Panel Discussion

Sergey Bartalev: Russia
Tuomas Hame: Finland
Eva Konkoly-Gyuro: Hungary
Anu Reinart: Estonia
Premysl Stych: Czech Republic

Panel Discussion Notes

- Russia
  - Emphasis on Applications – Forest/Agric/Wetland Peatlands
  - Human actions -Logging/ Agricultural Change / Peat mining
  - Natural disturbance and climate variability and change
  - Large area analysis - Current emphasis on coarse resn data > mod resolution – new methods building on high volume data
  - Regional differences (field size/rates of change) - require different resolutions
  - Spatial and temporal trade off – daily observations needed to increase cloud free obs. (data fusion) - new systems needed daily 50m requirements – constellation concept being initiated – fine resolution presents need opportunity – heritage from AP's methods /algorithms
  - Multi-angle data underexploited – small community - bulk preprocessing might advance the sub discipline
  - Land Cover > increase thematic classes – forest type, species composition
  - Coarse resolution product validation limited by accuracy of the moderate resolution classification

Panel Discussion Notes

- Estonia
  - Size of country and resources and capacity issue
  - Infrastructure investment underway – increase quality of data and data collection systems
  - Within country collaboration – maximizing resources – looking to private public partnerships – looking for international cooperation

Panel Discussion Notes

- Hungary (eastern central Europe)
  - Water management (Carpathians plus lowlands) – severe flooding and drought combination – part anthropogenic and part climate causes – land cover is a critical component – clear cutting and run off – changing regional climate. Systematic time series of land cover change needed – water management support
  - Forest / Grassland transition + trees beyond the forest – succession and change e.g. SE Hungary climatic limit of forest steppe- theory of Xeric Forest limit
  - Urban development and sprawl – uncontrolled and needs attention in terms of LCLUC
  - Abandonment and intensification – arable and viticulture land – EU policy is influencing LUC – wheat production being substituted by biofuels
  - Focus research on LC Transitions – accounting for scale of phenomenon
  - Actions
    - Compatibility, Accessibility of Data
    - Repeatability of Assessments – accuracy / validation
    - Practical uses of data products by different sectors but also landscape ecol.
    - Harmonization of different data sets – Corine seen as limited use for sectoral applications
    - Scale optimize for different uses

Panel Discussion Notes

- Finland (plus more generic comments)
  - Technical
    - Imagery 10m+ pixel analysis – capability well known and explored – large area mapping remains a challenge – harmonized quality cost control – need for automated methods (high quality /harmonized products) validation needed - need fine resolution sampling - use of radar data – and integrating coarse resolution multi-temporal data (focus forest and agric lands) – sampling techniques need attention
    - Change monitoring – quantifying changes monitoring trends – issue of validation
    - Data Fusion – combining in-situ, airborne, UAV, optical and radar
    - Fine resolution data needs new image analysis methods
    - How to move forward in the combination of physical and empirical modeling
  - Applications
    - Need methods to support forest management planning – reduce degradation / carbon seq. – econ and env. Impact
    - Change – related to climate – treeline/heathland
    - EC soil sealing – impervious surfaces
  - Drivers for the research GMES
    - supporting with large research funding but restricting the research – focus on operative applications

Panel Discussion Notes

- Czech and Slovak
  - Global processes driving national changes
  - National data sets are out of date
  - Corinne is recent but limited in terms of spatial resolution for use in this region e.g. abandonment, urban sprawl and forest encroachment poorly represented
  - Limited support for distribution of available data
  - Inc. Forest Distrubance due to Natural events
- Actions
  - Greater use of Landsat and Spot at full resolution – use to build and enhance Corinne data sets
  - Emphasis on dynamic LULC types
  - Fusion of data – prep for Sentinels
  - Investigate driving forces of change. Statistical and archived LU data – historical analysis feasible
  - Increased awareness of the role of EO with State Agencies and University Students– and possibilities
  - Investigate new data sources – Lidar / Radar
  - ESA seen as an opportunity to expand EO activities in Czech Republic

