

Topic report No 5/1999

Catalogue of Data Sources

Annual topic update 1998

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1. Introduction

1.1. The European Environment Agency

The European Environment Agency (EEA), based in Copenhagen, was established in 1990 by Council Regulation EEC 1210/90. The main objective is to provide objective, reliable and comparable information for those concerned with framing, implementing and further developing European environmental policy, and for the wider European public.

One of the major tasks of the EEA is the co-ordination and further development of the European Environment Information and Observation Network, EIONET, consisting of co-ordinating institutes (National Focal Points – NFPs) and expertise centres (National Reference Centres – NRCs) in the participating countries, and 9 European Topic Centres (ETCs). These ETCs work on behalf of EEA with the countries and the European Commission within specific environmental areas.

EEA/EIONET member countries are the 15 EU countries plus Iceland, Liechtenstein and Norway. In collaboration with the EU PHARE programme, the work of EEA extends to 13 Central- and Eastern European countries.

1.2. The European Topic Centre on Catalogue of Data Sources

The European Topic Centre on Catalogue of Data Sources (ETC/CDS) was founded by the EEA in December 1995 to develop a European Catalogue of Data Sources and a European Multilingual Environmental Thesaurus to provide access to environmental information on a European scale.

The ETC/CDS was built as a consortium of 10 partners from Austria, Germany, Italy, the Netherlands, Spain, and Sweden, performing various tasks under the three-year contract from 1996 to 1998.

ETC/CDS Partner	Country	Tasks
Ministry of Environment of Lower Saxony (Leading Organisation)	Germany	General management and co-ordination
International Society for Environmental Protection (ISEP)	Austria	Terminology and meta-information dissemination
Consiglio Nazionale d. Ricerche (CNR)	Italy	Thesaurus
Umweltbundesamt (UBA)	Germany	Thesaurus
Management von Umweltvisualis. & Informations-Systemen (MUVIS)	Austria	Metadata collection
Swedish Environmental Protection Agency (SEPA)	Sweden	Selection criteria
Dr. Lippke & Dr. Wagner GmbH (L&W)	Germany	WinCDS
Forschungszentrum Informatik an der Universität Karlsruhe (FZI)	Germany	WebCDS
Sabini Library Automation (SABINI)	Spain	-
TNO Beleidsstudies en Advies (TNO)	Netherlands	-

Figure 1: Consortium partners until 1998

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The work of the ETC/CDS is described in the EEA Multiannual Work Programme and more detailed in the yearly Technical Annexes to the agreement with EEA, and further in workplans with the consortium partners where task, products and time schedules are defined in detail.

The work of the ETC is guided by an Advisory Committee consisting of members from 9 European countries showing a specific interest in the work area of the Topic Centre. From 1999, the committee will be extended to cover all NRCs for the CDS topics.

In late 1998, the Management Board of the EEA approved to renew the contract with the Ministry of Environment in Lower Saxony for another three year period. In this period there will not be a formal consortium but tasks not done by the Topic Centre staff will be contracted following call for tender procedures.

1.3. The National Reference Centres for CDS

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Figure 2: Table of NRCs on CDS taken from EIONET Directory January 1999

2. Progress in 1998

2.1. General

The progress of the ETC/CDS is reported to the EEA and the Advisory Committee in quarterly reports.

Contacts were made or maintained with institutions within and outside the EIONET. In the field of international harmonisation of metainformation description and retrieval contacts are maintained with

- UNEP/GRID in Geneva, Switzerland and Arendal, Norway
- United States Environment Protection Agency (US EPA)
- United States Geological Services (USGS)
- NASA Global Change Master Directory

In order to bridge to other European developments in related fields, contacts were maintained with

- Joint Research Centre's (JRC) Space Application Institute (the CEO Programme) and Environment Institute (Alpine Convention)
- European Commission's Telematic Application Programme (TAP) in DGXIII
- Switzerland Environment Agency (BUWAL)
- MEGRIN, the head organisation of the European mapping authorities

Co-operation has resulted in various activities, information exchange, common use of data models and shared projects.

2.2. Development of the WinCDS data collection software

The MSAccess based WinCDS tool for data collection has seen an intensive period of testing and validation during the year. The experiences made during this work were used to review and improve the software. With the release of WinCDS version 2.5, the tool is now in the state to support the development and maintenance of local metainformation databases.

Many functional additions have been implemented to aid the user of the tool with data input and retrieval. The search and reporting functions have been enhanced to make the administration of metainformation records easier to handle.

Version 2.5 is based on a data model that is now fully compliant with the Global Environmental Information Locator Service (GELOS).

The software is fully functional and may be downloaded from our ftp-server www.mu.niedersachsen.de. Please contact the Topic Centre for the specific download information.

