Scandinavia:
- most forest land managed for wood supply,
- clearfelling after ≈ 100 years.
- stand size ≈ 1 – 10 ha "many pixels per stand" needed.

-The Swedish Forest Administration is yearly detecting and delineating all clerfelled areas using Landsat TM or SPOT data

ENFORMA
- stand alone PC software developed by Metria, Stockholm
- change image computed under forest mask
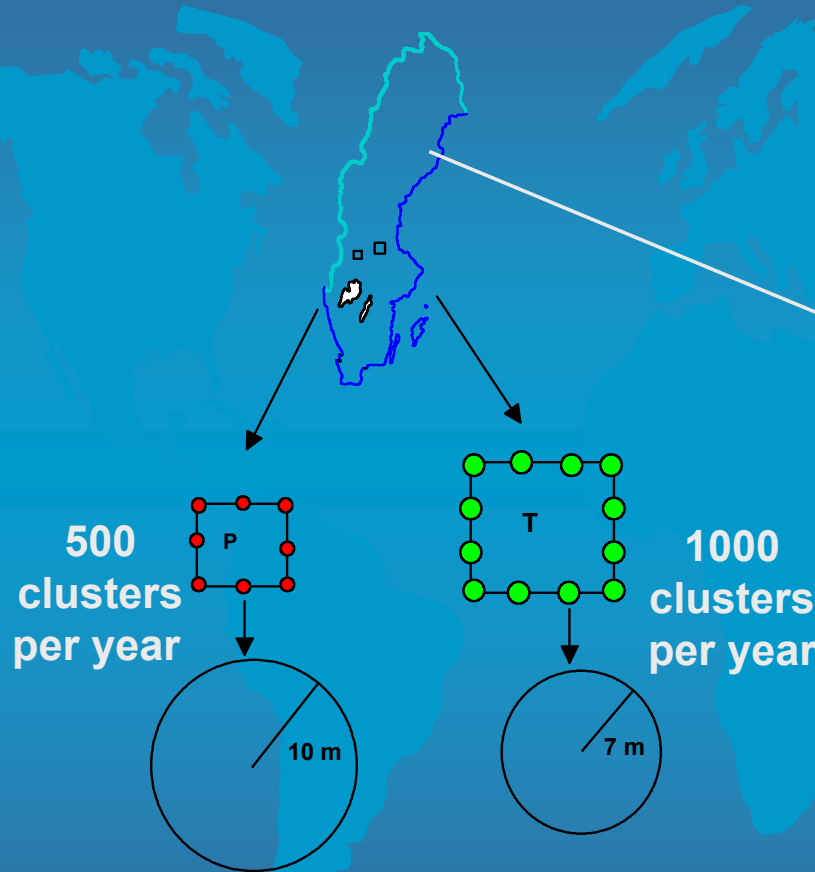- interactive thresholding, filtering and vectorisation
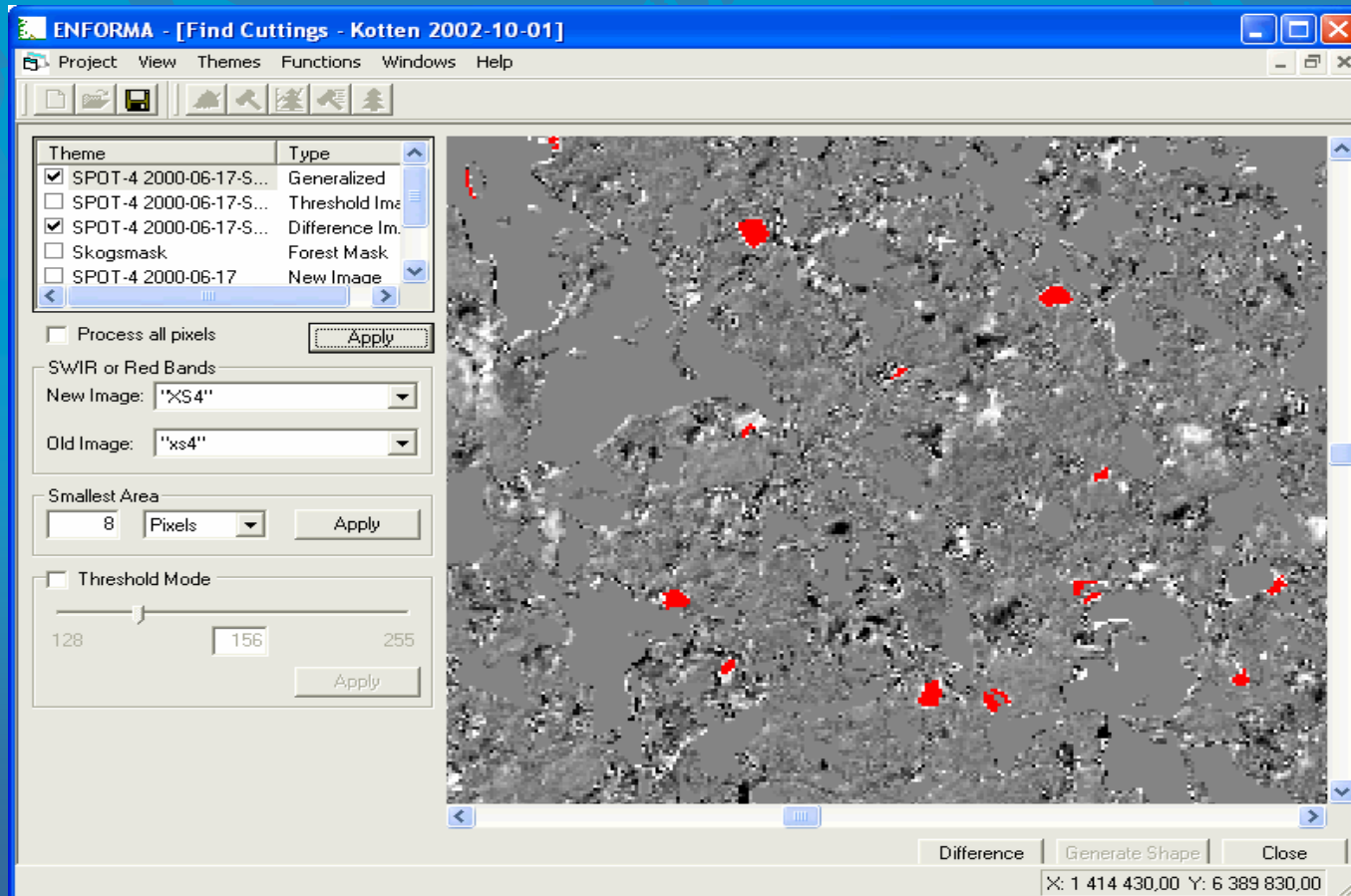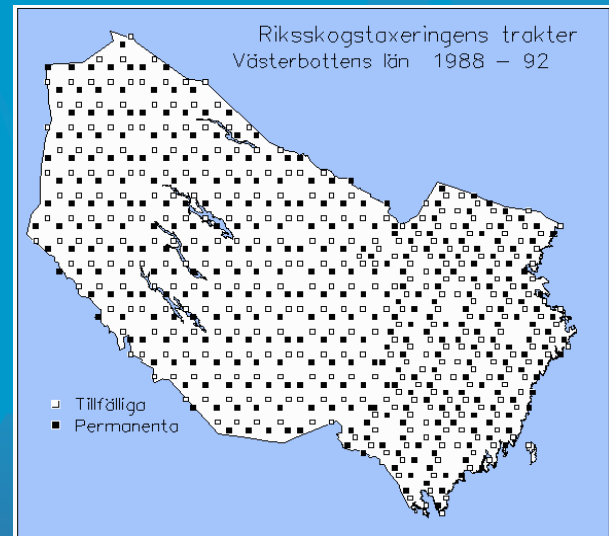
