



***NASA Science Meeting, GOFC-GOLD and NEESPI Workshop
and Regional Conference***

**Impacts of extreme weather on natural, socio-economic, and
land-use systems:
Focus on the 2010 summer anomaly in the Volga region**

June 17 – 22, 2012

Volga State University of Technology, Yoshkar-Ola, Mari El, Russian Federation

The anomalous weather in the summer of 2010 in European Russia led to a number of significant environmental and human impacts. While their full extent and long-term consequences have not been fully explored, the immediate and short-term impacts on natural and socio-economic systems within and outside Russia have been significant, particularly the impact on agricultural production and wildland fire. With the projected changes in global climate, frequency of extreme weather conditions and the accompanying wildfire occurrence in Northern Eurasia is projected to increase. The anomalous summer of 2010 presents a unique and important case study for developing a better understanding of potentially more frequent drought events of the future and their impact on natural and socio-economic systems within Northern Eurasia and globally, and the decision support systems that could benefit from this understanding.

The proposed topical workshop will provide a venue for sharing the knowledge and methods of assessing the impacts of drought conditions on natural and human systems in densely populated areas. The workshop aims at combining national, regional, and international expertise in applications of remotely-sensed data processing and analysis in support of scientific and management goals. Specifically this workshop will focus on two major topics: 1) anomalous weather-driven wildfire events, and 2) impacts of anomalous weather conditions on agricultural production. The last day of the workshop is dedicated to training sessions for regional participants and young scientists interested in mapping land cover, land use, and disturbances from a suite of remotely-sensed data sources.

The conference is supported by START, SCANEX, EFI, IUFRO, CSFM&RS, SOVZOND



EFI ASSOCIATED EVENT



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For more information and to register visit

http://csfm.marstu.net/nasa_conference/Index.html

Agenda

Day 1 June 17 (Sunday)

Field trip to the Volga-Kama Nature Preserve to observe vegetation change and the impacts of drought in the Volga region. The trip will start in Kazan and end in Yoshkar-Ola. (Please see the web site http://csfm.marstu.net/nasa_conference/Index.html for details).

Day 2 June 18 (Monday)

Volga Tech (Pl. Lenina, 3, Yoshkar-Ola, auditorium 403, Mari El, Russia)
8:30 – 9:00 – registration of participants

Plenary session 1: Official opening of the meeting and programmatic overviews

Chair: Evgeny Romanov, Rector of the Volga Tech

9:00 – 9:10 Opening remarks and welcome from the host University, Evgeny Romanov

9:10 – 9:20 Welcome from the Ministry of International Relations of Mari El (Larisa Polushina)

9:20 – 9:40 GOFC-GOLD Fire IT and GEO Agricultural Monitoring Program Overview, Chris Justice

9:40 – 10:00 NASA-LCLUC Program, Garik Gutman

10:00 – 10:15 Overview of Workshop Objectives, Olga Krankina

10:15 -10:30 Group Photo

10:30 -10:45 *Coffee break*

10:45 – 11:00 NEESPI Program, Pavel Groisman

- 11:00 – 11:15 SCANEX, Olga Gershenzon
11:15 – 11:30 Research and education at the Center for Sustainable Forest Management and Remote Sensing of Volga Tech, Eldar Kurbanov
11:30 – 11:45 Development of satellite monitoring centers in universities: implementation practice in regions, Sergey Mishlyakov (Sovzond).

Plenary session 2: Regional overviews

Chair: Eldar Kurbanov

- 11:45 – 12:10 Socio-economic indicators and utilization of natural resources in Republic Mari El, Vladimir Karmanov - Head of the Department of ecological security, nature utilization and protection of Mari El population.
12:10 – 12:35 Satellite-based assessment of the 2010 summer drought impact on terrestrial ecosystems in European part of Russia, Sergey Bartalev
12:35 – 13:00 Welcome words and introduction to the Ministry of forestry of Mari El (Irina Golovenkina, Consultant of the ministry)
Fighting forest fires of 2010 in Republic Mari El (Petr Dolgov, head of the Air forest protection unit of the Ministry of forestry of Mari El)

13:00 - 14:30 *Lunch (not provided)*

14:30 – 15:50 Plenary session 3: Climatic and hydrological characteristics of the 2010 drought

Chair: Pavel Groisman

- 14:30 – 14:50 Major characteristics of the 2010 drought over European Russia from in situ meteorological observations (Olga Bulygina and Pavel Groisman)
14:50 – 15:10 Hydrological assessment of droughts in European Russia: 2010 as case study (Alexander Shiklomanov)
15:10 – 15:30 Wild fires in the mid-21st century as projected by RCM ensemble for Russia (Igor Shkolnik)
15:30 – 15:50 The 2010 drought: genesis and long-term weather projections (Evgeny Volodin)

15:50 – 16:10 *Coffee break*

- 16:10-16:50 Questions to speakers and Discussion of climatic and hydrological characteristics of the 2010 drought
16:50- 17:00 Logistics update: Walking city tour, Reception, Field Trip (E. Kurbanov)

17:20 – 18:50 Yoshkar-Ola walking tour.

