

**Euro-limpacs**



Project no. **GOCE-CT-2003-505540**

Project acronym: **Euro-limpacs**

Project full name: **Integrated Project to evaluate the Impacts of Global Change on European Freshwater Ecosystems**

Instrument type: **Integrated Project**

Priority name: **Sustainable Development**

**Deliverable No.139**

**Development of End user /stakeholder and Public part of Web site  
(WP10 Task 2)**

Due date of deliverable: **Month 24**

Actual submission date: **Month 24**

Start date of project: **1 February 2002**

Duration: **5 Years**

Organisation name of lead contractor for this deliverable: **UCL**

Revision **Final**

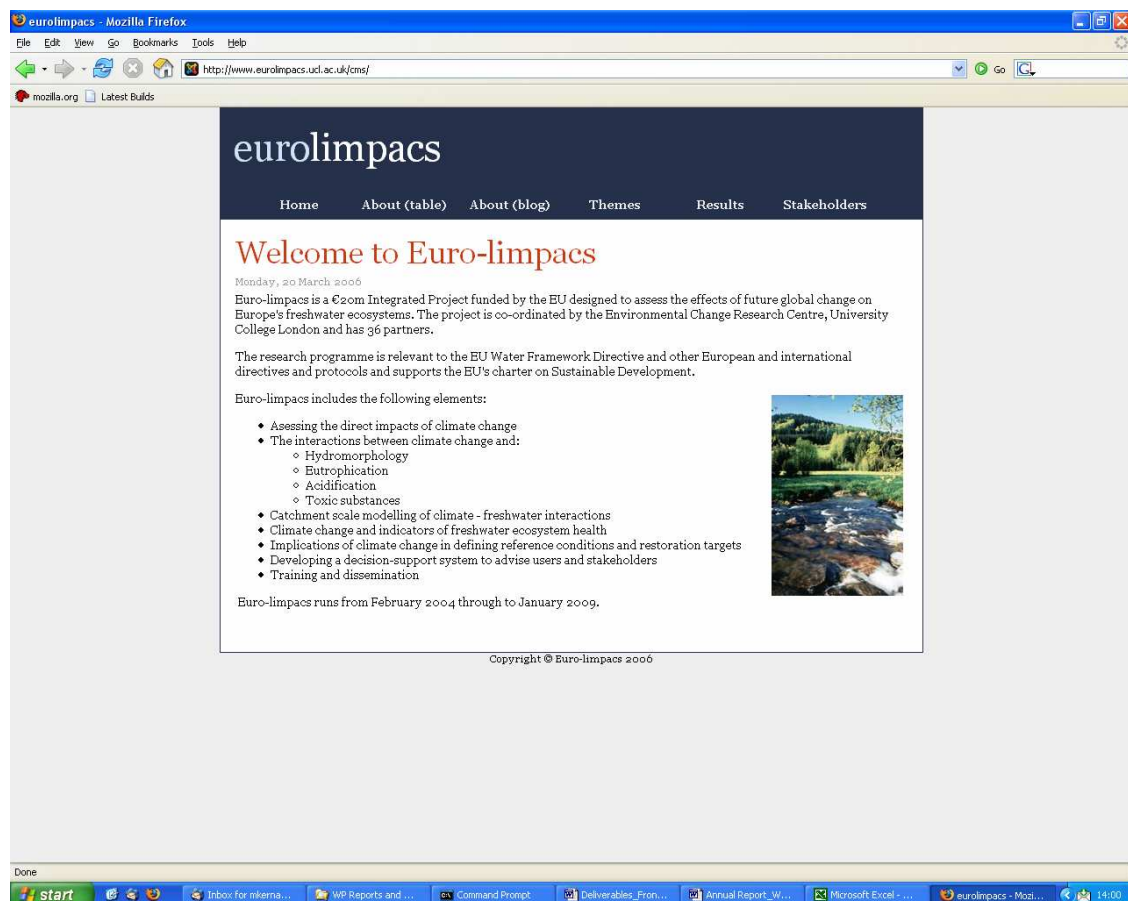
<b>Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)</b>		
<b>Dissemination Level (tick appropriate box)</b>		
<b>PU</b>	Public	PU
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

