EUROPEAN FOREST INSTITUTE
ATLANTIC EUROPEAN REGIONAL OFFICE – EFIATLANTIC

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REINFFORCE project

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Introduction

Potential threats INDUCED BY CLIMATE CHANGE :

- **invasion** by new pests and pathogens that were not able to expand their home range under colder climatic context,
- increased risk of **outbreaks** by forest pests and pathogens in response to higher temperatures
- increased frequency of **biotic hazards** such as strong winds, severe droughts, fires …
- **mis-adaptation** of local tree species due to a lack of genetic diversity and/or a temporal mismatch between the speed of climate changes and the rapidity of local adaptation processes (*e.g*. changes in phenology, growth - differentiation balance…)
- Increase of wood harvesting for fuel, to reduce CO_2 emissions.

Funding and duration

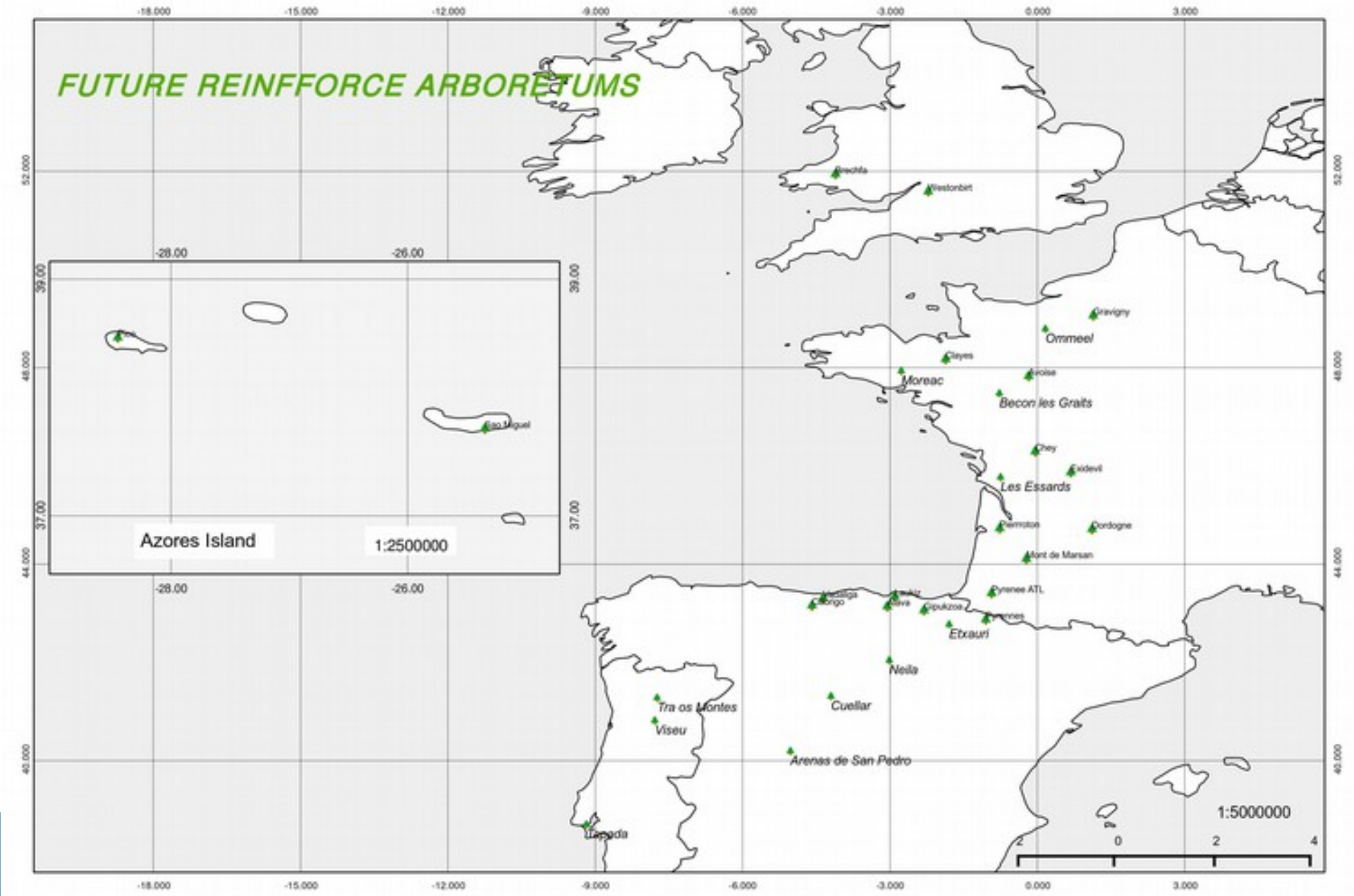
- Project funded by interreg 4B Atlantic area
- Coordinated by IEFC/EFIATLANTIC
- Duration 4 years (2009-2012), 4M€
- 4 technical packages
- Additional arboretums planned on extra funding
- Agreement on long term monitoring after project end