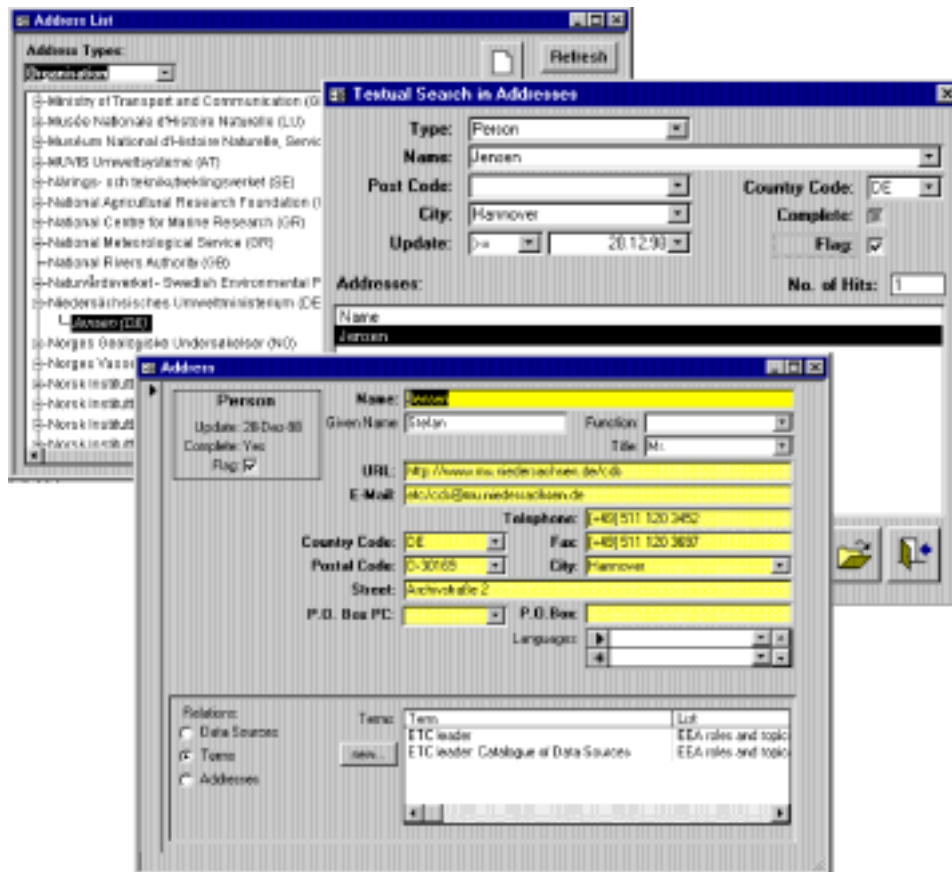


Figure 3: Sample screen of WinCDS 2.5 – address list, search window, input window

WinCDS – New Features:

Two Flags have been added to mark records, e.g. for export:

General Flag

Quality Criteria Flag

For full **GELOS support**, 3 attributes have been added:

Date of Creation / Last Modification of Resource

Field to enter "free terms"

Use Constraints

It is now possible to **export** selected records:

Data Source Records (including address references)

Selected Addresses

Records for Export may also be selected through textual and Thesaurus search

The improved **Textual Search Window** now includes Search for Criteria:

- Complete database
- Flagged records
- Quality Criteria
- Date of last update

Print functionalities have been enhanced:

- It is now possible to print selected records.
- Two new printing options of search results: hit list (simple list of titles) and full scale description of each hit.
- The print options have been harmonised throughout the application

The **reporting functions** have been updated:

- The user may select from a wide range of different styles of reports.
- Alternatively these reports can be linked to the MSOffice tools (MSWord and MSEXcel) for further processing.

The latest version of the **General European Multilingual Environmental Thesaurus**, GEMET 1.5, featuring all European languages but Icelandic and Greek has been included as an indexing and retrieval tool.

Two **roles** have been added to the EIONET role list: NRC Noice and PCP Noice.

A **new table** has been added to the Addresses Window, allowing the user to register the following attributes:

- Language
- Name of the Organisation
- Abbreviation of the Name

Minor **alterations** have been made on the **two tables** AddressCore and DataCore:

- Table AddressCore: the Name field is now 255 characters long
- Table DataCore: the Title field is now 255 characters long

Office Links have been added; it is now possible to ,export‘ selected records into a MSWord document or MSEXcel spreadsheet.

The **documentation** for the data model has been improved; a new file with the data model description in a helpfile format is included with the software.

