AEROSPACE MONITORING

PROBLEMS



The potential for **using solar energy** has not been fully studied

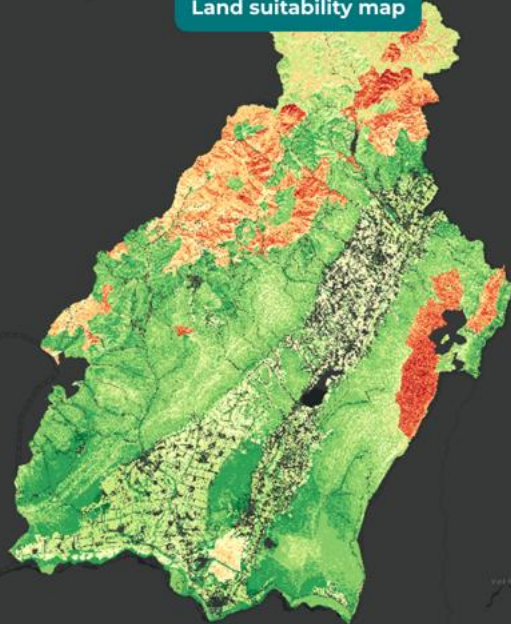


Difficulty in determining optimal locations for **solar panel installation**

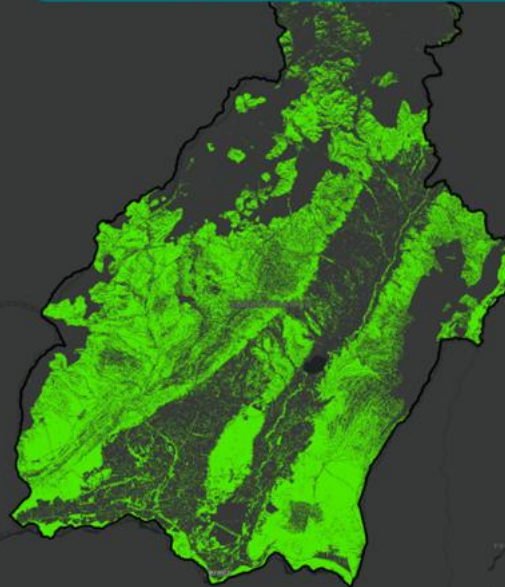


Lack of accurate data for **planning and managing solar energy infrastructure**

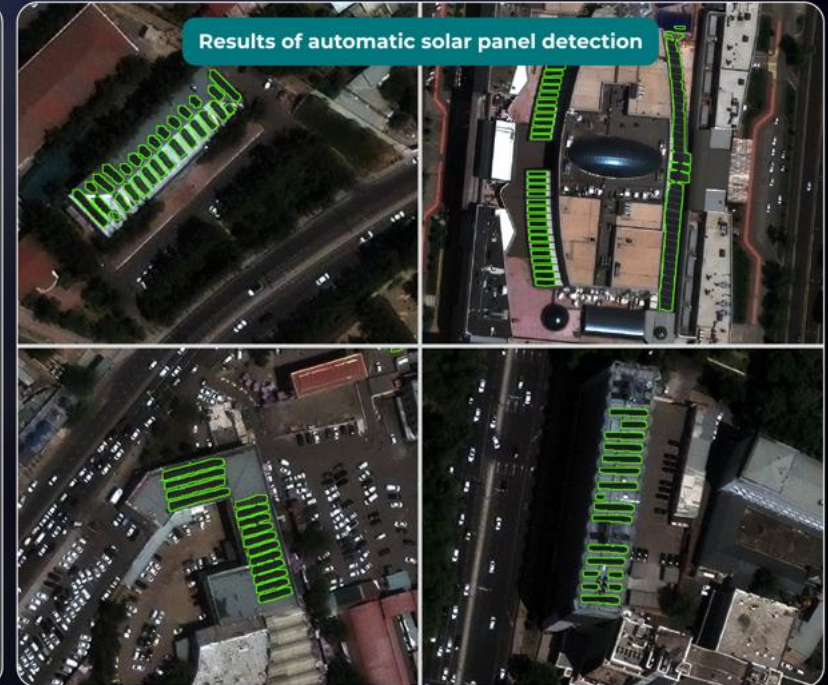
Land suitability map



High suitability zones for solar panel installation



Results of automatic solar panel detection



Development of a system for determining optimal locations for **solar panel installation using artificial intelligence algorithms**



Using **aerospace imagery to identify existing solar panels** and evaluate their efficiency

FROM EXPERIENCE TO TRANSFERABLE APPROACH

What Can Other Emerging Nations Take From This Experience?

National problem → Local capability → Operational application

Identify a national problem where EO can provide better information

Build local capacity around data, analytics and applications

Create partnerships to close technology and knowledge gaps



CENTER FOR SPACE MONITORING AND GEOINFORMATION TECHNOLOGIES UNDER
UZCOSMOS SPACE AGENCY

Thank You

E-mail: s.sodiqjonov@spacemc.uz

website: <https://spacemc.uz/en/>