

South Central & Eastern European Regional Information Network (SCERIN)

SCERIN-1 Meeting

"Monitoring Land Cover Changes & Forest Condition"

SCERIN Network Coordinators

Petya Campbell (JCET/UMBC & GSFC/NASA)

Jana Albrechtova, Lucie Kupkova and Premysl Stych (Charles University in Prague), Regional Contacts & SCERIN-1 HOSTS

Sponsors: GOFC-GOLD, START, NASA, ESA, CU & **YOU**



17-18 June 2013, Faculty of Science, Charles University, Prague, Czech Republic

Presentation Outline

- Network background
- The SEERIN formulation workshop
 - Outcomes, thematic areas, projects, need of working groups
- SCERIN-1 meeting, trip and training
 - Goals
 - Agenda

Network Goals

The goal of SCERIN is to contribute for improving the use, quality and availability of remote-sensing observations and supporting data, as well as to promote the production and provision of Earth System observations in South Central & Eastern Europe (SCE).

We plan to work together with the regional forest and land management agencies to ensure continuous, high quality observations for operational and management applications, facilitating feasible and sustainable natural resources management practices.

Regional Focus



Unifying Regional Specifics & Issues

- The extreme diversity in land forms and environmental conditions has produced unique species richness, highly sensitive & vulnerable to the global climatic changes
- Most of the region has been under extensive land use for a very long period. This renders dysfunctional many of the natural processes of adaptation, but opens the possibility/responsibility of applying planned, large-scale measures to support natural processes by human interference
- The region is undergoing active LU changes & is currently presenting a major source of uncertainty in many global-scale estimates, e. g. estimates of land-cover, carbon storage & flux dynamics
- In addition, the region plays an important role in food production and industry, at the same time the economical and social restructuring following the political transition is complicating considerably the socioeconomic consequences of land cover change

SCERIN website

<http://www.fao.org/gtos/gofc-gold/net-SEERIN.html>

SCERIN-1 Meeting website

<http://csebr.cz/scerin/index.html>

Collaborative Work-Space for:

- Working documents, Presentations, Publications
- Data exchange

? Drop box, Google Drive, Cloud , Others?



South Eastern European Regional Information Network (SEERIN)

Formulation Workshop

Petya Campbell and Antoaneta Yotova, Coordinators
JCET/UMBC & GSFC/NASA and NIMH/BAS

Hosts: NIMH/BAS, Sofia, Bulgaria and Prof. Georgy Kortchev

Sponsors: GOFC-GOLD & START

17 April 2012, Conference Center of Park Hotel Moskva, Sofia, Bulgaria

Formulation Workshop GOALS

- 1) Achieve a consensus if the regional network is *needed*
if yes, then
 - 2) Identify common *goals, participants* & outline specific regional/national research & application objectives
if yes, then
 - 3) Outline *next steps*: Outline the research projects, applications and capacity building initiatives to be conducted by the network
and
 - 4) Formulate the next venue - discuss objectives, duration, participants, timing, *host & location*
- * Outline the specific research, applications and development needs in the SCE region to be targeted by the network.

Formulation Workshop

- **41 participants** - representatives from Bulgaria, Czech Republic, Germany, Poland, Romania, Slovakia, Switzerland (ENVIROGRIDS), the Netherlands (GOFC-GOLD LCPO), TFYR Macedonia, Turkey, USA
- Meeting report and presentations and materials: http://nofc.cfs.nrcan.gc.ca/gofc-gold/SEERIN_Webpage/



- 1) The participants of the SEERIN Formulation Workshop expressed **strong interest in forming a regional network**
- 2) The network should **include both South Eastern and Central Europe**
- 3) The network name to include Central Europe. The new name was accepted with consensus to be: **South Central European Regional Information Network (SCERIN)**
- 4) Network participants: The network includes, but is not limited to the following countries - **Bulgaria, Turkey, Macedonia, Romania, Ukraine, Slovakia, Czech Republic and Poland.**
- 5) **SCERIN objectives:**
 - **Characterize (map) the specific Land Cover types and diversity in the region**
 - **Monitor vegetation productivity and condition**
 - **Identify drivers of land cover and vegetation productivity changes**

Detection and monitoring of LU and LCC

Impacts of Land-Use and Land-Cover Change on the Regional, National and Local Management, specifically

- Forest and Water Resource Management
- Biodiversity and species preservation
- Sustainable Development and Natural Resource Management
- Global and Regional Climate Change

Assessment of the Human Dimensions of Land-Use and Land-Cover Change

Formulation Workshop Outcomes

Research Needs - Focus Groups

- Forest change processes and driving forces (natural/environmental & social)
 - Effects of drought, stress factors (air pollution, bark beetle) on vegetation
- Land Cover Changes
 - Urbanization processes and environmental impacts
 - Environmental consequences of construction (roads, hydropower dams construction)
 - Agricultural security
- Comparison/Validation for Standardization of high (Landsat) and low (MERIS & MODIS) resolution products - development of regionally-adapted versions
- Establishment of regional and local product **validation sites** (local specifics)
- Regional **spectral library** (characterize species spectral diversity)
- Common vs. local tools, approaches, methods

! Need to establish **SCERIN Focus Groups (FGs)** and identify **Joint PROJECTS!**

A herarchical approach to classify land product validation stages was adopted by CEOS through consensus of the LPV

Stage 1 Validation

Product accuracy is assessed from a small (typically < 30) set of locations and time periods by comparison with in-situ or other suitable reference data.