2.3. Development of thesaurus (GEMET) and related tools

The General European Multilingual Environmental Thesaurus (GEMET) has been developed as an indexing, retrieval and control tool for the CDS. GEMET is conceived as a "general" thesaurus, aimed to define a common general language, a core of general terminology for the environment. The current version - GEMET 1.5 is available in British English with equivalents in American English, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Portuguese, Spanish and Swedish. The GEMET is endowed with a Glossary in English which contains about 3.000 definitions of descriptors.

GEMET has been compiled by merging the terms of the following thesauri and documents:

1. *Umwelt Thesaurus* of Umweltbundesamt (UBA), Berlin,
2. *Thesaurus Italiano per l'Ambiente (TIA)* of Consiglio Nazionale delle Ricerche (CNR), Rome,
3. *Multilingual Environment Thesaurus (MET)* of Nederlands Bureau voor Onderzoek Informatie (NBOI), Amsterdam
4. *EnVoc Thesaurus*, (UNEP Infoterra),
5. *Thesaurus de Medio Ambiente* of Ministerio de Obras Publicas, Transportes y Medio Ambiente (MOPTMA), Madrid,
6. *Lexique environnement - Planète*, of the Ministère de l'environnement, Paris,
7. Descriptors of the *Second Assessment report* of the EEA and of *Eurovoc*, the Thesaurus of the European Parliament.

Missing translations and languages not covered by the above mentioned sources have been completed with the support of the Translation Office of the European Community in Luxembourg.

The resulting ~ 5.500 descriptors have been arranged in a classification scheme made of 34 groups. Each descriptor has been arranged in a hierarchical structure. The level of polyhierarchy has been kept to a minimum. Furthermore, to allow a thematic retrieval, a set of 41 themes have been agreed upon with the EEA, and each descriptor has been assigned to one or more themes. At the moment, the user can access the thesaurus through the thematic structure, through the group-hierarchical list or through the alphabetical list. GEMET follows the ISO norms on monolingual and multilingual thesauri.

Besides the GEMET, other term lists can be loaded into the CDS Software to be used to index and retrieve information.

In summer, GEMET 1.5 was released, being an interim product including 11 out of the 13 EEA official languages and the majority of the term definitions. The product was launched for the validation process, which is currently undertaken with the help of the EEA member countries.

ThesShow and GEMET are freely distributed after filling an agreement on the use of these products. To order online:

<http://www.mu.niedersachsen.de/cds/thesshowagree.htm>.

