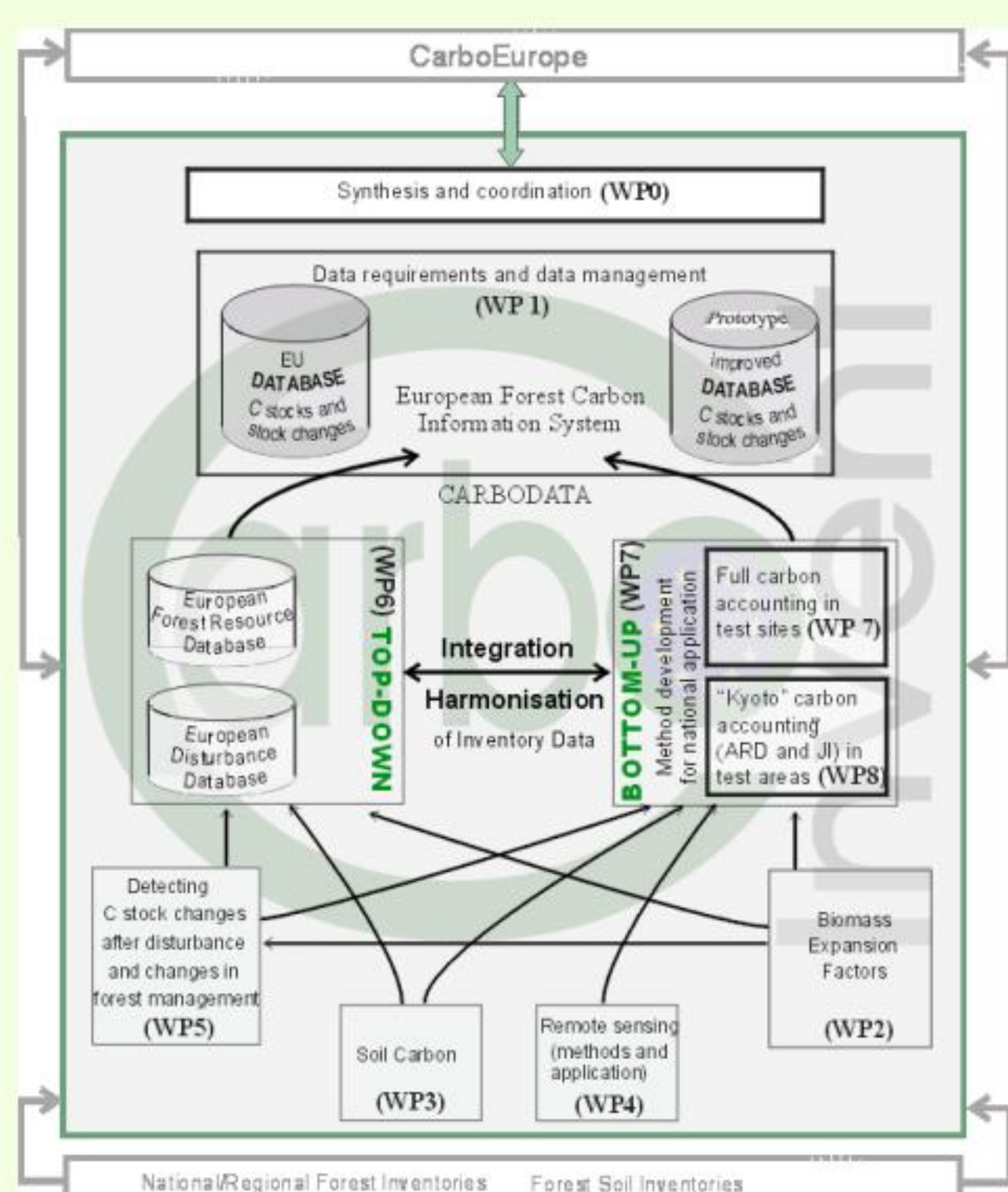


# Inventories of Forest Soil Carbon Stocks

## I. Research Concept

### Multi-Source Inventory Methods For Quantifying Carbon Stocks And Stock Changes In European Forests



- EU FP5 Project (11.2002 – 10.2005) for identifying, developing and testing methods for the assessment of carbon (C) stock changes in forests at national/EU level
- Assessment of forest C in biomass and soil, using top-down and bottom-up methodologies
- Development of a database to provide default activity data for carbon in forest storage pools at regional, national and European scale → estimate the baseline carbon stocks
- Provide methodology to estimate C stocks and stock changes in a harmonised way
- Evaluations will concentrate on 6 test countries and 4 test areas (see Figure below)
- Error budgets and representativity are important aspects and will detail the uncertainty at each level of the upscaling process which regionalize the plot inventory data

