

**Joint NASA LCLUC Science Team Meeting and
GOFC-GOLD/NERIN, NEESPI, MAIRS Workshop**

**Monitoring land cover, land use and fire
in agricultural and semi-arid regions of Northern Eurasia**

September 15-19, 2009 (Training Sessions September 20-21)
National Center of Space Research and Technologies, National Space Agency,
Almaty, KAZAKHSTAN

The growth of human population, increasing demand for agricultural production and concerns about food security in the world are among the reasons for growing interest in land monitoring based on satellite remote sensing. The semi-arid regions are also very sensitive to global climate change and all vegetation there depends strongly on weather conditions and water availability. Land cover, land use change, state of agriculture and various natural/ artificial phenomena such as fire, drought, flooding, soil erosion by water and wind are the subject of research using the remote sensing. Remotely sensed observations and analysis play an important role in quantifying changes in these phenomena and informing land management decisions.

The workshop is organized around 4 major themes (land cover, land use/agriculture, water resources and fire) with the goal of reviewing the availability of satellite data, products, and processing methods for land monitoring in temperate and semi-arid regions of Northern Eurasia.

An additional focus for the workshop is the definition of requirements for land cover and land use characterization that address the needs of users in these regions and the community of scientists working on regional environmental issues. Participants will evaluate the Land Cover Classification System (LCCS) as a tool for harmonization of available land cover products and as a basis for developing map legends for the region.

Presentations and discussions at the workshop will give an overview of recent research accomplishments and formulate future research and applications development needs. The workshop will explore opportunities for coordination and collaboration among research teams and ongoing projects aimed at improved observations of agriculture, land-cover, land-use, water resources and fire in the temperate and arid regions of Northern Eurasia. English-Russian translation will be provided. The workshop is hosted by the National Center of Space Research and Technologies of the Kazakhstan National Space Agency (<http://www.spaceres.kz/>). For additional information about the workshop contact:

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Online registration:
[http://lcluc.umd.edu/Program_Information/meeting-
registration_almaty.asp](http://lcluc.umd.edu/Program_Information/meeting-registration_almaty.asp)

AGENDA

Sept. 15 – Participants arrival (from Bishkek, etc.)

Day 1 . Sept 16 (Wednesday)

8:30 – Participant registration and poster set-up begins

9:00 – 10:30 Session 1a. Introductions and opening comments (Chair – Lev Spivak)

Welcome - Local Host (Zhumabek Zhantaev)

Presentation of the Workshop Objectives – Olga Krankina

International and National Program presentations (10 minute overviews)

NASA LCLUC – Garik Gutman

MAIRS – Ailikun

GOFC-GOLD NERIN – Olga Krankina

NEESPI – Mutlu Ozdogan

Science Keynote Address – The Regional Context for Land Cover Land Use Studies (the geography of the region and recent trends in land use and land cover change and their causes and implications) – (I.V. Severskij – **to be confirmed**) – 30 minutes

Coffee 10:30-10:45

10:45 – 12:45 Session 1b. National Overviews on Land cover-land use, Fire and Agriculture: projects, activities and organizations (15 minute overviews) (Chair Olga Krankina)

Kazakhstan (Lev Spivak)

Russia (Sergey Bartalev – **to be confirmed**)

China (Xi CHEN, Chinese Academy of Science, Urumqi)

Mongolia (Tsolmon Renchin)

Kyrgyzstan (TBD)

Tajikistan (TBD)

Uzbekistan (TBD)

Turkmenistan (Leah Orlovsky?)

Lunch (12:45 - 2.00) – (poster set up for Session 2b)

2 – 5.30 pm Session 2 Agricultural Land Use

Session 2a Agricultural Land Use Plenary Presentations (2-3.30) Chair – Chris Justice

The GEO Global Agricultural Monitoring Task – Chris Justice (UMD) – 10 minutes

Spring crop yield forecast on the base of remote and ground data - Nadiya Muratova (JSC “NCSRT”, Kazakhstan) – 20 minutes

The MARS Project Overview: agricultural monitoring in Central Asia. - Olivier LEO (JRC, Italia) – 20 minutes

Agricultural monitoring of Central Asia using Remote Sensing: an overview - (Sergey Bartalev, Russia) – 20 minutes

Monitoring vegetation condition in Central Asia: an overview – (Geoff Henebry, SDSU- USA) – 20 minutes

Session 2b Poster Session: Agriculture Land Use (and Coffee) 3.30 – 4.30

The accuracy of Kazakhstan crop mapping using multi-resolution satellite data - Alexey Terekhov (Kazakhstan)

Application of Remote Sensing Data in Regional GIS of Agro industrial complex A. Chernov, N. Vorobyeva (Russia)

