BALTICSEAWEB – an information system about the Baltic marine environment

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Abstract

Baltic Marine Environment Bibliography and Database contains currently more than 11 000 references to published scientific information on environmental aspects and condition of the Baltic Sea. The database is available on traditional online services and via user-friendly www-based search interface on the Internet. A specific project, BALTICSEAWEB within the EU Telematics Applications Programme was started in the beginning of 1997 and it will continue until mid 1998. The aim of the project is to develop a map-based search interface to the Database and to input original documents allowing also retrieval of original documents in electronic form. Users are encouraged to comment the system under development. The home page of the project can be found at URL http://www.baltic.vtt.fi.

1 Introduction

The research work carried out on the condition of the Baltic Sea marine environment is documented as research reports, the results are presented in conferences and published as conference papers, articles in scientific journals, books, dissertations etc. An information system related to these publications was created in late 1970'ies under auspices of the Baltic Marine Environment Commission, the Helsinki Commission to offer a concise source of information about the findings related to the Baltic Sea.

National focal points in the countries around the Baltic Sea, i.e. in Estonia, Latvia, Lithuania, Poland, Germany, Denmark, Sweden, Finland and Russia make the selection of information to be inputted to the database. The publications are catalogued, indexed and abstracted according to international standards. The classification of ASFIS, the Aquatic Science and Fisheries Information System is used for subject headings.

The database has been available on traditional online systems, where searches can be made using a com-

mand-based search interface. Printed bibliographies and previously COM (computer output on microfiche) listings have also been compiled of the database.

A user-friendly form-based interface has also been developed and the database has been made available on the Internet. This has greatly increased the usage of the database. A new project was initiated in 1997 for further development of the system. The project, called BALTICSEAWEB, is supported by the European Commission within the Libraries sector of the Telematics Applications Programme. The project is being carried out by VTT Information Service together with libraries of the Swedish Environment Protection Agency, the Federal Fisheries Research Institute and the Federal Maritime and Hydrographic Agency in Germany. The project started in the beginning of 1997 and its duration is 18 months.

BALTICSEAWEB has two basic aims:

1. To develop a geographic user interface allowing database searching by using maps.
2. To convert original documents into electronic form and link them to the system so that they can be retrieved by clicking the results of a bibliographic search.

2 Database

The Baltic Marine Environment Database currently contains more than 11 000 references. It covers information on the Baltic Sea, i.e. all marine areas from the Gulfs of Finland and Bothnia in the east and north to the Belt Sea and the Kattegat in the west. It contains references to reports, including 'grey literature', journal articles, books, conference proceedings, dissertations, etc. The subject coverage includes all aspects on the marine environment of the Baltic Sea, for example ecology, fauna and flora, fisheries, hydrography, pollution, environmental impact, research, planning and administrative measures. Information on the database and bibliography can be found in: http://trip.hut.fi/vtt/baltic/intro.html.

3 User interfaces

The database has currently three different user interfaces available: WWW-search form and two versions of the geographical interface. Geographical user interfaces that have been developed within the project are a dynamic Java-applet with scalable map and a solution with a more static clickable map.

3.1 WWW-search form

WWW search form is implemented with standard CGI-scripts, which handle the queries between WWW server and the database. The user can either make a global search by searching from every field in the database at the same time or focus the search on specific field (e.g. title, author, keywords, language, publication year, contributing country, source information). To receive more accurate results user can combine different fields in the search. The use of Boolean operators is supported.

Different output layouts for displaying the search results are available. The user can receive the bib-

liographic information of an interesting document either by clicking its title on the list or selecting a continuous output, which displays all references in the hit list in one output file.

The search form is in: http://trip.hut.fi/vtt/baltic/search.html

3.2 Geographical user interface with Java-applet

The geographical user interface which allows free area selection is implemented with a Java-applet (Figure 1). The user can select multiple regions, cities or monitoring stations from the map.

By drawing an area with the mouse the user can select specific regions, smaller cities or other geographical locations (e.g. rivers, bays) and combine them for a search. The user can also select to display data monitoring stations on the map. After combining different search criteria the user then either submits the query or goes to an advanced search form, where the selected criteria have been automatically transferred.