### Objectives of the SOIL workpackage

1. Quantification of regional soil C budgets at various scales
2. Assessment of plot level (calculations of stocks from concentration measurements) and regional-level (upscaling of plot data) uncertainties
3. Link of the accounting methodology/data base with the UNFCCC/Kyoto Protocol reporting requirements

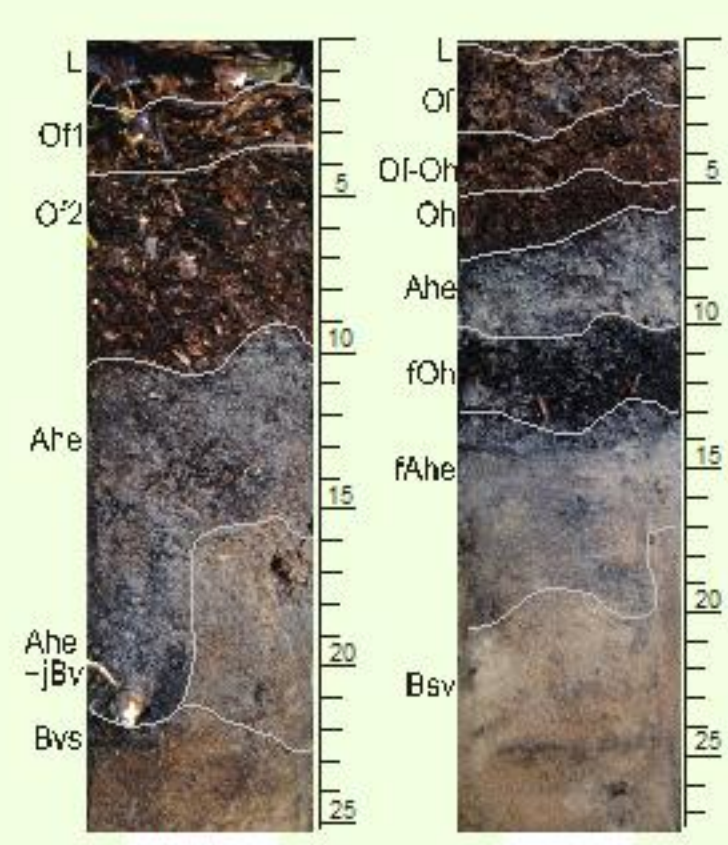
### Methodology

### LOCAL

### SCALE

### LANDSCAPE

#### Soil profile



#### Management unit



Example:  
Spodic Cambisol

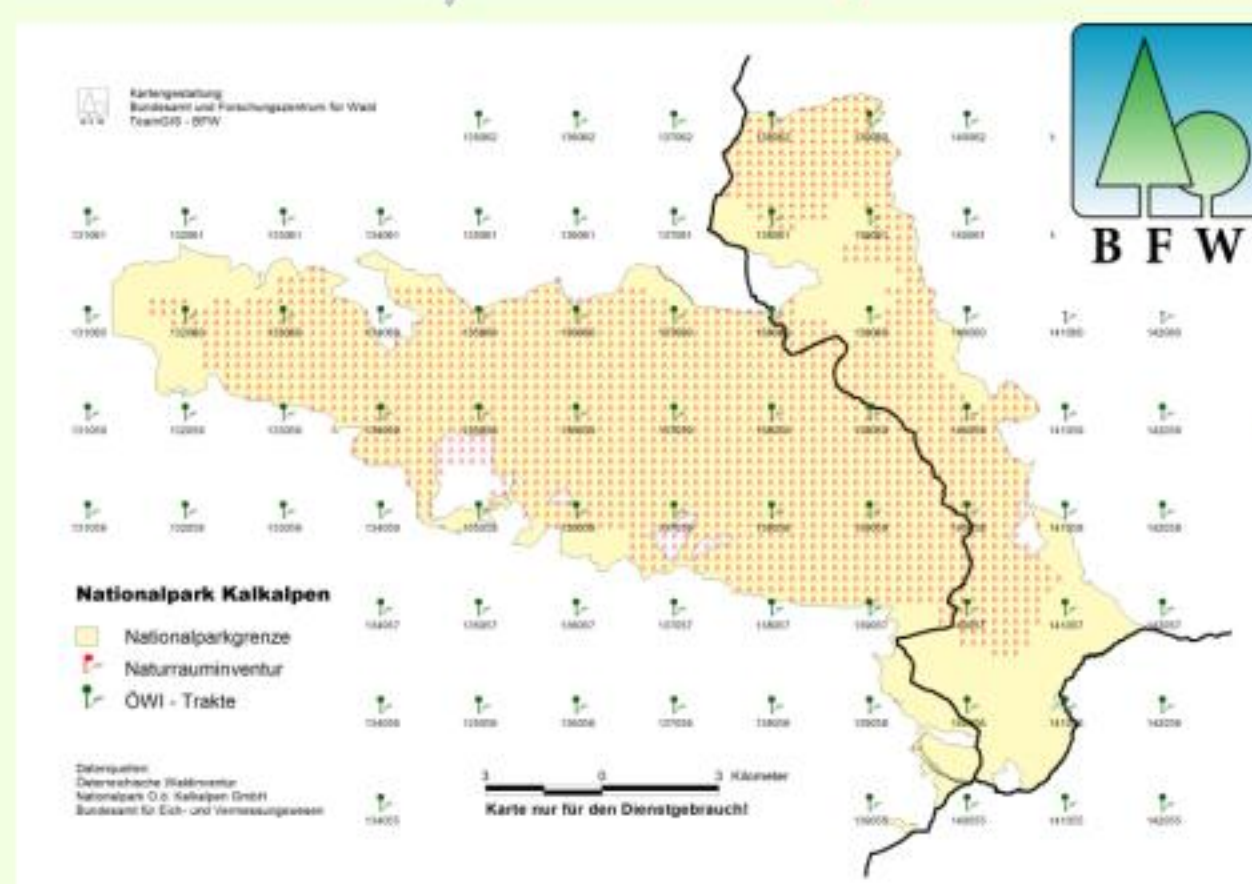
Tools: Sampling scheme  
Analytical scheme

Example:  
Scots Pine  
(mature, selective cutting)

