

Iranian Space Research Center (ISRC)
Space Research Institute (SRI)

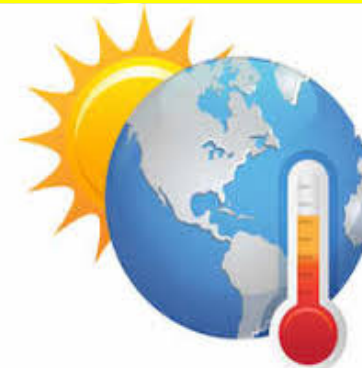
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❑ SRI Remote Sensing Capability

- Food security (Agriculture)
- Natural Hazards Management
- Climate Change Monitoring
- Insurance (Damage Assessment)
- Satellite Monitoring Platforms
- Educations

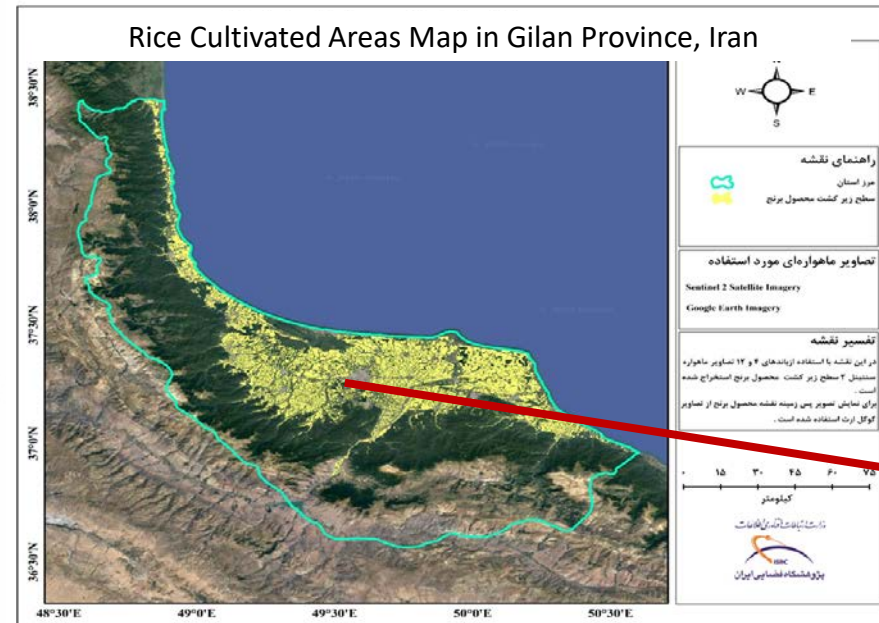
❑ Cooperation Models

- ❑ Some examples of international activities



Food Security (Agriculture)

Rice Crop Mapping



Rice Area
Estimation



Measuring Crop Parameters



Estimating Biomass



Filling Questionnaires

Food security

Natural Hazards
Management

Climate Change
Monitoring

Insurance
(Damage
Assessment)

Satellite Web
Service

Educations

Cooperation
Models

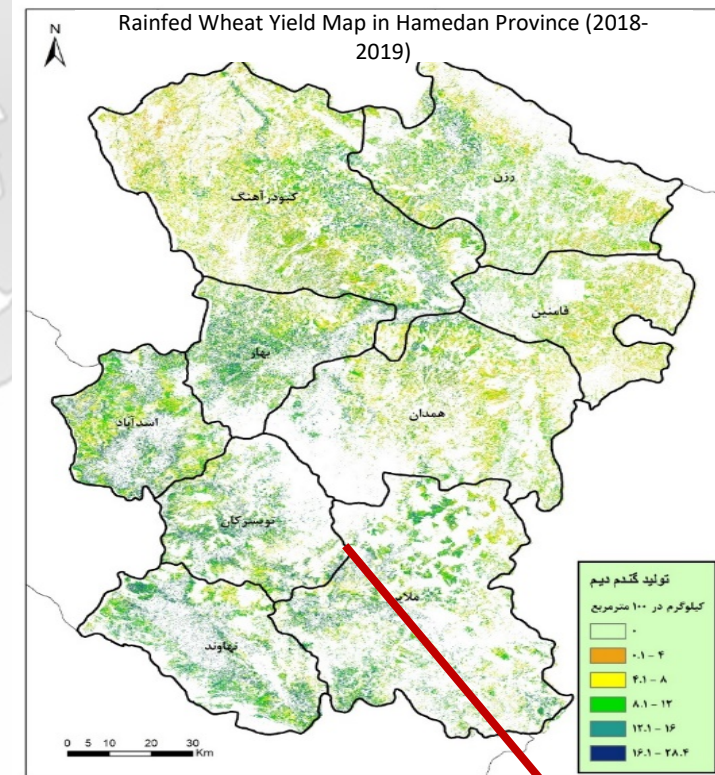
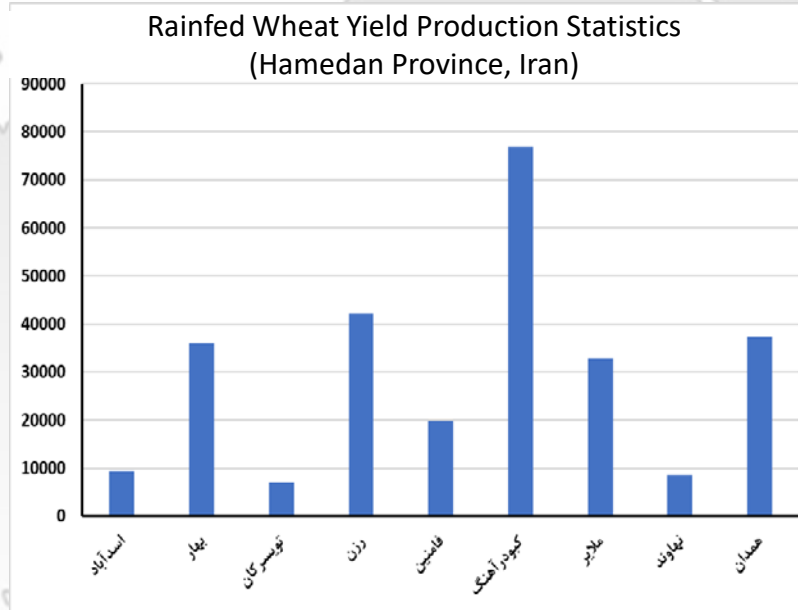
Other Activities

Food Security (Agriculture)

Wheat Yield Production Estimation

km²

- ✓ Crop yield production estimation
- ✓ Yield comparison in different years
- ✓ Crop patten management



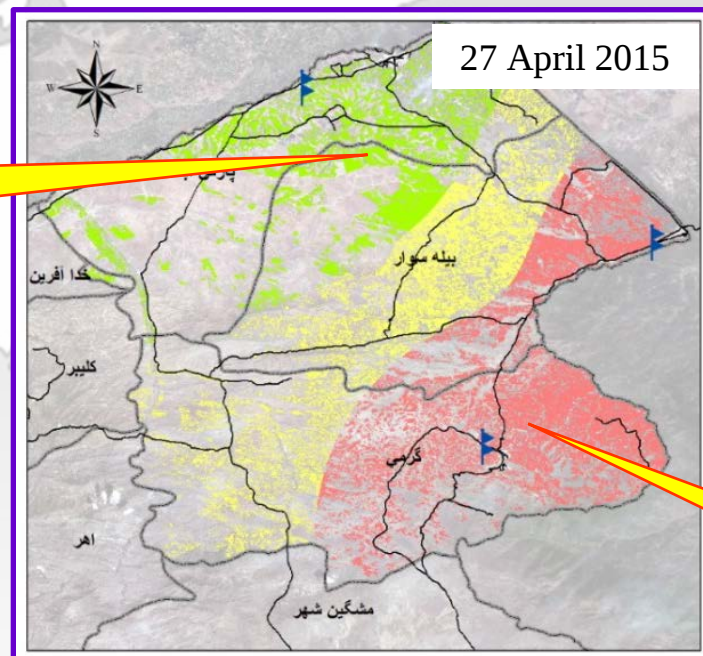
Wheat Yield
Production Map



Food Security (Agriculture)



Wheat Fusarium disease prediction map



Low
Probability

Low Probability

Average probability

High Probability

High
Probability

- ✓ Crop diseases identification
- ✓ Crop disease prediction map

Food Security (Agriculture)

