



Forest Treasures of the Carpathians

Towards a Carpathian-wide Forest Information System

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- **Background**
- **Implementation so far**
- **Achievements**
- **Gaps**
- **Road map**

Carpathian Convention - EEA

Partnership Agreement and Work Plan (signed in July 2014)

The key objective of the cooperation is to support CC in:

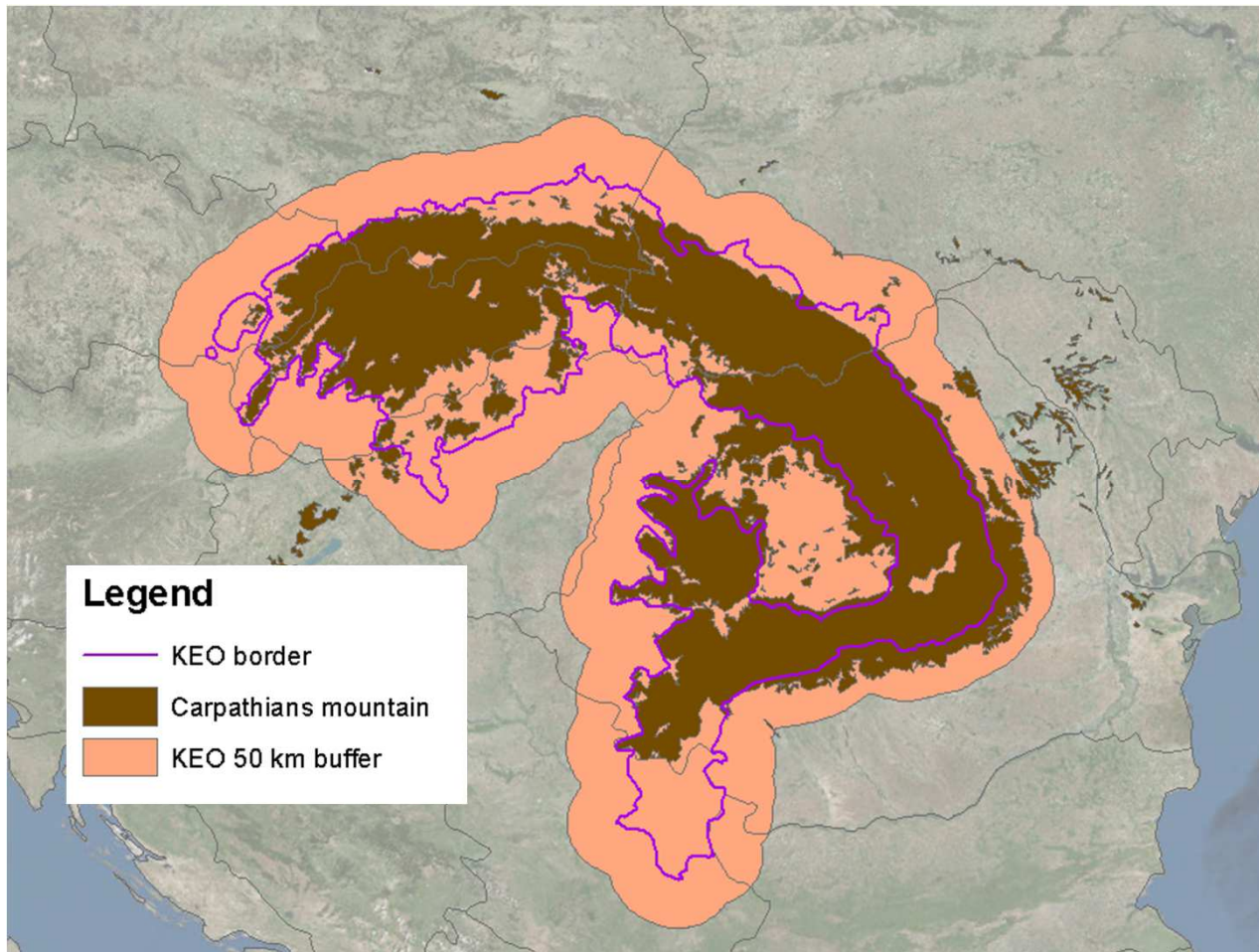
- establishing framework for **regular environmental observation and assessment in the Carpathians** so that it may be interoperable with the European level,
- the **development of specific indicators on forests for the Carpathian area**, harmonized with the already existing indicators for other mountain regions.
- **Enhancing the work on environmental information and reporting in the Carpathians**
- The implementation of the new **EU Forest Strategy in the Carpathian Area** and the contribution to the related Forest Information System of Europe.