Following the comments of the Project reviewers during the first Annual Project review it was decided to expand the public part of the Web site to provide a greater level of access to the objectives and output from the Project. More detailed information is to be provided in this area and there will be an area (Euro-limpacs briefings) where the general public can be kept informed of Project results on an ongoing basis. A series of key questions have been highlighted and results from these will be updated as the Project progresses.

To facilitate this development the public part of the Web site has been redeveloped using a Content management System. This has meant that the expansion of the public part, although underway, is not as advanced as previously estimated. However, now that the Content management System is in place more resources will be put into populating this area.

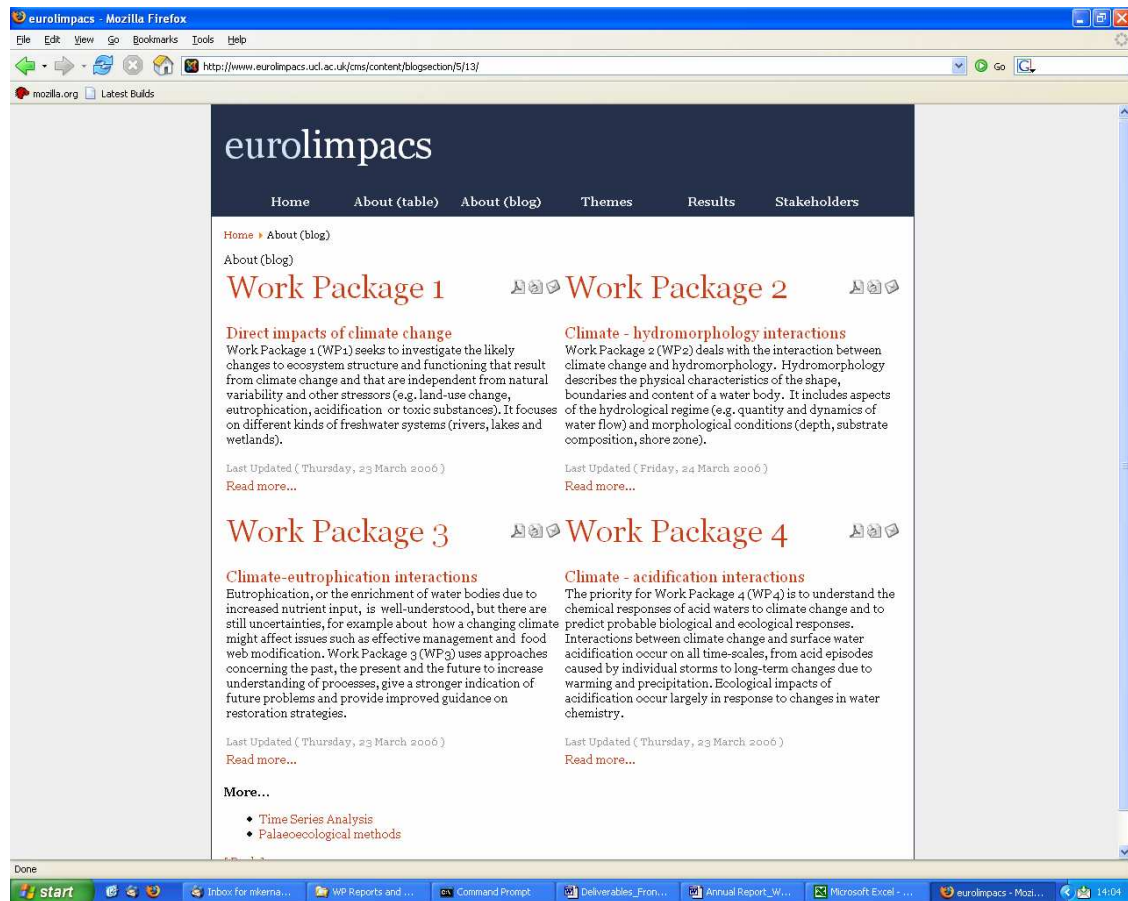
The current design of this part of the Web page is shown by the screen grab below (Figure 1).