Monitoring of Nicaragua Strategic Crops

Rice



Corn



Tobacco



Sugar Cane



Coffee Bean

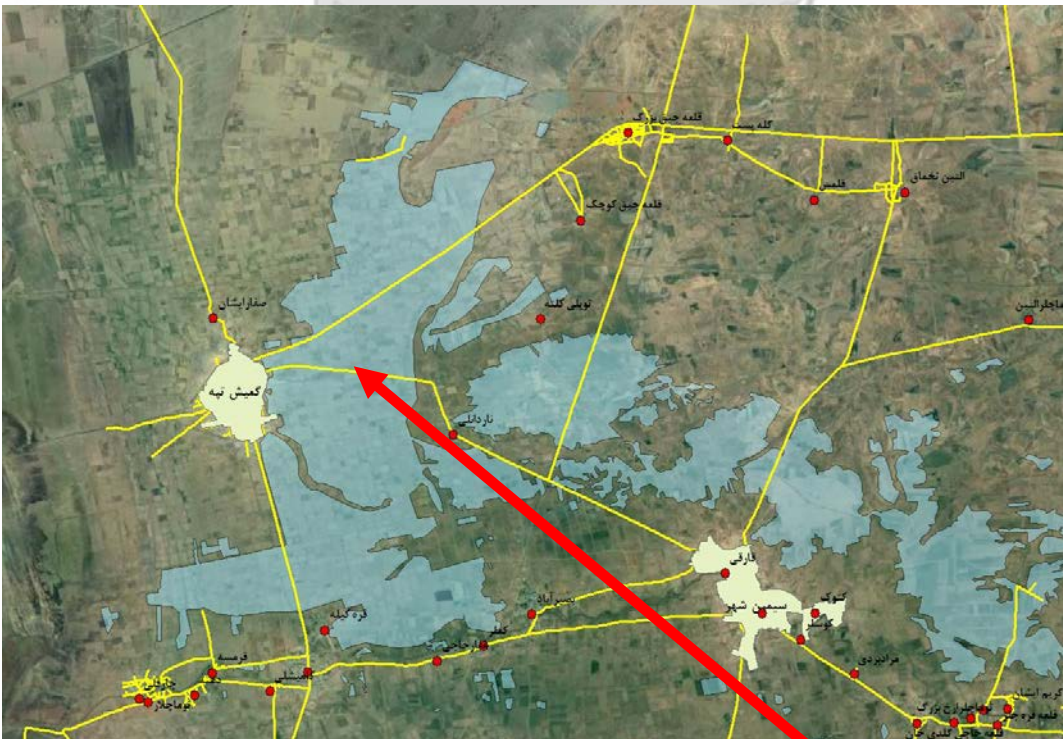


Banana



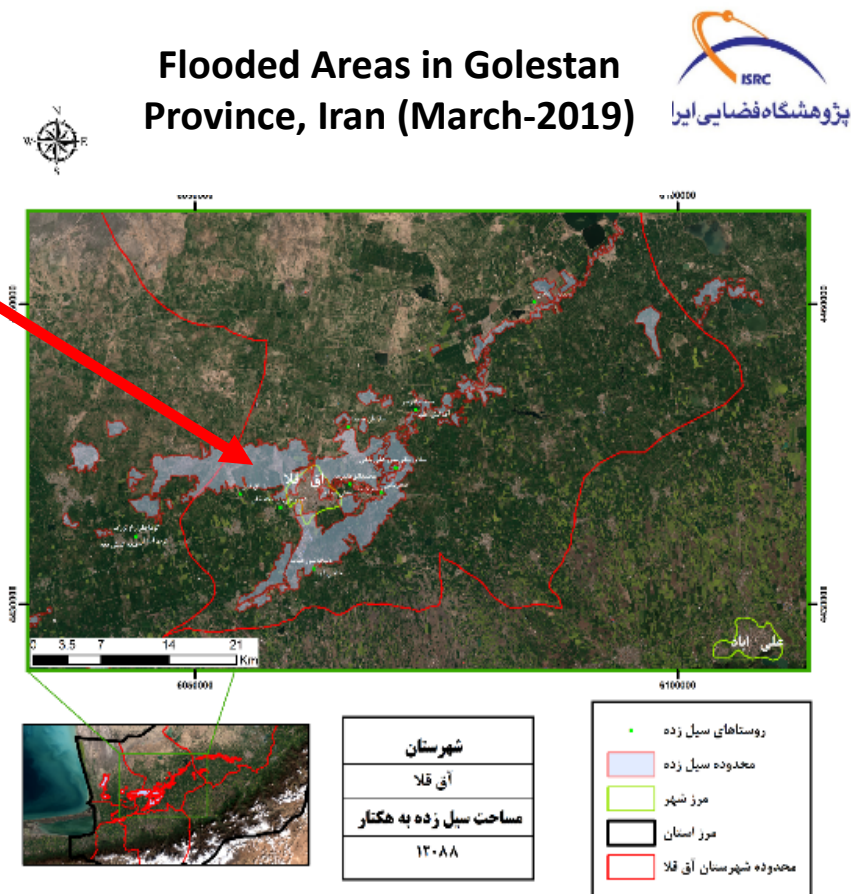
Natural Hazard Management

Flood



Inundated Roads

Flooded Areas in Golestan Province, Iran (March-2019)



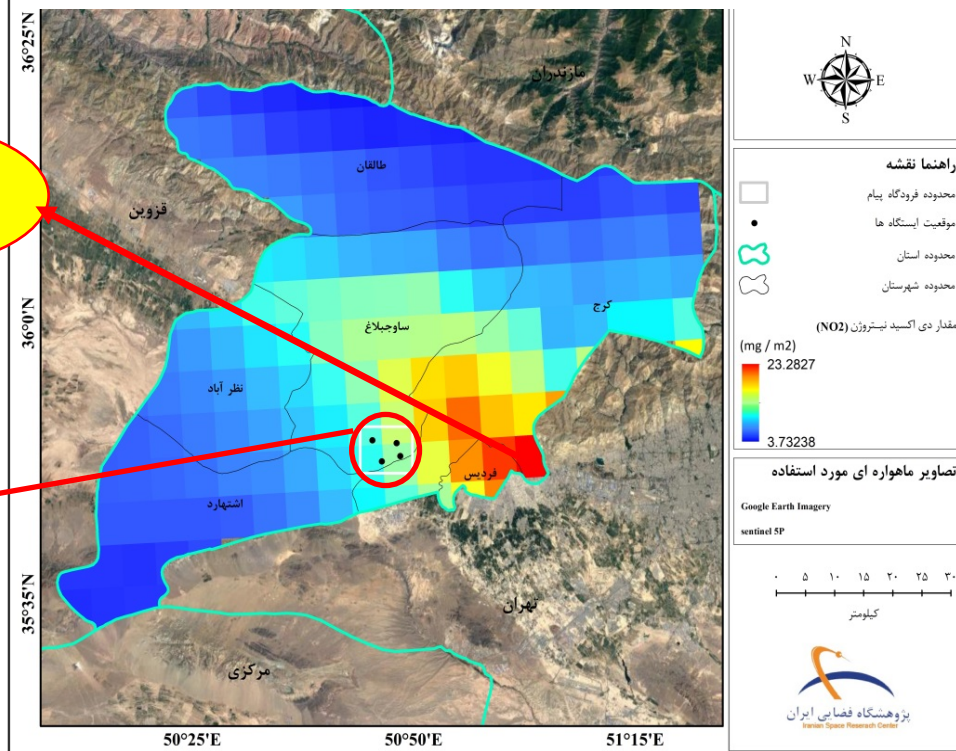


Natural Hazard Management

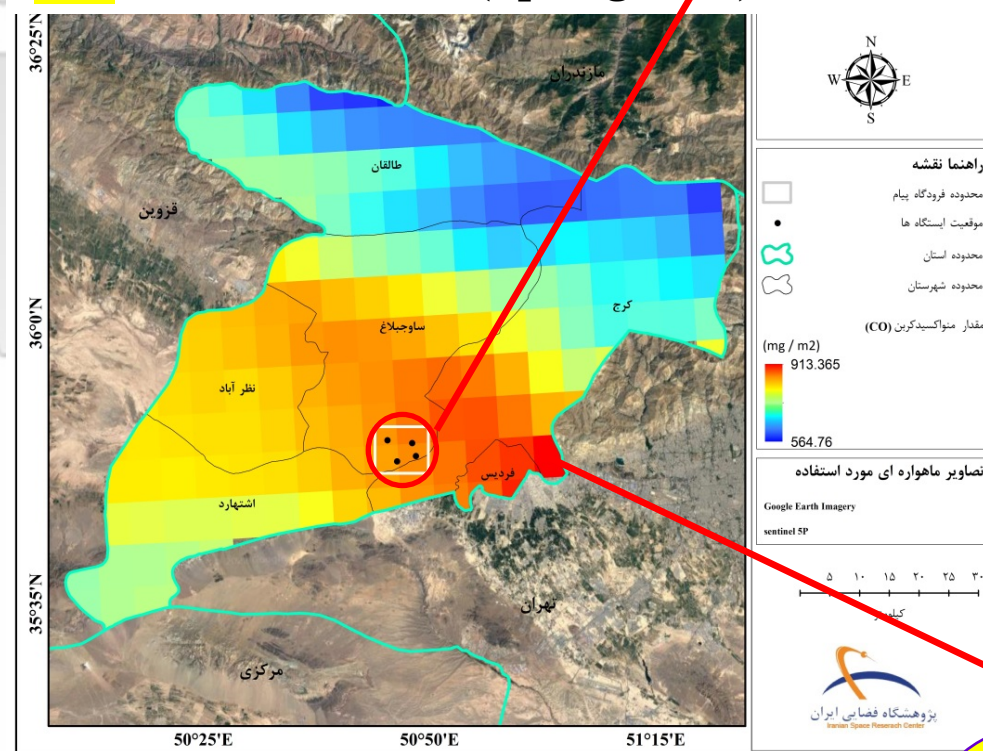
Monitoring of Atmospheric Pollutants for Urban Management



NO₂ in Alborz, IRAN (Spring 2021)



CO in Alborz, IRAN (Spring 2021)