Implementation & Achievements - 2014

- Spatial definition and delimitation of boundaries
- Developing Four Activities:
 - a) Integrating LULC spatial info. focused on FOREST
 - b) identifying datasets & indicators on sustainable forest management
 - c) application of virgin forest selection criteria
 - d) realization of virgin forest inventory

Definition and delimitation of boundaries

Carpathian Convention space



50 km buffer surrounding
the KEO limits
(2010 EEA mountain report)

(Carpathian Environmental
Outlook)

*Source: <http://www.grid.unep.ch/activities/assessment/KEO/index.php>

Slide 5

Integrating LULC spatial information

Harmonised datasets from satellite imagery – focus on forests

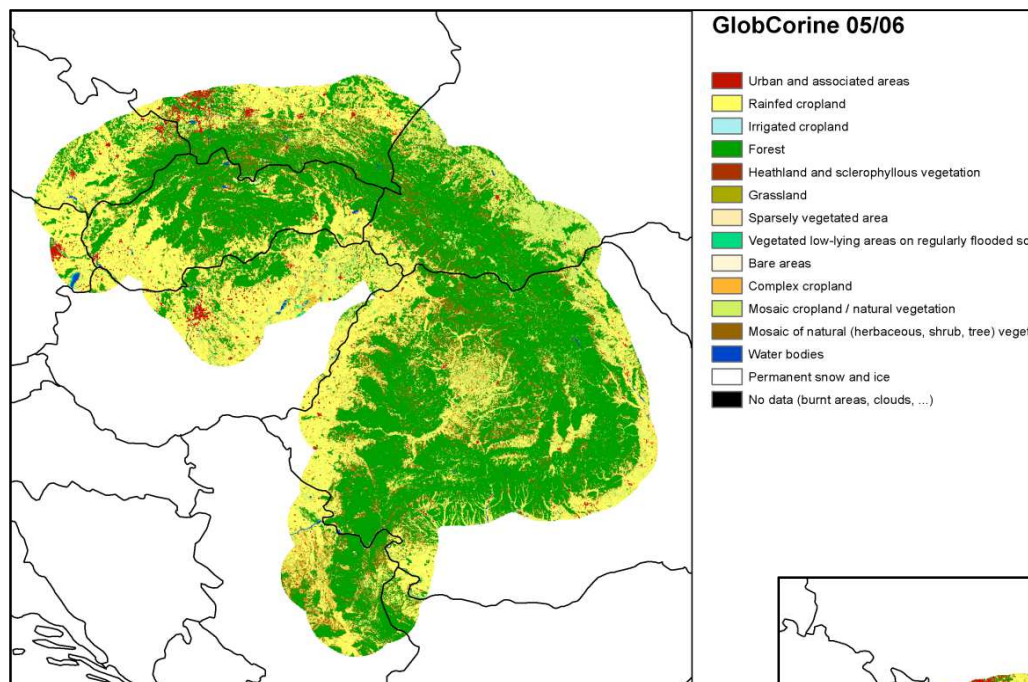
Data name	Source	Function in the project	Description
Glob Corine LULC	ESA	Support forest classification task: distribution of one general forest class. Good resolution (300m)	14 unique land cover classes. Reference year 2005 and 2009.
Modis LC	USGS - NASA	Support forest classification task: distribution of 4 different forest classes on homogeneous group and one of mixed forest. Good resolution (500m) .	17 unique classes. Reference year 2001 and 2008.
Glob LC	ESA	Support forest classification task: distribution of 6 forest class typologies on homogeneous groups. Good resolution (300m)	22 unique land cover classes including 6 on forest typologies. Reference year 2005 and 2009.
AVHRR Tree Cover Continuous Fields (Advanced very high res. radiometer)	University of Maryland	Support forest classification task: provide helpful information on forest distribution, with one aggregate class and with homogeneous classes. This dataset also represents leaf longevity (evergreen and deciduous) and estimation on leaf type (broadleaf and needle-leaf). 1km resolution.	Indicate the tree coverage in % for forest general class and for four forest types (Evergreen, broadleaf, deciduous and needle-leaf). Reference year 2000.



