

# **GMES User Forum Land services**

Elise Järvenpää, Yrjö Sucksdorff, Pekka Härmä  
SYKE/GEO

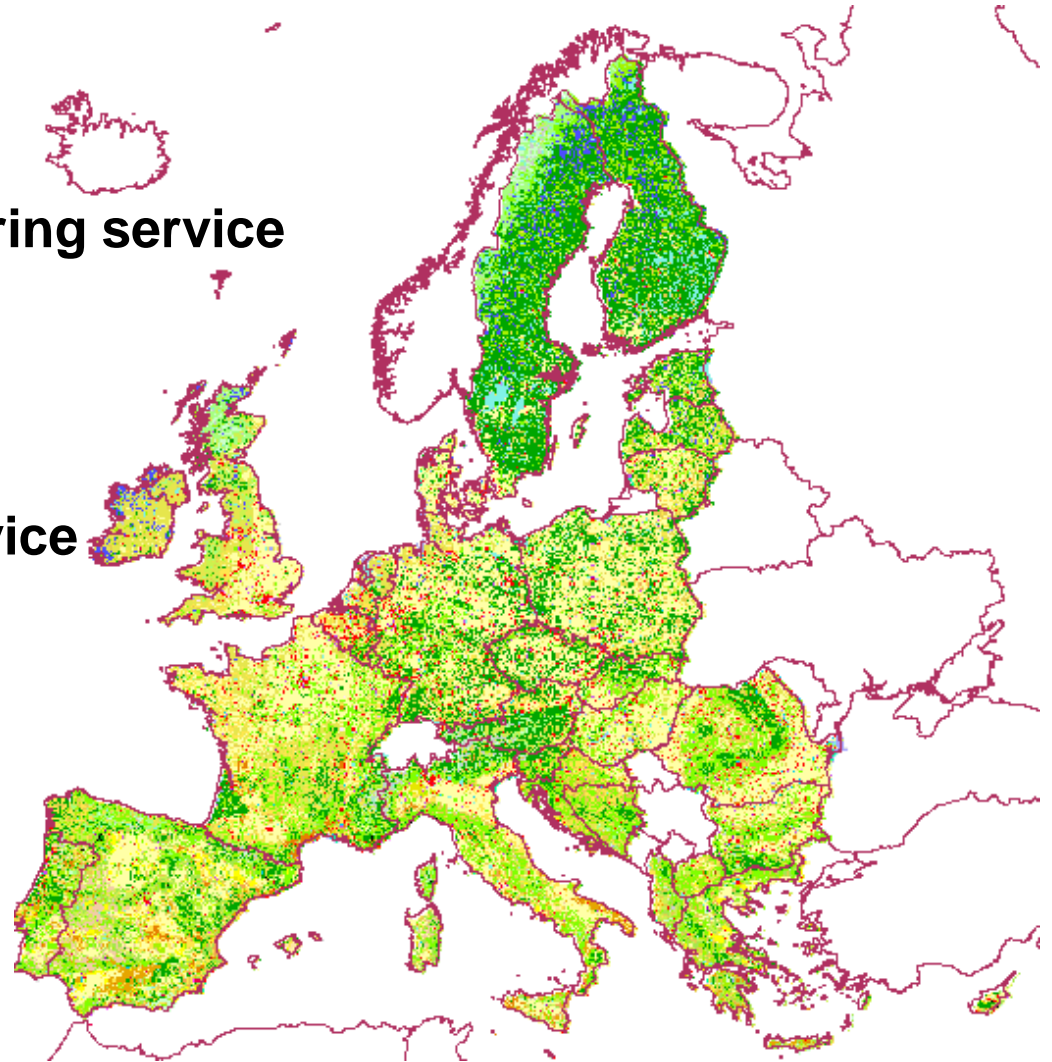
*SnowCarbo Life+, Finnish GMES User Forum and DORIS\_NET  
Workshop*