19.00 - 21.30 Reception and ScanEx software demonstration at the National Art Gallery of Mari-El (Sponsored by ScanEx)

Day 3 June 19 (Tuesday)

8:20 – all day Field Excursion to burned forest sites and Volga River flooded areas
(Bus and boat)
Picnic lunch provided.

Day 4 June 20 (Wednesday)

8:30 – poster set-up (Posters remain on display June 20-21)

9:00 – 10:30 **Plenary session 4: Satellite monitoring of agricultural production**

Chair: Sergey Bartalev

9:00 – 9:20 GEO-GLAM: agricultural mapping and monitoring (Chris Justice)

9:20 – 9:40 Crop rotation as a factor of crop failure in drought period (Igor Savin)

9:40 – 10:00 Satellite monitoring of 2010 weather anomaly in Kazakhstan (Alexey Terekhov)

10:00 - 10:20 Discussion of Research Priorities in Ag. Monitoring

10:20 – 10:30 Poster Session Introduction – Olga Krankina

10:30 – 11:30 **Poster session** and *Coffee break*

Presenters are requested to remain by their posters 10:45-11:30

11:30 – 13:30 **Plenary session 5: Regional applications in support of monitoring and assessment of land cover, land use, and disturbances.**

Chair – Igor Savin

11:30 – 11:50 Post-processing techniques for active fire products (Vladimir Ermakov, Georgy Potapov).

11:50 – 12:10 Fire fighting in conservation areas: from remote sensing analysis to rapid response (an example from Greenpeace Russia; Anna Komarova)

12:10 – 12:30 Agroclimatic potential in southern Siberia in a warming climate of the 21 century (Nadezhda Chebakova)

12:30 – 12:50 Dynamics of Central Russia forest stands under recent climate change conditions (Alexander Maslov)

12:50 – 13:10 Global-Local monitoring of climate-weather conditions for renewable energy (Igor Tyukhov)

13:10 – 13:30 Questions and discussion

13:30 – 14:30 *Lunch (not provided)*

14:30 – 17:30 Field excursion (Bus). Field trip to visit abandoned agricultural lands and sites with spruce dieback (consequences of the draught of 2010).

19.30 – 22:00 Banquet (Sponsored by ScanEx) in cafe “Sportivni ostrov”

Day 5 June 21 (Thursday)

9:00 – 11:00 **Plenary session 6: Ecosystems stress and disturbances during extreme weather events**

Chair: Amber Soja

- 9:00 – 9:20 The influence of climate and weather on high-impact fires in Russia and resultant changes in ecosystems (Amber Soja)
- 9:20 – 9:40 Influence of large-scale circumpolar atmospheric circulation patterns on distribution of severe fire outbreaks in Eurasia (Susan Conard)
- 9:40 – 10:00 Effects of recent climate fluctuation on ecosystems of Northern Eurasia: Remote sensing estimations (Vladimir Elsakov)
- 10:00 – 10:20 Land Surface Anomalies Preceding the 2010 Russian Heat Wave and a Link to the North Atlantic Oscillation (Geoffrey Henebry)
- 10:20 – 10:40 Impacts of global climate change and social economic development on land use and land cover change and their consequences of biogeochemical and water cycling in northern Eurasia (Qianlai Zhuang)

10:40 – 11:00 Questions and discussion

11:00 – 11:20 *Coffee break*

11:20 – 13:30 **Plenary session 7: Satellite fire monitoring**

Chair: Luigi Boschetti

- 11:20 – 11:50 Global Burned Area Mapping: the ESA fire_cci project (Emilio Chuvieco)
- 11:50 – 12:10 Global Burned Area Mapping: MODIS and beyond (Luigi Boschetti)
- 12:10 – 12:30 Burned Area Mapping and Post-Fire Monitoring Using the BFAST Trend Analysis Method (Ioannis Gitas, Greece)
- 12:30 – 12:50 The role of satellite observations in assessing impacts of wildfire occurrence on respiratory health of population (Tatiana Loboda)
- 12:50 – 13:10 Fires and floods of 2010 in Kazakhstan (Oleg Arkhipkin)
- 13:10 – 13:30 Discussion of satellite fire monitoring
- 13:30 – 15:00 *Lunch (not provided). Time for side meetings and preparation for general discussion*