- A general overview of the area, distribution of different LC classes, including a detailed information about main forest classes.



- The course resolution does not allow to work in a precise scale.
- Some data are outdated.

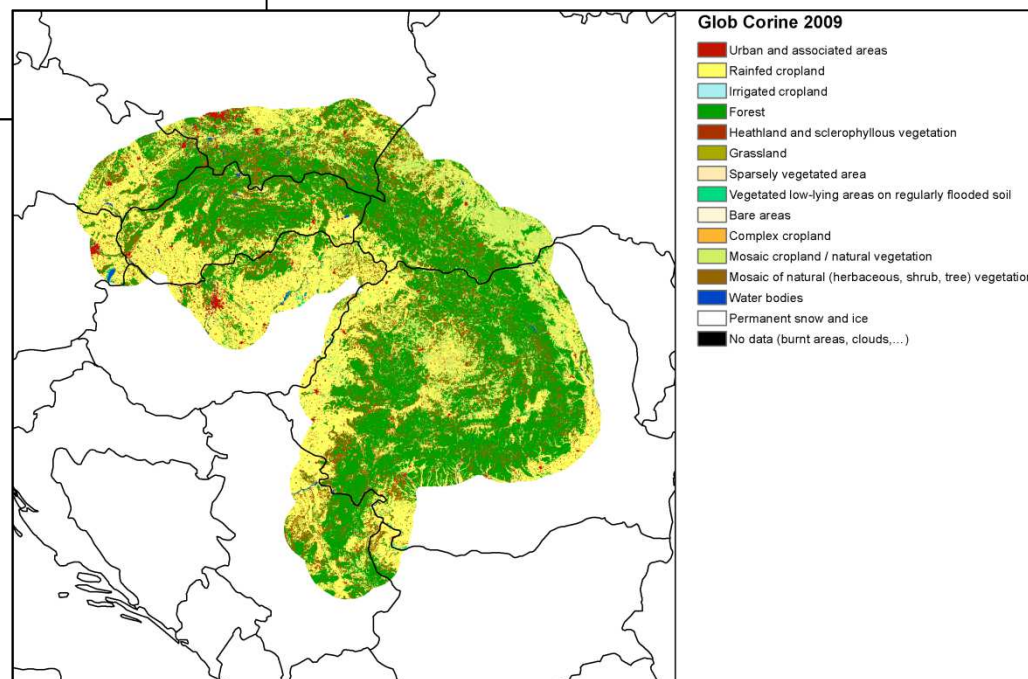


Source: ESA

Sensor: MODIS

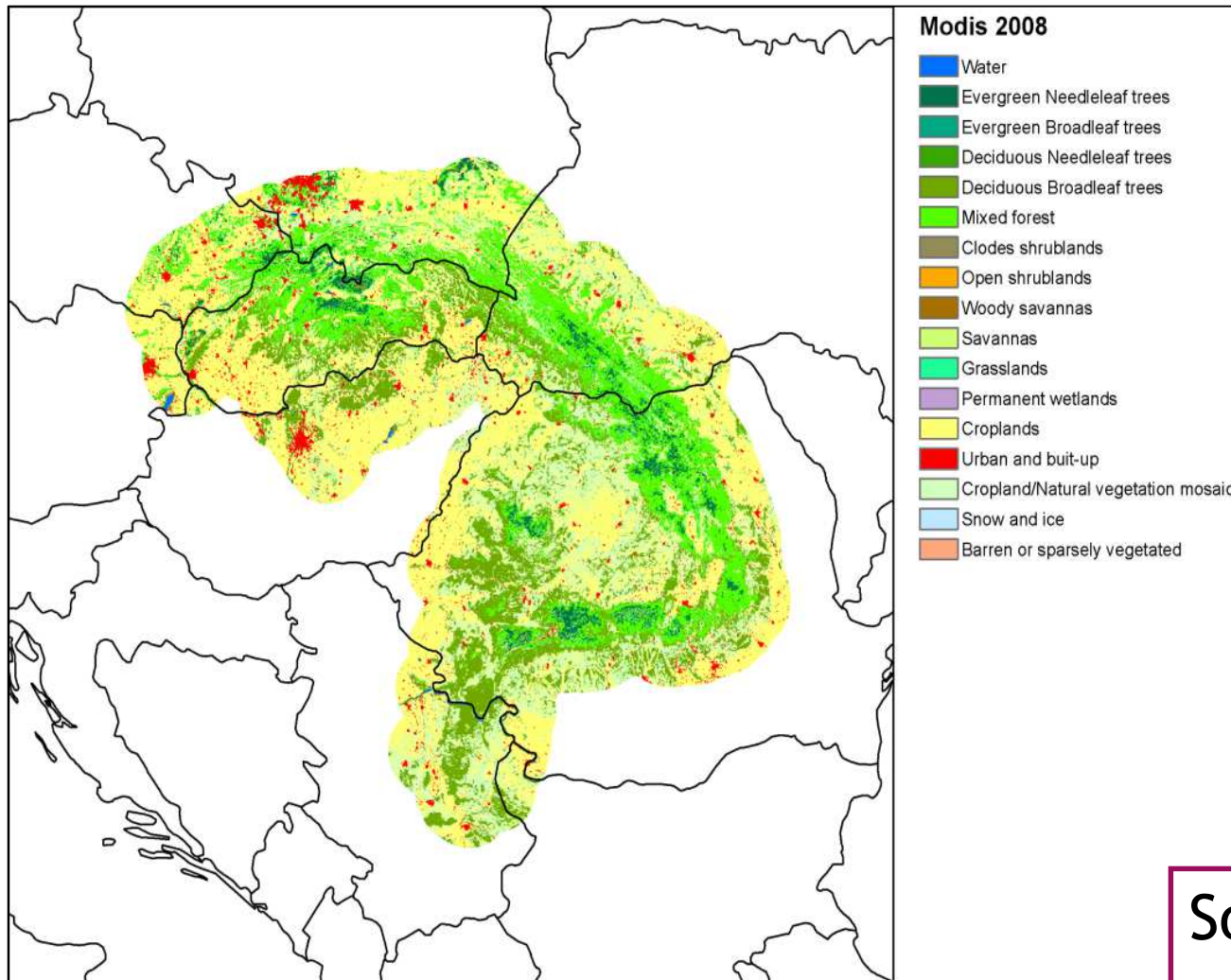
Spatial res.: 300 m

Temp. res.: 2005 - 2009



1 forest class

MODIS Land Cover Type product



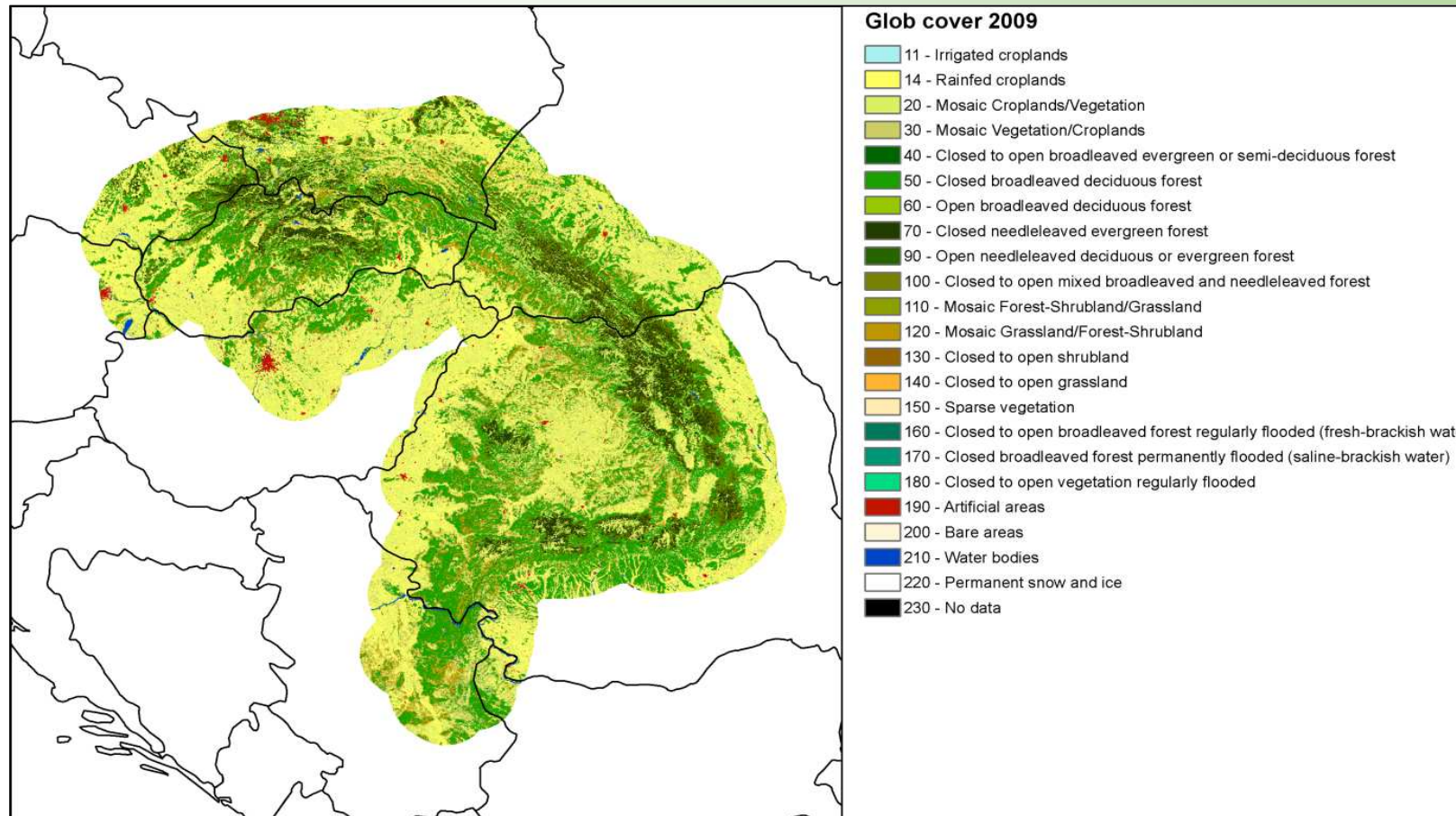
5 forest classes

Source: USGS - NASA

Sensor: MODIS

Spatial res.: 500 m

Temp. res.: 2008 *Slide 8*



Source: ESA, JRC, EEA, FAO, UNEP, GOFC-GOLD, IGBP