***GMES Services for Finnish Users***

9.1.2013 FMI

## Content

- **GMES Land monitoring service**
- **GIO Land**
- **GMES UF Land service**



# GMES Land Monitoring service

- **Land Monitoring is a "pilot theme" for User Forum**
  - Based on MS & service provider user requirements (implementation steps, role of MS, content of the HR)
  - Based on GSELand, geoland1, geoland2 and Corine LC
- **→ GIO (GMES Initial Operations) Land 2011-2013**

European Environment Agency



## GIO-land: geographical coverage



### EEA member countries

- Member countries
- Collaborating countries

5.8 Mkm<sup>2</sup>  
39 countries

- EU27
- additional 5 EEA MS
- 7 collaborating countries

# The 3 Main GIO Land Components

## 1. Pan-EU Land Cover services (EEA39)

- produce up to 5 High Resolution Layers (HRL) of dominant land-cover classes
- ensure the continuity of CORINE Land Cover time series
- support the harmonisation efforts of Member States for aggregating their national products at EU level

## 2. Local component ('hot spot' zooming)

- Urban Atlas update
- biodiversity hot spot monitoring service linked to Natura2000 areas?
- others e.g. coastal zones (together with Emergency Response)?

## 3. Global component

- producing global terrestrial Essential Climate Variables (ECVs)

## Pan-EU Land Cover services – in Finland

### **SYKE coordinates continental component in Finland**

- Corine Land Cover inventory, including CLC changes 2006-2012

### **Finnish Forest research Institute (Metla) will coordinate the verification task of HR layers and the verification work is divided as follows:**

- HRL imperviousness: Finnish Geodetic Institute
- HRL forest: Metla
- HRL permanent grassland, wetland and water: SYKE

### **SYKE will coordinate enhancement of HR layers and the enhancement work will be divided as follows:**

- HRL imperviousness: FGI and SYKE
- HRL forest: Metla
- HRL permanent grassland, wetland and water: SYKE

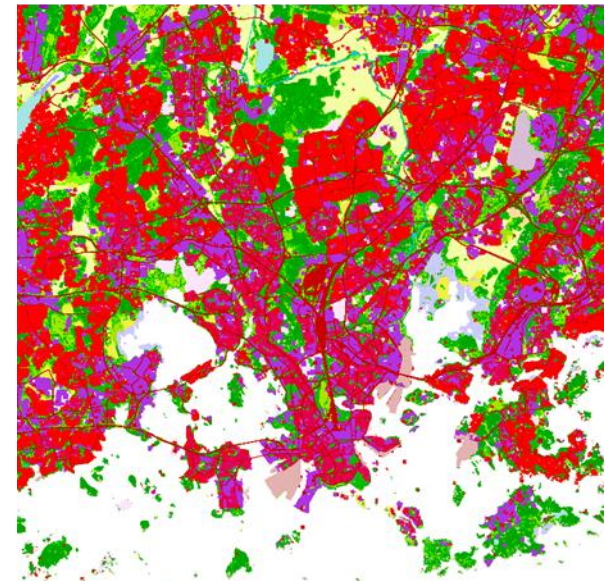
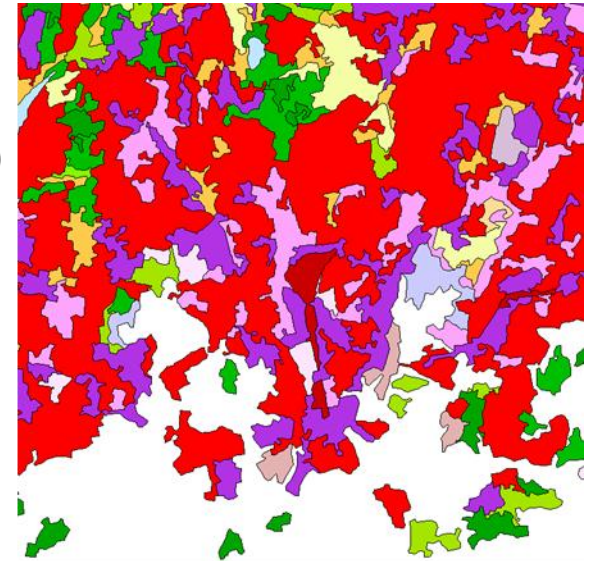
VTT will be a service provider for the HR forest theme in Finland