eMail: kirsten.nax@mu.niedersachsen.de

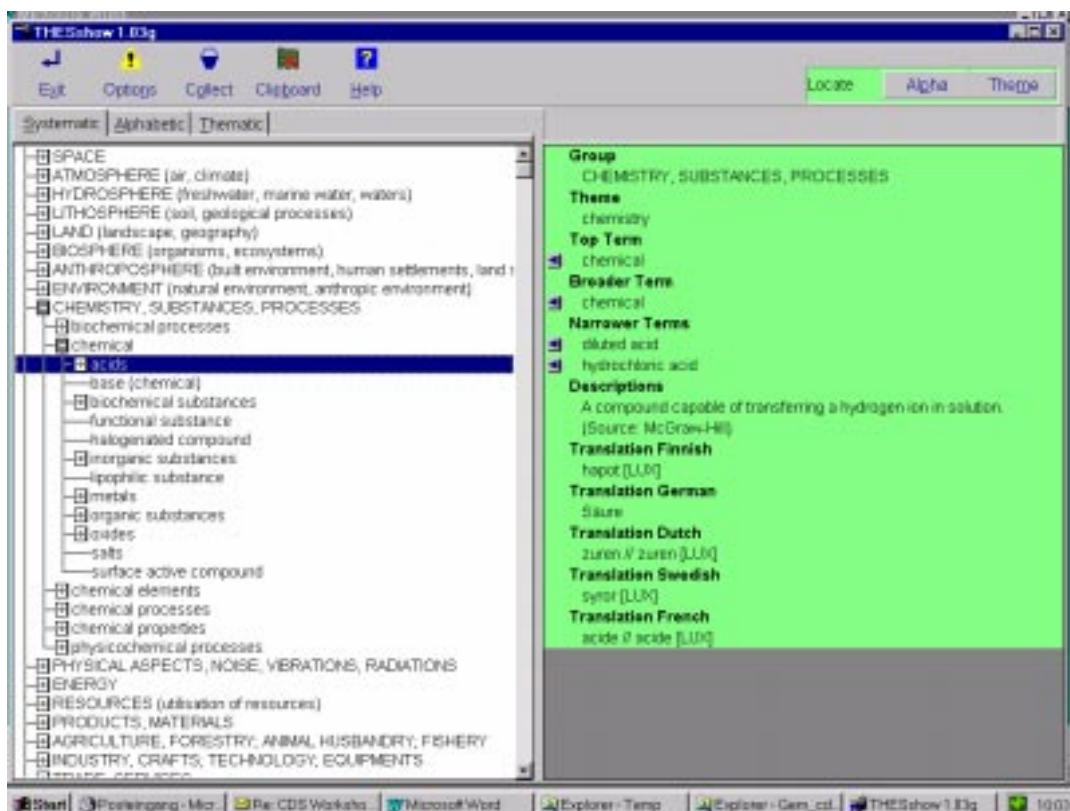


Figure 4: ThesShow browser. Selected language English. Term properties displayed

During the year increasing demand arose for GEMET and related software tools. A survey of current users shows that GEMET has become a recognised instrument for environmental institutions from within and outside the EIONET, and for scientific use and educational libraries. Especially the new thesaurus visualisation tool, ThesShow, is appreciated as a useful tool to support indexing and translation practices.

Product		ThesShow	GEMET pdf	ThesMain
EIONET		15	14	4
Phare Nfp		1	2	1
Non-EIONET Members (Europe))	Science	7	18	3
	Library/ Education	2	4	1
	Government	2	2	1
America Asia	Science	1	2	
	Library/ Education	5	5	
	Government	2	2	2
Total/User		35	49	12

Figure 5: Distribution of GEMET related products in 1998

In order to maintain the Thesaurus, a software has been developed, co-funded by the Austrian Environment Agency. The tool is used to produce a Thesaurus and to maintain an existing one, for example adding new descriptors, translations, definitions, displaying the hierarchy in a graphical way and many other features.

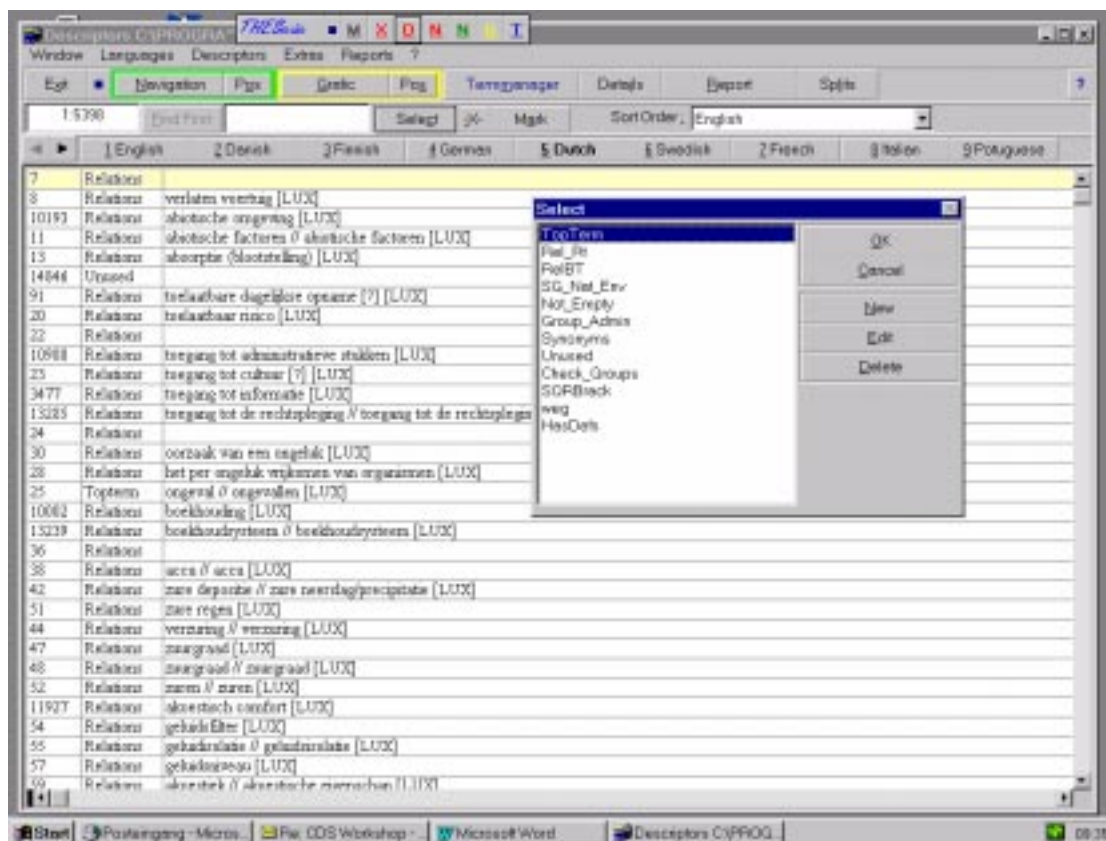


Figure 6: ThesMain with Dutch terms selected for maintenance

2.4. Development of the WebCDS retrieval software

The main tool to search and retrieve environmental metainformation is the WebCDS which gives public access to the CDS database through the World Wide Web. The Version 2.5 has got a new more user-friendly graphical interface and improved stability, security and performance.

