

Report  
of the ICES Meeting  
on  
Service Hydrographique  
Charlottenlund, 28/3-30/3-1966

A. Introduction

1. According to the Procès-Verbal de la Réunion 1965 of the ICES (p. 113) the terms of reference for this ICES Meeting, to be held some time well before the next Council Meeting of representatives of each member country, at national expense, were as follows:
  - (a) To expedite the transfer of data to Service Hydrographique and to make detailed arrangements for quality control,
  - (b) To make detailed proposals concerning levels of staff and data-processing facilities required to meet the rapidly increasing demands on the Service Hydrographique from the ICES itself including the extension of the work to the south, and in connection with the exchange of data with WDCs,
  - (c) To consider, in the light of these proposals, how the Service Hydrographique can best meet the demands of individual scientists, especially biologists, from member countries as illustrated by the wide range of needs suggested in the answers to the questionnaire.
2. The meeting was held at Charlottenlund, 28-30 March, 1966 with the following persons participating:-

Denmark:	Mr. <u>F. Hermann</u> and Mr. <u>H. Thomsen</u>
Finland:	Dr. <u>I. Hela</u> and Dr. <u>F. Koroleff</u>
France:	Dr. <u>Ch. Allain</u>
Germany (Fed.Rep.):	Dr. <u>G. Tomczak</u>
Netherlands:	Dr. <u>R. Dorrestein</u>
Norway:	Mr. <u>R. Ljøen</u>
Sweden:	Mr. <u>A. Svansson</u>
U.K., England:	Mr. <u>A.J. Lee</u> and Mr. <u>G.W. Andison</u>
Scotland:	Dr. <u>J. Steele</u>
ICES:	Mr. <u>H. Tambs-Lyche</u> and Mr. <u>J. Smed</u>
Observers:	
IOC:	Dr. <u>K.N. Fedorov</u>
SCOR:	Dr. <u>W.S. Wooster</u>

3. The General Secretary of the ICES opened the Meeting and made, among others, the following observations:

"The Bureau and the Council are looking forward to receive a report with a very broad and realistic analysis from a hydrographical point of view of means and possibilities, and with a list of preferences, so as to give our governing bodies an opportunity to draw up integrated plans for the development of ICES as a whole . . . . " "May I just call your attention to the papers before you. Some time ago we sent all of you a small booklet with a proposed Agenda and some background papers. This morning you have received another one. Mr. Smed and his staff - particularly Mrs. Holm - have worked up to the last minute to give you as much concrete information as possible about the work which has been performed in the Service Hydrographique throughout the years, about the status of the Service to-day, and about our role in the international data exchange. You will also find suggestions for improvements of the work. It is our hope that the material presented in these two booklets will make it easier for you to arrive at concrete proposals for the future developments of the Service".

4. Professor Hela (Finland) was elected Chairman of the Meeting.  
5. Mr. Smed (ICES) was elected Rapporteur.

B. General Matters

6. Before adopting the Agenda the following proposal for an amendment by Mr. A.J. Lee (U.K.) was observed:

"I would be glad if you could include in the Agenda, say after Item 2, an additional item "Consideration of the need for the ICES Oceanographic Data Lists and the punched card holdings" I ask this because in recent months people in this country (U.K.) have been giving a considerable amount of thought to the question of the Service Hydrographique with the result that last week the appropriate committee of the Natural Environment Research Council, which is now responsible for the co-ordination of Oceanography and Fisheries Research in the United Kingdom, came to the conclusion that there does not seem to be a case for the retention of the ICES Oceanographic Data Lists and punched card holdings and that ICES should concentrate instead on providing the service listed under Item 9 in your Agenda."

The Agenda was adopted with this amendment which was listed as Agenda item x.