CLC2012 completed 2014



# CORINE Land Cover in Finland

- **SYKE produces CLC datasets**
  - **Corine LC changes 2006-2012 (0,5 ha)**
  - **National 25 m raster data**
  - **EU version 25 ha**
- More detailed national nomenclature
- Versions 2000 (SYKE,VTT), 2006 (SYKE, Metla)
- Use of data from national on-going programmes
  - Avoid overlapping work
  - Use of best data and expertise available
  - National co-operation



# National Corine Land Cover 2012 update

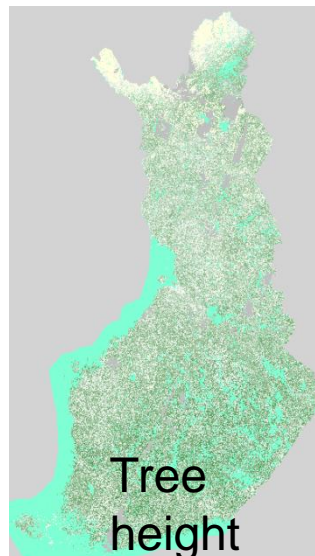
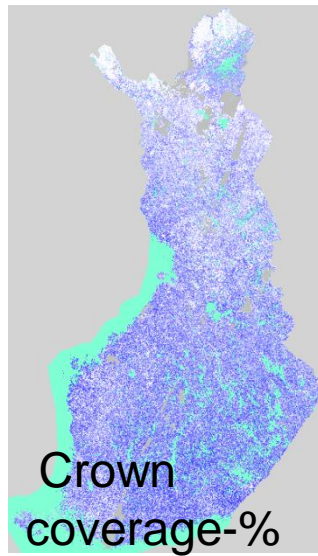
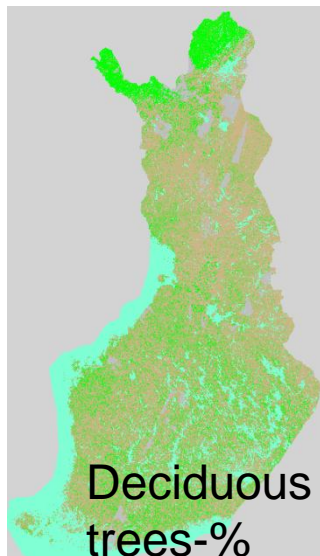
## National user requirements were collected

- **Aim** was to improve the national 25m raster dataset and re-define the national 4th level classes
- **Main results**
  - Better national CLC2012 dataset
  - All requirements (new classes) cannot be put into single data set
  - There are changes in operational environment of land cover monitoring (open data policy, WMS, SLICES, LUCAS, ...) which have effects to future CLC updates and broadly to land cover and land use monitoring

→ **Several wonderful opportunities for the future!**

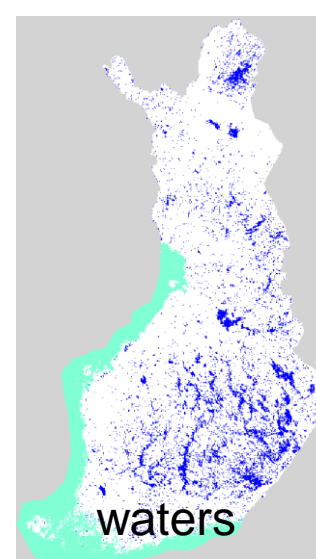
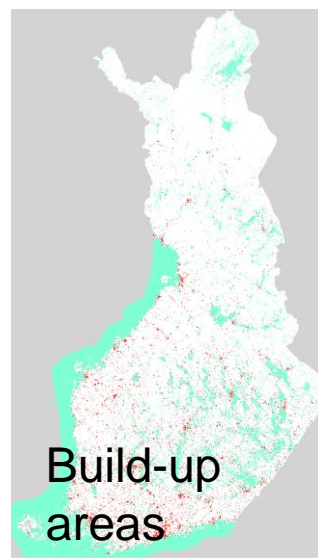
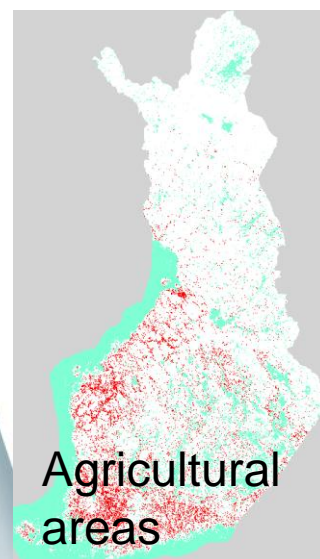