REINFFORCE INFRASTRUCTURES I : ARBORETUMS

Network of arboreta

Aim : expose the same genetic material produced in the same conditions to various climate/soil context (each site is supposed homogenous)

- Each arboretum area is about 2 hectares and made of 2000 trees. Density between 1000 and 1111 trees/ha. No fixed pattern.
- 31 (+3) arboretums * 30 species * 3provenances * 12 trees = **1080 mandatory** in each arboretum + Site specific provenances (50-52*12= 624 trees)
- 4 species have 3 blocs(2*4*3provenances*12trees=**288**) in each arboretum to assess site variability
- Selection of sites typical for forest management in the area
- Commitment by the partners for minimum set of data collection for 10-15 years
- Weather monitoring


FUTURE REINFFORCE ARBORETUMS
Azores Island
1:2500000
Ormeel
Moreac
Becon les Grails
Les Essards
Mont de Marsan
Etxauri
Neila
Cuellar
Tra os Montes
Viseu
Arenas de San Pedro
1:5000000

Tree species in the arboretums

- Acer pseudoplatanus
- **Betula pendula**
- Castanea Sativa
- **Cedrus atlantica**
- Calocedrus decurrens
- Cedrus libani
- Cunninghamia lanceolata
- Cupressus sempervirens
- Ceratonia siliqua
- Eucalyptus nitens,
- E. gundal and E. globulus
- Fagus orientalis
- Larix decidua

- Pinus brutia
- Pinus elliottii
- Pinus nigra subspecie laricio and subspecie salzmanii
- Pinus peuce
- **Pinus pinaster**
- Pinus pinea
- Pinus ponderosa
- Pinus sylvestris
- Pinus taeda
- Pseudotsuga menzienesii

- Quercus ilex and Q. rotundifolia
- Quercus petraea
- **Quercus robur**
- Quercus rubra and Q. shumardii
- Quercus suber
- Robinia pseudoacacia
- Sequoia sempervirens
- Thuja plicata

REINFFORCE INFRASTRUCTURES II : demonstration sites

Network of demonstration sites

Aim : demonstrate meteorological context producing a damage and demonstrate efficiency of mitigation measures not commonly used

- Weather stations close by an exposed forest stand
- Damages assessment in case of extreme event
- Selection of exposed sites
- Possibility to compare various sylvicultural strategies for adaptations: Under-storey management, no thinning, permanent edges, deep soil preparation, water capacity improvement…

