



Environmental quality and pressures assessment across Europe



# Action 5 "Testing in the Field" Status, achievements, the 2012 field campaign

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Contribution from all Beneficiaries and participants



# Contents

- Brief overview of A5
- Activities performed up to now
- The 2012 campaign
- To do list until December 2012 (and for 2013)



## General aim of Action 5

- To assess the state and trend of European ecosystems for a set of commonly established parameters (existing and new)
- Applying agreed methodology
- Different levels/scales of investigation and specific monitoring intensities
- The set of parameters will be collected at 67 sites, all ecosystem types (terrestrial, marine, freshwater)

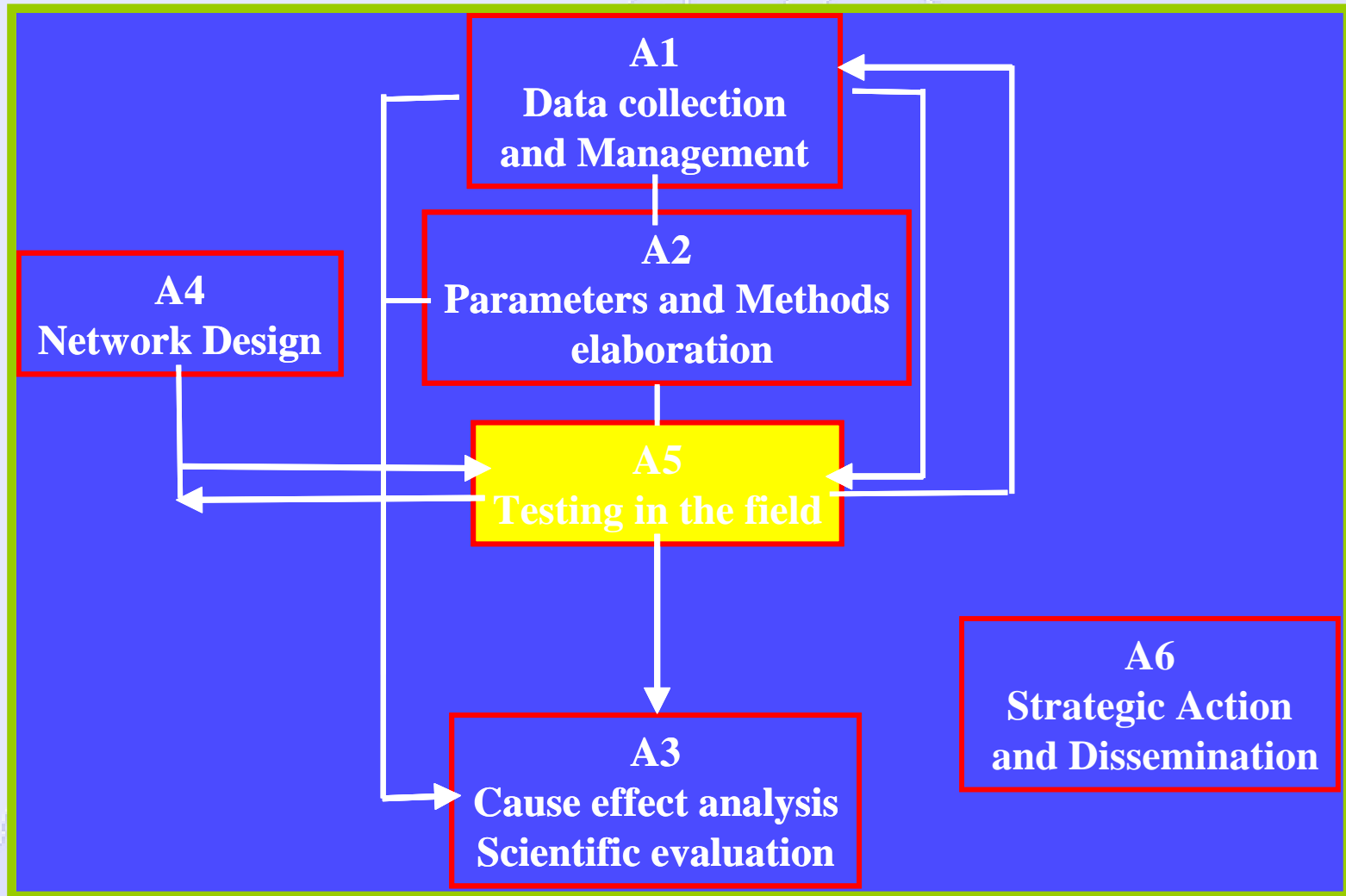


## Expected results

- 1. Dataset on common parameters collected in the field, as a test case useful for A1, A2, A3 and A4.
- 2. Harmonization of collected data to be processed in action A1 and for common evaluation in action A3.
- 3. Test case for sampling activity coordination across LTER sites
- 4. Reports on field activity, data harmonization and sampling coordination.



