

University of Maryland Land Cover ESIP

INTERFACE DESIGN

Interim report for June 1st, 1998 Milestone Report

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Introduction

Based on the results of the users needs assessment we have started to prototype some elements of the ESIP user interface. We have focused on 2 tasks of the task taxonomy: 1) Getting an overview of the site and 2) locating datasets of interest.

Getting an overview of the site and locating datasets of interest

1. Interface challenges

A challenge for the user interface of digital libraries is to provide users with an adequate overview of what the site purpose is, and what type and volume of material it contains. Once users have been able to decide that they in fact have reached a potentially useful site, users will need to search or browse the available materials (here data and services).

Today's Land Cover ESIP is still in its infancy and only contains a few datasets, making lists appropriate to browse the datasets, but as the number of datasets grows, other techniques will be needed. We propose to highly interactive graphical interfaces to browse the available datasets. The first one is a dataset browser in which each dataset is described individually. The second version proposes a initial preview step where numbers of datasets are given in response to users selections for 3 three datasets attributes.

2. Dataset browser for early ESIP (i.e. few datasets)

In the ESIP dataset overview users can see the list of datasets. They can see on the map the overall geographical coverage of the data in the ESIP and its time coverage. Samples representative of the

whole ESIP are given. Next to each dataset is given the maximum resolution, and the type of processing: none (raw data) , fixed (processing has been done and is available "as-is"), or on demand (request for processing is possible).

As users select a dataset the map, time line and samples are updated to reflect the geographical and temporal coverage of the dataset. Samples of the selected dataset are shown.

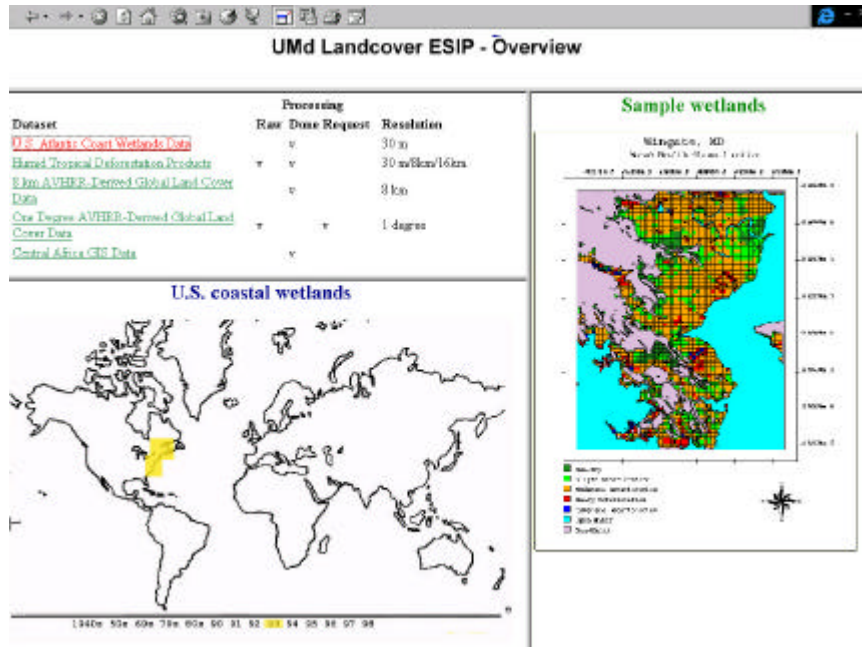


Figure 1: The user has clicked on a dataset (Atlantic coast marsh data), the map is updated to show the rough geographical coverage. The timeline shows that data is only available for 1993, and a sample map showing gridded index data and the legend. A selection of a smaller area in the gridded map would further narrow the timeline coverage; and a selection on the timeline would update the geographical coverage.

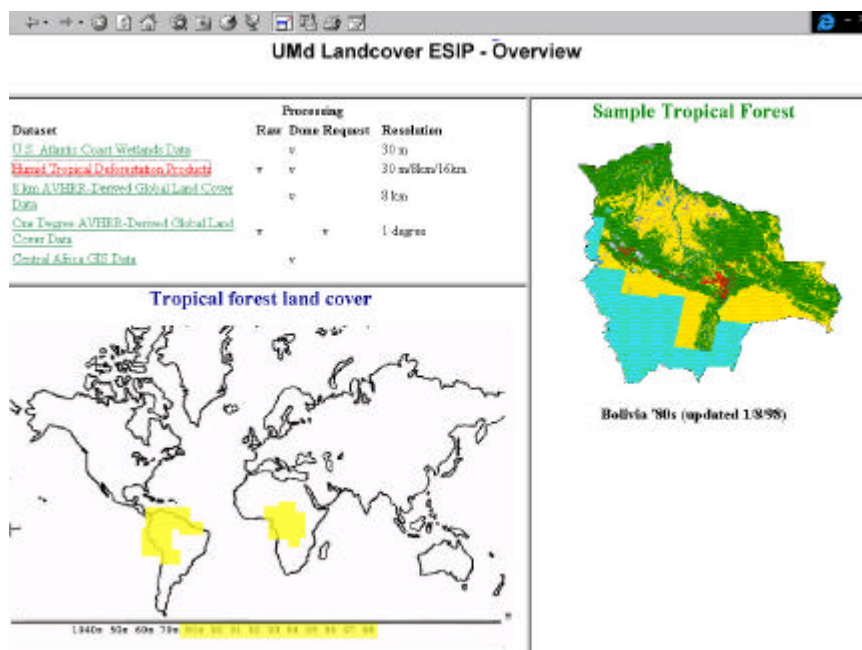


Figure 2: The user has now selected another dataset, the map, timeline and samples have changed to reflect the attributes of the selected dataset.

