CITIDEP - Research Center on Information Technology and Participatory Democracy

ENVIRONMENT - HEALTH - CITIZENSHIP

EDUCATION FOR SUSTAINABLE DEVELOPMENT

EuroLifeNet

Pedro Ferraz de Abreu

MIT, CITIDEP

IES - Institute for Environment and Sustainability / JRC - Joint Research Centre - UE

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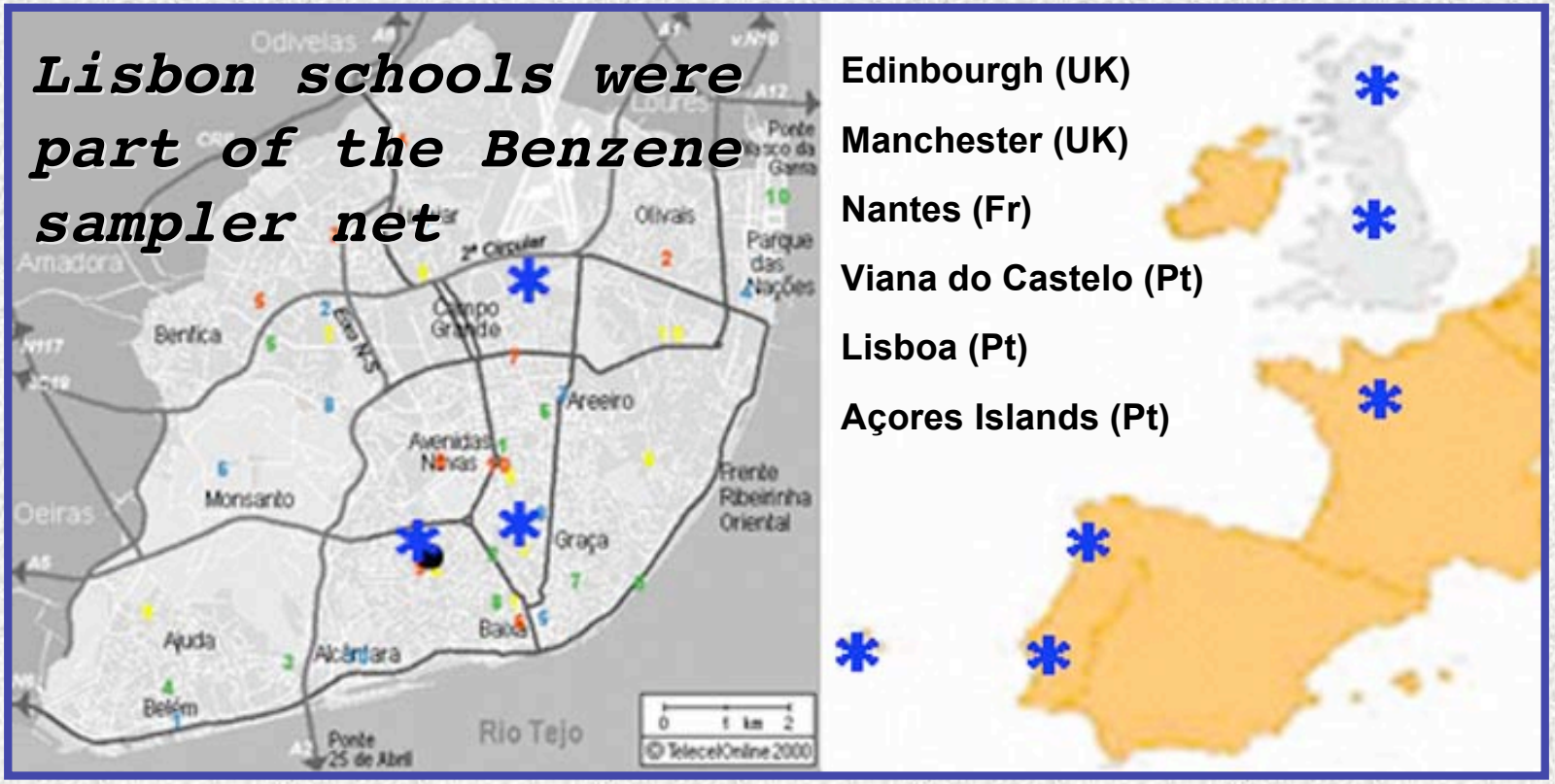
CITIDEP promotes networks with scientists, teachers and students