7. The discussions were started by Mr. Lee speaking to Agenda item x. (Mr. Lee has since prepared a statement which is added to the background papers (3rd Collection) together with two statements presented by M. Ch. Allain (France)). Mr. Lee's main points were that (a) with the recent expansion of oceanographic research and the development of modern data collecting instrumentation there was at present taking place an oceanographic data explosion which could not be ignored, (b) this explosion was producing so many data in the ICES area that the continued publication of all of them as the ICES Oceanographic Data Lists and the maintenance

of a fully comprehensive punched card data file were virtually impossible without the provision of large sums of money, but that these could not be justified as the demands made on the said Data Lists and the punched card file by scientists were relatively small, (c) alternative means of data exchange exist now that the two World Data Centres and some national data centres had been established and that individual laboratories had computer facilities for producing their own data lists etc., (d) the Service Hydrographique should from now on concentrate on data analysis as required by both hydrographers and biologists.

8. The Meeting agreed that there was a rapidly accelerating increase in the amount of oceanographic data being collected and that this was clearly shown by the fact that at the present moment the Service Hydrographique had some 60 volumes of the ICES Oceanographic Data Lists in the course of preparation, that these would take at least 2-3 years to publish, but that on the whole they did not deal with data collected since 1962. As the ICES Oceanographic Data Lists do not appear to be used frequently enough and as there are alternative means of obtaining oceanographic data, the majority of the Meeting, paying due attention to the differing views presented a.o. in the following reservation, felt that publication of the lists should cease with the 1962 set of volumes except for some special cases.

Mr. A. Svansson (Sweden) disagreed to a cessation of the publication of the ICES Oceanographic Data Lists and suggested full approval of "Proposal for Staff etc." and "Additional Rooms etc." contained in the background documents, Second Collection, Agenda item 6 b (2), because "it will be of great scientific importance to have available on the library shelves future data of the category until now published in Bulletin Hydrographique and the ICES Oceanographic Data Lists. These observations always include temperature, salinity and, usually, oxygen and some chemical constituents. The increase in the amount of such data is not yet 'explosional' and will perhaps never be. If, however, an 'explosion' would occur the material to be published could be restricted to standard stations and standard sections at standard depths. Material resulting from e.g. bathythermographs and recording buoy stations should not be introduced into the ICES Oceanographic Data Lists."

9. The Meeting could not agree with Mr. Lee's proposal for the complete winding-up of the punched card data collection.

Mr. Lee's main argument for this proposal was the fact that ICES does not receive all the standard data for its area. Not all the fisheries laboratories of member countries submit data and a number of oceanographic institutes, universities and services in these countries do not do so either. In addition some non-member countries were active in the ICES area and did not submit their data to ICES.

The Meeting felt that the alternative of data exchange between national institutions and services was inconvenient and ineffective and that a centralized data collection was essential for the servicing of ICES cooperative expeditions and investigations, for atlas preparations, for data analyses and to act as a means whereby data could be obtained by individual scientists when the ICES Oceanographic Data Lists were no longer published. But it was agreed that,

in order to move large quantities of data into the collection speedily, the institutions and agencies in member countries should be urged to improve their quality control and accordingly take full responsibility of the quality of their data. Furthermore, the data filed would have to be limited to standard observations of temperature, salinity and chemical constituents and to bathythermograph data.

10. It was noted, however, that even the attempt to store bathythermograph data was not working satisfactorily, as some countries had not the resources to digitize bathythermograms and as some national agencies had adopted different punched card formats for their own use of the bathythermograph data. It was considered that it would be necessary to convene an ad hoc meeting during the next Council Meeting in October in order to try to resolve these difficulties.