**Legend:**  
→ Upscaling  
Variability  
Uncertainties

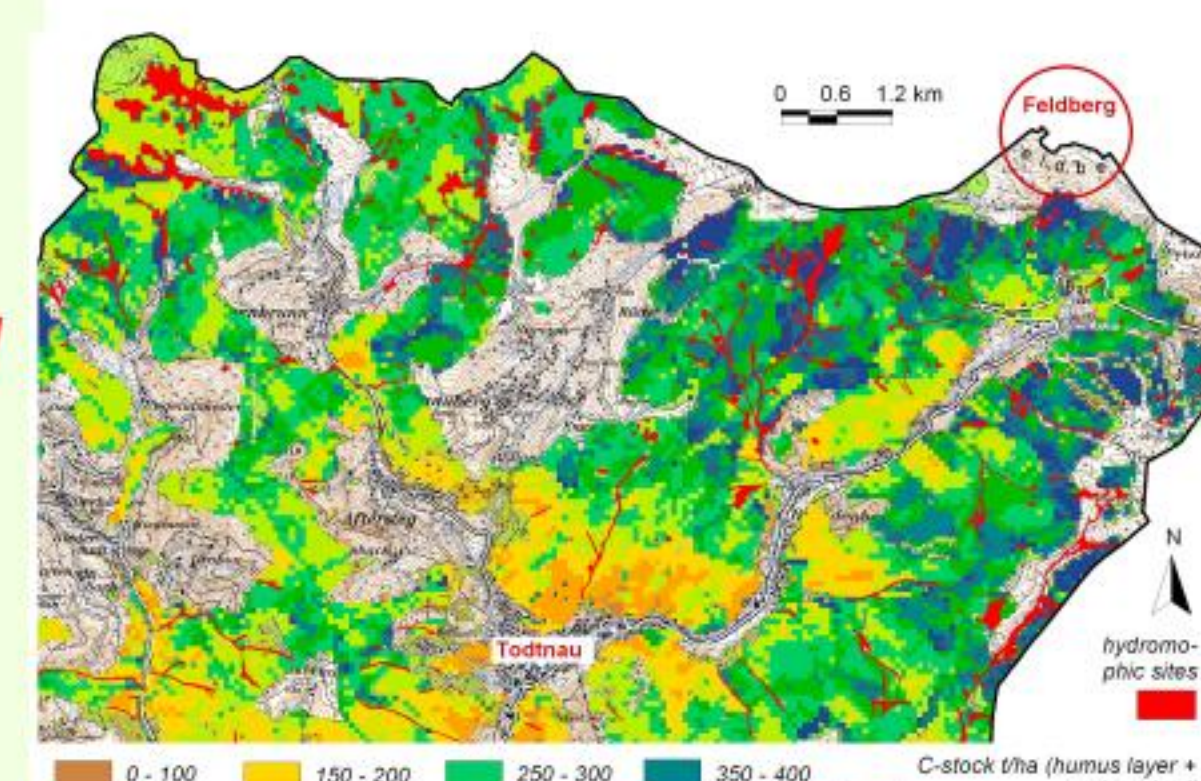
Representativity

CarboInvent Test area  
Nationalpark Kalkalpen