# Actions Interactions





# Where we are: A5 Timetable

Action Number/name of action		2010				2011				2012				2013			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
<b>A5 - Testing in the field</b>	Planned																
	Actual																
A 5.1 Experimental design	Planned					X	X										
	Actual				X	X	X										
A 5.2 Field activity	Planned					X	X	X	X	X	X	X	X				
	Actual					X	X	X	X	X	X	X	X				
A 5.3 Sample analysis	Planned										X	X	X				
	Actual						X	X	X	X	X	X	X	X			
A 5.4 New data sets	Planned																
	Actual							X	X	X	X	X	X	X			

## Finalised Activities

### A5.1 establish the experimental design parameters, sites, logistics, sampling timetable

- Activity 5.1.1a – List of sites participating to Experimental Phase. Establishing of expert groups for different eco-domains“ (09-12/2010)
- Activity 5.1.1b – Parameters to be assessed in the participating sites (with methods) (01-06/2011)
- Activity 5.1.2 – Set up of national teams and related meeting for local coordination (10/2010-06/2011)
- Activity 5.1.3 – Technical meetings (two meetings in 2011 TM1 before 05/2011, TM2 before 11/2011)



## On-going Activities

### A5.2 Develop and implement the field experimental activity

- Activity 5.2.1 – Detailed plan for field activity and related feedbacks (01/2011-12/2012)
- Activity 5.2.2 – Sampling and experiments (01/2011-12/2012)

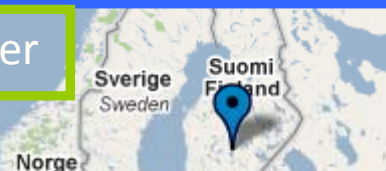
### A5.3 Sample analysis

- Activity 5.3.1 – Analysis of samples (04/2011-03/2013)
- Activity 5.3.2 – Assessment of indicators (07/2011-03/2013)



# Participating sites

Freshwater



Marine



Forest	21
Coastal	3
Alpine	4
Terrestrial Complex	17
Marine	7
Lacustrine/freshwater	15
<b>Total</b>	<b>67</b>

A1-A4



Kaunas, Lithuania

Coordination Plenary and Technical Meeting A3-A5

22-23 May 2012



Site Name	Country	Ecosystem domain	Active in 2011 (LTER)	EnvEurope in 2011	EnvEurope in 2012
04 LTER Lunz	Austria	Lacustrine	X		X
AU01 Zöbelboden	Austria	Terrestrial (simple) - Forest	X	X	X
AU02 BFW1	Austria	Terrestrial (simple) - Forest	X	X	X
AU03 BFW2	Austria	Terrestrial (simple) - Forest	X	X	X
04 Mesta	Bulgaria	Lacustrine	X		X
06 Sozopol-Black Sea	Bulgaria	Marine	X		X
BG01 Srebarna	Bulgaria	Terrestrial (complex)	X		X
BG02 Petrohan	Bulgaria	Terrestrial (simple) - Forest	X		X
BG03 Yundola	Bulgaria	Terrestrial (simple) - Forest	X		X
02 Lake Pajanne	Finland	Lacustrine	X	X	X
09 Zingst	Germany	Marine	X		X
10 Artificial Reef	Germany	Marine	X		X
05 Uckermark	Germany	Terrestrial (complex)	X		X
06 Rhein Main Observ	Germany	Terrestrial (complex)	X	X	X
07 Eifel	Germany	Terrestrial (complex)	X		X
DE-01-LH-FB Friedeburg	Germany	Terrestrial (complex)	X	X	X
DE-01-LH-GH Greifenhagen	Germany	Terrestrial (complex)	X	X	X
DE-01-LH-SS Schafstädt	Germany	Terrestrial (complex)	X	X	X
DE-01-LH-WL Wanzleben	Germany	Terrestrial (complex)	X	X	X
DE01 Bornhoved	Germany	Terrestrial (simple) - Forest	X		X
02 Lake Balaton	Hungary	Lacustrine	X		X
03 Kiskun	Hungary	Lacustrine	X		X
03 Kiskun	Hungary	Terrestrial (complex)	X	X	X
04 Sikfökút	Hungary	Terrestrial (simple) - Forest	X	X	X
08 Southern Alpine Lakes	Italy	Lacustrine	X	X	X
09 Lentic Env. Apennines	Italy	Lacustrine	X		X
10 Lake Sardinia	Italy	Lacustrine	X		X
11 North Adriatic Sea	Italy	Marine	X	X	X
12 Gulf of Naples	Italy	Marine	X		X
15 Lagoon of Venice	Italy	Marine	X		X
IT01 Apennines high elevation	Italy	Terrestrial (simple) - Alpine	X		X
IT06 Coastal Dunes	Italy	Terrestrial (simple) - Coastal	X		X
IT02 Forests of Alps	Italy	Terrestrial (simple) - Forest	X	X	X
IT03 Forests of Apennines	Italy	Terrestrial (simple) - Forest	X	X	X





