An Information Network for Atmospheric and Marine Science

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ABSTRACT

The National Oceanic and Atmospheric Administration (NOAA) has established a national library network that facilitates development of and access to the agency's geographically-scattered and heterogeneous information resources in the atmospheric and marine sciences. This paper will describe early steps toward coalition-building among the NOAA libraries to show how they later contributed to the implementation and success of a formal network relying on a shared computer database. It will highlight some of the products and services developed to support and unify members during the 15 years of NOAA's existence as an agency. Finally, it will describe the development and implementation of the NOAA Automated Library Information System (NALIS), which currently links 18 NOAA libraries across the United States.

INTRODUCTION

The NOAA Library and Information Network (NLIN), has evolved from cooperative resource sharing by means of conventional communications media, such as telephone, correspondence, conferences, newsletters, etc. to reliance on a computerized system known as NALIS, NOAA Automated Library Information System. This paper will focus on NALIS, an integrated library system, accessible via remote terminals and communicating microcomputers for end-users in their offices, laboratories, and at home as well as in NOAA library and information centers located throughout the United States. It will also discuss briefly the major efforts that set the stage for NALIS development and made its implementation and acceptance possible.

The current operational status of NALIS required a consistent and continuing effort on the part of NOAA's Headquarters' Library, the Library and Information Services Division (LISD) located in Rockville, Md. to coordinate and develop library and information services throughout NOAA's decentralized facilities. This effort began in 1971, soon after NOAA was created in October of that year by an Executive Order of President Richard Nixon, bringing together a number of diverse functions dealing with oceans and atmospheres formerly administered by several different agencies.
BACKGROUND

As early as December 1970, Dr. Robert M. White, first Administrator of NOAA, assigned David S. Johnson, Senior Meteorologist, to review scientific information, editorial, and library activities within the newly created agency and make recommendations for operation and management of NOAA's libraries and information functions. Johnson visited many laboratories of NOAA's organizational components, namely, the National Marine Fisheries Service, Office of Oceanic and Atmospheric Research, National Ocean Service, and National Weather Service, and issued a report for Administrator White. One of the assumptions of that report was the need for a coordinating body "to provide functional guidance throughout NOAA for library services and assist Major Line components in improving these services in the field. [It should] . . . provide a focal point for NOAA library personnel." Thus, the framework for networking NOAA libraries and information centers was provided at the top managerial level.

FEDERAL INTERAGENCY FIELD LIBRARIANS' WORKSHOP

One of the recommendations of the Johnson report was that there be an annual meeting for NOAA library and information personnel. LISD responded to this recommendation and met with colleagues in the Department of the Interior and the Departmental Library of the Department of Commerce to promote an annual workshop for all information staff at both the professional and para-professional levels. The workshop was designed to train regional library staff, many of whom had responsibilities for small libraries but had no formal training in library and information science.

Incidentally, the first workshop of the joint Federal agencies was held in the State of Oregon at Portland in 1971. From that beginning between two federal agencies whose missions were concerned with environmental issues, an information network in environmental science and ancillary disciplines was established. NOAA librarians gained from and shared with their counterparts in main Commerce, Interior. To ensure the central objective of intra-agency development, two days were set aside for each agency to work entirely with its own information personnel. Subsequently, invitations to join as sponsors of the annual workshop, designated the Federal Interagency Field Librarians' Workshop were extended to other agencies that had a regional library structure. Today there are eight sponsoring agencies supporting the FIFL Workshop, which convenes next month in Washington, D.C.

PUBLICATIONS AND PRODUCTS

In addition to the participation and support of FIFL workshops, LISD provides a number of publications and products that support and unify the NOAA libraries affirming and strengthening the network concept.