Stage 2 Validation

Product accuracy is estimated over a significant set of locations and time periods by comparison with reference in situ or other suitable reference data. Spatial and temporal consistency of the product and with similar products has been evaluated over globally representative locations and time periods.

Results are published in the peer-reviewed literature.

Uncertainties in the product and its associated structure are well quantified from comparison with reference in situ or other suitable reference data. Uncertainties are characterized in a statistically robust way over multiple locations and time periods representing global conditions.

Stage 3 Validation

Spatial and temporal consistency of the product and with similar products has been evaluated over globally representative locations and periods.

Results are published in the peer-reviewed literature.

Stage 4 Validation

Validation results for stage 3 are systematically updated when new product versions are released and as the time-series expands.

SCERIN-1 Meeting, Scientific Trip & Training, Prague

1. SCERIN-1 Meeting: 17-19 June 2013

“LCLUC Science in the SCERIN Region: Current Focus and Future Directions” (meeting)

2. Scientific Field Trip in coordination with IGU LUCC: 19 June 2013

„LCLUC in Sokolov Region in North-western Bohemia affected by mining activities“ (scientific trip)

3. Training in collaboration with ESA: 20-21 June 2013 “Classification methods in Land-Use/Land-Cover Change” (training)

collaboration between the existing networks in the region

IGU LUCC meeting will take place 20-22 June, 2013, Prague

„International Geographical Union LUCC working group meeting“

Charles University in Prague, Czech Republic



Goals & Objectives

SCERIN-1 meeting

- Overview of current land-cover and land-use change programs relevant to the research and applications in the SCE region;
- Inform about ongoing scientific efforts, considering the opportunities for collaboration and contribution from the SCERIN participants;
- Form Focus Groups (FGs) to resolve specific issues (actions) as requested by the SCERIN community; and
- Review the availability of satellite data, products, and approaches for land cover monitoring in South Central and Eastern Europe (SCE).

Working groups (Focus Groups, FGs) of participants, formed based on participant's interest and expertise, will be tasked to resolve the specific issues (action items) identified in the SCERIN discussions.

Research visit to the Sokolov region: introduce typical regional examples of land use change associated with open-cast mining, reclamation of mines and spoil banks.

Trans Atlantic Training (TAT): planned in coordination with the regional meeting of the International Geographical Union.

SCERIN-1 Agenda Outline

Opening, Background and Overviews

Session 1: Forest condition, disturbance & biomass [*Lucie Kupková/ Gregory Taff*]

Session 2: Land Cover Changes [*Levent Genc/ Andrej Halabuk*]

Session 3: SCERIN Special topics [*Géza Király/ Brice Mora*]

SCERIN Special topics - continued [*Vladimir Gancz/ Bogdan Zagajewski*]

Session 4: SCERIN Focus Groups (FGs) [*Olga Krankina / Petya Campbell*]

SCERIN-1 Reporting: Recommendations & Next venue

Informal Discussions --- Coffee Breaks, Lunch & Reception

SCERIN-1 Day 1, Monday, 17 June 2013

8:00 – 9:00 **Registration, Introductions & Meeting logistics**

- 9:00 Welcome remarks [*Jakub Langhammer, Vice Dean of Faculty of Sci., CU; Jana Albrechtova, CU*]
- 9:20 The NASA LCLUC program & GOFC-GOLD SCERIN [*Garik Gutman, NASA*]
- 9:40 The GOFC-GOLD networks [*Olga Krankina, OSU*]
- 10:00 The SCERIN network, focus groups, meeting goals & agenda [*Petya Campbell, UMBC & NASA/GSFC*]

10:20-10:40 **Break, Coffee/Water**

- 10:40 GOFC-GOLD implementation teams, GEO LCLCC [*Brice Mora, GOFC-GOLD, EU*]
- 11:00 Land use changes in Czechia evaluated by data from cadastral evidence (1845 - 1896 - 1948 - 1990 - 2010) [*Ivan Bičík, IGU LC/LUC, CZ*]
- 11:20 ESA Earth Observation program and results [*Francesco Sarti, ESA, EU - Italy*]
- 11:40 GEOSS Activities [*Jan Kolar, Faculty of Science, Charles University in Prague*]

12:00 Group Picture in front of the building of the Faculty of Science

12:15 – 13:00 **Lunch [room 371]**

SCERIN-1 Day 1, Monday, 17 June 2013

Session 1: Forest condition, disturbance & biomass [*Lucie Kupková / Gregory Taff*]