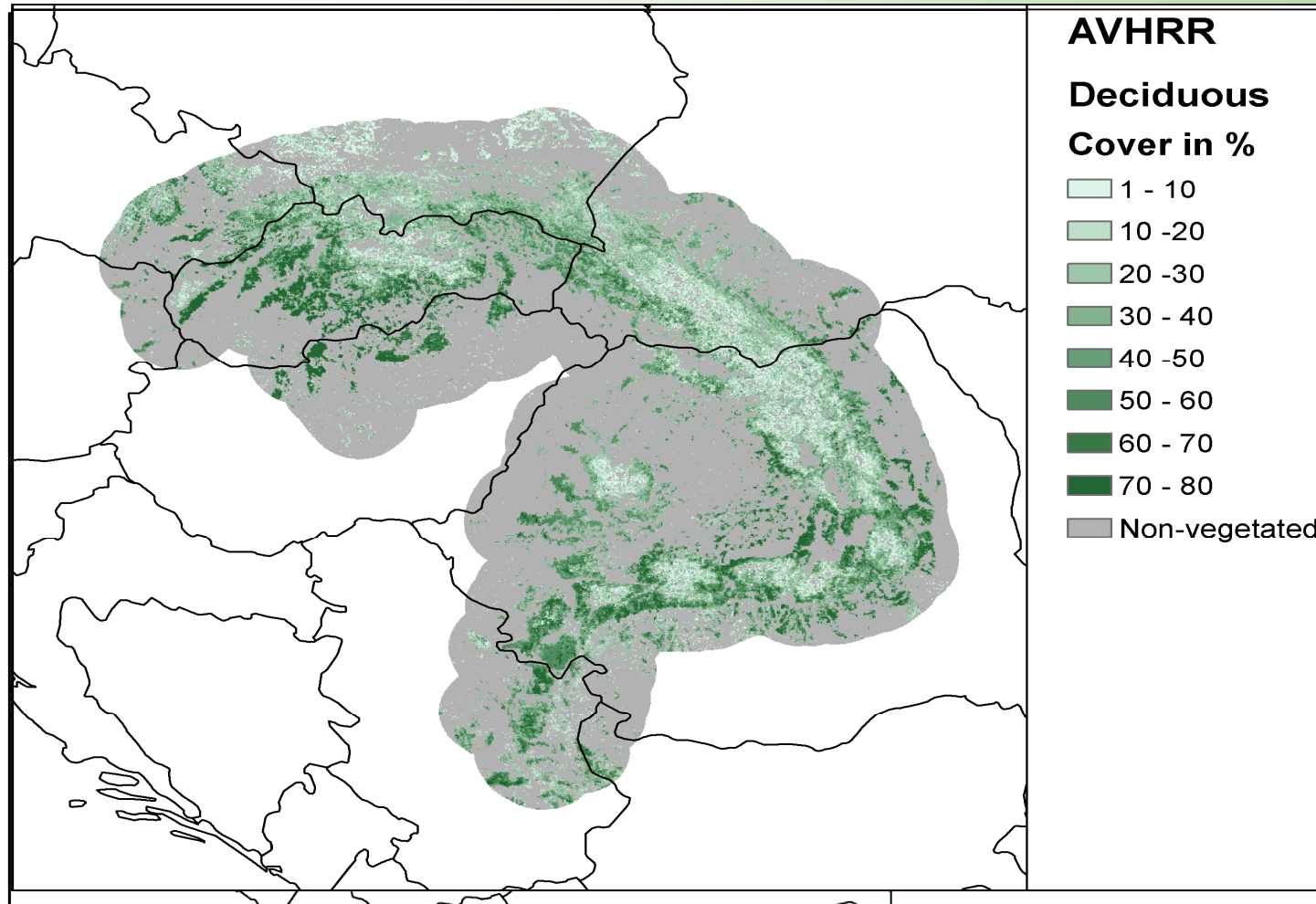
Sensor: MODIS

Spatial res.: 300 m

Temp. res.: 2005 - 2009

6 forest classes

AVHRR continuous Tree Cover Fields



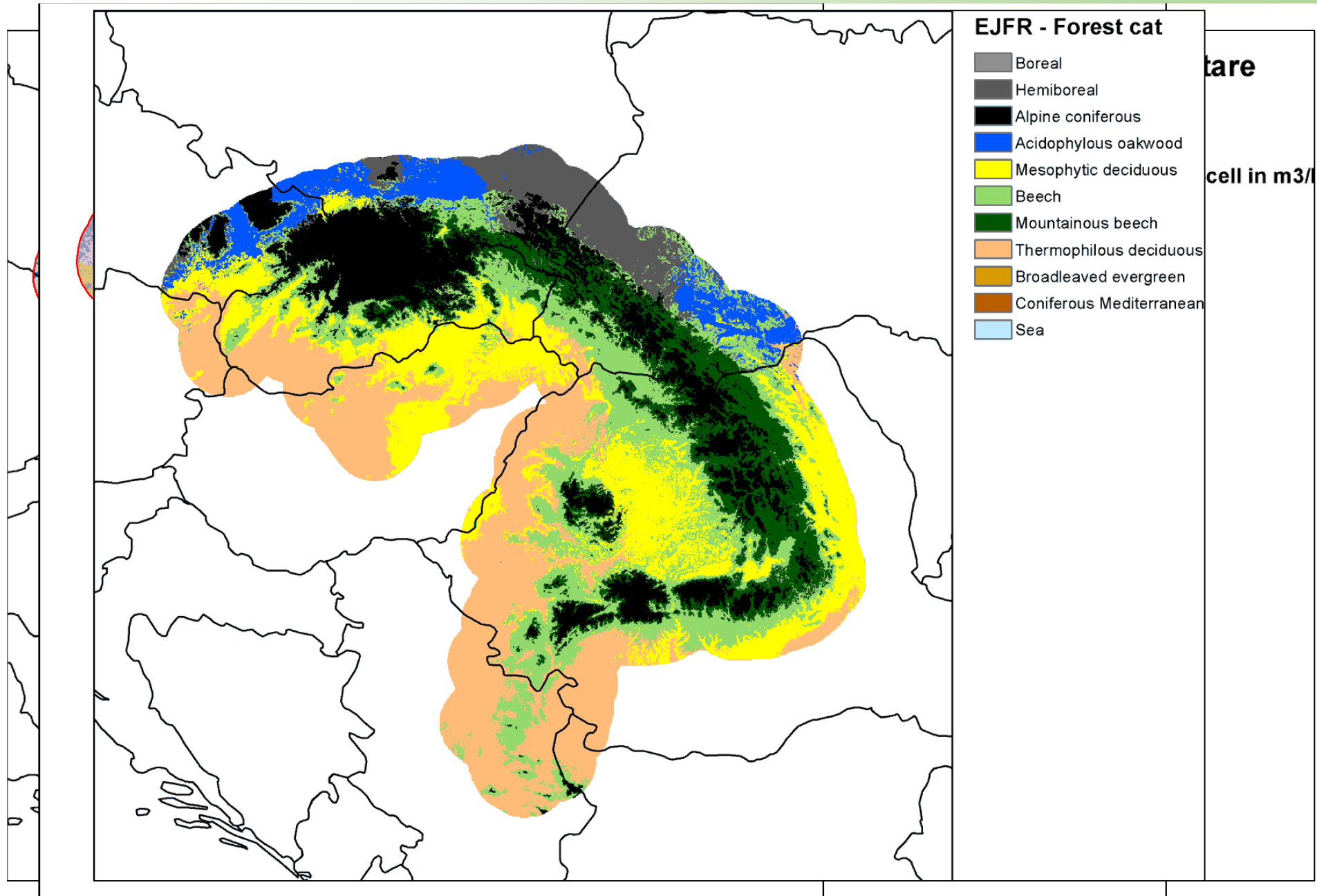
Source: Univ. of Maryland
Spatial res.: 1 km
Temp. res.: 2000

% tree cover
% cover - leaf longevity (evergr.& decid.)
% cover - leaf type (broad & needle)

Datasets & indicators on sustainable forest management

Data name	Source	Function in the project	Description
Growing stock volume	Gallaun et al.	Identification of forest resources / biomass distribution. In the specific localization of mature forest areas and is an important proxy for health of biodiversity. Good resolution (500m).	