Using Internet (web broadcast) and videoconference to allow access of remote areas and student communities abroad

12 June 2003

Activity: Role-Play on “PEOPLE” issues

Characters:

Parliament member (PS)

Cancer specialist (M. Doctor)

Smokers’ association pro-active

Car Manufacture Industrial

Oil Industry Owner

Querqus’ member (environmentalist)

Gas Pump worker

We wanted students to also use REAL results from PEOPLE

2003 Highschool students work with Elementary school students

Students in Lisbon say goodbye
to students in Viana do Castelo

PEOPLE Videoconference
and Internet broadcasting II
with chat for students
from the 2nd and 3rd grade

Activity: “ The air exists,
although we can't see it”

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Needs:	**Problems**:
Personal Exposure Data	Expensive, Resource-hungry
Raising Awareness	Often Superficial, Non-sustained
Promoting Citizenship	Political correct does not work
Teaching Experimental Sciences	Requires resources & motivation

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EURO-LIFE-NET:

CITIDEP PROGRAM

In each School in the EuroLifeNet, groups of students lead by a teacher will "adopt" each an **"EuroLifeNet Node"**, and keep a regular record of indicators measured on this Node.

- Node ID: School, GPS Long/Lat/Z, type
- Nodes may be indoor or outdoor
- Bio-Physics measures at the Node
- Socio-economic measures in a circle (or grid) centered at the Node
- Composite data (tracing data around the node, eg. students carrying sensor 24h measuring personal exposure, with diary)

Program timetable: Set-up (2005-06) ; Pilot Project (2006-07) ; Expansion (2007-2014)

EURO-LIFE-NET:

CITIDEP PROGRAM

All **“EuroLifeNet Nodes”** share their data and integrate it at multiple scales, “feeding” different uses and agregate records. In many cases, procedures can be incorporated in curricula.

- Adoption of common data protocols
- Data validation procedures with institutions
- Sets of tool kits for schools and teachers
- Use of integrating tools and architectures*
- Events inter-schools and public awareness
- Scalable + modular, easy procedure to join

* BOINC - Berkeley Open Infrastructure for Network Computing (**boinc.berkeley.edu**) / GLOBE (**www.globe.gov**)

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Pilot Project with focus on Particulate Matter (PM 10 / PM 2.5)

Contribute to EU (APHEIS, JRC/IES) Environment-Health Strategy

In sync with UN ***"Education for Sustainable Development" Decade***

Scientific Coordination by IES-JRC

10-20 Schools in EU, distributed East-West, North-South, urban and non-urban

Portable PM samplers + local station (right)

Local partnerships with Schools + Gov/PAd + Environment/Healh Institutions + NGOs

Funding application to "LIFE+" and other

Pilot project timetable: Set-up (2005-2006) ; School implementation (2006-2007)

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Pilot Project with focus on Particulate Matter (PM 10 / PM 2.5)

Contribute to EU (APHEIS, JRC/IES) Environment-Health Strategy

In sync with UN ***"Education for Sustainable Development" Decade***

IES-JRC equips* EuroLifeNet schools and coordinate scientific procedures

Students carry portable PM sampler (right), a portable GPS and make a 12 h diary

One student at a time, with different habits and trajectories, will provide a rich map