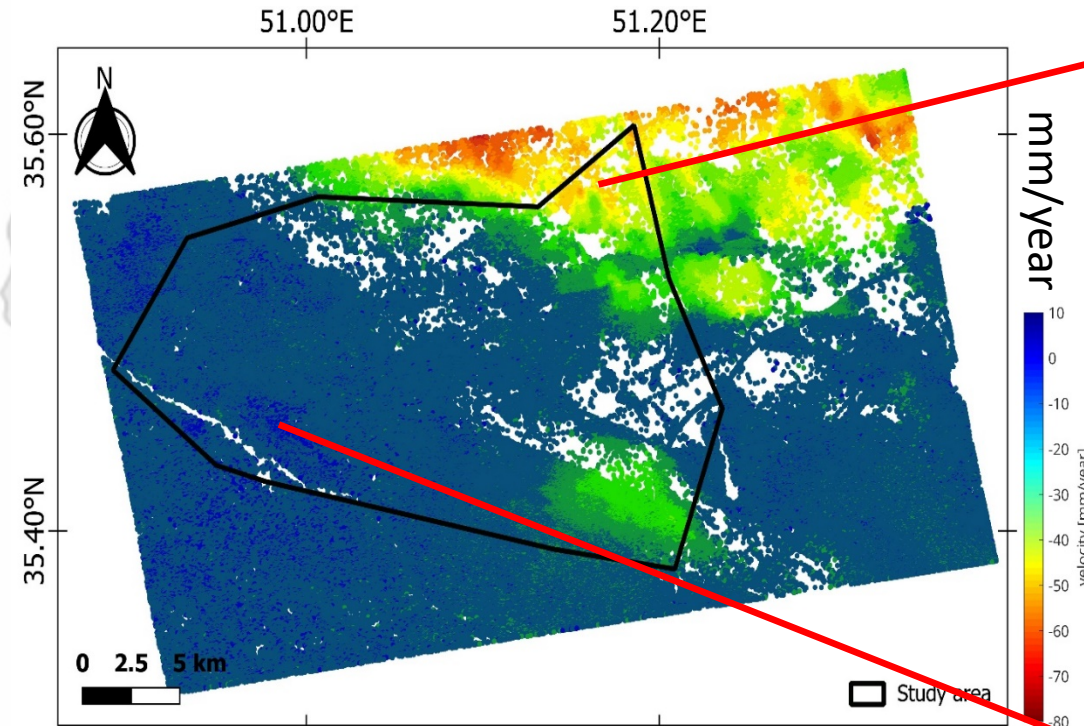


Natural Hazard Management

Monitoring of Land Subsidence for Smart Urban Management

Land subsidence, Tehran Province, from 2019 January to February 2022

Study Area



High
subsidence

Low
subsidence



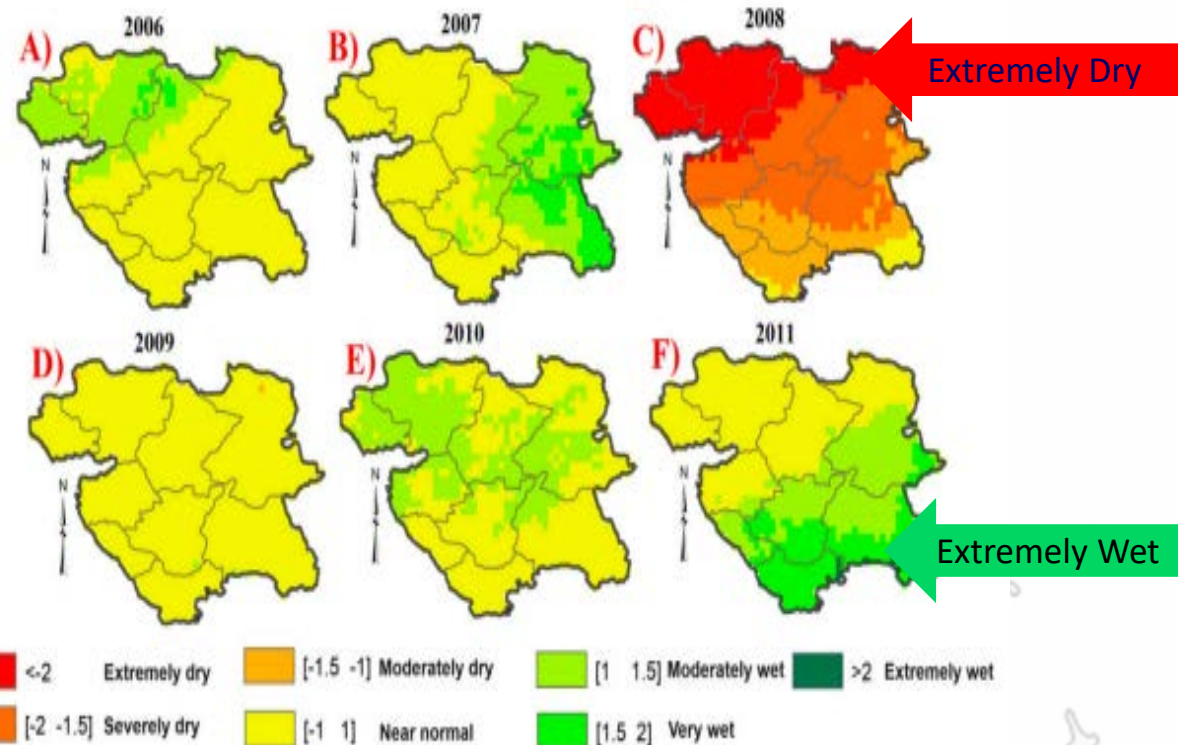
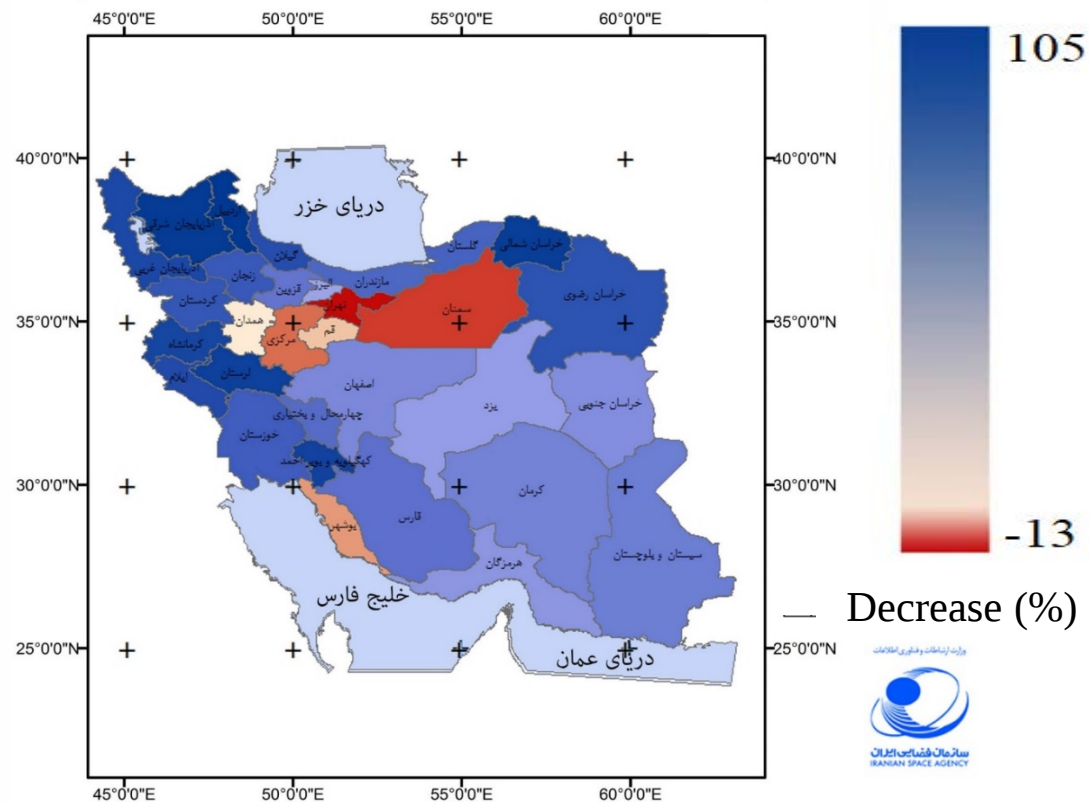
Climate Change Monitoring

2006

2011

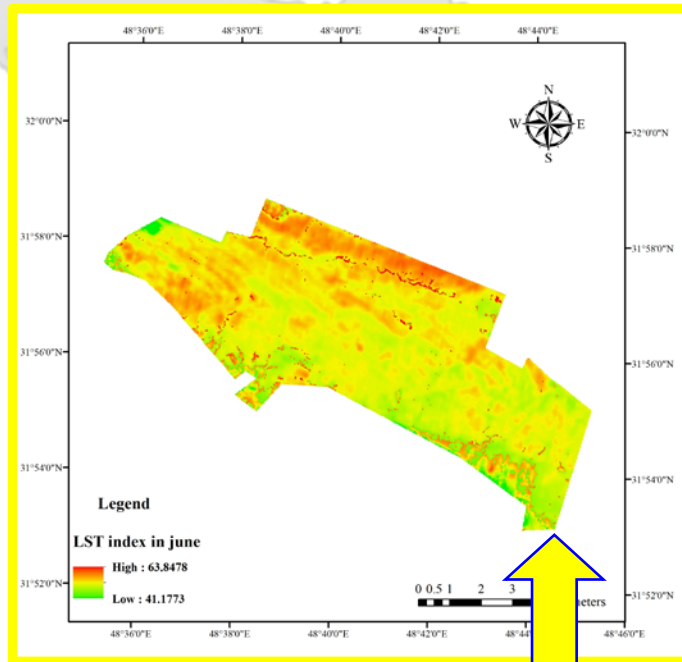
Greenness Changes, Kurdistan Province, Iran for Drought Monitoring

Soil Moisture Changes, Iran for Drought Monitoring

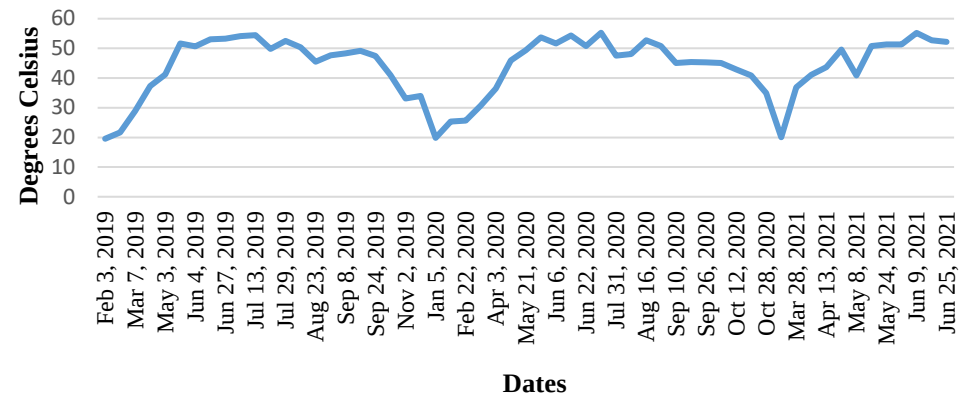


Climate Change Monitoring

Highest mean surface temperature, Khuzestan, Iran



Mean Surface Temperatures during 30 months, February 3, 2019 to June 25, 2021, Khuzestan Province