Links to monitoring data are also enabled. Icons showing monitoring stations on the map are linked to corresponding inventories of monitoring data. The demonstrator is also furnished with a button which offers basic environmental information pages for all major Baltic Sea subregions and cities.

3.3 Search interface with a clickable map

The other currently supported version of the demonstrator is a clicka-

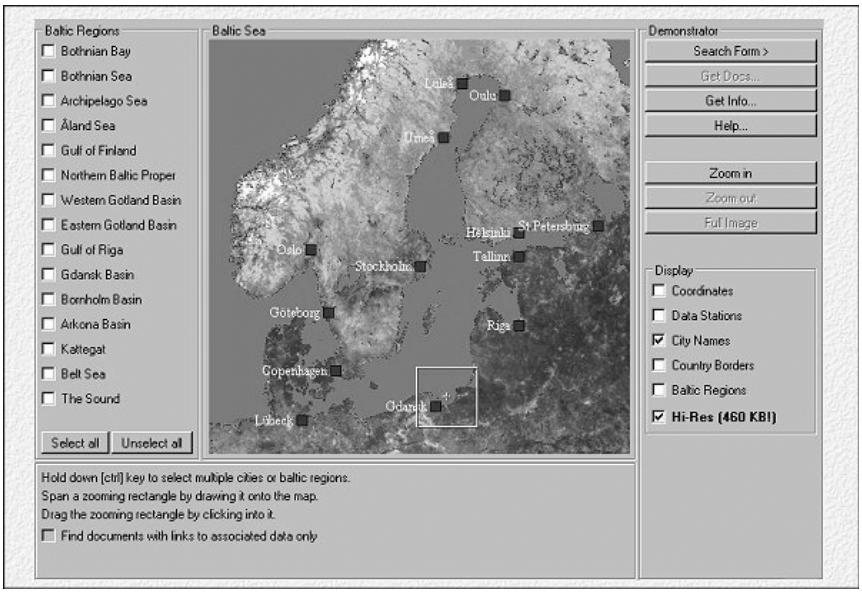

Figure 1. GIS with a Java-applet. Scalable map allows free area selection, which can be combined also to a selection from predefined Baltic Sea regions. Multiple selections are supported.

ble Baltic Sea area map (Figure 2). It is implemented with standard (static) Html-pages, without any Java programming.

The Baltic Sea area is divided into 15 sub-regions according to scheme used by the Baltic Marine Environment Commission. (e.g. The Baltic Sea Joint Comprehensive Environmental Action Programme. Helsinki,1993, Baltic Sea Environment Proceedings. No. 48) By clicking the map the user can limit the search to concern a selected region only.

The resulting screen is divided into three windows for documents, references and introductory text (a general description of the local environmental conditions) for the particular area (Figure 3).

User searching for references can choose a subject descriptor from the menu of ASFA descriptors used for indexing the references or enter any free search term(s). The user can also opt for a query directed to only those regional references, which have corresponding full text documents available.

As a result of the search a list of titles of available documents is displayed.

4 Original documents in electronic format

A number of original documents have been converted into electronic form by scanning. Scanned electronic documents are available in the Adobe Acrobat pdf format, which for chosen because of its' many advantages: pdf retains the layout of the original document, it has great popularity in the publishing world and the