Indicator of biomass quantity distribution and carbon stock. Floating values from 0 to 300. Reference year 2000.
Forest distribution	EUFORGEN	Identification of forest resources. This database allows the identification of potential species' coverage area.	Species distribution in 32 shape file. One per each species. Ref year 2012.
Tree species maps for EU	EFI/Alterra	Identification of forest resources. This database allows the calculation of forest density estimation of 15 single species. It is also providing the delimitation area where each species is dominant. 1km resolution.	Indicate the presence in % of species' group (e.g. Quercus misc) and single species (e.g. Pinus sylvestris). Reference year 2011
Forest connectivity	JRC/ GUIDOS	It indicates the core forests and the interaction between forest patches assigning a degree of connectivity / fragmentation in forests 25 km resolution	Detection of connecting structures, distinction of external versus internal background (detection of holes), detection of deviations from a pre-defined thickness, Ref year 2006
Landscape fragmentation indicator	EEA	It indicates the level of fragmentation at the landscape level based on transport and regional planning 1km resolution.	Fragmentation based on transport networks Ref year 2009
Imperviousness indicator	Copernicus	It provides a spatial distribution of all artificially sealed areas, including the level of sealing of the soil per area unit. 20 m resolution	The level of sealed soil is produced using an automatic derivation algorithm based on calibrated NDVI. Ref years 2006 -2009 -2012

Indicators on sustainable forest management



Indicators on sustainable forest management



- Several European indicators were identified.
- High relevance to assess sustainability.



