Development of an Information System for Research Papers Related to Hydrology

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Abstract : Any challenging water resources project or research requires the time-consuming task of literature search. The rapid growth of research in hydrology during the last fifty years is of unique interest to researchers as it provides a clear-cut idea of how new concepts and techniques shape the totality of scientific endeavor and the directions it takes. Conventional literature search methods are inefficient and involve manual shifting through a cornucopia of journals, periodicals, conference proceedings, volumes of library indexes and other printed materials. Yet, important research papers and articles related to the work at hand often remain undiscovered and, as a consequence, research suffers.

Keeping this in view, a query based software package (HydroAbs) has been developed for searching the water resources engineering literature. It includes a database, consisting of a comprehensive reference library of water resources publications (abstracts of international journals received in NIH library and from some other important journals). The package transforms the time consuming task of literature search into an easy, user-friendly and enjoyable exercise and changes the scenario for water resources engineers and researchers and others who consult water resources publications regularly.

The paper presents formulation and application of the software package and its utility to water resources engineers.

INTRODUCTION

During this century, the pressure on water resources has increased dramatically. Unless water resources are wisely managed, shortages could become a serious obstacle to economic and social progress and adequate information is essential for wise management of water resources. In these circumstances, planning and decision-making must achieve new levels of sophistication, reliability, and acceptance. This will demand timely, accurate and comprehensive information about the status of water resources, to complement information about the economic, social, and environmental dimensions of water use.

Any challenging water resources project or research requires the time-consuming task of literature search. Conventional literature search methods are inefficient and involve manual sifting through a cornucopia of journals, periodicals, conference proceedings, volumes of library indexes and other printed materials. Yet, important research papers and articles related to the work at hand often remain undiscovered and, as a consequence, research suffers. Keeping this in view, a query based software package (HydroAbs) has been developed for searching the water resources engineering literature. It includes a database, consisting of a comprehensive reference library of water resources publications, as well as software to manipulate the database (abstracts of international journals received in NIH library and from some other important journals). The package transforms the time consuming task of literature search into an easy, user-friendly and

enjoyable exercise and changes the scenario for water resources engineers and researchers and others who consult water resources publications regularly.

BRIEF DESCRIPTION OF THE PACKAGE

HydroAbs is comprehensive, well-tuned and easy to use software with full-screen menus and on-line help to guide the user. The package includes many tabular and graphical options facilitating efficient reporting. It changes the scenario for water resources engineers and researchers and others who consult water resources publications regularly. The Package transforms this time consuming task of literature search into an easy, user-friendly and enjoyable exercise. The database can be searched on the basis of author's name and the publication year, or a combination of both, selecting one or more journals at a time. The user using only a few keystrokes or mouse clicks specifies the search items.

The list retrieved from the search, which contains records corresponding to all the research papers that satisfy the specified criteria, is displayed on the screen. The user may scroll through the displayed list one record at a time and can edit the retrieved list discarding any records, which are considered irrelevant. When the user is satisfied that all relevant papers are in the retrieved list, the list can be printed or saved as a text file that may be appended later to a document, or the printed copy can be taken to the library to find the original articles.

The package requires only a small number of commands, which can be learned in a short period of time. No special computer knowledge is necessary to use this software. The package offers a number of advantages over other comparable computerised indexes. Most significantly, it allows a user to review a large number of papers in a relatively short period of time. Moreover, the source code is available, so the package can be updated whenever desired. The layout of the start-up HydroAbs screen is shown in the fig.1.
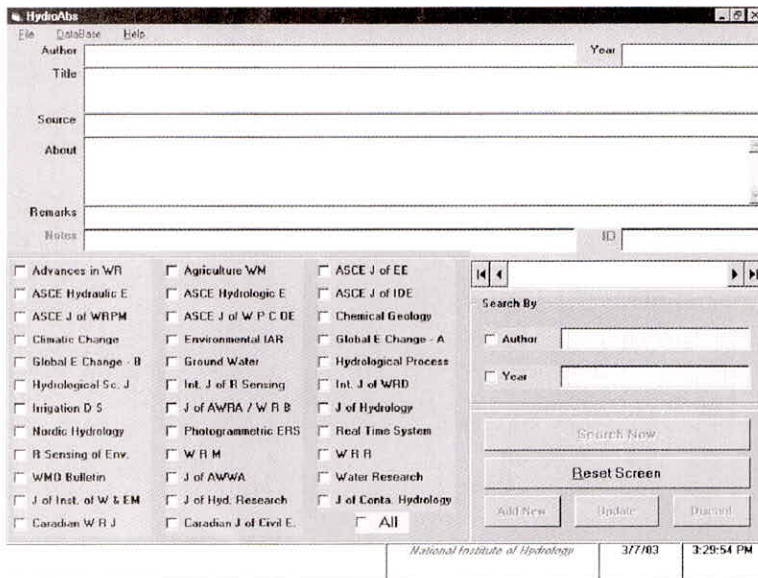