The Graphical User Interface (GUI) is mainly HTML-based to provide a stabile search process and to prevent running into system problems, such as firewalls. Useful functions of the earlier version were adapted and new facilities were added to offer a better performance of the locator system.

The *Quick Search* offers a fast entry point in the CDS database and retrieval of data sources or addresses. The *Expert Search* is an extension, offering more parameters to define and submit a customised query to the CDS database for retrieve an optimised range of records.

A brand new facility is the *Topic Search* which provides 40 environmental topics (according to the GEMET structure) to search thematically for data

sources. Each topic shows the number of available data sources in the CDS database which are related to this topic (see Figure 7 below)

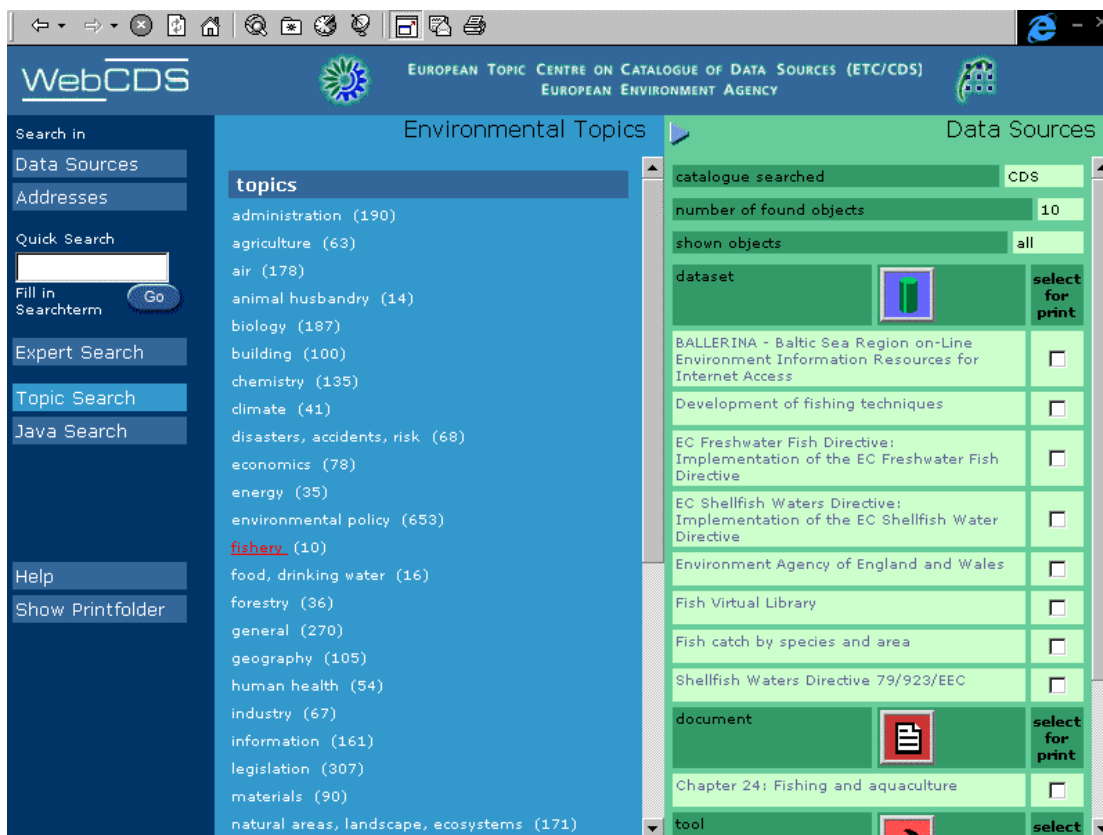


Figure 7: WebCDS-Topic Search; search for 'fishery' with retrieved result list

Also the *Select for Print* functionality and the *Printfolder* are new features enabling the user to store the results (addresses and data sources) of interest for later print. The user is able to start different search queries and to add each address or data source to the printfolder and print a personalised result list at the end of his search session.

The whole GUI is divided into three parts showing a navigation, search and result form, respectively in order to visualise the path of the search session. The query, the list of search results and the more detailed information about the results are shown next to each other (see Figure 7 and 8). Blue and green colours are used to mark the two basic functions: Navigation and Search in blue, results in green.