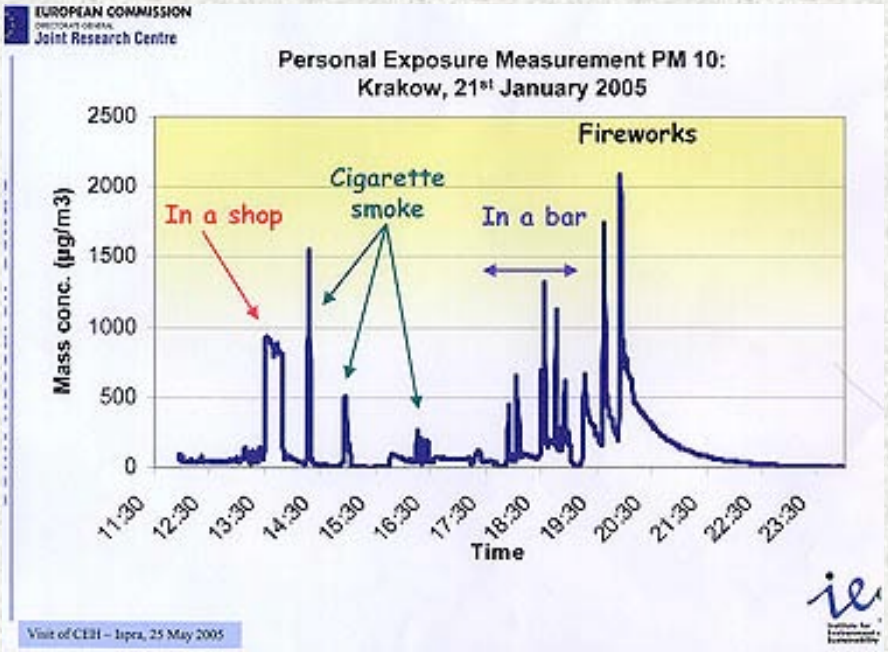
Other associated projects may benefit from this pilot EuroLifeNet project, and amplify it

* IES-JRC will lend the PM samplers to designated schools, for the project duration

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

The electronic nature of the portable samplers allows for easy data extraction, network sharing and analysis. Together with a diary and GPS data, this will be a powerful tool both for scientists and teachers.