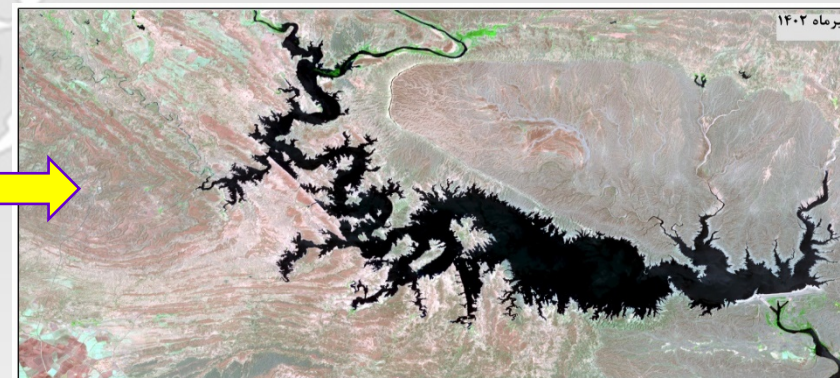
- ✓ Agriculture land use suitability analysis
- ✓ Crop pattern prediction

Climate Change Monitoring

Surface area dam detection to estimate the water storage for urban use

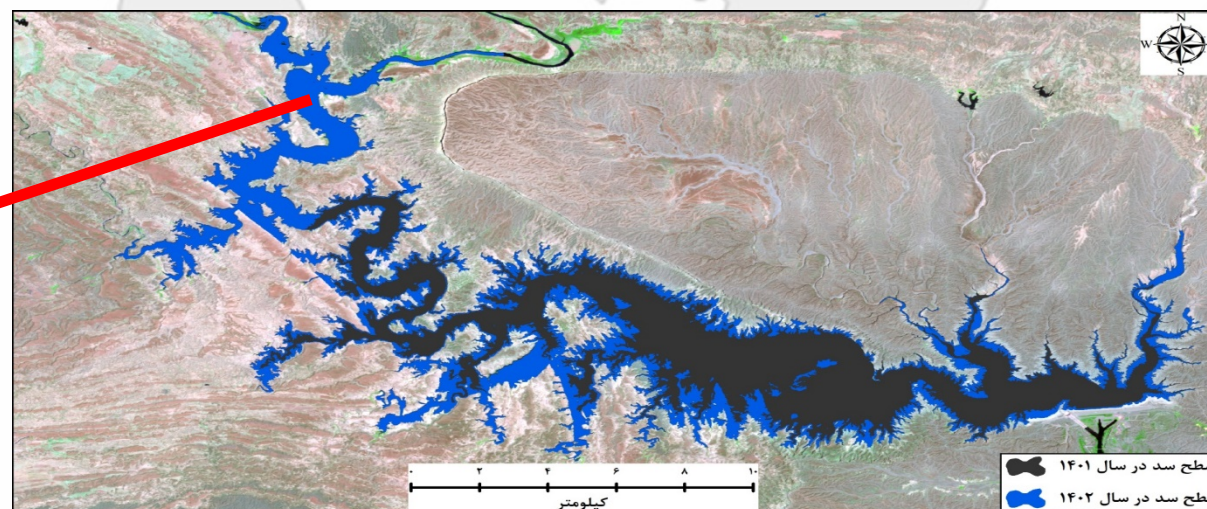


Karkheh Dam (Iran) June 15, 2021



Karkheh Dam (Iran) June 15, 2022

The Difference:
+82.62 %

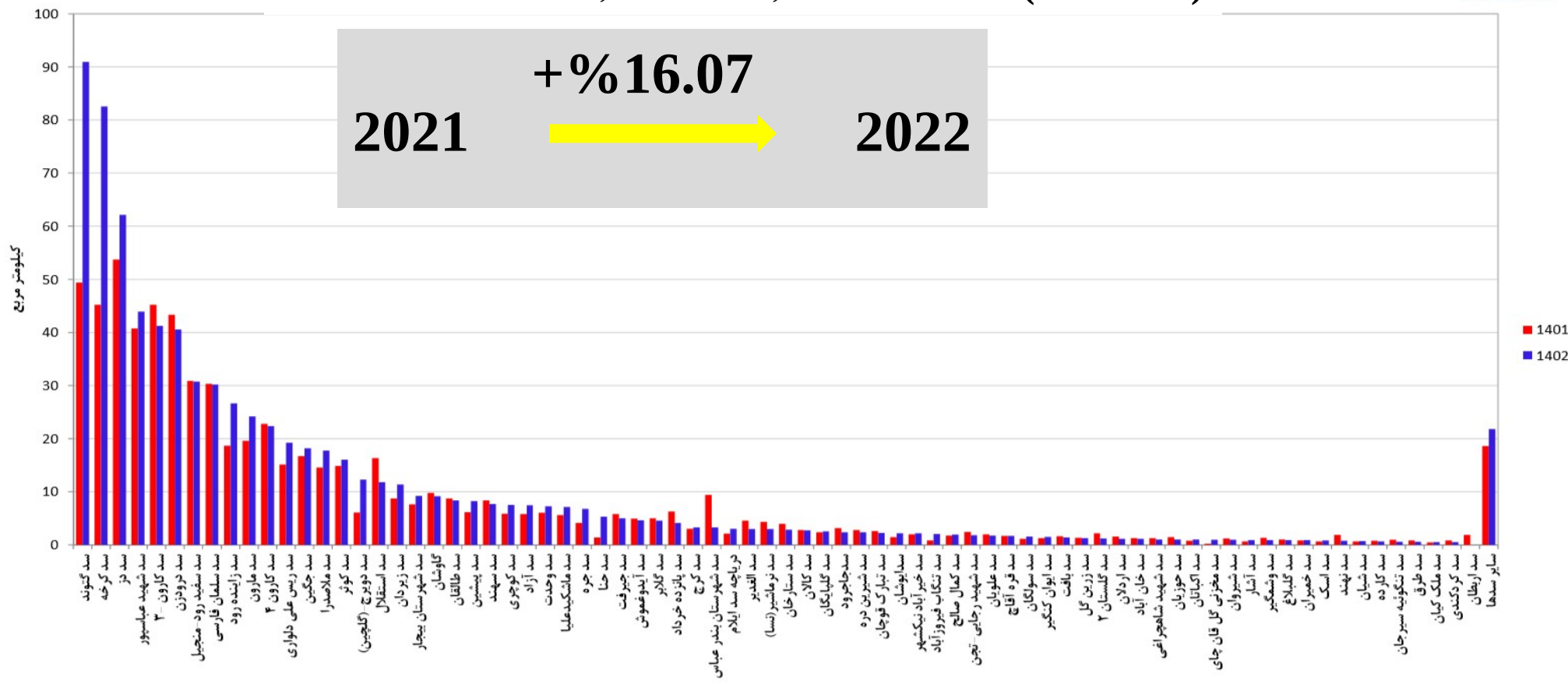




Climate Change Monitoring

Km²

Area of Dams in Iran, in June 10, 2022 and 2023 (250 Dams)





Insurance (Flood Damage Assessment)

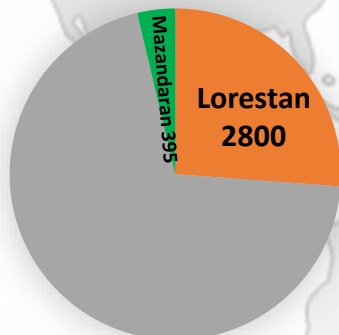
Over 200 Thousand Damage Claim Files



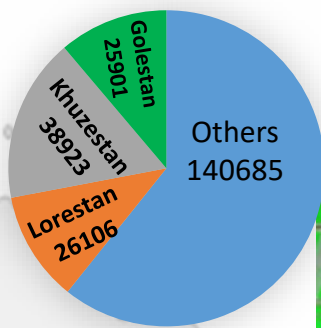
2022



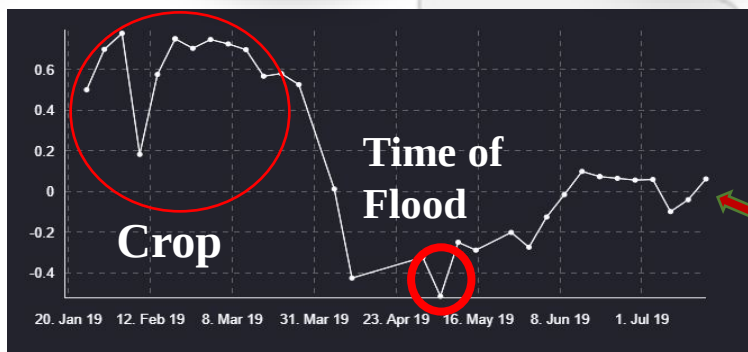
2021



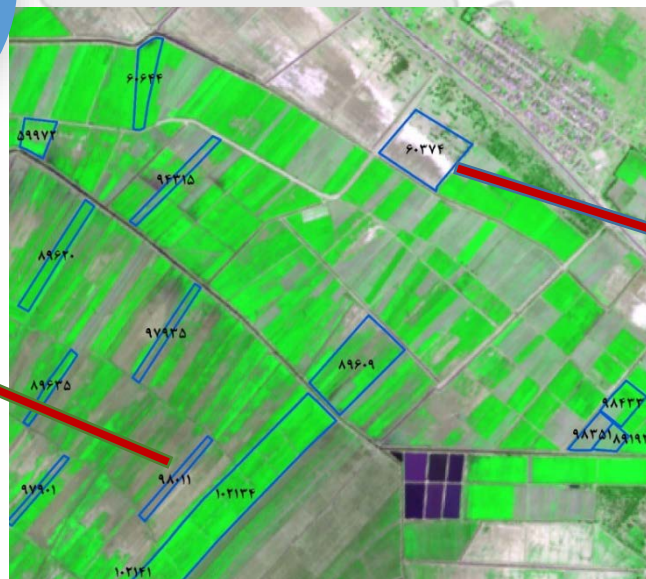
2020



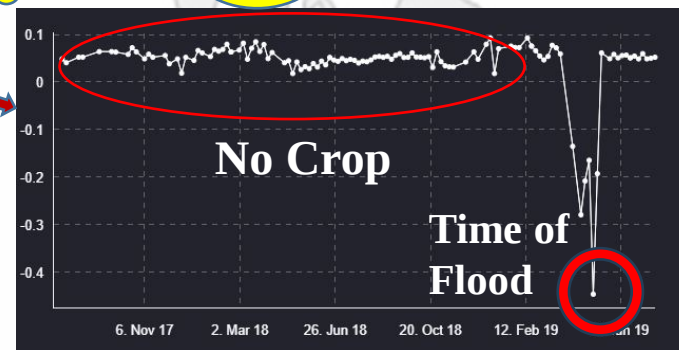
Estimating Flood Damage to Agricultural Fields