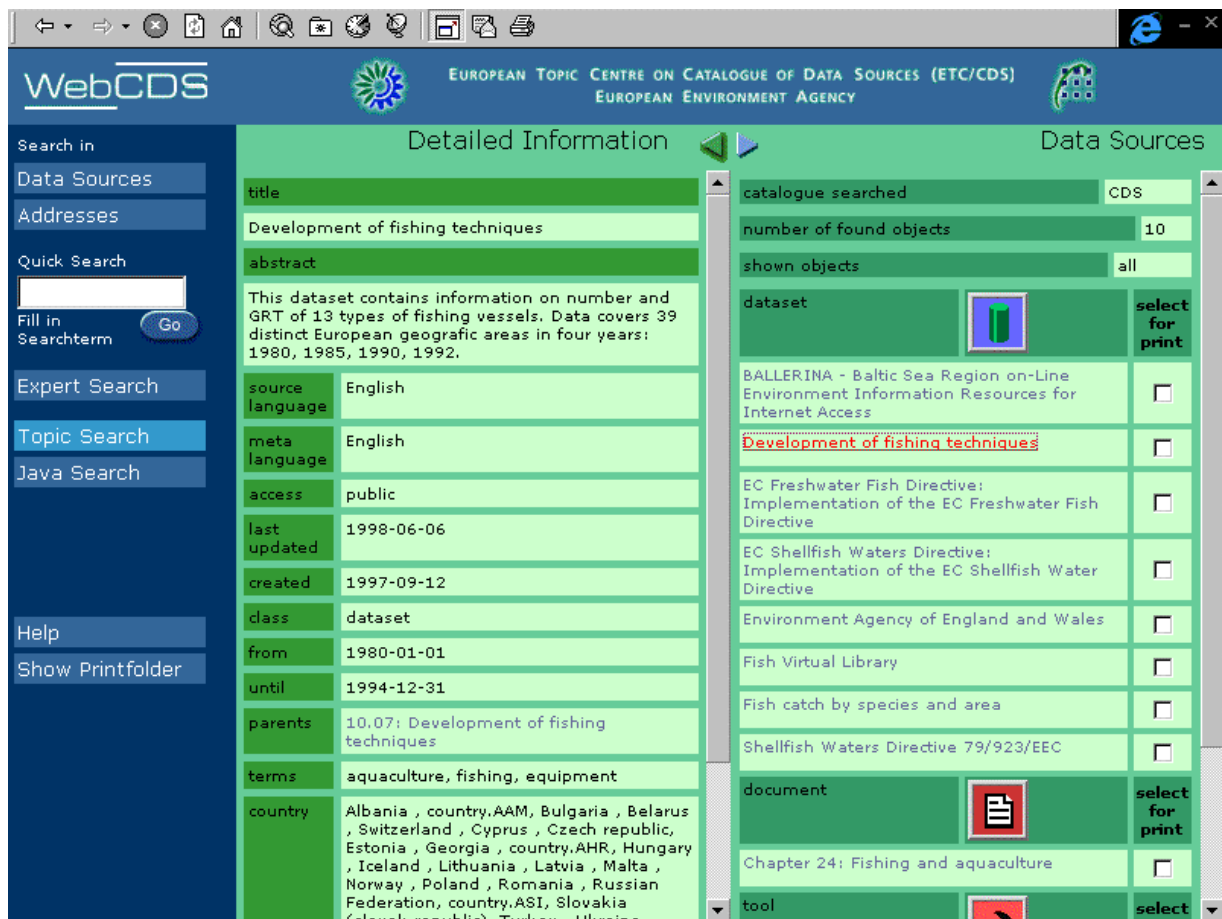


Figure 8: WebCDS – navigation frame, result list and detailed information in one view

In addition to the HTML-Search functions, the WebCDS 2.5 offers three JAVA-based search applications providing special search tools:

- GeoView: a map based geographical search interface
- GenThes: enable a search GEMET
- Navigator: allows navigating through the whole CDS Database by index or hierarchy

These JAVA search tools are designed for expert users and have special system requirements and might need up to some minutes download time before use. The applications pop up in a new browser window.

WebCDS 2.5 is available (since week 50 of 1998) on the ETC/CDS Website www.mu.niedersachsen.de/cds or directly at www.mu.niedersachsen.de/system/cds.

2.5. Collection of metainformation at various institutions

After collecting metainformation at the Topic Centres in 1997, the report on Selection Criteria has been prepared to guide streamline the collection effort and start negotiation with the member countries on how to achieve an appropriate representation on their individual information resources. In the same time, the description of data sources at the EEA were updated.

A special focus was put on the updating of the EIONET directory which is the authoritative address directory of the EIONET.