Fig.1. Main-screen of HydroAbs

JOURNALS INCLUDED

NIH library subscribes a number of international journals. Some other important journals are available on the web. An attempt has been made to include the following journals:

Advances in Water Resources, Agricultural Water Management, ASCE Journal of Environmental Engineering, ASCE Journal of Hydraulic Engineering, ASCE Journal of Hydrologic Engineering, ASCE Journal of Irrigation and Drainage Engineering, ASCE Journal of Water Resources Planning and Management, ASCE Journal of Waterway, Port, Coastal and Ocean Engineering, Chemical Geology, Climatic Change, Environmental Impact Assessment Review, Global Environmental Change : Part A, Global Environmental Change : Part B, Ground Water,

Hydrological Processes, Hydrological Sciences Journal, International Journal of Remote Sensing, International Journal of Water Resources Development, Irrigation and Drainage Systems, Journal of American Water Resources Association / Water Resources Bulletin, Journal of Hydrology, Nordic Hydrology, Photogrammetric Engineering and Remote Sensing, Real Time Systems, Remote Sensing of Environment, Water Resources Management, Water Resources Research, WMO Bulletin, Journal of American Water Works Association, Water Research, Journal of Institution of Water and Environment Management, Journal of Hydraulic Research, Journal of Contaminant Hydrology, Canadian Water Resources Journal, Canadian Journal of Civil Engineering etc.
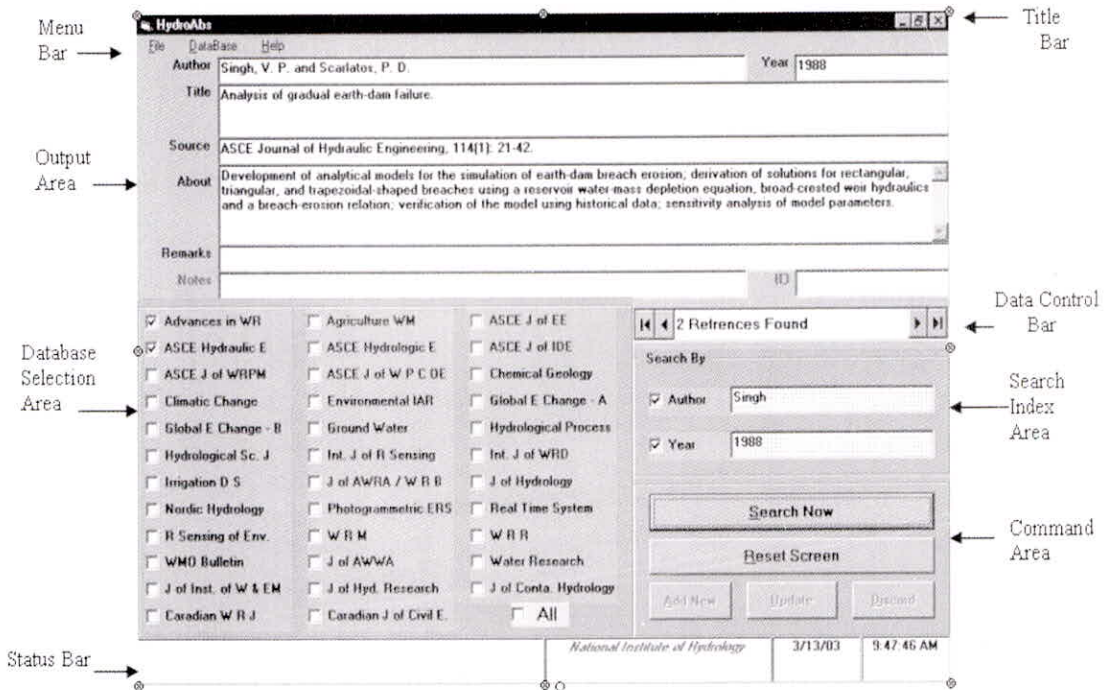

Fig.2. The Layout of HydroAbs Screen

HYDROABS SCREEN

An overview of the major elements on the HydroAbs screen, such as menus, command buttons, output area, database area, and *Search* by area is given in fig.2.

Brief descriptions of various parts of the HydroAbs screen are given below.

Title Bar

The left portion of the text in the title bar shows the name of the software (i.e., HydroAbs), and the right portion shows the opened list name.

Menu Bar

All the functions in HydroAbs can be accessed through the menu bar.

Output Area

The output area of the HydroAbs screen is mainly used to show the result of a search.

Database Selection Area

This area contains the abbreviated names of all the journals. The journals to be included in the search can be selected by clicking the item.

Data Control Bar

The arrow buttons on the data control bar are used to move through the displayed list.

Search Index Area

The Search by criteria can be selected in the two text boxes enclosed in the area.