Fig 1: Screen grab of the (current) front page of the public part of the Project Web site



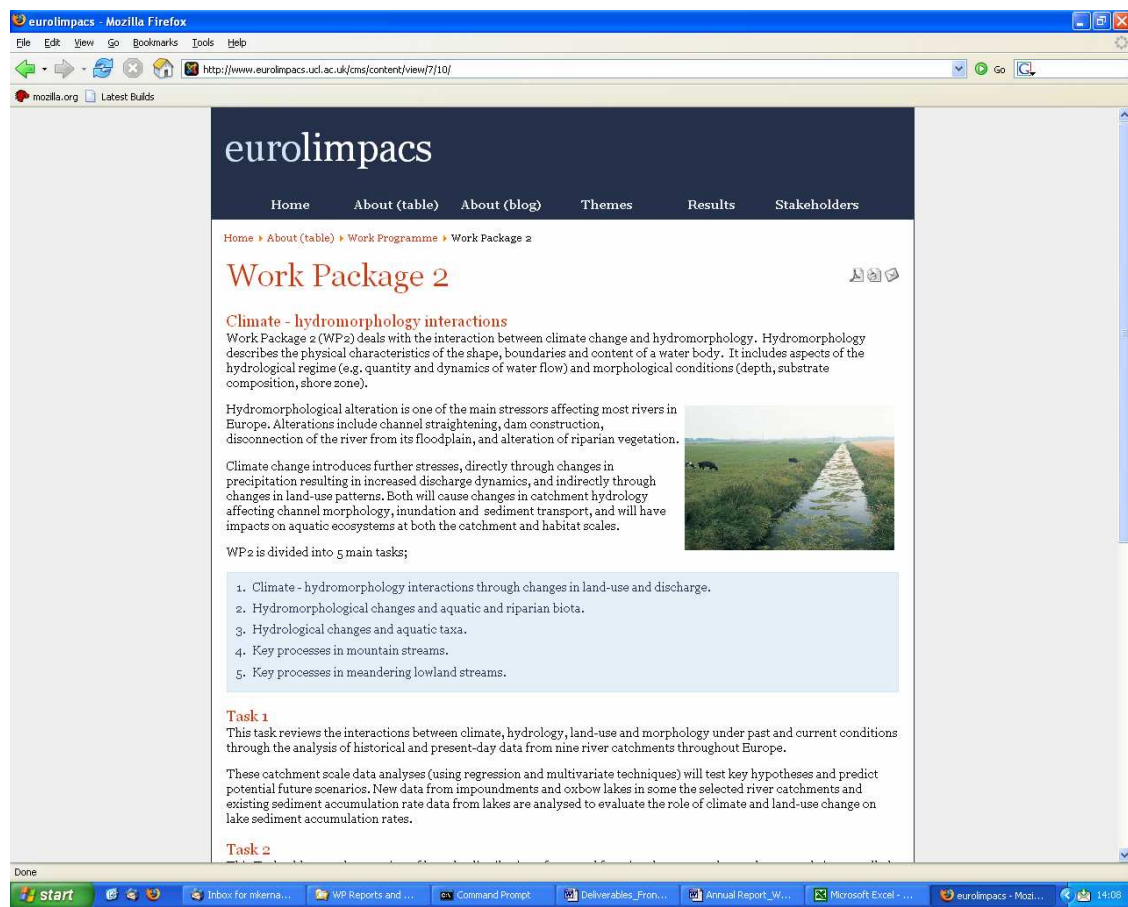
Access to information about each of the work packages will be provided in an easy to navigate way. Figure 2 shows how visitors will be able to select more detailed information about each of the individual work packages.