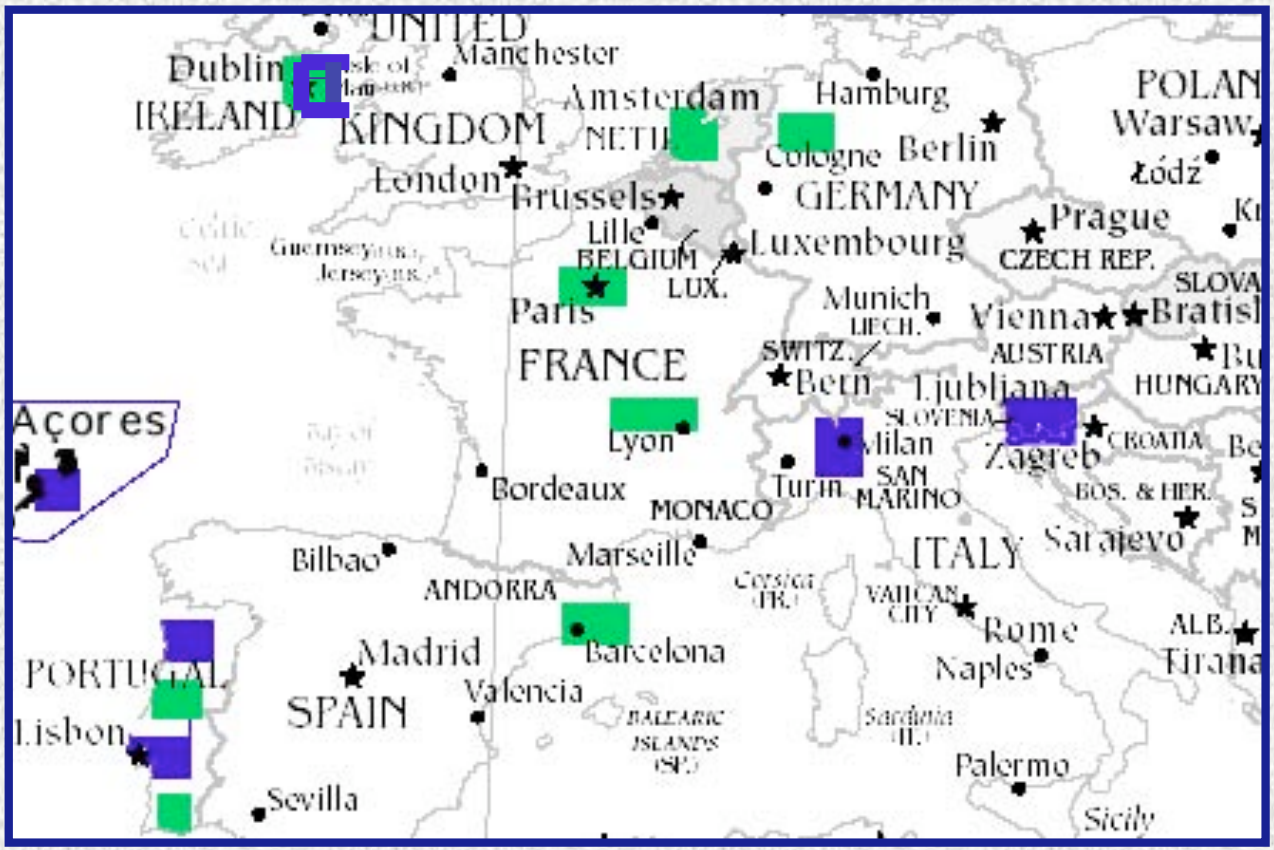


Download movie file
(http://www.citidep.net/mov/PMportsampler.mov)

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Students:	665
(measuring:	235)
Teachers:	51
Researchers:	11
Experts:	5
HighSchools:	10
Universities:	4
Research C.:	5
NGOs:	3



PROGRAM [2005 - 2014]

PILOT PROJECT [2006 - 2007] ***EXPANSION [2008->]***

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Classes: 15 basic + sec. (14-17)
Students: 340 (82 with devices)
Teachers: 18

LISBOA CLUSTER :

- **CITIDEP Lisboa**
- **Ministry of Environment, Lisbon V.T.**
  Air Quality Division
- **Universidade Nova Lisboa**
  Dpt Ambiente
- **Instituto de Ciências Sociais-UL**
- **1 partial post-doc**
- **3 Highschools**
  Pedro Nunes, Maria Amalia
  Anselmo Andrade (Almada)
- **1 Elementary school** (Torel)

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Açores CLUSTER :

- **CITIDEP Açores**
- **1 Highschool**

  Escola Secundária
  Jerónimo de Andrade,

  Angra do Heroismo, Açores

Classes: 4 basic + sec. (12-19)
Students: 80 (24 with devices)
Teachers: 4

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

VIANA do CASTELO CLUSTER :

- **Escola Superior de Educação-IPVC**
- **Universidade do Minho, Dpt Fisica**
- **1 Master Thesis**
- **CITIDEP Viana do Castelo**
- **2 Highschools**
  Ponte de Lima,
  Póvoa Varzim

Classes: 2 basic + sec. (14-17)
Students: 45 (39 with devices)
Teachers: 4 + 3 (ESE)

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

MILAN CLUSTER:

- **Mamme Antismog di Milano**
- **Milan Istituto dei Tumori**
- **Assoutenti Lombardia**
- **3 Highschools**
- **CITIDEP Firenza**

Classes: 7 basic + sec. (13-18)
Students: 200 (90 with devices)
Teachers: 12

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Experts & scientists **Teachers** **Civic action**

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Experts & scientists **Teachers** **Civic action**

What to measure

When to measure

How long to measure

How to measure

Network Synchronism

Use of data

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Experts & scientists **Teachers** **Civic action**

What to measure

When to measure

How long to measure

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Network Synchronism

Use of data

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

Experts & scientists **Teachers** **Civic action**

What to measure

When to measure

How long to measure

How to measure

Network Synchronism

Use of data

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

	Experts & scientists	Teachers	Civic action
What to measure	PM 2.5	No strong preference	PM 10
When to measure	• Seasonal • Also weekend/night	• According to curricula • Day only, no w/e	• When pollution is worse
How long to measure	1 month minimum, at least twice a year	1 or 2 weeks, at most twice a year (2/year)	As long as possible
How to measure	Always same person per period / sampler	Many different students per period	As many students as possible, also adults
Network synchronism	Little sync. value; Concentrate all resources one site at a time	High sync. value; All schools in sync, for short periods of time <= 2/year	High sync. value; All in sync, as frequently as possible
Uses of data	• Correlate with regular monitoring network data; • Environment/health correlations	• Relate with other course curricula; • Curricula update, exciting participatory science methodology; • Student debate/raising awareness.	• Public raising awareness; • Data as political tool for stronger regulation; • Call for more monitoring and pro-active solutions.