# Future scenarios for land monitoring



## Development of additional datasets for landuse/cover

- Separated land cover layers on certain themes
- Production of new LC information according to different end use requirements





# GMES User Forum Land services

- **GMES UF Land covers all the national public sector GMES users**
  - Theme representative Yrjö Sucksdorff SYKE (Mika Karjalainen FGI)
  - Other national public sector GMES users (LYNET institutions, National Land Survey...)
- **Communication methods**
  - E-mail list, workshops....
  - Finnish GMES website: <http://blog.fmi.fi/gmes/>
- **Topics 2013**
  - **EEA's survey on data access**
    - Identifying the existing and available RD products in countries to meet the GIO Land and EMS services' requirements
  - **→ National user requirements to European GMES UF and EC!**
  - **→ Future developments in national land monitoring**
  - Join the discussion, leave your contact information!
    - [elise.jarvenpaa@ymparisto.fi](mailto:elise.jarvenpaa@ymparisto.fi)

# Thank you for your attention!

## EEA's Survey on data access 1/2

- Previously the demand and offer of reference data (RD) needed by the GMES Land service and Emergency Management Service (EMS) were studied
- Now a new survey for identifying the existing and available RD products in countries to meet the GIO Land and EMS services' requirements
  - How well datasets will match the requirements of precise GMES services
  - Are there constraints around data policy, licensing and costs for GMES service use
- EEA will analyse the match between demand and offer
- The results will be used to support the implementation of the GMES Work Programme 2013