One such publication, issued as a loose-leaf service for continuing revisions, is the Guidelines for NOAA Regional Libraries. The Guidelines contains background and historical material as well as practical information on topics to improve library operations. Recently, the chapter on NALIS, NOAA Automated 2. Library Information System, was completely revised. The Guidelines and its updates are mailed to all network members.
LISD issues a newsletter entitled NOAA Library and Information Network News. Regional librarians are encouraged to contribute items of interest, announcements of new publications which they have prepared or to which they have contributed, significant information delivery examples, outreach programs, etc. The newsletter plays an important role in bringing cohesiveness to NLIN, which now number 40 sites. [Figure 1 - Location of NLIN Sites]

LISD conducts a biennial survey of these network members that results in a published Directory of the NOAA Library and Information Network. It describes the collections of each library or information center, services, hours of operations, etc.

FEDLINK

Much of the groundwork, both psychological and technical, for the transition from cooperative activities to a true automated network resulted from NOAA participation in the Federal Library and Information Network (FEDLINK). FEDLINK is a network of Federal libraries which contribute their holdings to an international database developed by the Online Computer Library Center (OCLC). FEDLINK is a component of the Federal Library and Information Center Committee (FLICC) and is under the general direction of the Assistant Librarian for National Programs, Library of Congress, the National Library of the United States.

In addition to participation in the services provided by OCLC, e.g., cataloging, acquisitions, serials control, and interlibrary loan, FEDLINK negotiates contracts with several database ven-
dors to provide information retrieval services for its members at favorable rates. The NOAA network, under the leadership of LISD, participates in these contracts to provide computerized information retrieval services to NOAA researchers and administrators.

**NALIS DEVELOPMENT**

The effort to develop an integrated library system was initiated in 1975 to meet the growing demands of LISD and NLIN for better ways to handle labor-intensive library processes needed to organize and provide access to a rapidly expanding information base. Increased automation offered a way to achieve greater efficiency while dramatically improving service to users through a coordinated information network [Figure 2 - Advantages of an Automated Library System Network]. The NALIS concept was therefore designed and developed to extend the benefits of

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ADVANTAGES OF AN AUTOMATED LIBRARY SYSTEM NETWORK

-----Expanded Resources through Sharing
-----Reduced Duplication of Material
-----Reduced Duplication of Work
-----Improved Quality of Access to Books, Journals and Other Materials
-----Greater Speed and Availability of Access
-----Heightened Currency of Information
-----Reduced Unit Costs for Processing Operations

Figure 2
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automation to the staff and users of all NOAA libraries and information facilities throughout the United States. Planning for NALIS began in 1975, with approval and funding obtained in 1978. A Request for Proposal (RFP) was issued in 1980 and a contract for the development of the first three modules awarded to Systems Control, Inc. of Palo Alto, Ca. later that year. As one of the early integrated library automation efforts attempted by a Federal library, NALIS was supported as a prototype system by the Federal Library and Information Center Committee (FLICC) of the Library of Congress. FLICC played a cooperative role in NALIS development through 1985, when the delivered system was fully operational and all warranties under the initial contract had expired. Thus, NALIS has been achieved through a collaborative effort that cuts across traditional governmental and agency boundaries.

**NALIS STATUS**

NALIS has been planned as a totally integrated system.(2) It is being developed in a modular fashion, with each module designed to automate a major library function. The modules completed are Computer-assisted Cataloging, Authority Control, and Information Retrieval. Planned are Acquisitions, Serials Control, Circulation, and Management Information.

NALIS runs on a Tandem Non-Stop minicomputer that offers fail safe operation. The Tandem actually consists of two processors so that if one unit fails the other sustains all operations. The database itself and all programs are also fully backed up, with two copies of the entire NALIS
system currently residing on four disk drives. [Figures 3 and 4 - Overview of NALIS features and functions: NALIS - What It Is and NALIS - What It Does].

**LIBRARY AND INFORMATION SERVICES DIVISION**

**NALIS**

**WHAT IT IS**
- NOAA automated library and information system
- An integrated library automation system
- Custom designed for NOAA
- Runs on tandem non-stop II Minicomputer
- Fully-backed up failsafe, failsoft operation
- Currently supports
  - Computer-assisted cataloging
  - Authority control
  - Information Retrieval
- Will automate
  - Serials control
  - Acquisitions
  - Circulation
  - Management information

**Figure 3**

NALIS is available through 7 dedicated terminals in the LISD Main Library and through 5 dial-up lines, 2-1200 baud and 3-300 baud. Additional 1200 baud lines are planned for FY 1987.