ENFORMA-extension
- ArcView extension developed by Swedish Forest Admin (SVO)
- editing and comparing with land owner cutting permits are made nationwide at local level for 50 000 clear fellings yearly.
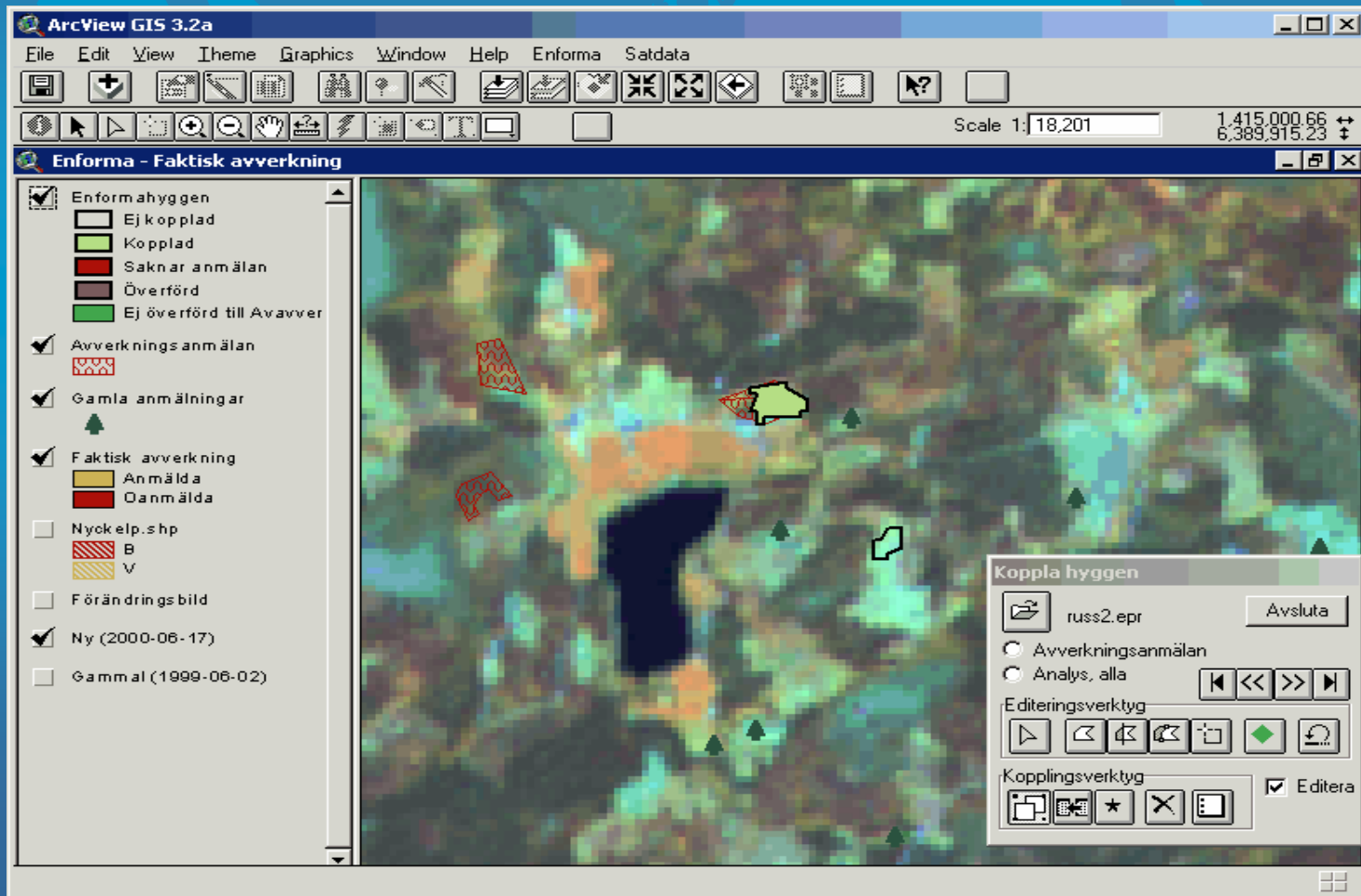
Swedish National Forest Invenory (NFI)