Wheat Cultivated in the Farm



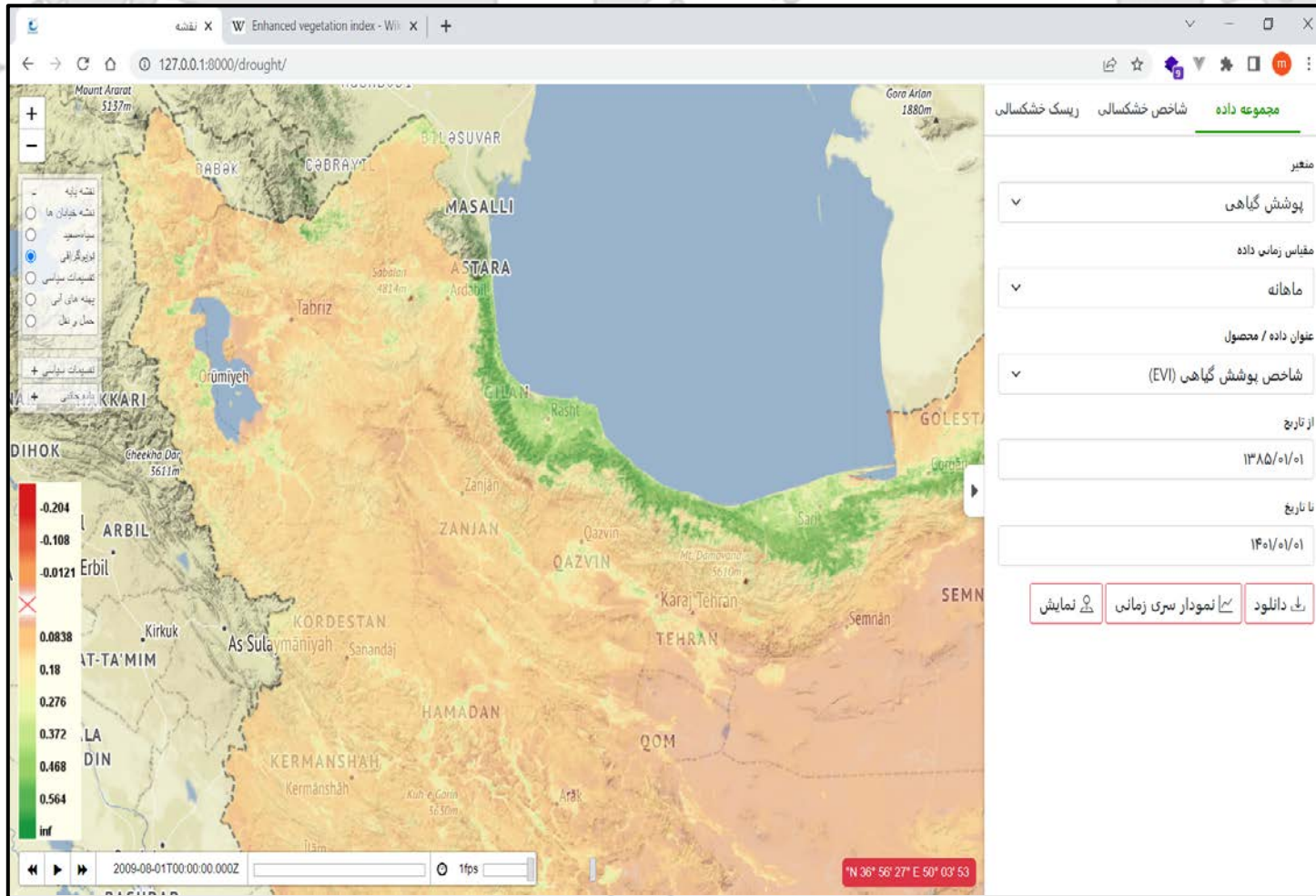
Validating Damage



No Crop Cultivated

Satellite Monitoring Web Service

Drought Monitoring System



Soil moisture sheet

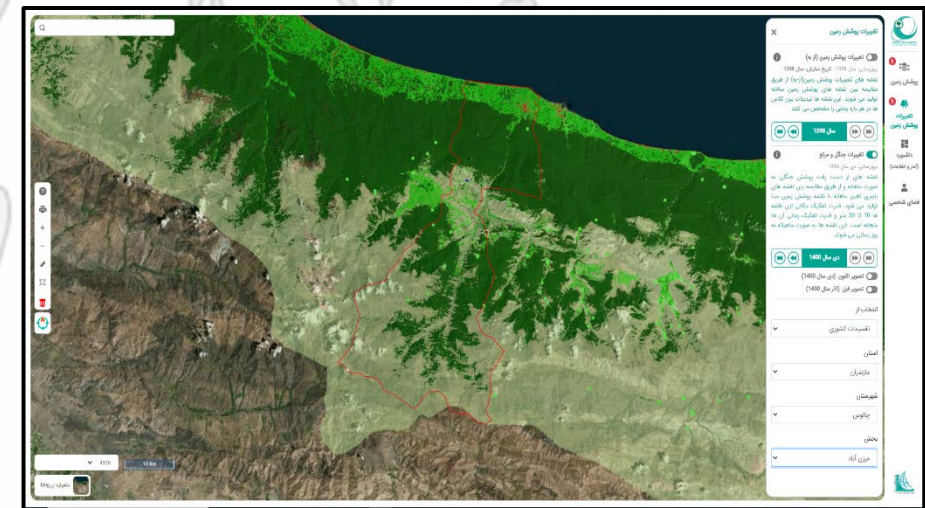
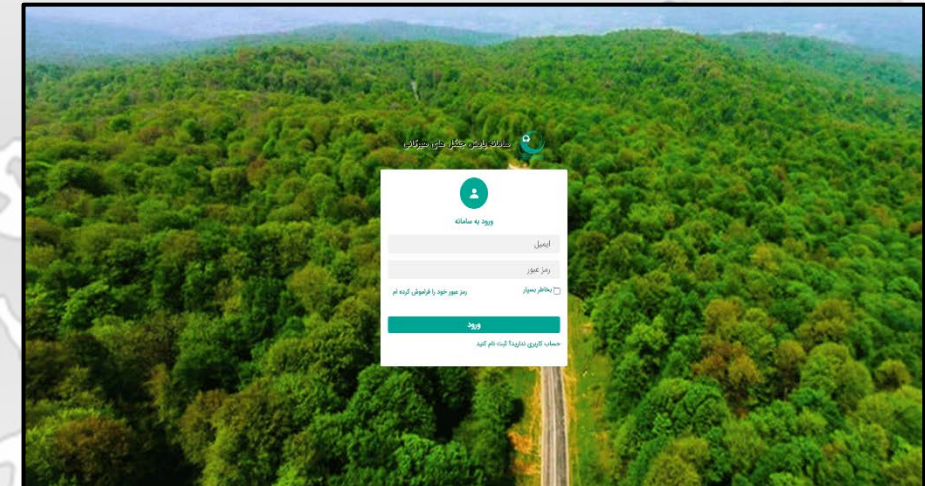
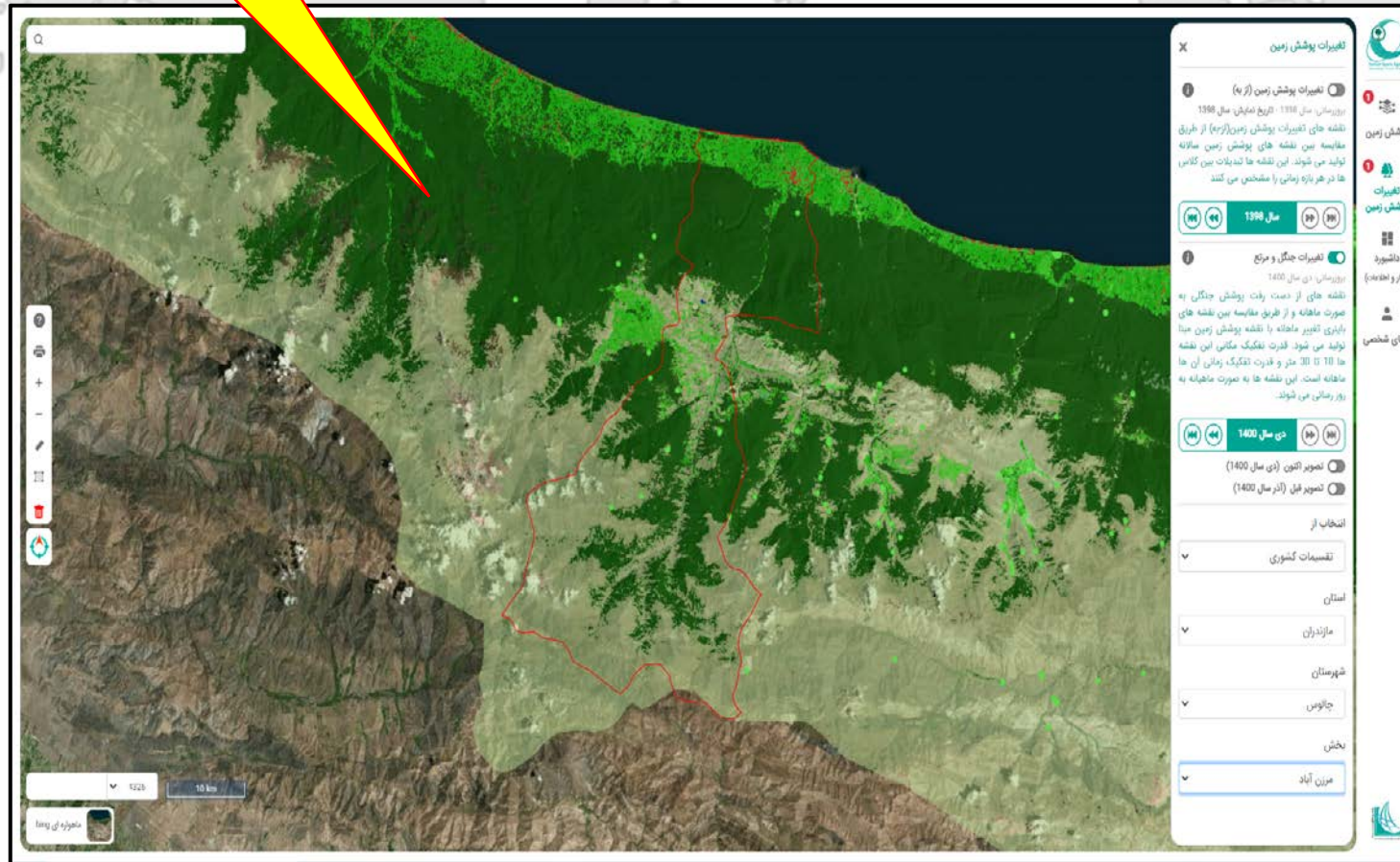
Drought risk map