Space-based monitoring of agriculture in Brazil. Jansle Rocha (Brazil)

Hyperspectral methods of crop states remote test and ecological risk detection - Svetlana Kochubei (Ukraine)

Assessing status of wheat crops by hardware-software complex “Field chlorophyllmeter” – Taras Kazantsev (Ukraine)

Human vulnerability and adaptations to climate change in arid environments of Central Asia - Elena Lioubimtseva (USA)

The NASA Global Agricultural Monitoring Project: Central Asia (Chris Justice, Inbal Becker-Reshef, Eric Vermote USA)

CropWatch: Central Asia. Lu Shanlong, China

Regional evaluation of crop rotation system and spatio-temporal variation of soil organic carbon dynamics for rainfed cereal farming in northern Kazakhstan – Takata Yusuke (Japan)

NASA Data and Services Supporting Monsoon Asia Integrated Regional Study in Eastern Asia – Greg Leptoukh NASA ?

**Session 2c. 4.30 – 5.30pm Plenary Synopsis of Posters, Presentations and Discussion
Session on regional priorities for agricultural land use monitoring (Chair - Chris Justice)**

Official Dinner

Day 2 Sept. 17 (Thursday)

8:30 – 10:30 Session 3a. Land Cover Monitoring and Validation (Chair - Jiaguo Qi)

20 minute presentations:

GOFC-GOLD Land Cover IT and validation task -- Curtis Woodcock (USA)

Grassland Ecosystems and Societal Adaptations Under Changing Grazing Intensity and Climate on the Mongolian Plateau – Dan Brown (USA)

The experience of land cover changes detection by satellite data – Irina Vitkovskaya (Kazakhstan)

Pasture Monitoring based on the Remote Sensing and Ground Observation Base (example of Balkhash area) Lyubov' Lebed (Kazakhstan)

Regional aspects of land cover change and interaction with climate, Gensuo Jia (China)

USDA-ARS grasslands project in Central Asia - Phil Heilman (ARS, USA)

10:30 – 11:30 Session 3a. Land Cover Monitoring and Validation (Poster Session and Coffee)

40 years of landuse changes in Baiyangdian Wetland. Dr. Lu Shanlong (China)

Conceptual framework for rezoning and monitoring of phyto-reclamation on the exposed bed of the Aral Sea -- G. Stulina (Uzbekistan)

Key territories for bird conservation in Turkmenistan -- Atamyrat Veyisov, Turkmenistan

Land Cover of Northern Eurasia: Comparison and Assessment of Coarse Resolution Maps – D. Pflugmacher et al. (Olga Krankina, presenter)

New Land Cover Map for Northern Eurasia -- Sulla-Menashe et al. (Curtis Woodcock, presenter)

Impacts of grazing, fire, and precipitation variability on woody plant cover in Chihuahuan Desert grasslands – Kelley O'Neal (USA)

Vegetation Change detection by temporal CBERS data in lower reach of Tarim river – Alishir Kurban (China)

The main drivers of land degradation in Uzbekistan – Muhtor Nasyrov (Uzbekistan)

Decision tree approach based on object oriented for land cover classification in mountain area Lei Zhang (China)

Land cover changes using MODIS data – Magsar Erdenetuya (Mongolia)

Land Cover and Carbon Sequestration in Drylands of Kazakhstan - Assessment by Remote Sensing and field data - Martin Kappas (Germany)

The new MODIS derived land cover map of Russia (250 m) Sergey Bartalev (Russia)

Land system change in pastoral systems of Mongolia – Dennis Ojima (USA)

3D for participatory spatial planning – Muratbek Koshoev (Kyrgyzstan)

11:30 – 12:45 Session 3c Synopsis of Presentations and Discussion: Regional Research Priorities for Land Cover Monitoring and Validation (Chair – Curtis Woodcock)

12:45 – 2:00 Lunch

2:00 – 5:30 Almaty city tour

5:30 – 6:30 Dinner

7-9 pm Training session 1: LCCS Overview and training (FAO rep);

Day 3 Sept 18 (Friday) Field trip (demonstration and discussion of different types of landuse in South Kazakhstan).