Tools: e.g. Regression Model

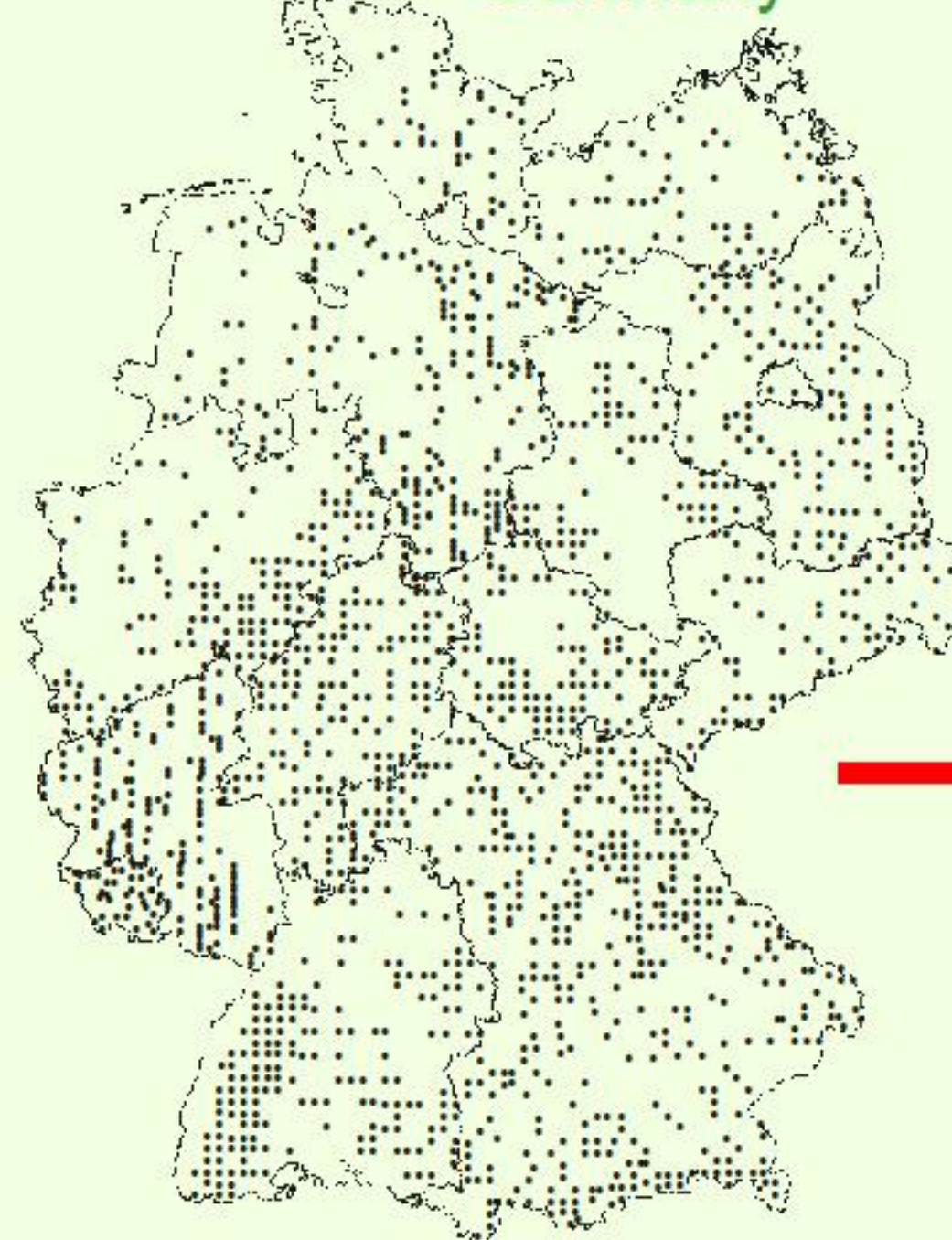
#### Watershed/Region



Example (not related to the test area):  
Western Black Forest watershed  
Zirlewagen 2002