The metadata currently available in the CDS database are:

- The EIONET directory
- EEA products
- Sources used for the State of the Environment report
- European environmental legislation in force (input ongoing)
- Sources from other ETC`s

Datasources by Theme	Percentage of total records (1.250)
Environmental policy	20
Information	8
Water	8
Pollution	7
General	7
Legislation	5
Biology	5
Air	4
Administration	4
Natural areas, landscape, ecosystems	4
Other	29

Figure 9: Content of the WebCDS database by end of October 1998

ETC/CDS is in the process of assembling a complete database of the acting EU Environmental legislation in force. There are currently close to 400 legislation acts to be recorded, approximately half of them have been registered in the CDS by the end of 1998.

Within the CDS database, the legislation records may be used to link to EIONET reports and products which are a result of acting EU Environmental legislation.

2.6. Harmonisation of approaches in the EEA member countries

In the past years, several EEA member countries (and Switzerland) have decided to adopt various concepts and tools out of the work of the ETC/CDS. The following table shows the co-operation in detail:

Country	National Metain-formation systems	Degree of CDS compliance	CDS tools Used	Use of CDS tools planned	Meta-information collection Initiated	Collectio n process agreed
Austria	available	Compatible	3	1	Yes	yes
Belgium	projected	Compatible	3			
Denmark						
Finland						
France	available	To examine				
Germany	available	Compatible	3		Yes	yes
Greece	projected	Compatible		1,2,3		
Iceland						

Ireland	available	Compatible	1			
Italy	projected	Compatible	3	1		
Liechtenstein	available	Compatible	1		Yes	
Luxembourg	projected	Compatible		2		
Netherlands						
Norway	available	Compatible	3, parts 2			
Portugal						
Spain	projected	Compatible		1,2,3	Yes	yes
Sweden	available	Compatible			Yes	yes
Switzerland	available	Compatible	1		Yes	
United Kingdom	available	Compatible	1			

Figure 10: Co-operation with member states (CDS tools: 1:WinCDS 2:WebCDS 3:GEMET with TheShow)

This harmonisation effort is a continuous process which puts demand on the software development. Tools need to be adaptable to different user needs, otherwise the different interests cannot be met. The availability of a flexible data model and a common element set helps to achieve this.

2.7. The EEIS project

The EEIS project aims to provide a bridge between the European Environment and Remote Sensing communities. To do so, it will leverage on two Information Systems developed for the respective communities: the Catalogue of Data Sources (CDS) by the ETC/CDS of the European Environment Agency and the Information on Earth Observation System (INFEO) in the Centre for Earth Observation (CEO).

CEOs goal is to support the use of satellite data and products. A system architecture, based on the Catalogue Interoperability Protocol (CIP – a Z39.50 profile) to connect distributed catalogues, has been developed for this purpose.

The interoperability brought by EEIS will enable the users in the Environment community to determine which remote sensing data sets are effectively available for their impact studies or remote sensing users to assess the potential usefulness of some images for environmental applications. The EEIS project development is ensured by a team that combines the required industrial experience (MATRA and FZI), strong involvement in European Environment and Remote Sensing Infrastructures development (Niedersächsisches Umweltministerium and Joint Research Centre of the EU) and data providers like the ETC/Landcover in Sweden and the British Landcover catalogue provider.

A challenge will be to integrate the different concepts: the CDS system with a multilingual thesaurus and a top down information service approach, and the CEO system, with extensive metadata description and a bottom up approach.

The project will result in a demonstrator of the EEIS, an increased awareness by both communities of users of available information, reusable

components for inoperable systems. Through the other activities of the ETC/CDS the demonstrator will be implemented in an operational way.

The project started in March 1998. First tasks were to collect user requirements of core CEO and EEA users and analyse them. The User Requirements Document (URD) was edited covering common as well as EEA and CEO specific user requirements for this project. Additional scenarios were generated for both EEA and CEO users to show how the future EEIS could behave. The URD and the scenarios serve as a reference document for the system development during the design and implementation phase. They also provide guidelines for the graphical user interface (GUI). The whole document including scenarios is available at the ETCs Website.

The system definition was finished and the technical developers are building the bridge between the two existing systems, INFEO and CDS. The process of connecting two providers of satellite images to the INFEO system has started with mapping their landcover catalogues.

For more detailed and latest information please have a look on the EEIS Website at: <http://eeis.ceo.sai.jrc.it/>

2.8. The ETC/CDS workshop

The *5th ETC/CDS Workshop*, was hosted by the Irish Environmental Protection Agency and held in Dublin on 23-24 September. More than 100 participants from various communities attended the event. Metadata users and providers from inside and outside the EIONET informed themselves on current developments in

- usage of metadata
- building up national environmental metadata systems
- approaches and experiences on distributed cataloguing

Discussions and agreements during and after the workshop shaped the main objectives of the ETC/CDS work for the coming years:

ETC/CDS maintains a catalogue of authoritative information relevant to EEA and EIONET through

- ensuring, in accordance with the EEA Regulation and the Århus Convention, the public's right to access all information supplied to and emanating from the EEA
- providing access to information across national and linguistic barriers by including in the catalogue the main national environmental information resources and ensuring their translation using a multi-lingual thesaurus,

ETC/CDS harmonises national initiatives to provide environmental information in Europe through

- facilitating a distributed network of environmental data providers, following the GELOS (Global Environmental Information Locator System) approach to define a common set of elements to describe

information resources and a SGML/XML or Z39.50 approach to facilitate exchange and retrieval on the web,

- developing and maintaining software modules for the use by the EEA's European Environmental Reference Centre, member countries and related initiatives to reduce cost and ensure compatibility,
- adapting available tools to EIONET partners needs.