Session Chairs to meet and develop a 10-minute science synthesis presentation, Coordinator Chris Justice

15:00 – 17:00 **Discussion Session: Regional research priorities and future plans for GOFCC-GOLD Networks in Northern Eurasia**

Moderator: Olga Krankina, Rapporteurs T. Loboda and E. Kurbanov

- 15:00 – 15:10 Synthesis of the Science Sessions (Chris Justice)
- 15:10 – 16:30 General Discussion
- 16:30 – 16:40 Publication plans and next steps, Eldar Kurbanov
- 16:40 - 17:00 Closing of the meeting (Garik Gutman)

19:20 - Train departure to Moscow

Day 6 June 22 (Friday)

Training sessions for regional participants and young scientists at Volga Tech facilities:

Mapping land cover, land use, and disturbances from a suite of remotely-sensed data sources.

Chair and coordinator: Tatiana Loboda

8:30 – 10:30 Analyzing spectral information in satellite imagery for land cover classification
Tatiana Loboda (UMD), Olga Krankina (OSU)

10:30 – 10:45 *Coffee break*

10:45 – 13:00 A simple method to map soy and corn crops using Rapid Eye, Landsat and MODIS data. *Peter Potapov (UMD)*

13:00 – 14:00 *Lunch not provided*

14:00 – 16:00 Fire monitoring from a suite of coarse and moderate resolution sensors
Vladimir Ermakov, Georgy Potapov (ScanEx)

16:00 – 16:15 *Coffee break*

16:15 – 16:45 Present and future availability of remotely-sensed data and concluding remarks for the training session *Tatiana Loboda (UMD)*

16:45 - 17:30 Presentation of Certificates for completed training
Tatiana Loboda, Olga Krankina, Eldar Kurbanov.

19.20 Train departure to Moscow

POSTERS

1. Solar drying and space monitoring of weather (A. Tilov)
2. Use of remote sensing in research of hydromorphological processes in Russain river deltas (Denis Aibulatov)
3. State of rivers network in Republic Mari El in the conditions of the anomalous hot summer of 2010 (Aleksey Ivanov)
4. National-scale forest cover and change assessment using the Landsat data archive (Peter Potapov)
5. Crop yield forecast for Northern Kazakhstan cereals on base of MOD11A2 Day (LST) (Alexey Terekhov)
6. Drought impact on several types of agriculture vegetation (Dmitri Plotnikov)
7. Crop rotation as a factor of crop suffering in drought period (E. Kiriyanova)
8. Estimation of forest invasion on the abandoned agricultural lands in Mari El with the use of satellite images (Kurbanov et. al.) Energy and mass exchange and productivity of major ecosystems in Central Siberia from the eddy-covariance measurements. Tchebakova NM, Vaganov EA, Verkhovets SV, Vygodskaya NN, Belelli L, Dolman AJ, and E-D Schulze
9. Impact of anomalous natural conditions on the state of protective forest stands in agro landscapes of Republic Tatarstan (A.T. Sabirov)
10. Influence of natural conditions on the radial increment of pine and spruce (S. Shirinkin)
11. Forest nurseries of PredUral region: problems of growing conifer seedlings (R. Sokolov)
12. Correction of current increment of forest inventory indices on stock in the conditions of Global Climate Change (Maxim Ustinov)
13. Impact of draught 2010 on the reforestation of pine stands in Penza steppe zone (N. Demicheva)
14. Burned area mapping using very high resolution IKONOS imagery and support vector machines". (E. Dragozi, I.Z. Gitas, D.G. Stavrakoudis, J.B. Theocharis, Aristotle University of Thessaloniki)
15. Monitoring of forest fires in Chuvashia and Mari-El (Oleg Vorobyov)
16. Fighting forest fires of 2010 in Mari El (Photo, Irina Golovenkina)
17. Climate-, Weather- and Fire-Induced Change in the Republic of Tyva (A. Soja et al.)
18. Biomass Burning Plume Injection Height Estimates using CALIOP, MODIS and the NASA Langley Trajectory Model. (A. Soja, D. Fairlie, D. Westberg, R. Kahn, G. Pouliot and J. Szykman)
19. Fire regimes in boreal forests of Siberia (Galina Ivanova)
20. Siberian fire emission estimates and an evaluation of uncertainties (Elena Kukavskaya)
21. Impact of solar activity on the forest fires in Mari El (T. Katkova)
22. Satellite assessment of fire impact on forest ecosystems in European Russia (F. Sticenko)
23. Monitoring of erosion processes with the use of archival remote sensing data (Ilmir Nugmanov)