Drought index map

Forest areas

Satellite Monitoring Web Service

Forest Monitoring System



Satellite Monitoring Web Service

Dust Monitoring System

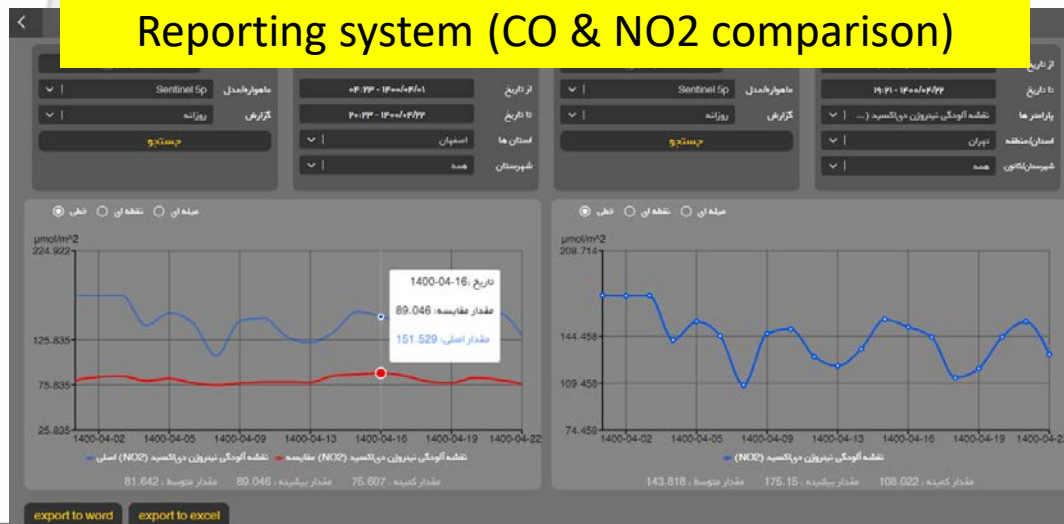
NO2 concentration map



Wind direction map



Reporting system (CO & NO2 comparison)



Medium Fire Risk
Monitoring

Satellite Monitoring Web Service

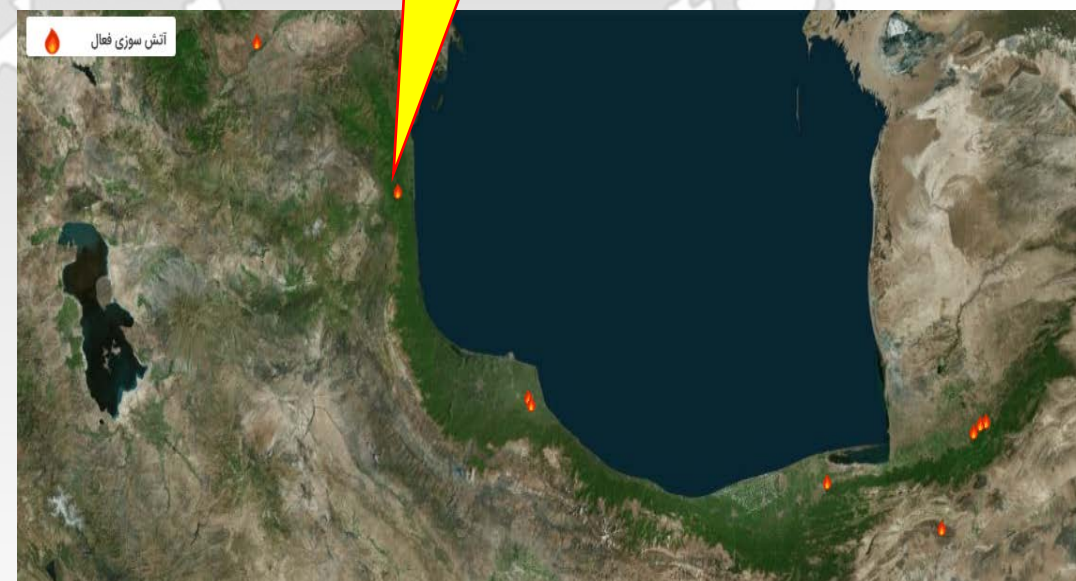
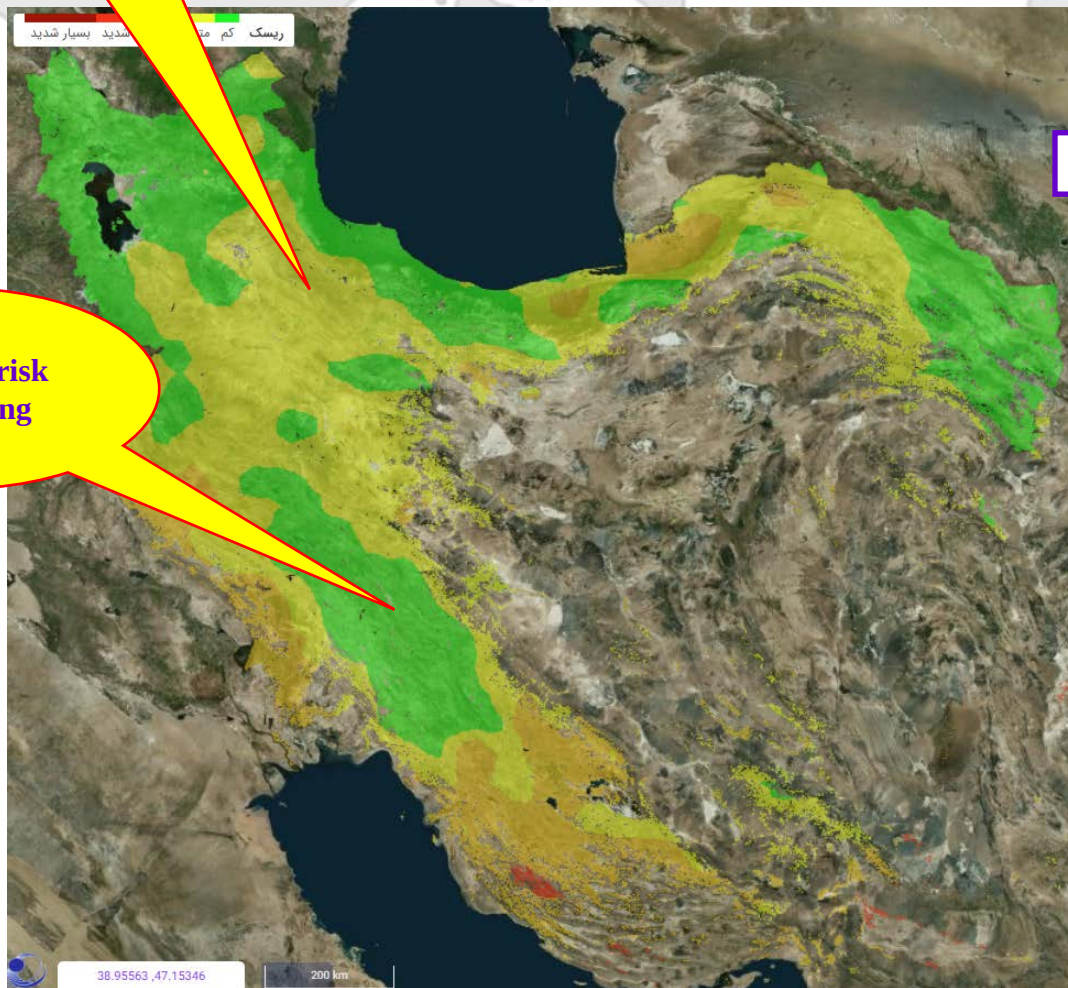


Fire risk monitoring system

Active Fire Detection

active fire monitoring system

Low Fire risk
monitoring



Food security

Natural Hazards
Management

Climate Change
Monitoring

Insurance
(Damage
Assessment)