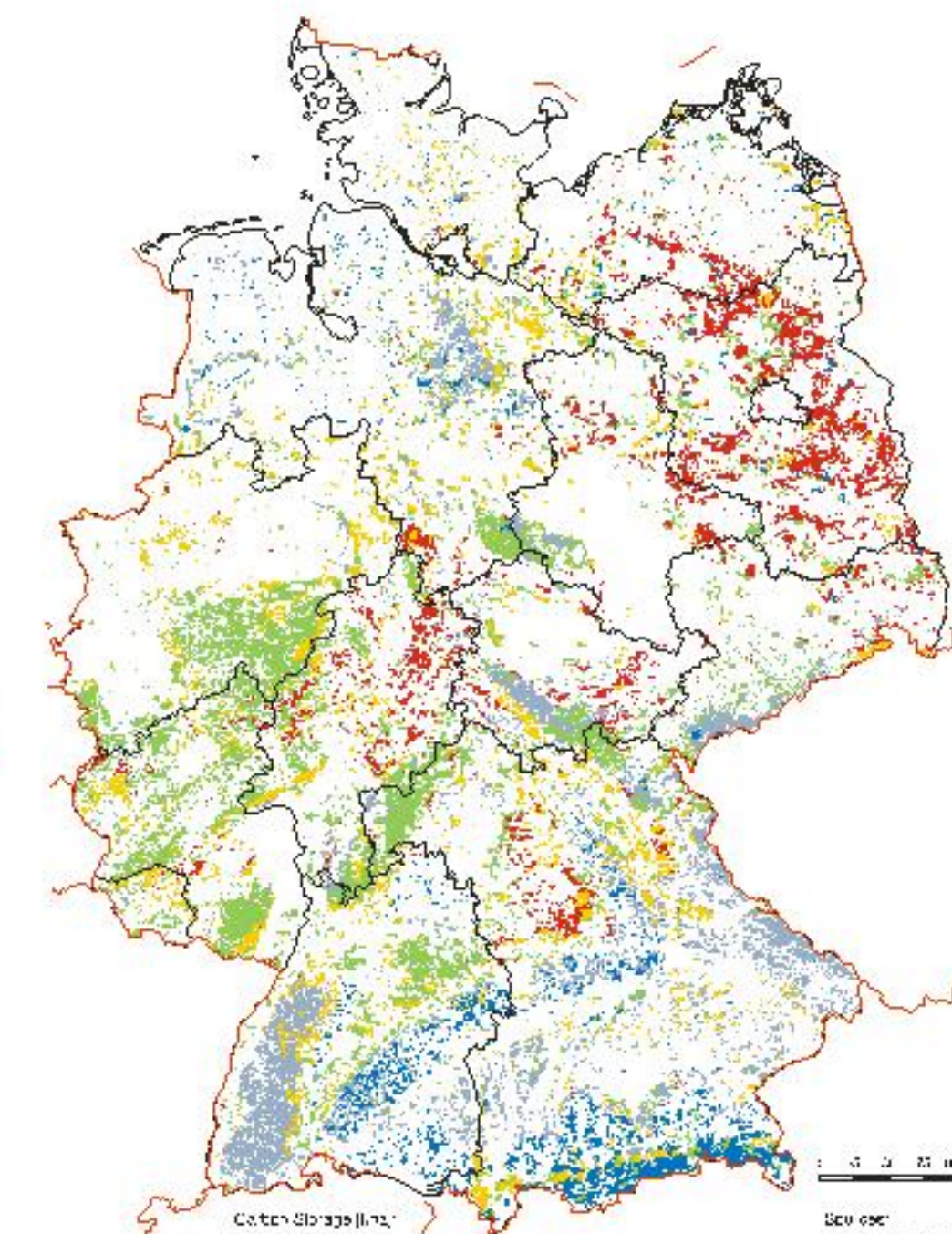
Representativity

CarboInvent Test country  
Germany



Tools: e.g. Soil Map

#### Country



Example:  
Germany  
Baritz 1999

### Expected Results

- Map of soil carbon in test countries and test areas
- Quantification of the plot level/upscaling errors/representativity as the basis to assess the quality of regional soil C estimates
- Assessment of the detectability of soil C changes at the landscape-scale
- Improvement of the data availability for further EU-wide calculations
- Establishment of a research network for forest soil carbon