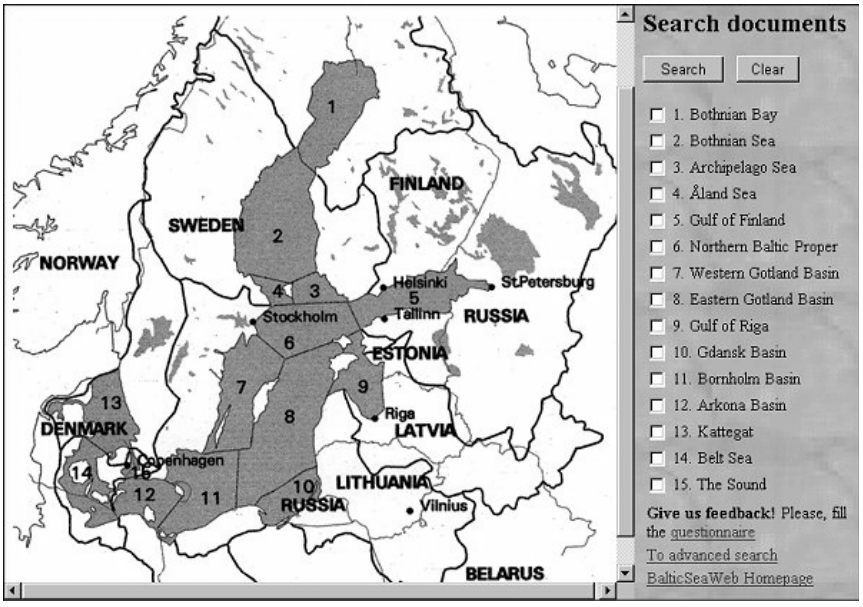

Figure 2. Clickable map allows users to select a predefined region of the Baltic Sea.

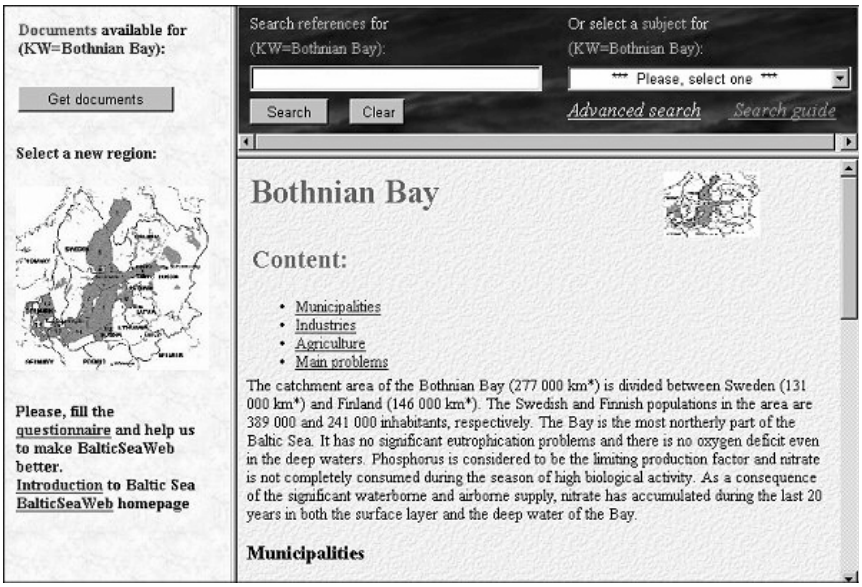

Figure 3.A sub region selected from the main map.

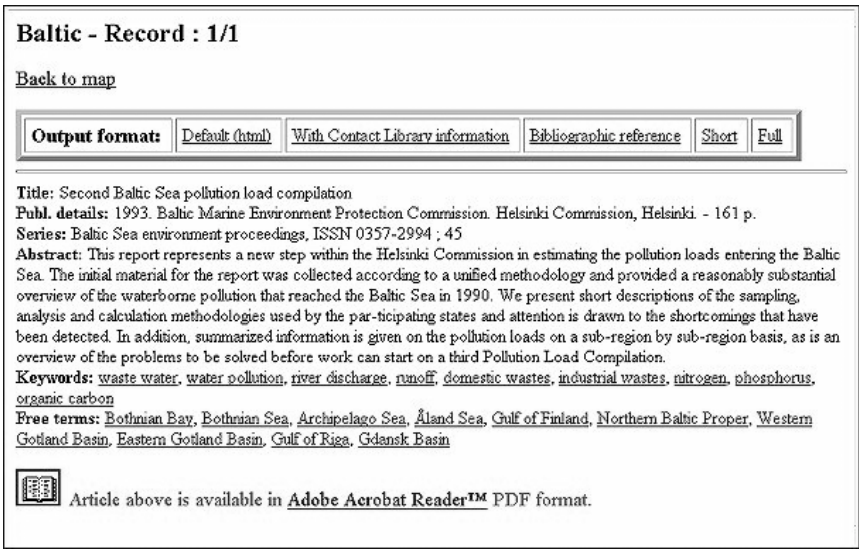

Figure 4 . Reference from the Baltic Marine Environment Database with a link to corresponding electronic document.

file sizes are smaller than in e.g. PostScript or TIFF format. In addition, the most common WWW browsers (Microsoft Internet Explorer and Netscape Navigator) support pdf. The availability of the original document in pdf format is indicated in the bibliographic record (Figure 4).