Site Name	Country	Ecosystem domain	Active in 2011 (LTER)	EnvEurope in 2011	EnvEurope in 2012
IT04 Mediterranean Forests	Italy	Terrestrial (simple) - Forest	X	X	X
IT05 Lowland forests	Italy	Terrestrial (simple) - Forest	X	X	X
LT-01 Aukstaitija	Lithuania	Terrestrial (complex)	X	X	X
LT-03 Zemaitija	Lithuania	Terrestrial (complex)	X	X	X
LT-04 Nagliai, Curonian Spit NP	Lithuania	Terrestrial (simple) - Coastal	X		X
01 The Sulejowski Reservoir	Poland	Lacustrine	X	X	X
20 Lake Mikołajskie	Poland	Lacustrine	X	X	X
27 West Polesie BR	Poland	Lacustrine	X	X	X
15 Brenna	Poland	Terrestrial (complex)	X	X	X
27 West Polesie BR	Poland	Terrestrial (complex)	X		X
PL01 Karkonoski NP	Poland	Terrestrial (simple) - Forest	X		X
PL05 Tatrzański NP	Poland	Terrestrial (simple) - Forest	X	X	X
PL17 Kampinoski NP	Poland	Terrestrial (complex) - Forest	X	X	X
PL18 Primateval Białowieża Forest	Poland	Terrestrial (complex) - Forest	X	X	X
01 Braila Islands	Romania	Lacustrine	X	X	X
01 Braila Islands	Romania	Terrestrial (complex)	X	X	X
02 Neajlov Basin	Romania	Lacustrine	X		X
02 Neajlov Basin	Romania	Terrestrial (complex)	X		X
RO01 Bucegi P. Craiului NP	Romania	Terrestrial (simple) - Alpine	X	X	X
RO01 Bucegi P. Craiului NP	Romania	Terrestrial (simple) - Forest	X	X	X
01 Donana	Spain	Lacustrine	X	X	X
01 Donana	Spain	Terrestrial (complex)	X	X	X
SP01 Donana	Spain	Terrestrial (simple) - Coastal	X	X	X
SP03 Aigüestortes	Spain	Lacustrine	X		X
04 Illes Atlàntiques	Spain	Marine	X		X
04 Illes Atlàntiques	Spain	Terrestrial (complex)	X		X
Ordesa y Monte Perdido	Spain	Terrestrial (simple) - Alpine	X		X
SP02 Sierra Nevada	Spain	Terrestrial (simple) - Alpine	X		X
SP06 Colserolla	Spain	Terrestrial (simple) - Forest	X		X
SE01 Northern coniferous forest	Sweden	Terrestrial (simple) - Forest	X	X	X
SE02 Central Swedish uplands spruce forest	Sweden	Terrestrial (simple) - Forest	X	X	X
SE03 South Swedish uplands spruce forest	Sweden	Terrestrial (simple) - Forest	X	X	X
SE04 West coast spruce forest	Sweden	Terrestrial (simple) - Forest	X	X	X