- 13:00 Assessment of forest decline and forest regeneration process from combined space/airborne data [*Frantisek Zemek, CzechGlobe*]
- 13:20 Remote sensing of forests and forest fires in Europe [*Lorenzo Busetto, JRC/EU*]
- 13:40 Monitoring Norway spruce forest conditions using hyperspectral data [*Jana Albrechtová, CU Prague & Petya Campbell, UMBC & NASA/GSFC*]
- 14:00 Vegetation mapping of the High Tatras and the Karkonosze Mts. using hyperspectral images and neural networks [*Bogdan Zagajewski, University of Warsaw/Poland*]
- 14:20 Legal and illegal clear cutting of forest detection on Landsat imagery: a case study in Romania [*Vladimir Gancz, Forest Research and Management Institute, Voluntary, Romania*]
- 14:40 **Questions & discussion**
- 15:00-15:30 **Break, Coffee/Water**

SCERIN-1 Day 1, Monday, 17 June 2013

Session 2: Land Cover Changes [*Levent Genc/Andrej Halabuk*]

15:30 GMES European Continental Mapping & Monitoring [*Lukáš Brodský, GISAT*]

15:45 Land Use and land Cover Change around Çanakkale (Dardanelles) Strait using Landsat Data: 1987-2011 [*Levent Genc, CSM University / Turkey*]

16:05 Land cover and land use change and its consequences: detection and simulation [*Katarzyna Ostapowicz / Poland*]

16:25 Hyperspectral projects for LCLUC in the post-mining area of the Sokolov Region [*Veronika Kopačková, Czech Geological Survey*]

16:40 Land use and land cover changes in the Carpathian Basin. Experiences in the vectorisation of the archive maps [*Géza Király / Hungary*]

17:00 Remote sensing in invasive plant ecology: Detection, monitoring and control of alien plant species [*Jana Müllerová, N. Ďurič, Petr Pyšek, Jan Pergl / Czech Republic*]

17:15 GEONETCAB project: GeoNetwork for Capacity Building, FP7 [*Lucie Kupková/Premysl Stych, CU*]

17:30 ***Questions & discussion***

SCERIN-1 Day 1, Monday, 17 June 2013

18:00 SCERIN-1 Day 1, Adjourn

Reception at the CU Botanical garden [Na Slupi 16, Prague; Hosted by the Faculty of Science, Charles University - Jana Albrechtova & colleagues]

- visit the garden & green houses of Charles University, Prague & informally get to know your SCERIN colleagues & our hosts
- open tropical greenhouses to relax with a music of the group 'TEMPERAMENT 430' playing Baroque and Renaissance music on original instruments
- snacks/water available out of the greenhouses



SCERIN-1 Day 2, Tuesday, 18 June 2013

8:30 – 9:00 Registration, coffee [Room 371]

Session 3: SCERIN Special topics *[Room 373, Géza Király/Brice Mora]*

8:45 Land cover and land cover change detection at national level - An example from Greece *[Ioannis Gitas /EU- Greece]*

9:00 Aerospace test sites on the territory of Bulgaria - state & prospects *[Lachezar Filchev, SRTI-BAS/Bulgaria]*

9:15 Land cover changes in river deltas of the Black Sea basin *[V. Starodubtsev, UKR]*

9:30 Monitoring of grassland management practices by using multitemporal classification of Landsat & Modis *[Andrej Halabuk, Institute of Landscape Ecology, Slovak Academy of Sciences, Nitra, Slovakia]*

9:45 High-Resolution Global Monitoring of Urban Settlements *[Mattia Marconcini / DLR, G]*

10:00 Urban Remote Sensing & Object-Based Image Analysis *[Levente Ronczyk]*

10:15 *Questions & discussion*

10:30-11:00 Break, Coffee/Water

Session 3: SCERIN Special topics - continued *[Vladimir Gancz/Bogdan Zagajewski]*

11:00 Using land surface phenologies for change analysis *[Geoffrey M. Henebry, GIScCE/SDSU]*

11:20 Reforestation in Central and Eastern Europe after the breakdown of socialism *[Gregory Taff, Norwegian Forestry Landscape Institute]*

11:40 Broad scale LCLUC in Eastern Europe: patterns, drivers and effects *[Catalina Muntenan, UW]*

12:00 *Questions & discussion*

12:00 – 13:00 Lunch

CEOS Working Group on Calibration and Validation Land Product Validation Subgroup

Focus Areas

✎ Biophysical

✎ Fire/Burn Area

✎ Land Cover

✎ LST/Emissivity

✎ Phenology

✎ Snow Cover

✎ Soil Moisture

✎ SurfRad/Albedo

A herarchical approach to classify land product validation stages was adopted by CEOS through consensus of the LPV

LAI; FPAR, FAPAR

Annual and Long term phenology in NDVI/EVI,

Active fires, Radiative power, Burned area