11. With regard to the proposal to concentrate on data analysis, the Meeting agreed that it was desirable to re-orientate the work of the Service Hydrographique in this direction. The Service should actually become an oceanographic data analysis centre designed so as to provide such presentations of oceanographic data as the Council's scientific experts, both biological and hydrographic, require in order to pursue their researches effectively. The Meeting examined certain tasks of this nature which the Service could perform and listed them in order of priority. It was strongly of the opinion, however, that such work cannot be carried out without the provision of suitable computer facilities and additional staff. The cessation of the ICES Oceanographic Data Lists and the suggestion by the Meeting that the whole quality control of the data should from now on be the responsibility of the member countries solely are both moves which will save staff, and these staff savings can be deployed in the field of data analysis. But this analysis cannot be effective without the provision of additional professional staff well versed in modern computer technique and automatic data logging and processing. The Meeting feels that the member countries of ICES have increased their national effort in fisheries research and oceanography but at the same time they have not provided the means whereby the Council can deal with the flood of data so produced. The Meeting is suggesting certain radical measures to meet the present situation which has been brought about by the data "explosion" and these are listed below. It has also suggested that the main function of Service Hydrographique should move from data exchange to the more productive one of data analysis. It is also of the opinion, however, that the Council must take measures over the next few years to equip itself so that it can deal with fruits of the great increase in marine research which is at present going on.

#### C. ICES Oceanographic Data Lists

12. On the basis of the above observations the Meeting recommends that publication of the ICES Oceanographic Data Lists should be discontinued, except for some special categories of data, as indicated below. The data holdings of the Service Hydrographique should be made available to the scientists, especially biologists, in the form of computer print-outs, summary tables and charts. (Cf. also the reservation of Mr. Svansson under item 8 above.)

13. All the data to the end of 1962 should be published as ICES Oceanographic Data Lists, except for the bathythermograph data, the flow of which has not been satisfactory.
14. The Data Lists should still be published from co-operative studies, performed under the auspices of the Hydrographical Committee and reported to the ICES.
15. The oceanographic data, whenever published and/or stored either by the national institutions and services or by the Service Hydrographique should be presented following identical or at least compatible schemes. It will be the task of the Service Hydrographique to distribute guidance to the national institutions in this respect.
16. The full responsibility for the quality of the oceanographic data, to be published and/or stored by the Service Hydrographique, should be transferred from the Service Hydrographique to the national institutions and services except for the data mentioned in 13 above.

D. Information on Completed Cruises.

17. The Service Hydrographique should be given the new task of collecting and disseminating information on completed cruises, with the station charts included. In this task cross reference should be made, if possible, to the programmes published in International Marine Science. The information should be circulated both immediately when available and also as annual reports.

In addition to providing the Council's scientists with an up to date account of the progress of hydrographic work in the ICES area, these station charts will also prove useful for oceanographers preparing articles with hydrographic charts and sections for the Annales Biologiques.

The other Committees of the Council should be asked to give advice on the possibility of including biological stations on the charts.

E. "Ocean Data Stations"

18. The Meeting recommends that the ICES Service Hydrographique continue to co-operate with the IOC Secretariat in preparing a new revised edition of the booklet "Ocean Data Stations" and in keeping this loose-leaf type booklet up to date, in accordance with the proposal outlined in the report of the 2nd meeting of the IOC Working Group on Ocean Data Stations. It also recommends that the Service Hydrographique of ICES take responsibility for maintaining an up to date index of ocean data stations in the ICES area (North East Atlantic, east of 42°W) and for transmission to the IOC Secretariat of all changes and new entries to this index.

F. Punched Card Holdings of the Service Hydrographique

19. Even with the discontinuation of the publication of the ICES Oceanographic Data Lists (with the exceptions referred to in 13 and 14 above) the oceanographic data should still be collected and stored in the Service Hydrographique to form the basis of its work as a regional data centre and also as an analysis centre for various scientific purposes of the ICES, as listed below in 27-34.
20. The punched card and other holdings of the Service Hydrographique should be limited to the standard observations, as listed in the ICES Punching Manual.
21. The punched card and other data holdings of the Service Hydrographique should consist of copies of cards or lists from the national institutions and services, of cards punched in the Service Hydrographique and of data received from the World Data Centres A and B and from the national data centres.
22. The Service Hydrographique should be given the financial support to include in the data holdings machine-generated values of  $\sigma_t$  etc., and machine-interpolated values for standard depths.
23. The Service Hydrographique should prepare and distribute annually a booklet comprising information on the punched cards in its holdings. (Ref. Agenda item 9 a.)
24. It was recommended that the Plankton Committee should be asked to consider the feasibility of arranging for exchange of biological data between the ICES member countries. In this connection attention should be drawn to the interim report of the SCOR Working Group 18 and to the report to be expected from the IOC Working Group on Data Exchange which will meet later in the week.  
  
