

Activities of
the ICES Service Hydrographique during 1976/77

by
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Synoptic Hydrographic Charts

The two series of monthly synoptic charts — for the North Sea and for Skagerrak/Kattegat — have been continued, though with greatly reduced speed because of long illness of a staff member. For the period of the International North Sea Young Herring Survey in 1977 charts showing the distribution of bottom temperature and salinity, and their anomalies, were prepared (C.M.1977/H:19).

Reports on Oceanographic Cruises and Data Stations

The completed ROSCOP forms received have been edited, and copies of the edited forms were sent to World Data Centres A and B. ROSCOP forms reporting on cruises in the ICNAF area were also copied to the regional data centre for the area, i.e., Marine Environmental Data Service, Ottawa.

On the basis of the edited ROSCOP forms "Reports on Oceanographic Cruises in the CINECA Region. Vol.3: 1974" was prepared and published as No.33 of the series "ICES Oceanographic Data Lists and Inventories" (IODLI). Also prepared, and delivered for printing, were Parts 1 and 2 of the "Report on Oceanographic Cruises and Data Stations in 1974", for publishing as Nos. 34 and 35 of the IODLI series.

Inventories of NAOS Observations

Additional information about oceanographic observations made at the North Atlantic Ocean Weather Stations in the pre-1963 period was compiled. The final manuscript for an inventory volume covering this period is virtually ready for typing.

IBY Atlas

According to a Council Resolution an atlas should be published in which the main part of the data collected as part of the International Baltic Year (IBY) 1969-1970 are presented in the form of hydrographic sections. The manuscript has been in hand for some time, and a considerable amount of editing has been done. The atlas will be published in spring 1978 as one or two volumes of the IODLI series.

Tables of Mean Values and Anomalies

Based upon the data published in the Daily Weather Report monthly means during 1975 and 1976 of the sea surface temperature at each of the North Atlantic Ocean Weather Stations were calculated, together with their deviations from the means over the period 1961-1970. The tables have been submitted for publication in the "Annales Biologiques".

Preparation of the tables for the 1969 version of the "Monthly Means of Surface Temperature and Salinity for Areas of the North Sea and the North-Eastern North Atlantic" was carried on.

Data Processing and Data Exchange

A great part of the data received for inclusion in the data bank of the Service Hydrographique and for copying to the World Data Centres were screened. Observations that appeared doubtful were discussed with the originators.

Punching and veri-punching of data was continued; a great amount of data received in the form of lists were transferred to punch cards. A special effort was invested in processing the great backlog of chemical data.

Most of the material in the data bank has been read on to magnetic tape.

From oceanographic data centres and other institutions in member countries copies of data were received, either currently or by request when needed for preparation of monthly charts or other environmental data products.

A considerable amount of data were transmitted to the World Data Centre system during the year. Furthermore, data or special data products such as mean values, were supplied to many scientists and scientific institutions. This part of the activities has greatly developed during the year.

For details about data processing and data exchange activities at the Service Hydrographique during the year see the Appendix.

Contributions etc.

A summary of the hydrographic conditions in the ICNAF area in 1976 was prepared, based upon papers from the ICNAF annual meeting. The summary will be published in the relevant volume of the "Annales Biologiques".

For the same volume was prepared an Introduction to its Hydrography chapter, summarizing the hydrographic conditions in the ICES area in 1976 on the basis of the hydrographic contributions (C.M.1977/C:12).

Meetings etc.

The Hydrographer attended the BOSEX 77 Workshop, Copenhagen, 17-20 January 1977. As a member of the JONSDAP 76 Data Management Group he participated in the meeting of the Group in Bergen on 11 May 1977. He attended also the meeting of the ICES/JONSIS Working Group on the JONSDAP 76 Experiment, in Bergen on 12-13 May 1977.

Secretarial Work

Lists of semi-permanent moored oceanographic stations in the ICES area have been distributed regularly to the appropriate national offices and to the members of the Hydrography Committee. Likewise, information about BOSEX 77 moorings was circulated to the above offices and to the BOSEX national contacts.

An updated catalogue of regularly issued marine environmental data products for the ICES area was compiled (C.M.1977/C:19).

In accordance with Council Resolution 1976/4:8 a catalogue was compiled of computer programmes concerning physical and chemical oceanography of general interest currently used by oceanographic institutes and data centres in the ICES community. The catalogue is available as a meeting document (C.M.1977/C:39).

The Hydrographer has served as secretary to the Hydrography Committee and to its Working Group on Oceanic Hydrography.

Appendix

Report on Automatic Data Processing

October 1976-September 1977

A. Computer Facilities

The ICES Service Hydrographique (SH) carries out its automatic data processing on an IBM System 370/OS (model 165) located at the Northern Europe University Computing Center (NEUCC), Denmark's Technical University, Lyngby. In addition to the usual utility programs that are part of the IBM system, the Center has available a large number of program packages and standard "help" programs that are useful for routine handling of data such as sort/merge, editing, subsetting, report writing, and computation of statistical values. Fortunately a considerable amount of our data holdings are recorded in such a way that we are able to make substantial use of these programs, thus reducing the need for software development for routine data handling. Most of our jobs are submitted in batch mode via one or two card readers at the Center but it is also possible to work via a terminal unit recently installed at Charlottenlund Slot in the Statistician's Department. However, this terminal is primarily intended for the Systems Analyst developing the FISHDAT System and is available for our use only on a time available basis. As it is necessary to deliver/pick-up tapes and cards to/from the Center, it is generally easier to submit the jobs there as well.