## 31 Dec 2011: Deliverable A5\_5.2



ENVeurope Project  
Life08 ENV/IT/000399



### Deliverable A5\_5.2\_CNR\_IBAF “Report on field Activity, data harmonisation and sampling coordination”

Dissemination Level	Internal
Due date of Delivery	31/12/2011
Document type and Version	Deliverable
Responsible	Giorgio Matteucci, CNR IBAF
Author	Giorgio Matteucci, Marco Bascietto
Language	English



## Deliverable A5\_5.2: contents



ENVeurope Project  
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### Content

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Field activity in 2011	8
The parameter set for 2012 "testing in the field" campaign	13
Data delivery issues	20

Annex 1 to 4: Parameters to be measured during the 2012 EnvEurope campaign at Terrestrial, River, Lake and Marine sites with comments and details

# The 2012 field campaign





# Parameter set for EnvEurope A5 1/3

## Selection criteria

- Feasible for many/all partners
- Inclusion of different ecosystems (same or similar indicator tested in different ecodomains)
- Related to long-term data sets and/or exemplary exercise
- Useful for project proposals (A3)
- Suitable for upscaling, GMES (Remote sensing), dissemination



# Parameter set for EnvEurope A5 2/3

## Base for selection:

- A2 indicator/parameter matrix
- A2/A3 „frequency“ table (what is measured at sites)
- Possibility to test methods (or compare)
- A „suite“ of parameters with accompanying ancillary variables:
  - Example: biodiversity assessment (list of species – vegetation, animals, cross-domain) + meteorological base parameters
  - Characterise the „testing in the field“ year for possible anomalies (climate main candidate)

# Parameter set for EnvEurope A5

3/3

## Important considerations:

- Emphasis to:
  - cross-domain indicators/parameters
  - parameters for which trends can be derived (long-term)
- Consistency and relationships
  - parameters/indicators should be linked or have mutual importance/reference (e.g. habitat structure and biomass)





# A2 matrix:

				LTER ecosystem type		
				terrestrial ecosystems	freshwater ecosystems	marine ecosystems
ecosystem structures	biotic diversity		flora diversity	Indicator	indicator	indicator
			fauna diversity	Indicator	indicator	indicator
			habitat structure	Indicator	indicator	indicator
			additional variables	Indicator	indicator	indicator
	abiotic heterogeneity		soil heterogeneity	Indicator	indicator	indicator
			water heterogeneity	Indicator	indicator	indicator
			air heterogeneity	Indicator	indicator	indicator
			habitat heterogeneity	Indicator	indicator	indicator
			additional variables	Indicator	indicator	indicator
ecosystem process	energy budget	input	exergy capture	Indicator	indicator	indicator
		storage	exergy storage	Indicator	indicator	indicator
		output	entropy production	Indicator	indicator	indicator
		Addit. state variables	meteorology	Indicator	indicator	indicator
		efficiency measures	metabolic efficiency	Indicator	indicator	indicator
	matter budget	input	matter input	Indicator	indicator	indicator
		storage	matter storage	Indicator	indicator	indicator
		output	matter loss	Indicator	indicator	indicator
		Addit. state variables	element concentrations	Indicator	indicator	indicator
		efficiency measures	nutrient cycling	Indicator	indicator	indicator
	water budget	input	water input	Indicator	indicator	indicator
		Storage	water storage	Indicator	indicator	indicator
		Output	water output	Indicator	indicator	indicator
		Addit. state variables	element concentrations	Indicator	indicator	indicator
		efficiency measures	biotic water flow	Indicator	indicator	indicator

# What we are measuring

- All sites:
  - One parameter/indicator for each of the ecological integrity element:
    - Ecosystem structure and processes
    - Biotic; abiotic; energy, matter and water budgets
- More intensive sites:
  - Assess a parameter for as many as possible of the different ecological integrity indicators :
    - Ecosystem structure:
      - flora and fauna diversity, habitat structure, additional
      - soil, water, air, habitat heterogeneity
    - Ecosystem processes:
      - input, storage, output, efficiency measures





# Detailed technical document, one for each ecodomain



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## A5 "Testing in the field"

Parameters to be measured during the 2012 EnvEurope campaign

### MARINE SITES

#### Content

#### Introduction

2

#### Level 1 – All sites

3

1. Ecosystem structure – biotic diversity
2. Ecosystem structure – abiotic heterogeneity
3. Ecosystem processes – energy budget