Command Area

The command buttons in this area can be used to access the most commonly used functions in HydroAbs. The **Reset Screen** button refreshes the HydroAbs screen to the start-up screen.

Status Bar

There are four segments on the status bar. It includes help tips, select all journals, user name and system time.

DESCRIPTION OF VARIOUS UTILITIES

Various utilities available in this software package are given below:

Finding References

Finding references using HydroAbs is a three-step procedure-

* Enter data in the *Search* by box,
* Select journals to be searched from the database selection area, and finally,
* Click the **Search Now** button to start the search process.

### Saving a List as a Text File

The list obtained by selecting various searched criteria, can be saved as a new list with a new name (fig.3). HydroAbs can create text files which can be imported to any document which accepts ASCII files. As in printing, list can also be saved as a text with complete records or with reference portions only.

Printing a List

The list obtained by selecting various searched criteria can be printed (fig.4). There are two options in printing. Print the complete record or only the reference portion of a record.

CONCLUSION

HydroAbs can help the hydrologists, engineers and researchers to achieve the goal very quickly. It is very comprehensive, well-tuned and easy to use software with full-screen menus and on-line help to guide the user.
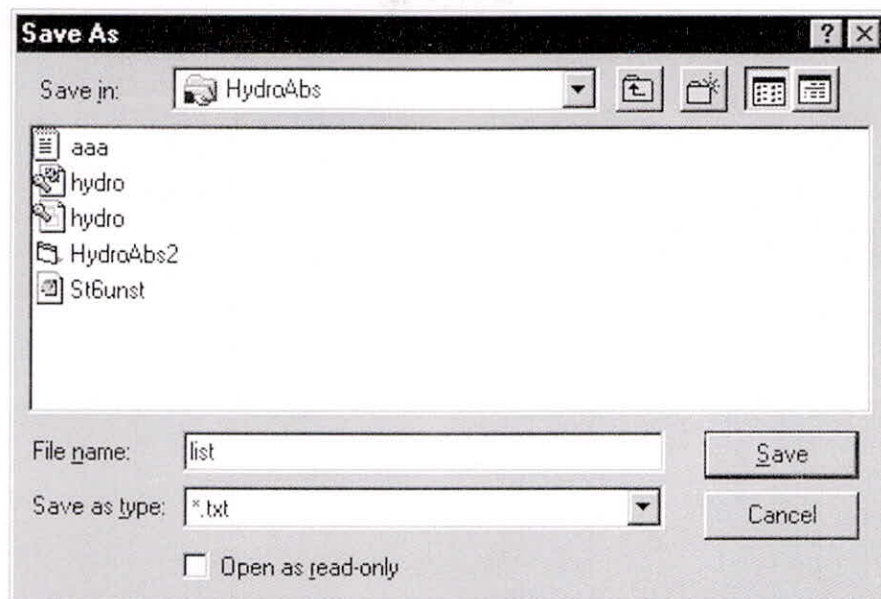
Fig.3. Save As Dialog Box
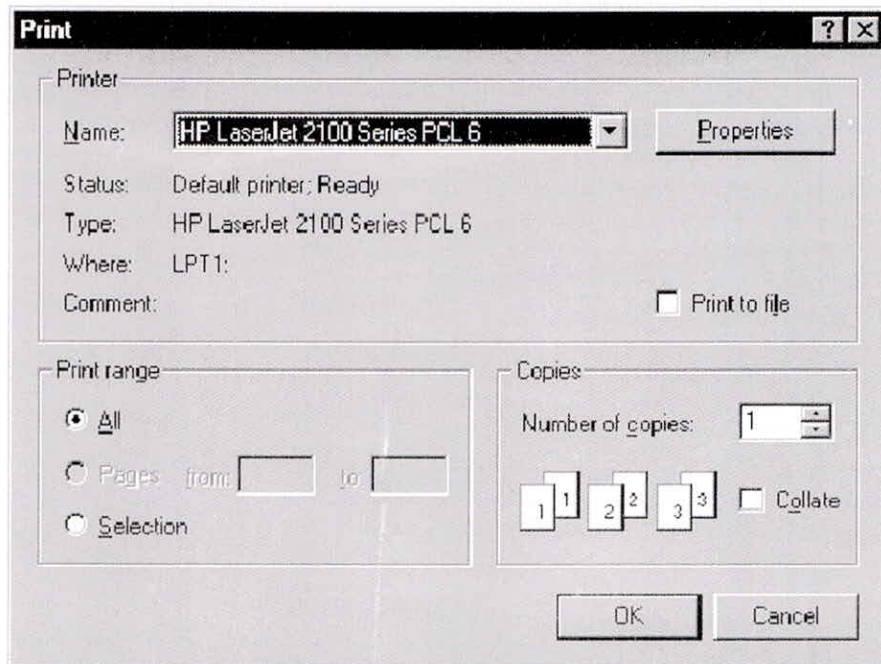
Fig.4. Print Dialog Box

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