- Spatial gaps for Ukraine and Serbia,
- Additional datasets need to be identified,
- Indicators need to be recalculated since the coverage area is restricted to EU countries.
- Combined indicators to be calculated & further validated by local experts

- c) Application of the common Criteria for definition of Virgin Forests
- c) Realization of a “Carpathian Inventory on Virgin Forests “

Virgin, natural, primeral and protected forests

Data name	Source	Function in the project
Intact Forest Landscape.	Greenpeace, WWF,...	Indicates an unbroken expanse of forest ecosystem, showing no signs of human activity. Reference year 2000. (Annex 1 DB.6)
Primeval Beech Forest of the Carpathians.	EUFORGEN	They contain an invaluable genetic reservoir of beech and many species associated and dependent on these forest habitats. (Annex 1 DB.7)
Carpathian Virgin Forests.	Research outcomes of Barton Zsolt.	This database contains fragments of virgin forest in Carpathian area identified by the publication of (Annex 1 DB.11)
World Database of Protected Areas.	WCMC	This global database includes the limits of several protected areas, including also the "Primeval Beech Forest" described above. (Annex1 DB.9)
Dominant Species	EFI	shows the distribution of the 15 dominant species of KEO area. (Annex1 DB.8)
Potential natural vegetation	EuroVegMap: Scale: 1:2,5 Mio	
Virgin Forest of Romania,	PIN-MATRA	database with some results of PIN-MATRA project, but the tabular info. Is partial



- Several databases identified at global/regional levels,
- Some research and project results at Carpathian level.



- Lack of hamonization between data sources,
- Not fully in line with carpathians protocol specifics/definitions,
- **Need for a better understanding of the field work done and results available for their integration**

Datasets & indicators on virgin forests



Top down vs. (2014) Vs. Bottom up (2015)

- **Fine-scale LULC information**
- **Criteria to identify virgin areas to adopt?**
 - To clarify with the **WG on forests** - primeval forests, natural forests, virgin forests, intact forests, old-growth forests.
- **Available datasets related to virgin forests,**
 - we will need to fill the non-MS countries and harmonize them into a common database.
 - Need to fill the partial datasets collected from the PIN-MATRA project.
- **Build on work done by EEA on beech forests (*Fagus sylvatica*), across a variety of environments.**
 - proposed methodology on HNV forest area indicator and methodology on forest naturalness indicators.

Proposed Roadmap

1. Validate and improve datasets on LULC focused on forests:

- Validate the regional data / Feed in national- local data,

2. Focus on virgin/primeval vs. natural forests:

- Make use of respective definitions in the CC Forest Protocol;
- Collect and validate information from **national sources**, using already available data from **national inventories**,
- Identify and include **national criteria** for classifying forests and in particular virgin forests and related inventory;
- Compile, compare and analyze this information to support the definition of the Carpathian approach / criteria;

3. prepare an inventory on Carpathian virgin forests:

- To be compared with other interesting sources (**such as Barton Zsolt's "historical" picture**);
- Further analysis / cross-examining with other sources/layers;
- Analysis of primeval beech forests and UNESCO sites - (**based on national sources**).

High need for:

- **setting and agreeing on one definition of virgin forests,**
- **a better understanding of local / national data availability (cross-check with national experts), state, and accesibility;**
- **a better understanding of the results of regional projects and field work available (PIN-MATRA, WWF field results,...);**
- **Ensure the way of data sharing process with all parties/ stakeholders.**

Technical meeting (early 2015) to better coordinate our cooperation activity on forests under the framework of our CC WG on Sustainable Forest Management.

<http://sia.eionet.europa.eu>

Muchas gracias Moltes gràcies Eskerrik Asko Muitas gracias

* * * * *

Dziękuję Merci beaucoup Много Благодаря Obrigado

Paldies Ευχαριστώ Tack Thank you very much Dank u

Hvala Köszönöm Dekuj Multumesc Dakujem Danke Takk

Aitäh Grazi Kiitos Grazie Dêkuji Спасібо شُكْرًا

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