3

3

5

#### Level 2 – Selected sites (where possible)

6

- A) Ecosystem structure – biotic diversity
- B) Ecosystem processes – abiotic heterogeneity
- C) Ecosystem processes – energy budget
- D) Ecosystem processes – matter budget

6

7

7

8



## LEVEL 1 – ALL SITES

### 1. Ecosystem structure – Biotic Diversity

#### 1.1 MAIN INDICATOR: flora diversity

##### Indicator/parameter to be assessed in 2012 campaign:

**Primary producers (phytoplankton, macrophytes, microphytobenthos) diversity, at a detail to be representative for the site/plot for 2012.**

##### Comment/highlight:

This parameter will allow the determination of indicator such as list of species, absolute and relative abundance, diversity index. (1<sup>st</sup> level indicator as reported in A2 table). Alien/harmful species, cell size (2<sup>nd</sup> level indicator of A2 table).

Where possible and feasible: for phytoplankton and microphytobenthos: species richness, total and % abundance and biomass of Bacillariophyceae, Prymnesiophyceae, Dinoflagellates, Nanoflagellates and Cyanobacteria.

**For sites where it is relevant (e.g. shallow water, coastal): seagrasses – macrophytes (species). See under A.2 “within habitat structure” for biomass and phenology of seagrasses (pag 6).**

It is acknowledged that not all the different compartments (phytoplankton, macrophytes, microphytobenthos) will be assessed at all marine sites. What will be measured will depend both on the specific ecosystem structure (e.g. pelagic or coastal) and on the expertise available at the single sites. However, it will be important that parameters of flora diversity will be available for all participating marine sites.

Possibility to assess trends if data of previous years will be made available.

**Possibility to assess presence/incidence of alien species (see 2<sup>nd</sup> level indicator)**

Type of information: data and metadata

Relevant to A3 projects number 2, 3, 4, 12



# Table to filled by Sites Responsibles

## Level 1 - all sites

ELEMENTS Ecological Integrity	ELEMENTS Ecological Integrity	INDICATORS Ecological integrity	Parameter	Assessed at site in 2012 (YES/NO)	Available at site (historical data) (YES/NO)	Method (keyword only)
Ecosystem structure	Biotic diversity	Flora diversity	Vascular plant species list			
			Vascular plant abundance			
			Vascular plant coverage			
Ecosystem structure	Biotic diversity	within habitat structure	Within habitat diversity			
			Deadwood			
			Number, type and coverage of layers (vertical, horizontal)			
Ecosystem structure	Abiotic heterogeneity	Soil	Soil type			
			Main soil features			
			Soil C/N			
Ecosystem structure	Abiotic heterogeneity	Air	Annual mean temperature and precipitation (snow where relevant)			
			Monthly precipitation and mean (min, max) temperature			
			Other main meteorological variables			
Ecosystem structure	Abiotic heterogeneity	Habitat diversity	Cover of CORINE/EUNIS land uses and habitats			
Ecosystem structure	Abiotic heterogeneity	(additional)	Management (presence, absence, quantitative data)			
Ecosystem processes	Energy budget	Energy input	Disturbances: presence and type			
Ecosystem processes	Energy budget	Energy storage	Global radiation reaching the site			
		(relevant also for matter storage)	Aboveground biomass by indirect methods			
			Direct measurements of aboveground biomass (sampling)			

## Level 2 - where feasible

ELEMENTS Ecological Integrity	ELEMENTS Ecological Integrity	INDICATORS Ecological integrity	Parameter	Assessed at site in 2012 (YES/NO)	Available at site (historical data) (YES/NO)	Method (keyword only)
Ecosystem structure	Biotic diversity	Fauna diversity	Species list of fauna			
			Presence and list of faunal species under Habitat and Birds directive			
Ecosystem structure	Biotic diversity	within habitat structure	Leaf Area Index			
Ecosystem structure	Biotic diversity	(additional)	Phenology of dominant cover at the site			
			Main phenological phases for dominant cover			
			Health status of ecosystem (e.g. crown transparency, defoliation, more complex assessment)			
Ecosystem structure	Abiotic heterogeneity	Water	Soil water content			
			Presence/absence of water table			
			Depth of water table			
			Susceptibility of the site to drought (qualitative/quantitative)			
Ecosystem processes	Energy budget	Energy input	Net radiation			
			Absorbed radiation			
Ecosystem processes	Energy budget	Energy efficiency measures	Aboveground Net Primary Production			
			Net Primary Production			
			History of growth by tree ring widths			
Ecosystem processes	Matter budget	Matter input	Litterfall (aboveground)			
			Atmospheric deposition of main nutrients/pollutants			
			Chemistry of precipitation and snow			