Until the spring of 1976, computer work of the SH was either done commercially or on a time available basis by the computer staff of Danmarks Fiskeri- og Havundersøgelser (DFH). This was expensive, if done commercially, or often led to long delays as the DFH staff could not be expected to give priority to our tasks over their own. At the same time, the amount of data to be handled increased each year as did the number of special requests.

With the addition to the SH staff early in 1976 of a new staff member with previous experience in computer processing of oceanographic data, it became possible to begin handling these tasks internally. Until 1 July 1977 we were able to buy, at a favourable rate, computer time at NEUCC through DFH. In addition, the DFH staff members are to be commended for the considerable assistance they have provided our staff member while she was learning the IBM system and for their continuing advice when we encounter problems.

From 1 July this year, ICES is a registered user at NEUCC with its own account number. While we have not received the most favourable rate for the purchase of computer time, it is very favourable when compared to commercial rates. We are able to reduce costs further by running many of our jobs at night on a low-priority basis.

B. Routine Data Management

1. All magnetic tapes received as part of data exchange agreements were test read to verify IBM compatibility, data format, and suppliers' tape descriptions. We are still experiencing occasional difficulty in reading some tapes due to errors in, or failure to provide complete, tape descriptions. Among the difficulties encountered in the last year were: an IBM standard label with blank serial and data control block (DCB) fields, an ASCII tape that had been described as EBCDIC, and an IBM standard label in EBCDIC with binary zeroes used as fillers for blanks and the DCB field indicating unblocked recording format when the tape in fact was recorded as blocked. Security features of the computer system do not allow us to bypass label processing so these irregularities could preclude use of the tapes.

2. A plan was drawn up for transferring the punch card holdings (currently in excess of 2 million cards) to magnetic tape on a country by country basis; all post-1956 data from Belgium, Finland, Denmark, and Iceland were transferred, library duplicate tapes produced, and complete listings made of all data. Where chemistry data are available, these cards are being placed with the "hydrographic station" cards on a station by station basis.

Many of these cards are close to 20 years old, have been mailed back and forth between data centers, and have not been stored under optimum conditions. As a consequence, the card reader often jams, or refuses to accept a card, thus aborting the initiated job. As the hydrographic and chemistry cards are sorted together an attempt is made to screen out badly damaged cards and insert a new copy but it is impossible to visually detect all potential problems. The result is that about 25% of all jobs fail on the first run due to a bad card(s). The need to re-submit so many jobs, the logistics of sorting and transporting the cards to the computer center, and the size of the final listings are such that we find the maximum size of each job is best kept under 20,000 cards.

After the creation of the library copy of each country tape, the cards are disposed of so that in addition to the greater efficiency and convenience of handling data on tapes rather than cards, we are also freeing (if somewhat slowly) desperately needed shelf space for other use. The cards processed in the past year required 4 meters of shelf space; the final listings and tapes less than one-fourth as much.

3. Many of the older tapes held by the Service Hydrographique have been re-copied at a higher density and blocking factor and at the same time card images containing "invalid characters" removed. While this means we occasionally lose a small amount of data, at least the bulk of it is available for use. At the present, we have neither staff nor time to correct the errors and a large number of the program packages available for our use not only will not accept a record with an invalid character but will terminate a job when such a record is encountered so that it becomes impossible to access the remainder of the tape.

4. Considerable time has been devoted to documentation and record keeping, and virtually all of our approximately 100 tapes now have adequate documentation. A system for documenting all computer tasks has been set up along with a cross-referenced index for tapes that is based on serial number, our library number, and originator identification.

C. Internal Data Processing

- 1) Since 1 Sep 1976 approx. 40,000 cards of oceanographic stations / chemistry data have been punched and veri-punched.
- 2) North Atlantic OWS Marine Meteorology data (1975-76) were punched and veri-punched, transferred to tape, sorted, listed, and edited. Monthly means of sea surface temperature, with other descriptive statistics, were computed for all the individual stations.
- 3) The Marine Meteorology data for the CINECA area, which were already on cards, were copied to tape, sorted by date and position, and a formatted listing prepared for future use.

D. Data Exchange

Data Received

- 1) On magnetic tape:

In the last year the ICES-SH received 13 magnetic tapes from data centers and institutions in Iceland, Fed.Rep.of Germany, U.S.A., France and Norway. These tapes contained 539 BT stations, 9438 surface stations, 638 STD stations and almost 70,000 hydrographic (with chemistry) stations.

- 2) On paper tape:

Approx. 500 stations.

- 3) In manuscript form, for punching:

Approx. 1000 stations.

Data supplied:

In the past year the ICES-SH has been able to respond to a considerable number of requests for computer processed data. Requests were received from individuals, institutions, and data centers in Poland, Iceland, Faroe Islands, Fed.Rep.of Germany, Sweden, Denmark, Canada, and United Kingdom. Most of the data were supplied on magnetic tape: a total of 18 tapes with about 111,000 stations. An additional 1400 stations were provided in formatted listings, and in reply to another request yearly averages of S% and O₂ at selected levels at two Baltic stations were prepared for the period 1905 to 1974. Comparison with the previous 18 months, when 7 tapes

(3 of which were intended for compatibility testing purposes) were provided, indicates the increasing demand on the SH to provide data on automated carrier.

As of 1 Sep work was progressing on the completion of 5 additional requests as well as providing supplementary data to 4 previous requests. In addition, 80,000 records were transmitted to the WDC system via an exchange agreement with the NODC, Washington, D.C.