

# THE CD-ROM *ATLES DE LES ILLES BALEARS*: METHODOLOGICAL, USABILITY AND PROGRAMMING ISSUES WHEN USING WEB-BASED MULTIMEDIA FOR EXPLORING AND TEACHING GEOGRAPHICAL INFORMATION

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## Abstract

In this paper we present the CD-ROM *Atles de les Illes Balears* which constitutes an example of a novel way to present geographic information, in a multiwindow web-based form for exploring and understanding geographical concepts. The format gives some important added values to the paper-based traditional atlas: it allows the integration, on the one hand, of a structure of approximately 1000 information units, and on the other hand, of quite varied multimedia elements, like videos, panoramic images or 3D models, and a set of didactic applications. We chose the Web format to support both a familiar interface, the future maintenance of the system, and the integration with other information. In order to develop the *Atles* a customised and rich multimedia interface was created, and in order to do that, Javascript based programs were developed as authoring tools. The *Atles de les Illes Balears* supports the education and diffusion of geography and departs quite a lot from GIS related commercial products which are orientated mainly towards travelling and tourism, while we encourage exploration, comparison and analysis, which requires both novel presentation and navigation.

The *Atles* is a thematic atlas of the Balearics devoted to students of secondary school (between 16 and 18) and of first year undergraduate courses. It was sponsored by the Regional Government and a Regional Savings Bank, with the aim to promote the knowledge of the land and culture of the region amongst students and citizens. While some cartographic CD-ROMs have been published, the *Atles* was the first atlas in multimedia format published in Spain, and one of the first ones in Europe (there is one for Switzerland [1] which was being prepared approximately at the same time).

The navigation is mainly structured by subjects. The main subjects are *topographic map*, *physical geography* and *human geography*. Each of them has a list of subjects of second level, for instance, *orography*, *climate*, *waters*, *biogeography* and *man and environment* are the second for *physical geography*. A list of specific topics of each of those subjects links to an information unit. For instance, *climate* has associated some twenty topics like *average temperatures*, *local winds* or *Mediterranean weather*. Each information unit is composed by a set of different multimedia elements, typically a map with a text (sometimes graphics, pictures,...). At the second level, there is a guided tour with the highlights of the information related to this subject, a glossary, the bibliography, some curiosities and some multimedia (videos and panoramic images) elements. The scale is also a key point in the navigation since every topic may have information on different scales (islands, counties, towns), depending on their relevance.

Apart from the navigation by subject, the user can also access directly all the materials by indexes: texts, maps, pictures, tables, graphics,... Lastly, a third part of the application is a set of didactic applications: some games (with a geographic metaphor); a tool (a Java applet) to measure distances on a map; a simulation of how a GIS works; a 3D flight over the islands (VRML-based); and a repository with the information of each municipality.

At the time of preparation, no sufficiently powerful multimedia authoring tools existed for the WWW, such as now Macromedia's DreamWeaver, or Adobe's GoLive. We developed our own set of tools for the

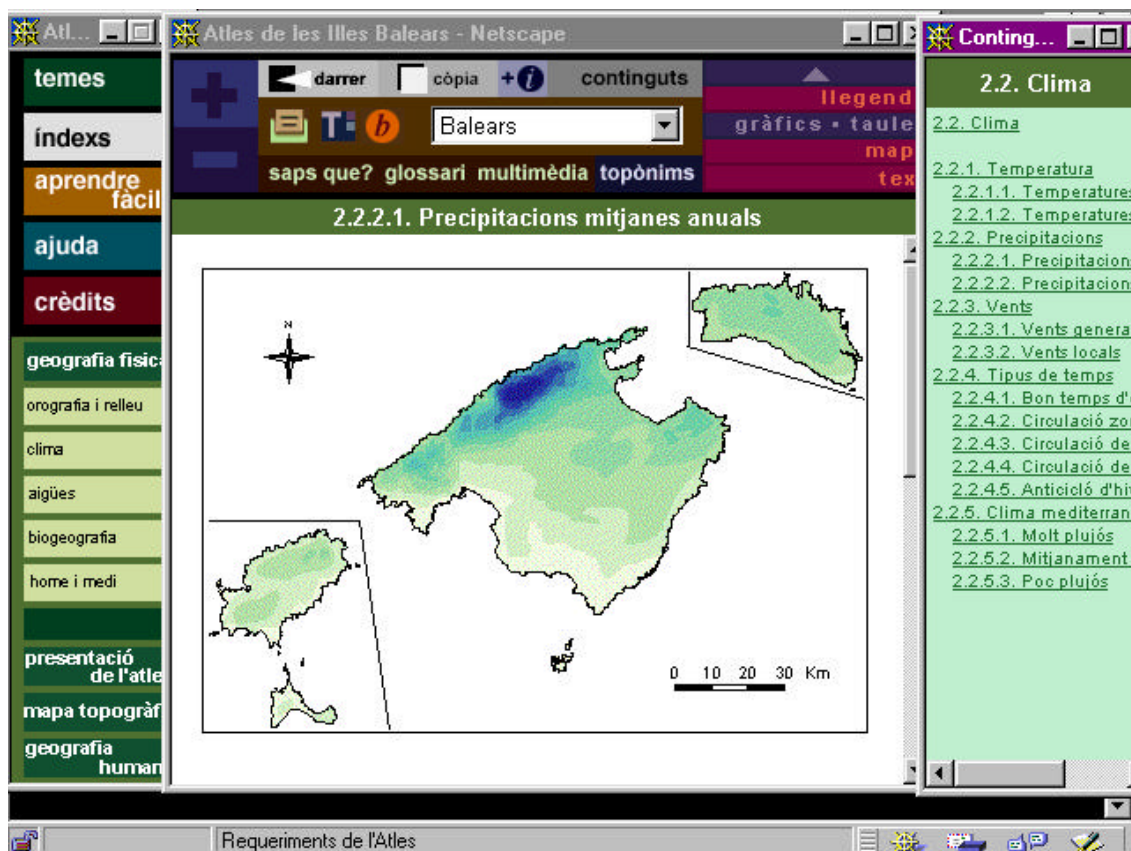
multimedia programmers using Javascript to enable interactivity and dynamism of the presentation. Also, the atlas was developed using a quite modified multimedia methodology RMM [2], for which new access structures were created. The interface is organised according to the results of the methodology.

The atlas was developed at the University of the Balearic Islands by an interdisciplinary team composed by three groups. There were authors, mainly from the Department of Earth Sciences, digital cartography producers from the Laboratory of Geographical Information Systems and multimedia developers and programmers, from the Multimedia group of the Department of Mathematics and Computer Science. The work was partly inspired on previous one on multimedia GIS related to planning and environmental protection [3].

A complete version of the atlas can be browsed on-line at

<http://www.iaa.upf.es/~jblat/material/atles/inici.htm>

A typical screenshot of the application, showing the navigation bars, and a unit of information obtained when browsing according subjects is:



[1] BÄR, H.R. and SIEBER, R., 1997. Atlas of Switzerland - Multimedia Version: Concepts, Functionality and Interactive Techniques. *Proceedings 18<sup>th</sup> International Conference of the ICA*, Stockholm, 2, 1141-1149

[2] ISAKOWITZ, T., STOHR, E.A., BALASUBRAMANIAN, P., 1995, RMM: A methodology for structured Hypermedia design, *Communications of the ACM*, 38, 34-44

[3] BLAT, J., DELGADO, A., RUIZ, M. and SEGUÍ, J.M., 1995, Designing multimedia GIS for territorial planning: the ParcBIT case, *Environment and Planning B: Planning and Design*, 22, 665-78