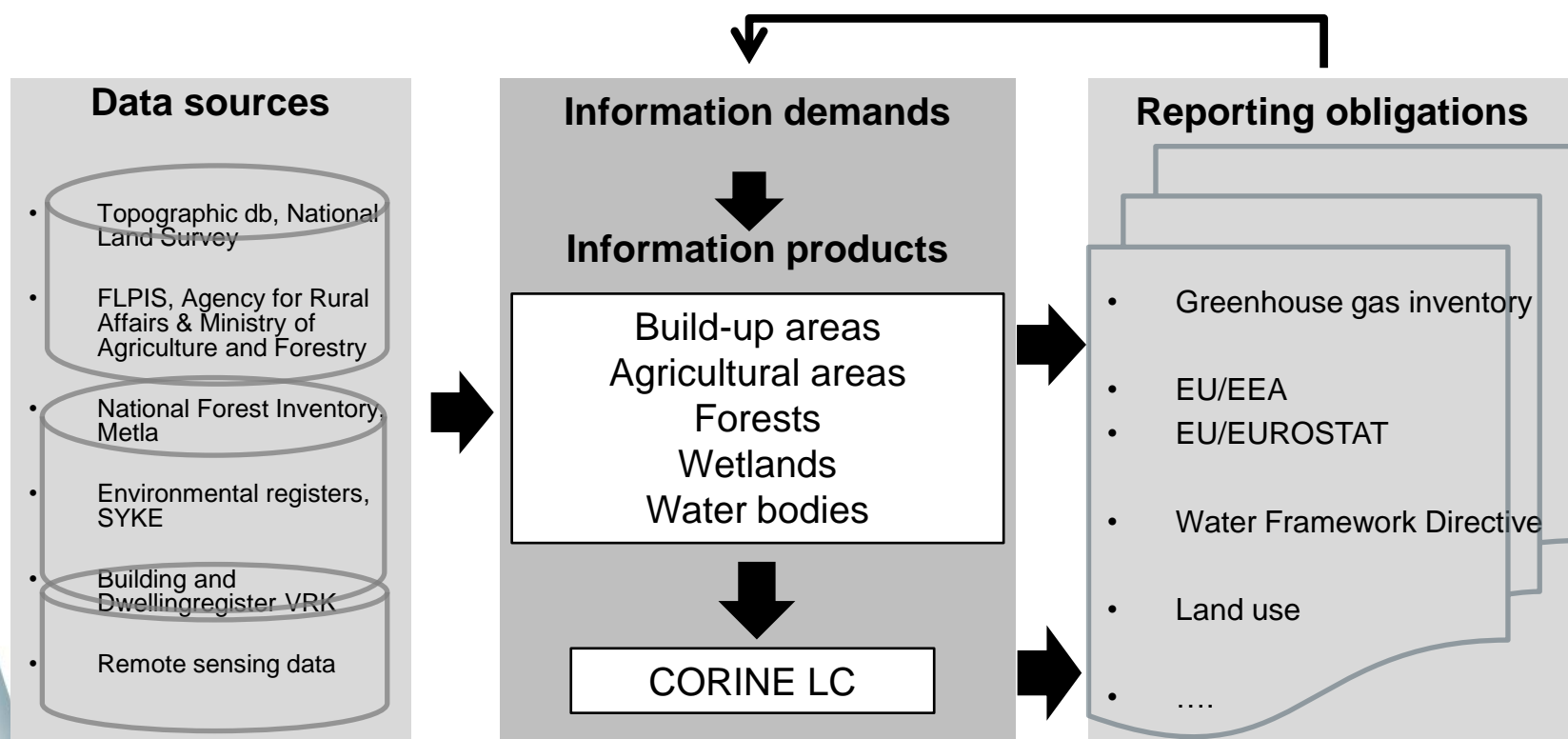
## EEA's Survey on data access 2/2

- Survey is sent by EC/GMES
- It should be completed by competent authorities (Mapping and cadastral agencies) in MS
- Each reference data requirement is specified on a separate worksheet named by the corresponding requirement
  - **Administrative units**
  - **Buildings**
  - **DEM high res**
  - **Hydrography**
  - **Ortho-imagery**
  - **Transport networks**
- **Deadline 12/2012 ( UF Finland pohtii miten kyselyn kanssa edetään ja laittaa eteenpäin laitoksille....1/2013)**



# Future scenarios for land monitoring

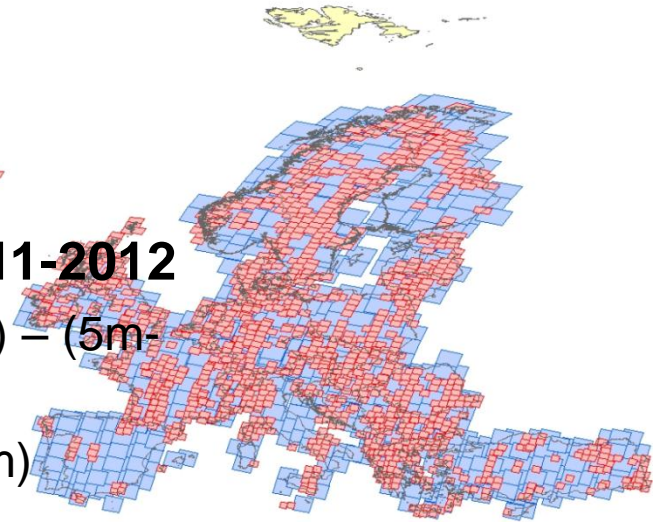
- Development of additional datasets for land use/cover
- Certain themes (build-up areas, agricultural areas, forests, peat extraction sites) monitored more frequently
- Improvement of joint use with other remote sensing and GIS datasets