Day 4. Sept. 19 (Saturday)

8:30 – 10:30 Session 4a. Fire Monitoring and Fire Science in Dryland Ecosystems of Northern Eurasia – Chair TBD

GOFC-Fire Program Goals and Initiatives – Chris Justice (20 min)

Global Fire Monitoring Center activities in drylands of Northern Eurasia - Johann Goldammer, (20 min)

Regional Central Asia and Northeast Asia Wildland Fire Networks – Leonid Kondrashov (20 min)

Satellite Monitoring of Fire in Kazakhstan - Oleg Arkhipkin (Kazakhstan) 20 min

Remote sensing approach for forest and steppe fire monitoring in Mongolia – M. Erdenetuya 20 min

NASA MODIS Global Fire Monitoring and its applications in Northern Eurasia – Loboda (20 min)

10:30 – 10:45 Coffee Break

10:45 – 13:05 Session 5a . Water Resources and Monitoring. Chairs - Alex Shiklomanov and Jiaguo Qi

Water Resources of Central Asia: historical analysis, contemporary status and future projections – Natalia Agaltsova, A. Shiklomanov (10:45 – 11:05)

Investigating the Relationship Between Land Use/Land Cover Change, Hydrologic Cycle, and Climate in Semi-Arid Central Asia – Mutlu Ozdogan (11:05 – 11:25)

Review of water problems and undertaking decisions in Central Asia - A. Nikolaenko (11:25 – 11:45)

Effects of Land Use Change on the Energy and Water Balance of the Semi-Arid Region of Inner Mongolia – J. Chen (11:45 – 12:05)

Impacts of Land Cover and Land Use Change on Water and Energy Cycle in Caspian Sea Drainage Basin – Sasaan Satchi, 12:05 – 12:25

Aral Sea crisis and health of population in disaster zone-The modern problems of using, management and protection of land-water resources of Aral Sea basin. Rashid Kulmatov, 12:25 – 12:45

12:45 – 13:05 Monitoring and research on watershed scale hydrological cycle in drylands in Northern China - Li Xin

Lunch 13:05 – 2:15

2:15 – 3:30 pm Poster Sessions 4b and 5b (and coffee break 3:15- 3:30)

Fire

Satellite Monitoring of Fire in China – TBD (*Qi to recommend*)

Satellite Monitoring of Fire in Russia (*Lagutin*)

Development of Fire Monitoring and Early Warning System for Wildfire Disaster Mitigation in Nepal – *Sundar Sharma*

Water:

Land Use Ecosystem Climate Interactions in Monsoon Asia – Hanqin Tian

Using satellite remote sensing to study and monitor the Aral Sea and Adjacent Zone, Phil Macklin (*To be confirmed*)

Approach to the assessment of the climate change impact to the water availability and water demand for area of the intensive runoff use - Natalia Agaltseva (Uzbekistan)

Monitoring the water level in Balkhash Lake and discharge of the Ili River: application of remote sensing – Pavel Propastin (Germany)

Irrigation requirement estimation using MODIS vegetation indices and inverse biophysical modeling - Bounoua Lahouari (USA)

3:30 – 5:30 Concluding session

Synopsis of Presentations and Discussion for Session 4: Regional Research Priorities for Fire Science (Chris Justice) *30 min*

Synopsis of Presentations and Discussion for Session 5: Regional Research Priorities for Water Resources and Monitoring (Alex Shiklomanov/ Jianguo Qi) *30 min*

Panel on Regional Research Priorities (5 min comments from a panel of regional experts); General Discussion of Regional Research Priorities and Formation of Regional GOFC-GOLD Network (Chris Justice, moderator) 40 min

Summary Presentations on future plans and funding opportunities (*Gutman, Ailikun, Justice*)

Special Issue Announcement – Jianguo Qi, Solicit papers for a special issue in a peer reviewed journal

Wrap-up – Garik Gutman

Close of Workshop 5.30

Day 5. Sept. 20 (Sunday)

1. Training Sessions – Geospatial Methods and Applications

8:30 – 8:45 Introduction and overview of Training sessions (Jianguo Qi)

8:45 – 12:45 Thematic data analysis of Landsat TM and ETM+ imagery (Tatiana Loboda) with coffee break at 10:30

12:45 – 14:00 Lunch

14:00 – 15:00 Geospatial tools and methods for fire monitoring and management (Tatiana Loboda)

15:00-15:30 Break

15:30 – 18:00 Land cover validation exercise (C. Woodcock)

2. Optional Field Visit (land use in montane regions)

Day 6. Sept. 21 (Monday) (UNESCO)

Training Sessions – Geospatial Methods and Applications (continued)

8:30 – 10:30 MODIS technical overview and products (Robert Wolfe)

10:30 – 11:00 Coffee Break

11:00 – 12:30 Water and its management in arid regions (Xin Li)

12:30 -14:00 Lunch

14:00 – 16:30 Geospatial applications in land-use/land-cover change processes in Central Asia (Mutlu Ozdogan)

16:30-16:45 Coffee Break

16:45 – 18:00 Remote sensing methods for rangeland degradation assessment (Jianguo Qi)

Discussion and training workshop summary - Jianguo Qi

Awarding Certificates of completed training - Jianguo Qi and Olga Krankina

Close of training 18:30