The plots have GPS positions and about 200 field assessed forest variables

500 clusters per year

P

10 m

1000 clusters per year

T

7 m

Riksskogstaxeringens trakter
Västerbottens län 1988 – 92

□ Tillfälliga
■ Permanenta

This field sample plot based inventory carried out by SLU will most likely be the basis for the operational Swedish Kyoto reporting
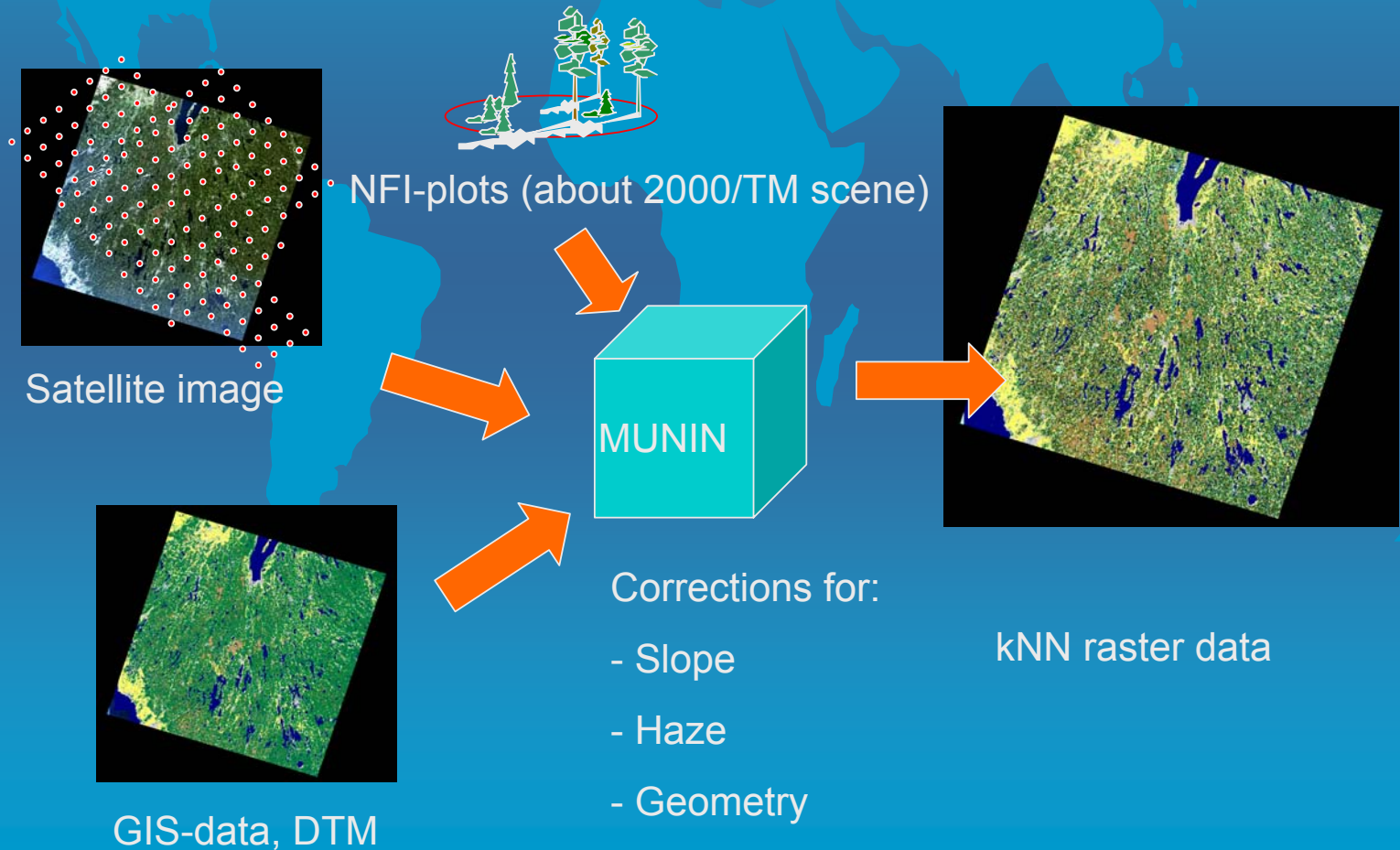
Operational Kyoto reporting of LULUCF some current thoughts in Sweden