# Pan-EU Land Cover services

## European wide satelliteimage mosaic 2011-2012

- Multitemporal coverage (Spring and summer) – (5m-20m)
- Timeseries from the summer 2011-2012 (60m)



## CORINE Land Cover land cover 2012 update

- Land cover changes 2006-2012 (mmu 5 ha polygon)
- Land cover 2012 situation (mmu 25 ha polygon)
  - Timeseries of land cover changes 2000-2006-2012

## Additionally in Finland

- National land cover dataset 2012 (25m raster)
- Land cover changes 2006-2012 (MMU 0,5-1 ha raster)
- National 4th level classification

## Local and Global components

- **Local component**

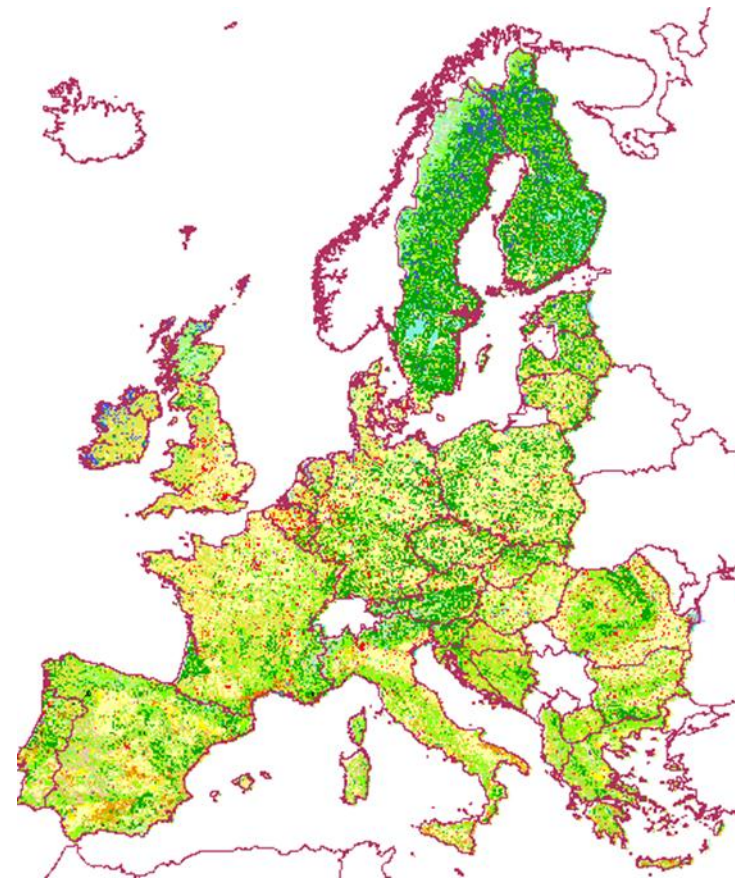
- Urban atlas 2012
  - Land use/cover from cities > 100 000 inh.
  - Updates 2006/2009 > changes
  - Turku, Tampere, Helsinki, Oulu
  - mmu 0.5 ha
- Hot Spot monitoring
  - Biodiversity – Riparian areas (2 % of EU)

- **Global component**

- Biophysical parameters (fcover, FAPAR, LAI, ...)
  - Real-time, daily monitoring of vegetation
  - mmu 250-1000 m

# Corine Land Cover 2012

- **Corine LC changes 2006-2012 (5 ha)**
  - Previous changes 1990-2000; 2000-2006
- **Corine LC update 2012 (25 ha)**
  - Versions 1990, 2000, 2006
  - 44 land use and cover classes
  - Vector data with MMU of 25 ha (100 m and 250 m raster)
- **SYKE produces national versions of CLC data (25 m & 0,5 ha)**
  - Versions 2000 (SYKE,VTT), 2006 (SYKE, Metla)
  - More detailed national nomenclature





# High Resolution layers

- **20 m raster datasets in 5 themes**

- Imperviousness/ soil sealing
- Forests
- Permanent grasslands
- Wetlands
- Water courses

- **Production centralized**

- verification and enhancement
- de-centralized

## HRL production

### Distribution in lots