# Level 1 - all sites

ELEMENTS Ecological Integrity	ELEMENTS Ecological Integrity	INDICATORS Ecological integrity	Parameter	Assessed at site in 2012 (YES/NO)	Available at site (historical data) (YES/NO)	Method (keyword only)
			Vascular plant species list			

## Level 1 - all sites

ELEMENTS Ecological Integrity	ELEMENTS Ecological Integrity	INDICATORS Ecological integrity
Ecosystem structure	Biotic diversity	Flora diversity
Ecosystem structure	Biotic diversity	within habitat structure
Ecosystem structure	Abiotic heterogeneity	Soil
Ecosystem structure	Abiotic heterogeneity	Air
Ecosystem structure	Abiotic heterogeneity	Habitat diversity
Ecosystem structure	Abiotic heterogeneity	(additional)
Ecosystem processes	Energy budget	Energy input
Ecosystem processes	Energy budget	Energy storage (relevant also for matter storage)





Level 1 - all sites

ELEMENTS Ecological Integrity	ELEMENTS Ecological Integrity	INDICATORS Ecological integrity	Parameter	Assessed at site in 2012 (YES/NO)	Available at site (historical data) (YES/NO)	Method (keyword only)
Ecosystem structure	Biotic diversity	Flora diversity	Vascular plant species list Vascular plant abundance			

Parameter	Assessed at site in 2012 (YES/NO)	Available at site (historical data) (YES/NO)	Method (keyword only)
Vascular plant species list			
Vascular plant abundance			
Vascular plant coverage			
Within habitat diversity			
Deadwood			
Number, type and coverage of layers (vertical, horizontal)			
Soil type			
Main soil features			
Soil C/N			
Annual mean temperature and precipitation (snow where relevant)			
Monthly precipitation and mean (min, max) temperature			
Other main meteorological variables			
Cover of CORINE/EUNIS land uses and habitats			
Management (presence, absence, quantitative data)			
Disturbances: presence and type			
Global radiation reaching the site			
Aboveground biomass by indirect methods			
Direct measurements of aboveground biomass (sampling)			





- Tables sent out on Friday to ABs, A5 reference people, external assistance contacts (copy to “all”)
- Quite successful return “rate”
- 20/67 sites replied (~ 30%, in two working days!!!!)
- But: still to be checked....

## To do list until December 2012

- Site Tables to be returned → **31.05.2012**
- Measure parameters at sites, feedback on problems, if needed ask for clarification on methods, etc. → **all year**
- Start to send **data for 2011** (A5 parameters, AB EnvEurope sites): exercise for 2012 data submission, relevant for A3 and trend analysis (Data tool: A1, A3, A5) → **30.06.2012 (A3-A5); 30.09.2012 (A5)**
- Provide metadata for data of the field campaign using the metadata editor (request from A1) → **start soon, continuous**
- Dissemination-communication: event with media, public, at your site, with photos, video, etc. → **30.09.2012**
- All will contribute to the **Deliverable of 31.12.2012** (*Report on field Activity, data harmonisation and sampling coordination*)



## A5: use your budget (and more?)

- Travel to sites (travel costs)
- Personnel to perform the measurements and elaboration (timesheets, permanent and temporary personnel)
- EXTERNAL ASSISTANCE:
  - Sites not coordinated by EnvEurope Abs
  - Parameters at your sites

Last chance to sign and start contracts!!!!
- Consumables for field work and laboratory analysis



# What to expect from A5 coordination

- Lots of e-mails ..... We will try one-to-one!!!
- Skype meeting at national level
- A technical meeting, if possible (check on budget for sites run on external assistance)
  - Suggest to have national A5 technical meetings
- Support for problems, clarification