Total and change of carbon in managed forest:

-Use NFI plots only,

-or NFI plots and post stratification with kNN segments

Afforestation and reforestation

- Use NFI plots only (about 24 000 permanent plots/3 years)

- New forest only certainly detected with RS after about 10 years

Kyoto reporting of LULUCF in Sweden, cont.

Deforestation, 3 alternatives:

1) Use permanent NFI plots only, (24 000 for a 3 year period)

2) Post-stratify change estimate from permanent NFI-plots with remote sensing change product (project just starting)

3) - Use satellite data and the ENFORMA system, to find all changes in forest for a sample of map sheet.
   - Visit suspected deforestation patches in field to determine type of change.
   - Obtain carbon stock before change from kNN data

Verification

A possibility to use the products accros nation borders ?

Title: Deforestation reporting in a sampling context

(current working title, tentative)

Product Leader: Håkan Olsson
Affiliation: Swedish University of (Sweden)
Product Team:
- Lars Ulander (CTH, Sweden)
- Anders Persson (Swedish Forest Administration)
- Göran Ståhl, Johan Fransson, Mats Nilsson (SLU, Sweden)

Agreement status: Early discussion, needs to be more firm March 2004
Preferred agreement type (individual/institutional): Individual
- Project objective(s):
- In co-operation with other products assess suitable methods for detection and delineation of clearfellings in boreal forest (choice of PALSAR product, geometry issues, season etc).

- Evaluate the detection and delineation accuracy obtained with the change product, for the use of the Swedish Forestry Administration.

- Define how PALSAR change products could be used for operational Kyoto reporting in a post-stratification framework together with permanent sample plots

- Define how PALSAR change products could be used for operational Kyoto reporting in a pre-stratification framework where type of change is assed in field.

Deforestation reporting in a sampling context

Prototype Area 1: County of Västerbotten, Sweden (Boreal forest, large patches)
Corresponding observation plan polygon(s):
No. PALSAR paths/coverage: ~12
PALSAR request (Year 1-3): ~48 passes (full coverage 1 summer and 1 winter for 2 years)
Input data (EORC products): PALSAR, TBD (the spatial resolution is critical)
Ancillary data requests: TBD

Prototype Area 2: County of Västra Götaland, Sweden (Hemi-boreal forest, small patches)
Corresponding observation plan polygon(s):
No. PALSAR paths/coverage: ~7 passes
PALSAR request (Year 1-3): ~28 passes (full coverage 1 summer and 1 winter for 2 years)
Input data (EORC products): PALSAR, TBD (the spatial resolution is critical)
Ancillary data requests: TBD

Deforestation reporting in a sampling context

K&C Product Deliverables (before end of Year 3):

- Evaluation of forest change maps over prototype areas

- Framework for using PALSAR change products for poststratification of changes assessed at permanent sample plots

- Framework for using PALSAR change products in a prestratification where the reasons for change of a patch is assessed in field

Prospects for Years 4-6 (assuming agreement extension)

- Example of how a PALSAR change product could be integrated in annual national reporting of deforestation