The software needed for viewing the documents is freely available from the Internet and the link to the downloading site is given. Adobe Acrobat Reader allows browsing the document e.g. with help of the thumbnail images of the pages (Figure 5). References in the database include also links to other relevant electronic full text documents on the Internet.

5 Discussion

By offering environmental information on Baltic Sea through a user-friendly and well structured geographical interface, end-users will have more direct access to the Baltic Marine Environment Database. For example, officials in state and local governments need frequently information on regional environmental problems for decision making. The geographical user interface of the BALTICSEAWEB will provide a tool for accessing this kind of information.

In addition to bibliographic references most end-users are interested in retrieving also the original full-text documents. The documents referenced in the Baltic database have been selected by the national focal points. Information about research on the Baltic Sea appears also in other databases depending on the subject matter. Comparisons made have, however, proven that 75% of the material in the Baltic database is unique. The Baltic database obtains much of the material directly from authors, institutes and libraries and to a lesser extend from monitoring journals and serials, which is the

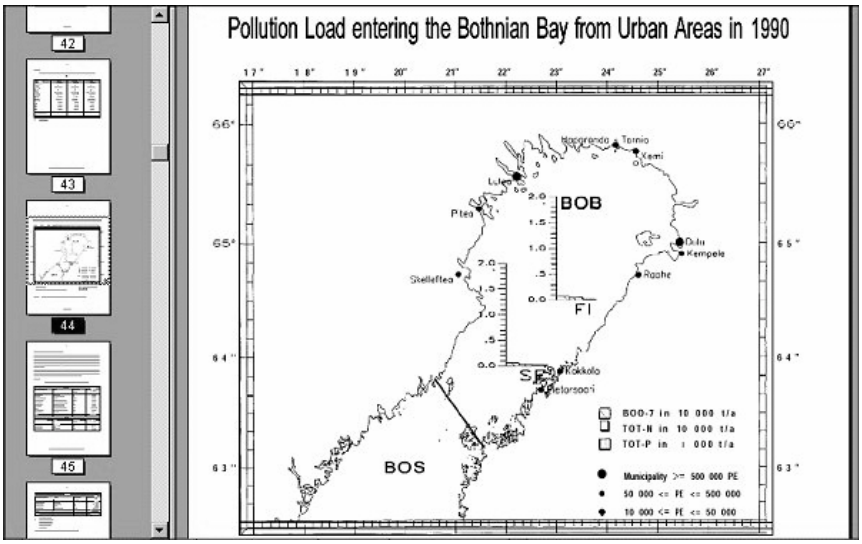

Figure 5 . Original document as retrieved from the Baltic Marine Environment Information System.

main method in the case of large international databases.

Because of the large number of references (currently more than 11 000) and because of copyright problems all documents cannot be inputted into the system. Scientific journals published by commercial publishers normally do not grant copyright for scanning articles and offering electronic access to them. Reaching thousands of authors for copyright requests is another problem. It seems, however, that a considerable amount of documents can be obtained and converted into electronic form both within the project and afterwards. In addition the printed original documents are available in the contact libraries in the countries around the Baltic sea and there is an option in the output forms to obtain the address of the contact library responsible for the particular reference.

Several file formats are possible for storing original documents electronically. Commonly used formats are postscript, pdf, tif and word-processing formats e.g. MS Word or WordPerfect. Printed documents can be transferred into electronic form by scanning. However, scanned documents cause technical problems. The files are often large, they are difficult to handle and their retrieval via the Internet can be time consuming. It would be preferred to receive documents in electronic form from the authors. In the future it would be desirable, if the authors, when submitting their manuscripts for publishing in printed journals, would retain a copyright of the electronic manuscript, "compuscript" with themselves, so that it could be offered electronically in information retrieval systems.

BALTICSEAWEB complements a number of other relevant projects, such as MARIS, BALLERINA and EDMED. It can be concluded that the database of the Baltic Marine Environment Protection Commission offers a concise and important source of information related to the Baltic Sea area in a user-friendly way.

Acknowledgements

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