Figure 2: Introduction to each of the work packages



More detailed information is available by clicking any of the work packages headings. Figure 3 is the first page in information relating to WP2.

Figure 3: More detailed information about Euro-limpacs WP2



Information about methods being used in Euro-limpacs and sites where research is being undertaken will also be provided. Figure 4 is an example of one of the Methods pages being developed.

The results section will include access to the Deliverables web page, the Euro-limpacs briefing area and other output from the Project including a bibliography of references, a Project meta-database and a range of publicity materials designed to raise the profile for the Project. Figure 5 is an example of one of the proposed Euro-limpacs briefings.

Figure 4 Information about palaeoecological methods being employed in the Project

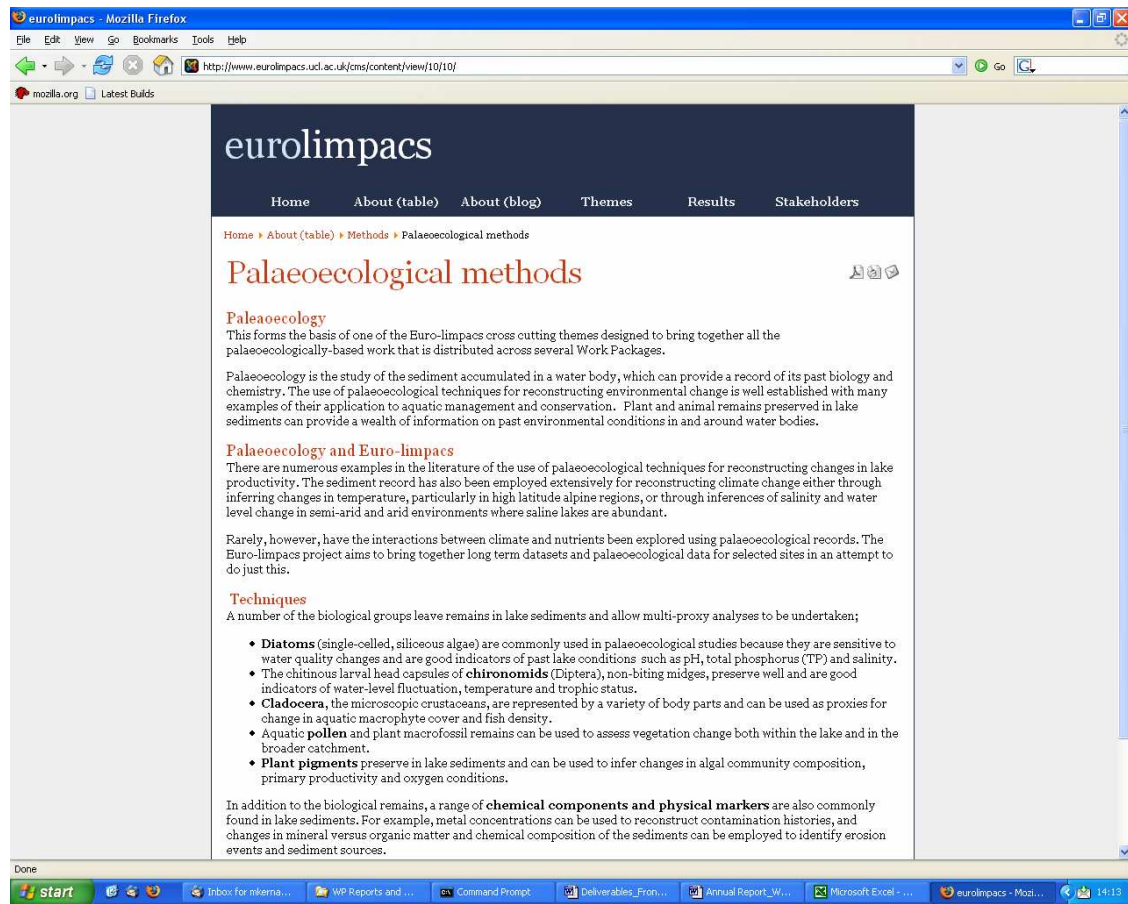


Figure 5: Example Euro-limpacs Briefing

The screenshot shows a Mozilla Firefox browser window with the address bar displaying <http://www.eurolimpacs.ucl.ac.uk/briefings/briefings.php>. The website title is "The Euro-limpacs briefing...". The navigation menu includes: Home, About the Project, About the Science, For Stakeholders, and Intranet.

## Toxics on the move?

Will climate change accelerate the release of toxic substances to fresh water ecosystems?

### Background

Toxic substances are a group of compounds that include persistent organic pollutants (POPs) and some trace metals, such as mercury, cadmium and lead. They are released into the environment through a range of processes including industrial activities and the use of pesticides and fertilisers in agriculture. These pollutants are widely dispersed throughout the environment mainly via the atmosphere and have been found at trace levels across the globe. More importantly, in aquatic and terrestrial ecosystems these substances accumulate in plants and animals and become more concentrated towards the top of the food chain—a process known as bioaccumulation—and many remain in the environment long after their use has been banned.

Today, many remote ecosystems are contaminated with atmospherically deposited pollutants. Methyl-mercury—the form of mercury available to plants and animals—is a particular problem as it is highly toxic, efficiently bioaccumulated and only small changes in the processes that control methylation and release of methyl-mercury from soils and sediments could lead to enhanced exposure in the environment.