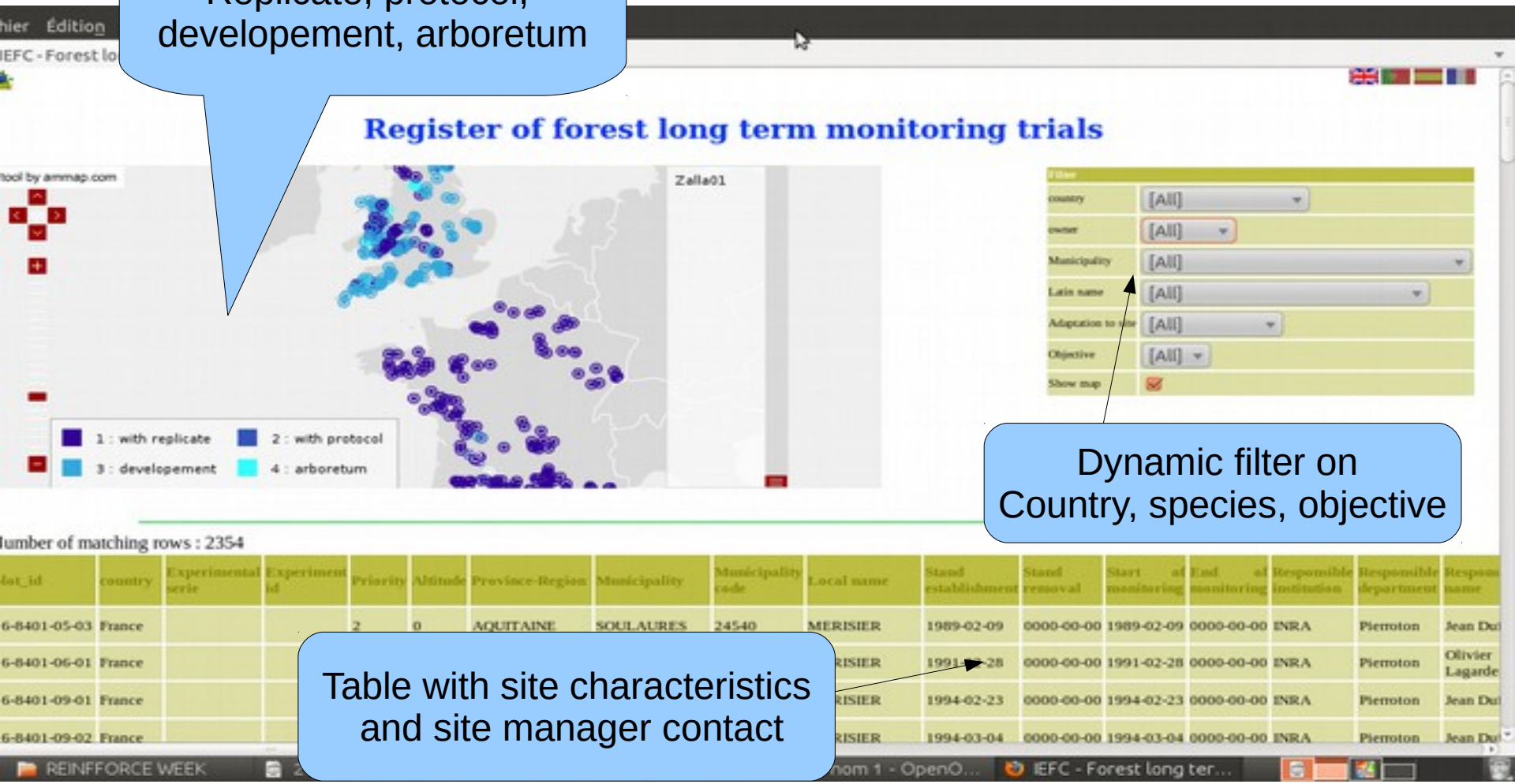
REINFFORCE INFRASTRUCTURES III: DATABASES, PROTOCOLS AND REFERENCE TOOLS

Database management and first monitoring

- Report on state of the art of regional actions on climate change and forest
- Report on selection process for REINFFORCE arboretum
- Adaptive capacity of 66 species analysed in bibliography
- Databases for European long term monitoring forest trials
- First measurements and protocols validation
- Tools for individual tree data collection and sharing between organisations

ng term monitoring trials

Map with site power : Replicate, protocol, developement, arboretum



Dynamic filter on Country, species, objective

Table with site characteristics and site manager contact

Status and actual (May 2012) challenges

- Publish online reports before summer
- Publish Adaptive capacity of 65 species analysed in bibliography before end of the year
- Publish online Databases for European long term monitoring forest trials In may
- Grow all th 100000 seedlings from 150 seeds lots and plant them in automn
- Set up tools for data collection and sharing between organisations