Further information about the workshop (abstracts, presentations, participants) can be found at the ETC/CDS Website.

3. Plans for 1999

3.1. General

The main purpose of the ETC/CDS project under the EEA's second Multi Annual Work Programme is to support the Agency in carrying out Project 4.3.1: Directory of EEA/EIONET Information Resources. The main tasks will be to maintain and develop the catalogue/directory, support the Agency in harmonising description of environmental information in Europe and provide ad-hoc support to other EEA projects which aim at building the European Environmental Reference Centre. The directory should include high quality descriptions of information resources that meet criteria set by the Agency.

The planning is outlined in the Technical Annexes of the 1998 and the 1999 subventions. The year will be characterised by an increasing importance of the data collection process. The main tasks of the year will be to:

- contact and visit NFPs/NRCs as appropriate and within resources available to cover relevant aspects of metainformation;
- advertise and distribute the EIONET metainformation concept to national metainformation projects to foster the harmonisation of data models;
- provide a help desk function to national metainformation projects using the EIONET metainformation concept to facilitate information exchange;
- organise one major ETC Workshop in September 1999;
- organise and execute further meetings with national experts to discuss software requirements for metainformation management;
- compile specification for harmonised software development for metainformation management;
- maintain the ETC/CDS EIONET server and telematics infrastructure;
- promote use of the CDS software and/or the CDS core model;
- actively market the CDS products.

Under the two subventions, the ETC/CDS will deliver the following products:

Product	Delivery date to EEA
GEMET 2.0 including the European languages	30 April 1999
WebCDS 3.0 including the input tool	30 April 1999
Report on Metainformation System in EIONET countries and the state of harmonisation at the turn of the century	15 December 1999
Directory/Catalogue of EEA/EIONET Information Resources	<ul style="list-style-type: none"> • Continuous update during the year • Completed directory on 15 January 2000

Figure 11: major ETC/CDS products in 1999

3.2. Data collection

The ETC/CDS has to further maintain the directory of EEA/EIONET information resources, which contains description of information resources supplied to, maintained in and emanating from EEA/EIONET, for the purpose of facilitating access to environmental information for EEA key clients and the public.

The CDS Selection Criteria, adopted in 1997, dictate what information resources are described in the CDS. The main task in 1999 will be to keep the description of the core resources up to date. These are the organisations which form the EIONET, the products of the EEA and the main databases maintained at EEA and the other European Topic Centres. Furthermore, major efforts shall be put in completing the description and indexing of the main environmental information resources in EEA member countries. These sources are for example environmental libraries and information services, the main monitoring networks, main databases and Web sites, and, if existing, national metainformation systems. The work shall be done in close co-operation with the NFPs. The core information includes also the description of European Environmental legislation and International Conventions. All entries in the Directory shall be indexed with terms of the multi-lingual thesaurus, to facilitate access across linguistic barriers.

3.3. Software development

Available tools will be maintained. The WebCDS will receive improvement in the area of advanced search functions. A focus will be put on the development of the web-based input and update tool. This is crucial for maintaining metadata and the development is co-financed by Switzerland. A further step will be to improve multilinguality by offering the graphical user interface in the European languages. The user will be able to navigate through the application in his mothertongue.

3.4. Thesaurus

The version 2.0 of GEMET will be released in April 1999 containing all languages and the necessary validations. This release will be followed by a thorough examination of user needs over at least half a year to come up with a consolidated version in early 2000. These further developments will depend on the use and acceptance of these products. Therefore all users are at this early stage welcome to send us as much response as possible.

More detailed tasks will be to:

- maintain the GEMET database, and update if necessary, based on input from eventual contractors;
- monitor the use of GEMET for indexing and retrieval of information;
- provide technical support to EEA contractors who will further develop GEMET;
- support further checking of translated terms, as necessary;
- maintain the EEA Glossary of environmental terms.

3.5. The EEIS project

The EEIS project will be finished at the end of 1999. The system development has to be completed in spring while the demonstration and validation phase, where the ETC/CDS is the leader of the work package, will be executed in summer.