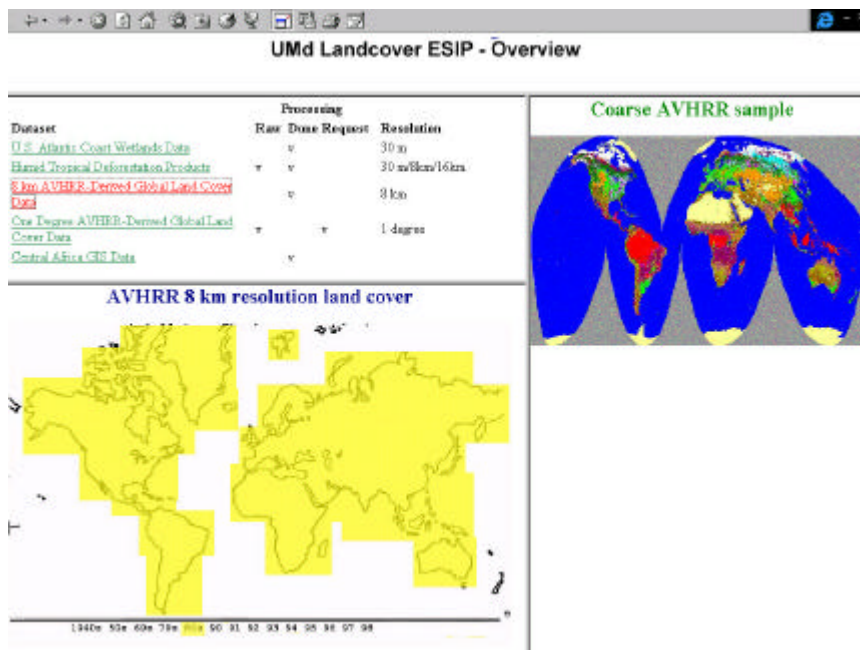


Figure 3: The user has now selected another dataset, the map, timeline and sample have changed to reflect the attributes of the selected dataset.

3. **Dataset browser for future ESIP (i.e. hundreds of datasets and services)**

In the future the number of dataset will increase significantly and users will have to query the ESIP to locate datasets or services of interest.

Query languages are effective for frequent users who are also willing to take training, but more robust querying interfaces are needed for a system that supports intermittent users, from scientists to high school teachers, with extensive or limited computer experience. Classic form fill-in interfaces for EOSDIS exist, but zero-hit queries are a problem as well as queries returning too many hits. It is difficult to estimate how much data is available on a given topic and how to refine or relax a query to return a useful set of hits.

The Land Cover ESIP will make use of the dynamic queries and query preview techniques that have been shown to alleviate some of those problems.

Our initial design is closely related to our existing design for the NASA global change master directory. Three attributes are chosen and a number of available datasets is given next to each attribute values. The choice of attributes has not been fixed yet and will probably depend on the type of datasets that will populate the ESIP. For example resolution, or projection type could be used as well as a selecting attribute.

University of Maryland Landcover ESIP
Earth Science Information Partnership

Area Selection:
Select attributes of interest by clicking on map areas or preview bars.

Topic Selection:

Marsh Land Surface	836
Tropical Deforestation	709
Global Blm Classification	146
Global 1 Deg. Avhaz	395
Other Gis Data	413
Future Topic 1	473
Future Topic 2	351
Future Topic 3	42
Future Topic 4	345
Future Topic 5	1
Future Topic 6	151
Not Specified	0

Year Selection:

Prehistoric	0
0001 - 1699	6
1700 - 1799	10
1800 - 1849	17
1850 - 1899	74
1900 - 1929	91
1930 - 1939	96
1940 - 1949	129
1950 - 1959	160
1960 - 1969	201
1970 - 1979	295
1980 - 1989	498
1990 - 1999	437
Not Specified	112

Area Selection:

Africa	92
Antarctica	68
Arctic	80
Asia	222
Atlantic	262
Australia	69
Central America	35
Europe	214
Indian Ocean	71
North America	836
Other	1547
Pacific	260
Solid Earth	0
South America	78
Space	14
Not Specified	52

RESULT: datasets selected = 836 out of 4451, based on data as of 02:50 on Monday, May 18, 1998

836 / 1000 2000 3000 4000 [Reset] [Select for Processing]

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Figure 4: Here users have to choose among thousands of datasets. The interface provides an overview of all the datasets and allow users to select rough values for area location and years. As users select values, the preview bars are updated to reflect the effect of the query. When the number of datasets has been sufficiently reduced the list of datasets can be explored with an interface similar to the version one, or submitted for inspection in the dataprocessing service.