Remobilisation of toxic substances from soils may occur if climate change leads to an alteration in the rate of key soil processes such as leaching and erosion. Peaty soils that contain historic stores of trace metals and POPs may be especially vulnerable, and accelerated release of these substances may maintain their availability in freshwater food chains in the future despite recent major reductions in their emission. Research as part of Euro-limpacs aims to develop our understanding of these processes.

### Current knowledge

Handong Yang and Neil Rose from UCL and co-workers recently showed that the reductions seen in the emissions of trace metals have not been reflected by reductions in lake sediments [Reference]. Figure 1 shows how sediment accumulation of lead (Pb) in Lochnagar, a remote corrie loch in north-east Scotland, has not declined in response to the dramatic reductions in lead emissions throughout the UK. This suggests that toxic metal inputs to the site are remaining high despite emission reductions policy.

However, while this is currently the only site for which such data exist it is thought that similar conditions exist at many other upland sites in the UK and across Europe. Although it is uncertain how widespread this problem is, it seems reasonably clear that if deposition levels are declining then this *additional* trace metal input must be derived from

### Contents

- Background
- Current knowledge
- Euro-limpacs work
  - Methods and sites
  - What are we testing?
- References



Industrial processes produce a variety of toxic pollutants that are emitted to the atmosphere



Pb: Lochnagar sediment flux vs. annual deposition & UK emissions

The graph shows two data series: Sediment Flux (represented by a line with square markers) and UK Emissions (represented by a line with circle markers). The x-axis represents time from 1970 to 2000, and the y-axis represents concentration in  $\mu\text{g Pb m}^{-2} \text{ yr}^{-1}$ . UK emissions show a sharp decline from approximately 20  $\mu\text{g Pb m}^{-2} \text{ yr}^{-1}$  in 1970 to near zero by 1990. Sediment flux remains significantly higher, starting around 10  $\mu\text{g Pb m}^{-2} \text{ yr}^{-1}$  in 1970 and showing a slight downward trend but remaining above 5  $\mu\text{g Pb m}^{-2} \text{ yr}^{-1}$  by 2000.