**NALIS OPERATION**

The Cataloging module creates the NALIS bibliographic database and builds its indexes. It accepts MARC records input to the system in a number of ways, the most common being monthly OCLC tape loads and screen images loaded into NALIS through the print-port of an OCLC terminal. The latter is currently only feasible for the LISD central location co-located with the

**LIBRARY AND INFORMATION SERVICES DIVISION**

**NALIS**

**WHAT IT DOES**
- Automates Library Processes
- Creates a NOAA Network catalog of participating Libraries
- Provides an electronic catalog with a sophisticated search capability
- Offers end-users both dial-in access and in-library use through dedicated terminals.

**Figure 4**
FIELDS AND SUBFIELDS INDEXED BY NALIS

The listed MARC fields, as shown on the incoming OCLC record are incorporated into three NALIS key word indexes. The text type indexes may be searched for word strings in the cataloging and information retrieval modules. Key word indexes may be searched only in IR.

**Author Index**
Includes subfield "a" of the following fields:
100, 110, 111, 700, 711, 800, 810, 811

**Title Index**
Includes subfield "a" of the following fields:
130, 210, 222, 241, 242, 243, 245, 246, 440, 730, 830

**Subject Index**
Includes all of subfields* of the following fields:
600, 610, 630, 650, 651, 652, 690, 691, 693, 694, 695

*Only subfield "a" is key word searchable; other fields can be used to "limit" retrieval.

**Figure 5**

A number of OCLC MARC fields are indexed to create the NALIS author, title, and subject indexes. [Figure 6 - Fields and Subfields Indexed by NALIS] Other fields searchable in NALIS include the OCLC number, call number, ISBN and ISSN.

The Cataloging module provides for database maintenance by allowing authorized users to make changes to records online. Records can be corrected, enhanced, or deleted. Call numbers and holding locations can thus be added to existing records without going through OCLC when that is appropriate.

As records are entered or modified they are checked by the Authority Control module for conformity to established corporate author and subject headings. At this time, no attempt has been made to review non-LISD records for authority conflicts, which are logged to a file when tapes are loaded. A major effort is planned to bring the entire database under authority control during 1987. Authority terms can be viewed using the Information Retrieval module.

NALIS consists of about 50,000 records, searchable by author, title, subject, call number, OCLC number, ISBN numbers and other access points through the Information Retrieval Module. At present 18 NOAA libraries are contributors to NALIS. [Figure 7 - Network participation] Records can be displayed online in a short or long bibliographic format and printed at the
computer site in long, short or MARC format. (MARC records can also be displayed online using the Cataloging module.)

The Information Retrieval module is used as an online catalog by contributing libraries, by other NOAA libraries, and by users throughout NOAA who search it directly from their offices and laboratories. An online tutorial provides an introduction to NALIS searching and instructions on the use of capabilities and commands. A resident "help" capability can be called at any time without interrupting a search in progress.

The Information Retrieval module offers full boolean search capability, providing the user with the capability for combining sets with "and", "or," and "not." In addition, a limiting capability allows users to restrict retrieval to type of material, publisher, place or date of publication, geographic subject subfield, holding location, or other OCLC MARC fields.

NALIS is fully documented in manuals, maintained online, for each module.
IMPLICATIONS FOR THE MARINE SCIENCE COMMUNITY

During 1986, a pilot project provided a non-NOAA facility with NALIS capabilities for the express purpose of improved access to marine science information resources. The University of Washington College of Fisheries Library was issued a NALIS password and full access to its Information Retrieval module. Cooperative activities between this library and the NOAA LISD library located in Seattle at Sand Point made this a logical first choice for a joint activity. The project will be evaluated after a six months' period.

REFERENCES