- Example of use of PALSAR change product for the operational delineation and verifications of clear fellings made by the Swedish Forestry Administration
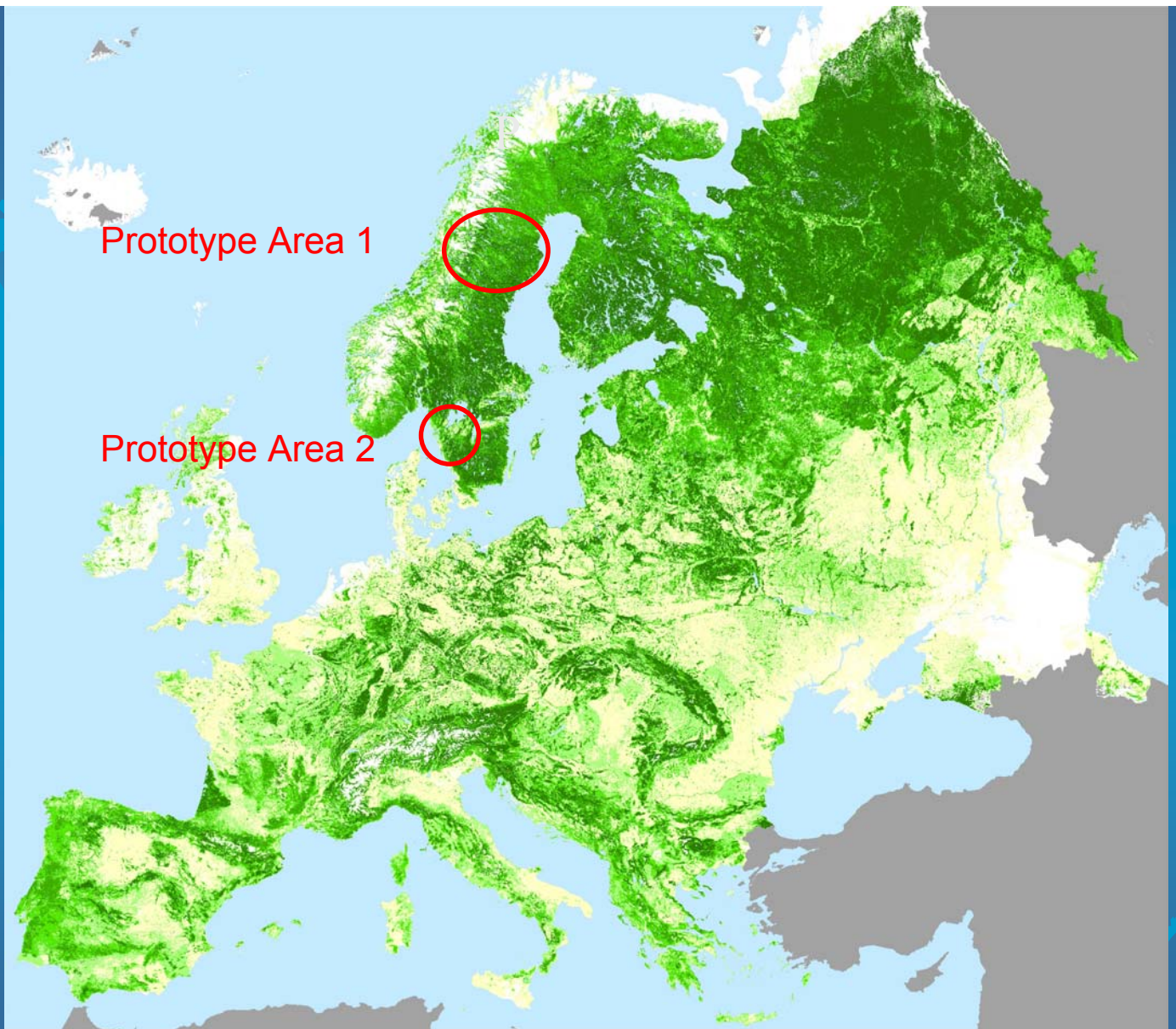
Prototype Area 1

Prototype Area 2

AVHRR-based forest proportion map (C) JRC, and VTT

Project outline

2004: - Planning, proposal writing

2005: - Acquire first year PALSAR
       - Investigate SAR methods and algorithms (CTH, SLU)
       - Work with JERS (CTH, SLU)
       - Work with statistical framework (SLU)

2006: - Acquire second year PALSAR
       - Perform PALSAR change detection (CTH, SLU)
       - Evaluate change detection (SLU, SVO)

2007: - Reserve year for image data acqusition
       - Report about PALSAR feasability (SLU, CTH, SVO)
       - Go / No go decision for nationwide project from 2008

2008 and onwards: Possible nationwide project