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

TRAINING

Experts

Teachers

EURO-LIFE-NET:

CITIDEP PROGRAM (with IES-JRC kind support)

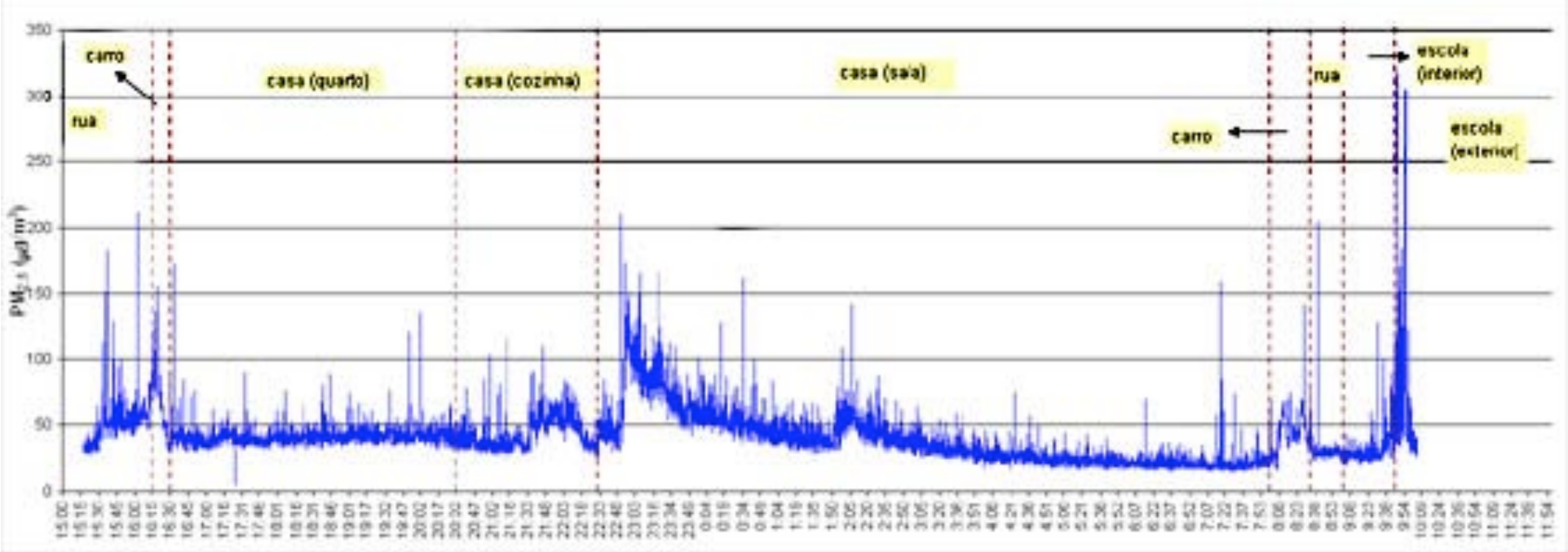
TRAINING

Experts

Teachers

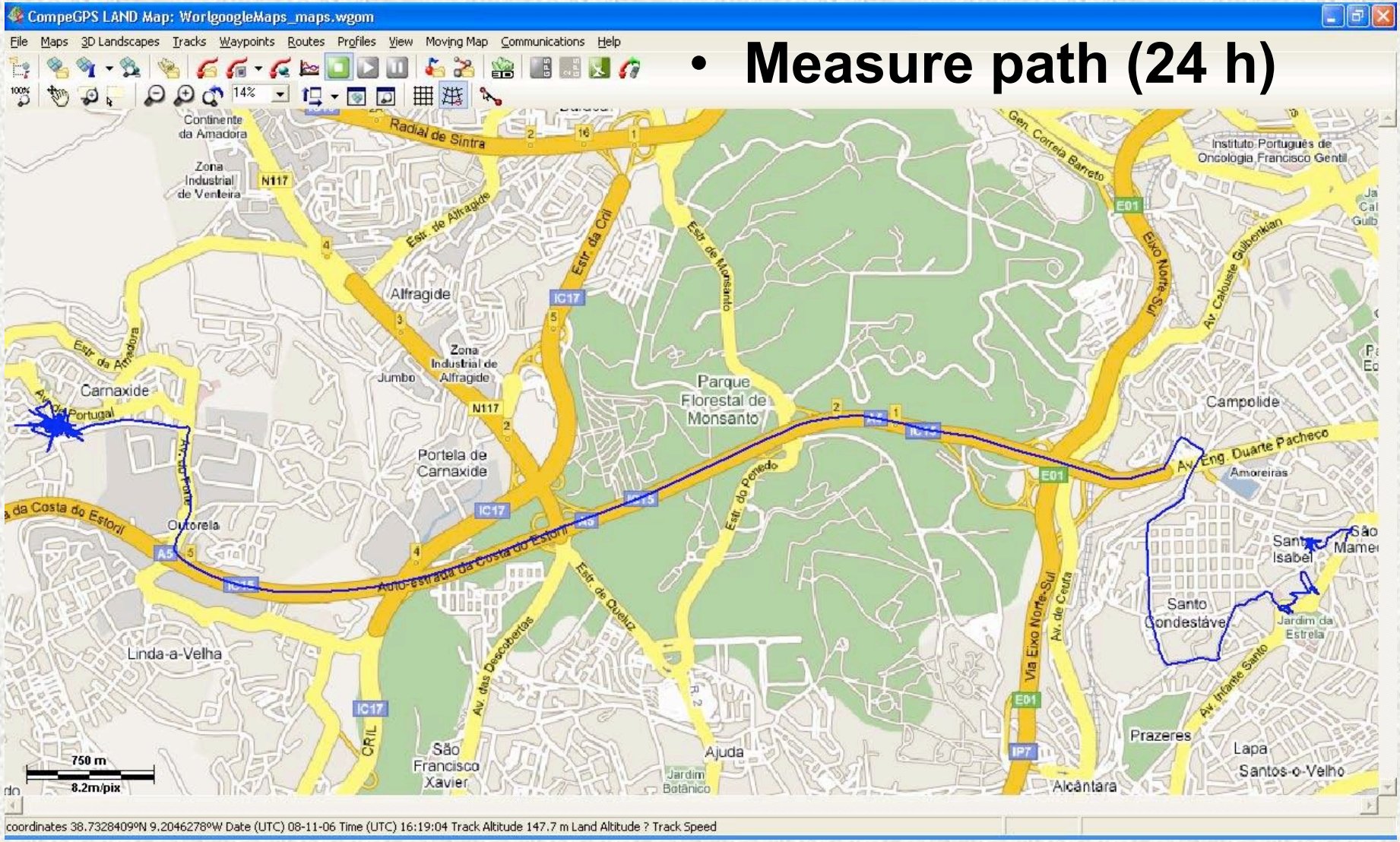
Example of Student Measure - Lisbon November 2006

- PM 2.5 Graphic (24 h)



Example of Student Measure - Lisbon November 2006

- **Measure path (24 h)**



Preliminary Evaluation - December 2006

- Kitchen - burned pan
- Tobacco
- Traffic (school exit rush hours)
- Indoor vs Outdoor (ex. Forest)

  – **Preliminary Feedback:**

- Students (rigourous protocol, criativity, weight)
- Teachers (curricula integration, extra burdens)
- Parents (support - few exceptions, curiosity, electricity costs)

» **FUNDING DELAYS !**

Formal Institutional Support:

- Secretary of State for Education, Portugal
- Secretary of State for Environment, Portugal
- IES-Joint Research Centre, European Commission

Funding:

- Ciência Viva – Ministery of Science, Technology and Higher Education **- funding POCI**

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EuroLifeNet / CiênciaViva

Partners:

www.citidep.pt • www.eurolifenet.eu • www.citidep.net

HighSchools Participating: (Portugal)

- Escola Secundária de **Ponte de Lima**
- Escola Secundária de Rocha Peixoto, **Póvoa do Varzim**
- Escola Secundária Maria Amália Vaz de Carvalho, **Lisboa**
- Escola Secundária Pedro Nunes, **Lisboa**
- Escola Secundária Anselmo de Andrade, **Almada**
- Escola Secundária Jerónimo de Andrade, Angra do Heroismo, **Açores**

EURO-LIFE-NET:

CITIDEP PROGRAM

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