Satellite Web
Service

Educations

Cooperation
Models

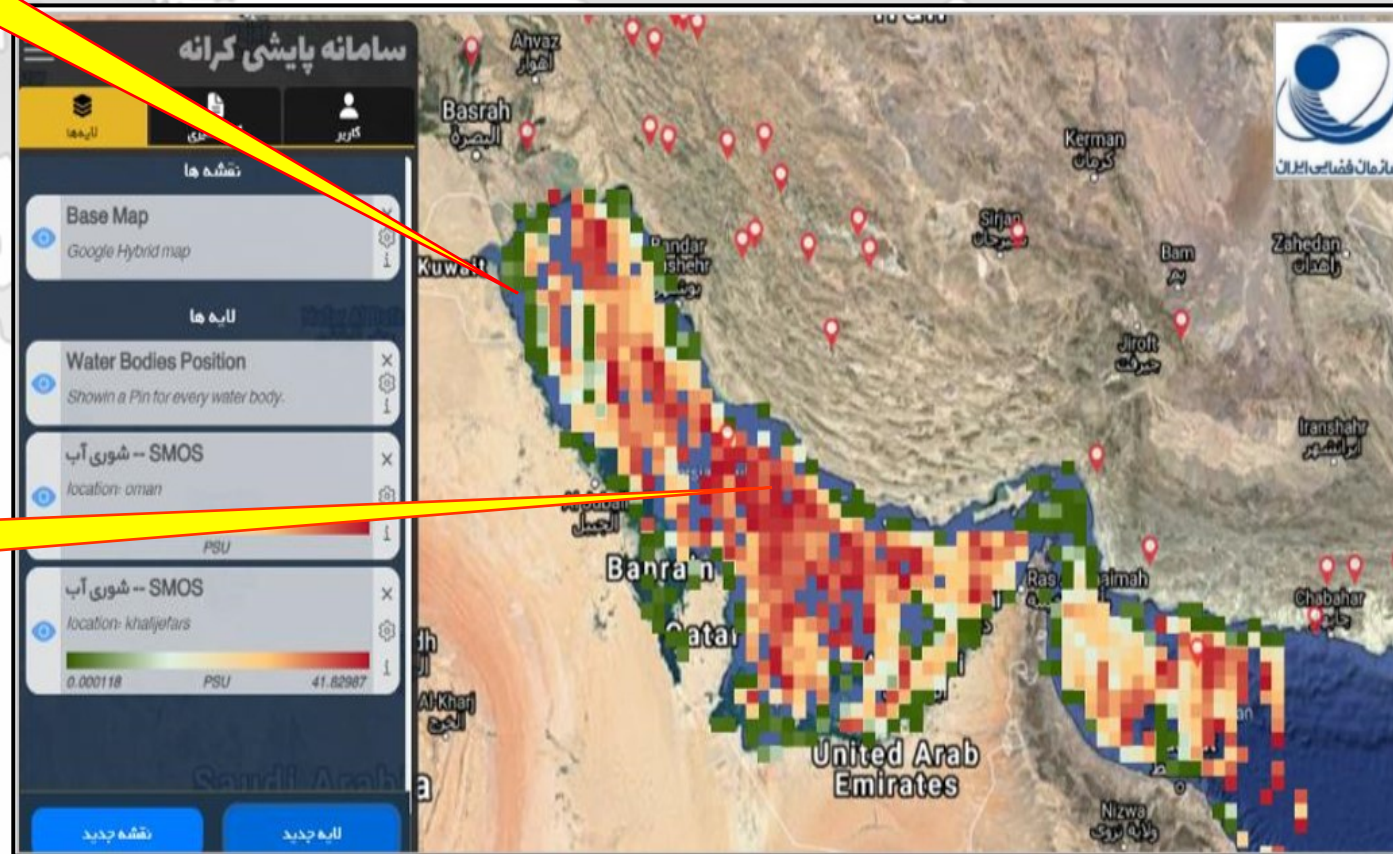
Other Activities

Satellite Monitoring Web Service

Water Quality Monitoring System

Low Water
Salinity

High Water
Salinity



Setting up satellite monitoring center

Satellite Monitoring Center



Food security

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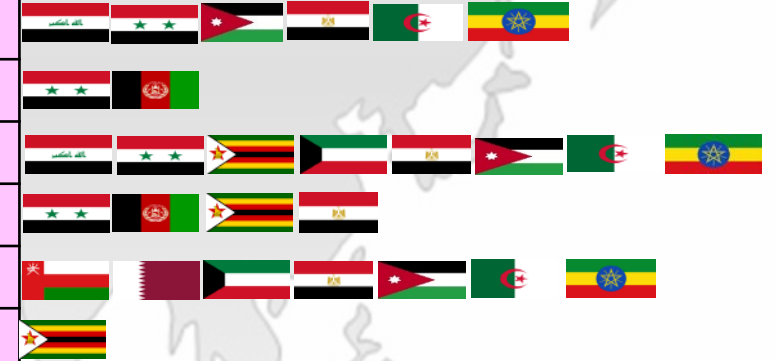
Other Activities

Education

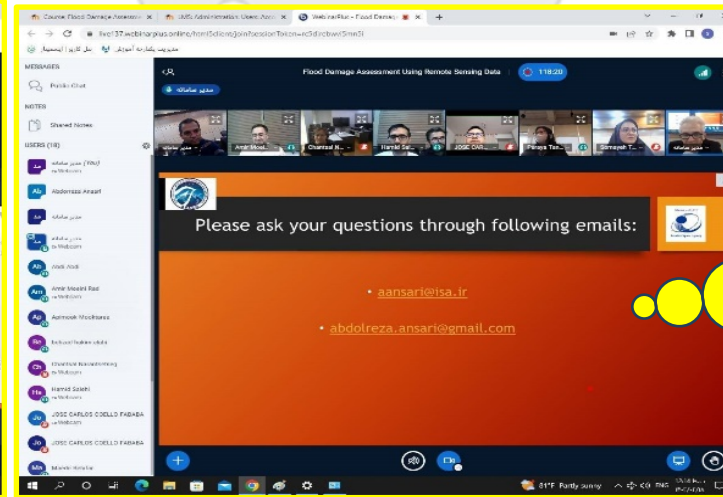
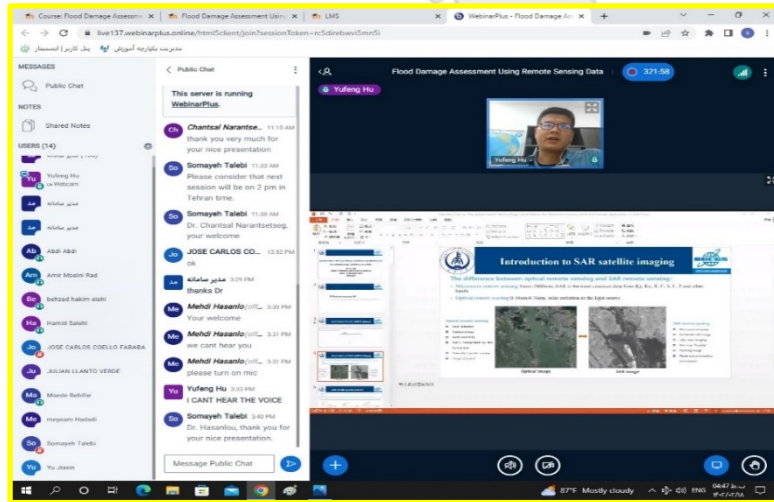
International Training Course



Course Title	Technology Transfer (operational project with the training course) (month)	Duration of training courses (week)
Natural Hazards: Dust Storm Origin Detection	6	1
Natural Resource Management: Forest Area Estimation	6	1
Natural Hazards: Drought Risk Assessment	8	1
Precision Agriculture: Crop Type and Area Estimation	10	1
Natural Hazards: Water Pollution Assessment	8	1
Natural Hazards: Flood Damage Assessment	10	1



Participating Countries



International
Training Course of
Flood Damage
Assessment by SRI

Food security

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(Damage
Assessment)

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Other Activities

The Remote Sensing Services that can be Provided are Proposed in Six Models:

1-J

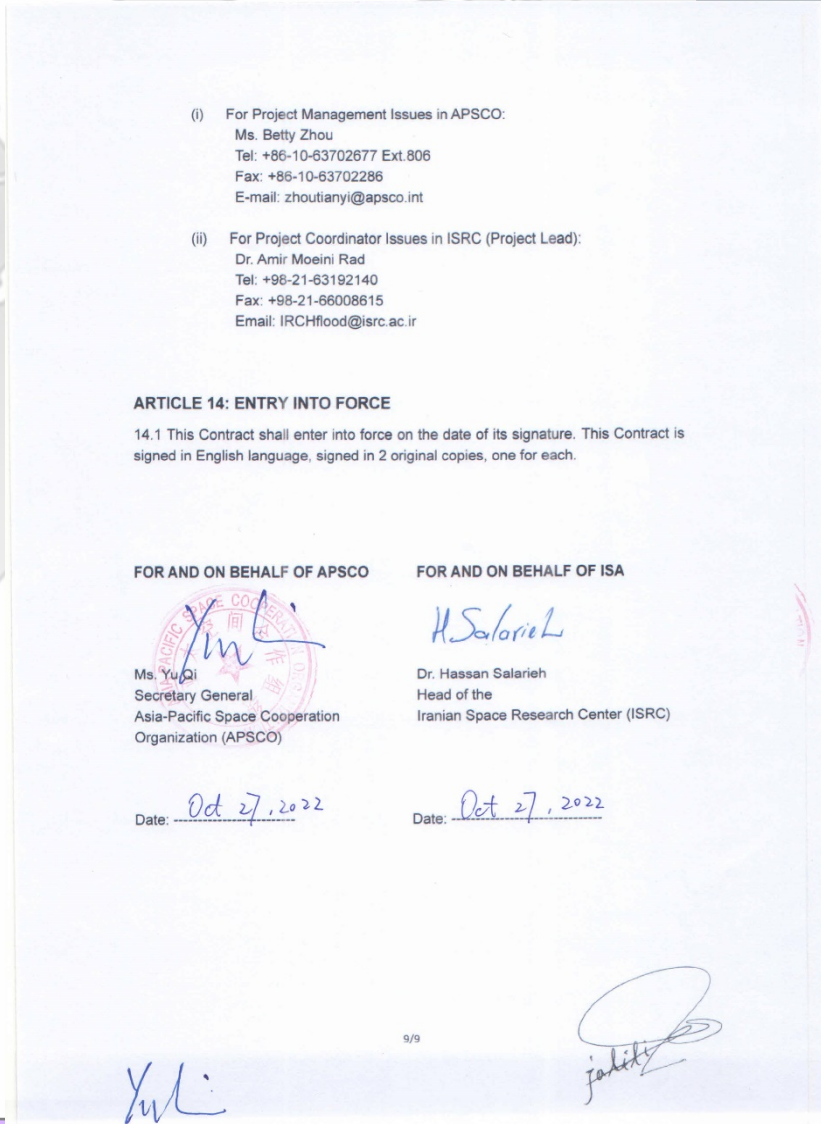
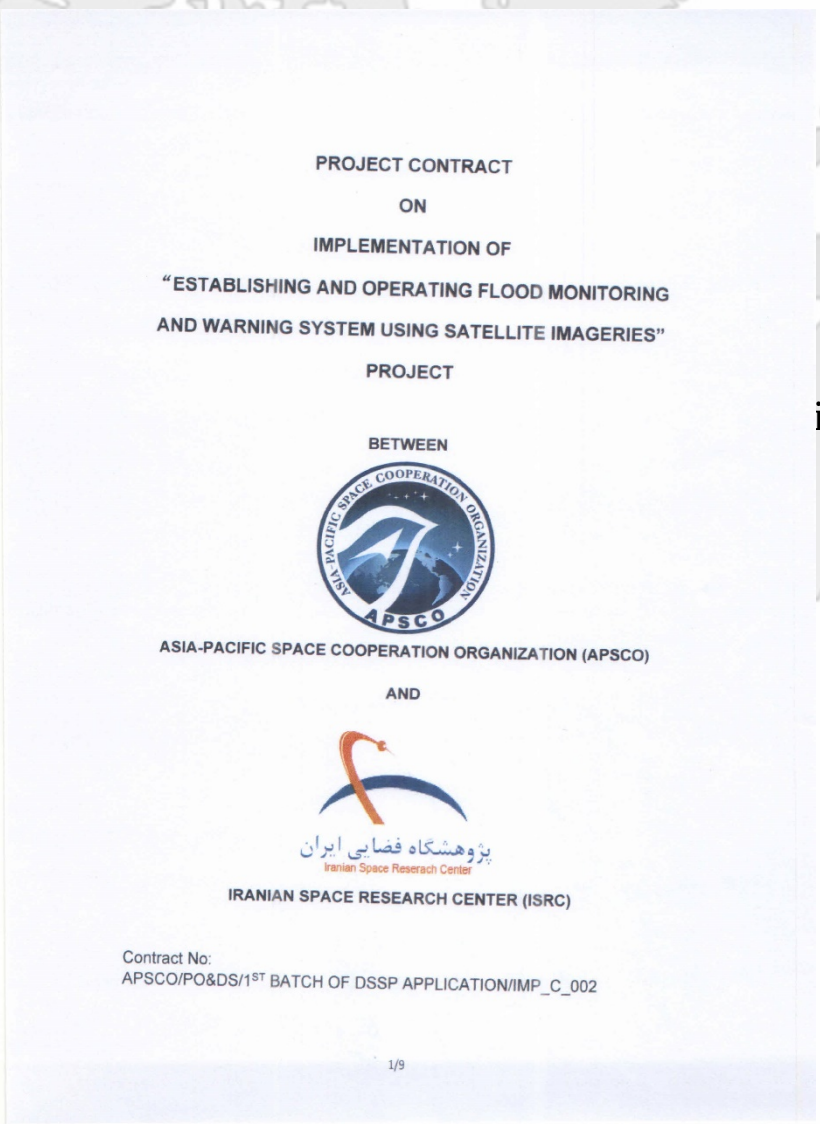
2-H