# For tomorrow

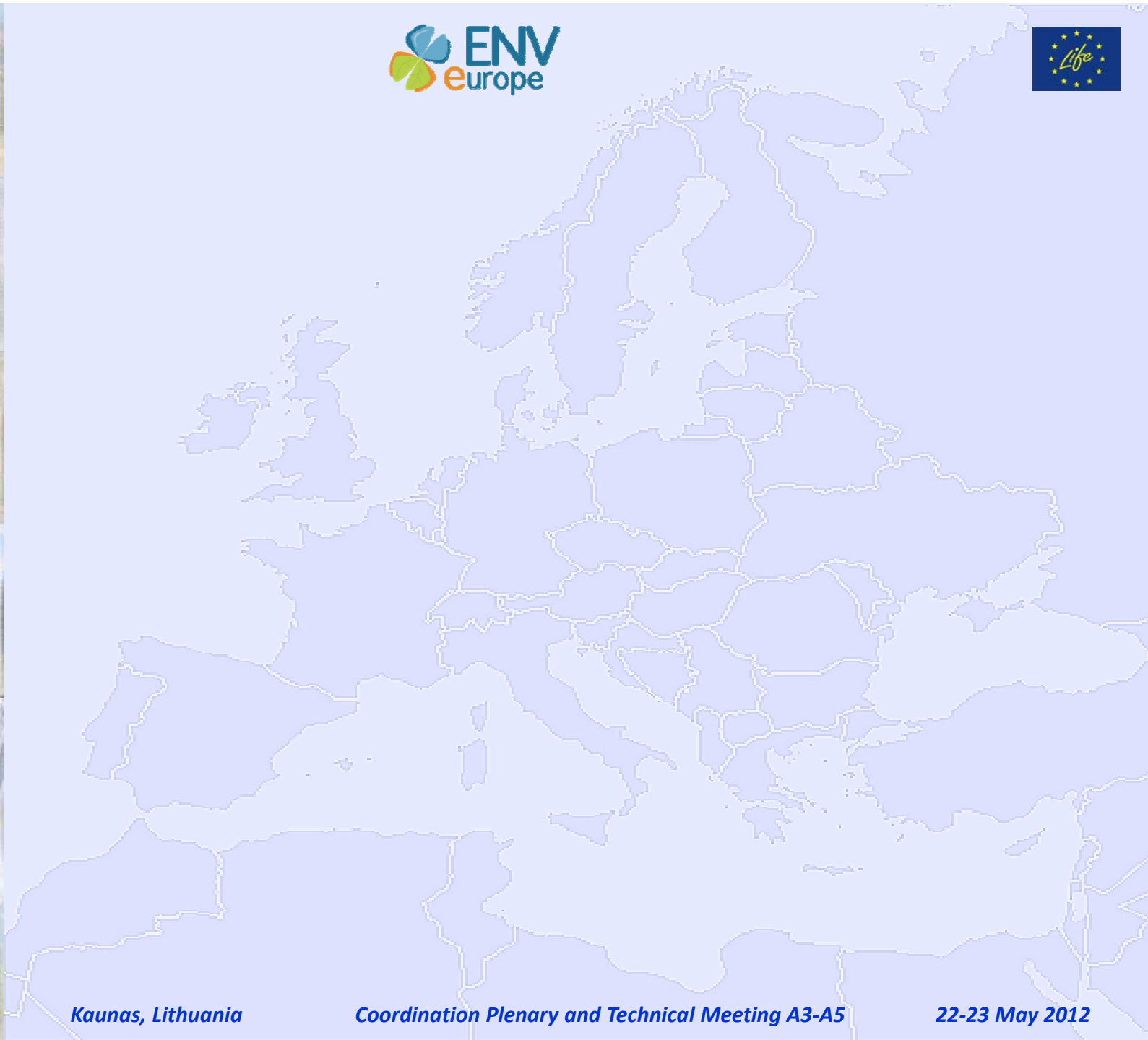
- 11:00 – 12:00 and 13:00 – 14:00
- ✓ Presentations and update on field activities, current and future planning
  - Presentation by sites on “significant” activities
    - Myself
    - I. Meszaros HU
    - M. Frenzel DE
    - Others!!!!!!!
- 14:00 – 14:45
- Metadata and data reporting issues
  - Cooperation with A1
- 15:15 – 16:00
- Update, planning and fine-tuning of the dissemination event at sites (“exemplary week”)
  - Cooperation with A6



A light blue map of Europe with white outlines of the countries, serving as a background for the central text.

**Thanks and....  
discussion!**





*Kaunas, Lithuania*

*Coordination Plenary and Technical Meeting A3-A5*

*22-23 May 2012*