Plenary Discussion Notes

- Are there common regional issues which would benefit from collaboration within the region and with cooperators outside the region
- Are there regional scientists which would be interested in collaborating on global data set validation
- Are there regional data sets which needed for the region that aren't currently available
- Could regional products be developed which accurately quantify rates of agricultural abandonment, forest expansion, forest degradation, urbanization.
- What defines 'the region' – EU is already addressing EU Mapping and Monitoring – launching calls for tender next year – the contents are TBD (Afforestation and Deforestation will be most likely addressed)
- Benefits in having a harmonized series of products – which are comparable in terms of changes in land cover that are taking place in the region
- Real need for finer classifications (beyond forest extent and Corinne) – agricultural types, wetlands.
- Can NLCD provide some lessons learned – coordination would be needed re. legend and resolution
- Is this region positioning itself for the emerging carbon markets – Ukraine example (abandonment and carbon sequestration potential – large potential for carbon storage).
- Cross border mapping and monitoring needed beyond EU boundaries in terms of biodiversity.
- Crop production and food supply – key regions Russia and Ukraine – limited availability of data to address these issues
- Central Russia – has similar problems re. land abandonment – also lack of stakeholder interest in scientific results – more attention needed to understanding and meeting stakeholder needs. Interest in providing data for validation – good data are available. Offer to hold a workshop in next couple of years on fires, post –Kyoto agreements etc
- Methods exist to harmonize national maps across the region – and there would be benefits in harmonized products.
- This is quite a heterogeneous community – fine resolution data provided on a grid basis would certainly benefit the community
- Meteorological community is looking at a coarse r scale – validation data are needed – statistical approach – ground measurements of albedo, land cover type
- Slovakia – small land parcels >fine resolution data – especially for Agric. Forestry issue is Spruceland decline 10m (SPOT) data appear to provide the optimum product – free data would help
- EU land cover – binary schemes the focus for the future, grasslands built up areas
- Concern about a balance between different ecosystem services not just carbon trading e.g. flood management.
- Need to stress that well known products which are unfinished need more work – e.g. Landsat 7 global mosaics (GLS) to support regional monitoring – a lot of areas in Eastern Siberia which are permanently cloudy – 50% of Landsat data in the USGS archive - need to complete the mosaics – problems associated with Georeferencing – too large an error for users in E. Siberia – improvements needed.
- Potential common topic – afforestation – technical issues associated with addressing this topic - data and methods over the range of spatial scales at which this is occurring – quantify the phase of afforestation (age/height) different rates of growth – is there a role for hyperspectral and lidar data – demand for management responses
- Corinne - nice system good framework – what can the science community suggest to improve the product - as the next generation of products are developed
- What are the classes that are needed from fine resolution data ? - broad classes may be sufficient for certain problems – perhaps its more important to characterize land cover (for example in terms of biomass) rather than classify a continuum

Plenary Discussion Notes

- Move toward land surface parameterization – need a physical basis for deriving these
- Corinne land cover – more or less correctly done but not much interest from the authorities and public – can this be stimulated – need to move beyond profit motive.
- Problem that different sectors have more specific needs beyond Corinne. Nature 2000 similarly.
- Historical Landsat scenes available for this region are held by Eurimage – tape degradation is happening unrecoverable data from Fiumicino and Kiruna from the 1980's – ESA could send data to USGS for stewardship (could be looked into) – as a result Eastern Europe will have some gaps in land use record
- Need more information on land use (not just land cover)
- Need temporal high resolution for land use
- More involvement of the end users needed to define products to meet specific needs – e.g. the nature protection community would like high spatial and temporal resolution data as maps – they are in need of being connected to the data infrastructure.
- Land cover modification more pervasive than change - e.g. forest biomass change, structure etc – do we have the methods for this
- Agricultural production – is this related to management practices (e.g. fertilizer application) or climate – merging of satellite and climate data
- Human dimensions perspective – conceptual framework for land abandonment – guidance from interpretative tasks – tomorrows presentations and discussion
- Surface parameterization, physical basis for data fusion – theoretical underpinning for data fusion is missing - explanation of how different parameters change with scale
- Carbon Trading also forest product use driving demand for forest products - discussion with economists needed
- Post Kyoto – concept of developing regional policies to address climate change – if this direction is taken then this community would be important in responding technically – it would be good to think through which data and resulting information could be used for policy - how can our results be used to address regional problems

Primary Workshop Deliberations

Research

- Continued basic research on remote sensing science
  - forest structure, condition and degradation, peatlands/wetlands, agriculture production
  - data fusion, new data sources (radar, Lidar), multi-angle data, automated procedures for fine resolution
  - Next generation systems
- Regional Forest Change Monitoring – enabling regional science
  - harmonized change product and validated across the region
  - clear cut, logging, disturbances – fire, insects inc. extreme events, fragmentation (scale and classes w. regional to local relevance)
  - climate – tree limit,
- Agricultural Abandonment / Intensification
  - Pattern to process, "drivers" – enhanced social science component building on the existing science
- Role of National/International Policies on LU Change
- Impacts of LU Changes – carbon, water, economies, environment
- *Urban expansion – impervious surfaces, impact on LU (recognized but not really discussed)*
- Areas for further consideration:
  - Difference between EU/non-EU states (extent of area, depopulation, permanence, reporting, impact)
  - Different National Environments and Conditions (econ, policy, cultural, tenure, climate, soil fertility etc)
  - Historical data availability e.g. non-USGS Landsat archive
  - Fine resolution data availability for science

Education and Outreach

- See Previous List from Greg

- Information Requirements, Outreach and Relevance of Research and Products/findings to State and Local Govt