3-H

4-Im

5-S

6-S



Research

Education

Technology Transfer

Project Implementation

Service

Product sale

Food security

Management

Monitoring

(Damage Assessment)

Satellite Web Service

Educations

Cooperation Models

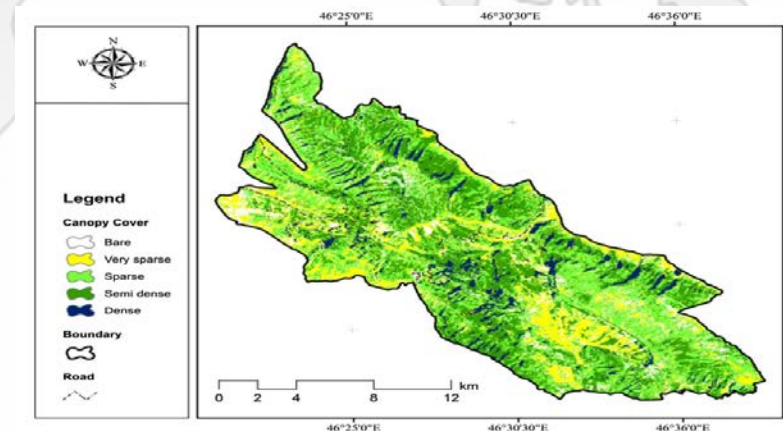
Remote Sensing Services

The Remote Sensing Services that can be Provided are Proposed in Six Models:

Research

1-Joint research project in order to use the scientific capacity of both countries

- ✓ Algorithm development
- ✓ Field sampling
- ✓ Algorithm localization and calibration



Food security

Natural Hazards
Management

Climate Change
Monitoring

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(Damage
Assessment)

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Cooperation
Models

Other Activities

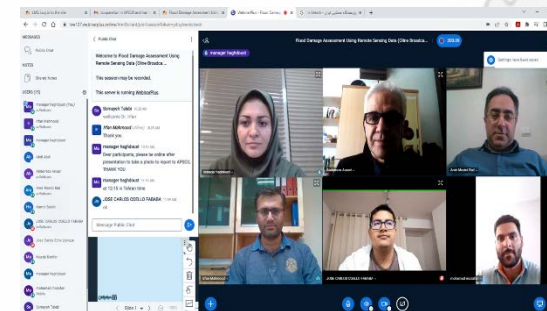
The Remote Sensing Services that can be Provided are Proposed in Six Models:

Education



2-Holding specialized training courses

- ✓ Theory and concept
 - ✓ Hands-on experience
 - ✓ Rest and tour at the end of the training courses
- in Food security, climate change, crisis management and etc.,



The Remote Sensing Services that can be Provided are Proposed in Six Models:

Technology Transfer



3-Holding the training course with the implementation of the pilot project

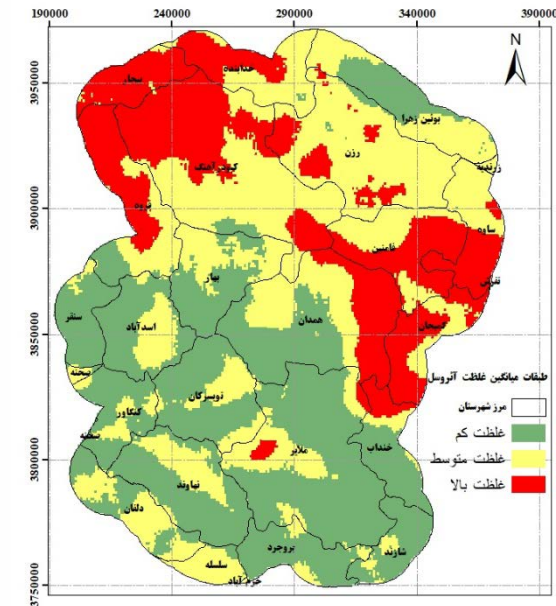
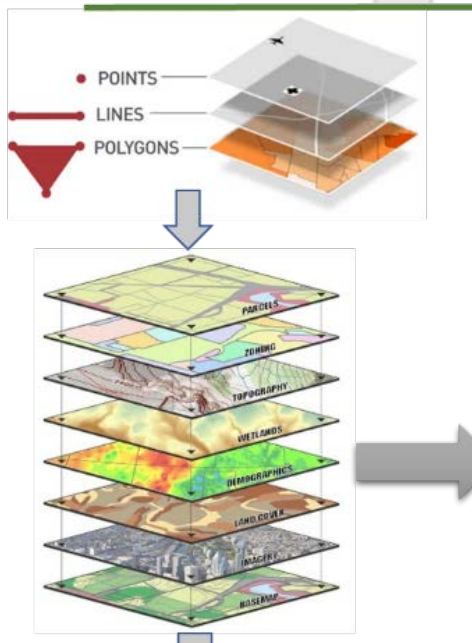
- ✓ On-the-job trainings
- ✓ Project implementation for 6-12 months consist of:
 - Algorithm development
 - Field sampling
 - Algorithm calibration
 - Analysis of the results



Project Implementation



- ✓ Implementation of a pilot project based on the announcement by the target country
- ✓ Algorithm development
- ✓ Field sampling
- ✓ Algorithm calibration
- ✓ Analysis of the results



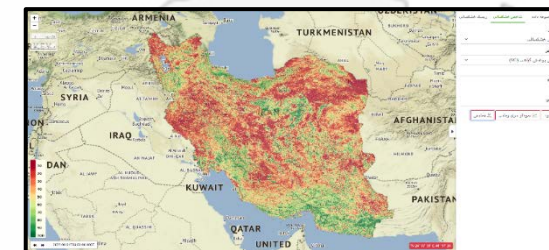
The Remote Sensing Services that can be Provided are Proposed in Six Models:

Service

5- Satellite monitoring web services

- ✓ System preparation and calibration for the target country
- ✓ Provide username and password
- ✓ Training and support
- ✓ Ability to output weekly, monthly, and yearly in different fields of remote sensing applications

- ✓ Fire
- ✓ Air pollution and dust storm
- ✓ Floods
- ✓ Land subsidence
- ✓ Forest
- ✓ Fishing sites (areas)
- ✓ Cloud and snow
- ✓ Water catchment
- ✓ Earth displacement
- ✓ Drought
- ✓ Wheat, Rice, Barley, Beet, Rapeseed ,and Corn
- ✓ The unauthorized construction
- ✓ and ...



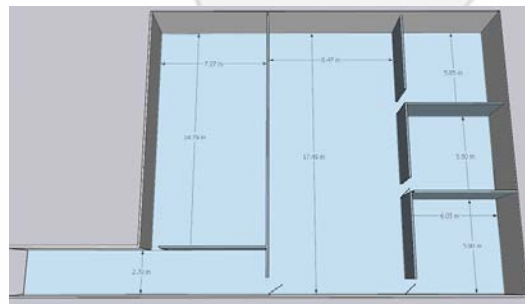
The Remote Sensing Services that can be provided are Proposed in Six Models:

Product sale



6-Setting up satellite monitoring center

- ✓ Infrastructure design
- ✓ Server design and implementation
- ✓ Upload the system to the server
- ✓ Education
- ✓ Support





Thank You