Care should be taken to avoid duplication of work done by other organizations and agencies. On the other hand it was felt that the time might now have come to consider this question in some detail.
25. The Service Hydrographique should furnish free of charge copies of data (on punched cards or on lists) on request to the national institutions and services and/or scientists of the member countries provided that the attention of the delegate of the member country concerned has been drawn to the request. Even in these cases the maximum value of such a delivery free of cost should not exceed 100 D. kr.

G. Transmission of Data to the World Data Centres

26. Since both ICES and IOC schemes of data exchange pursue one and the same goal of making oceanographic data internationally available, the ICES member countries and their national institutions and services should be asked to co-ordinate their participation in the ICES data exchange scheme with their commitments to the IOC within the framework of its "declared national programmes". This co-ordination should result in rapid transmission of the relevant data both to the Service Hydrographique and to the Exchange System of the IOC (WDC A and/or B.)

#### H. Application of the Punched Card Holdings

27. In order to make it possible for the Service Hydrographique to meet the demands of scientists, especially of biologists, of the member countries, the Service should be given both the scientific and technical staff and facilities to undertake among others the following tasks in the appropriate order given below.
28. The series (1876-1963) of monthly anomalies of surface temperatures for regions of the northern North Atlantic and of an area off the eastern coast of Scotland should be continued and also summarized in one volume.
29. Collaboration should be continued with the German Hydrographic Institute (a) on mean monthly charts of the salinity distribution at various depth levels in the North Sea and (b) on an investigation of the haline stratification of the North Sea, based on salinity observations 1902-1954.
30. Taking into account that the monthly charts of surface temperature and salinity, partly including also residual currents, prepared for the years 1950-52 by the Lowestoft Laboratory and for 1952-58 by the Service Hydrographique, apparently have proved quite useful, in the long run, their continuation should be made possible provided that the time-lag can be reduced to six months at maximum. The Meeting feels furthermore that this service should be re-started on a tentative basis only and covering limited areas. Finally, the charts should be prepared by a computer. (When considering this proposal due attention must be paid also to 35 below.
31. The tables and diagrams of monthly surface temperature and salinity anomalies for 1905-1964 started in the Lowestoft Laboratory on basis of the ICES Atlas (mentioned in 32 and its continuation, should be completed in collaboration with the Service Hydrographique.
32. The Hydrographical Committee and the Plankton Committee should be asked to consider whether the accomplishment of both the following tasks is necessary.
  - Preparation of tables of mean monthly surface temperature and salinity for the years 1955 onwards. (Continuation of the tables of the ICES Atlas: "Mean Monthly Temperature and Salinity of the Surface Layer of the North Sea and Adjacent Waters from 1905 to 1954.")
  - Continuation of the series (1957-1962) of tables of monthly means of surface temperature and salinity for areas of the North Sea and the north-eastern North Atlantic.Due attention should be paid to the fact that these two studies do not cover quite the same region and have not been based entirely on the same fields.
33. The Hydrographical Committee should be asked to give advice on the feasibility of preparing atlases, similar to the above mentioned ICES Atlas, for the Barents Sea and for the seas around Iceland.

34. The Meeting does not wish to give a high priority to the regular preparation and publishing of historical charts of temperature and salinity at a number of depth levels, based on data of certain cruises or surveys, possibly with the occurrence of fish indicated. (Cf. the herring hydrography charts prepared in the 1950's at the instigation of the biologists.)

#### I. Synoptic Services

35. The successful pilot project just completed under the leadership of Dr. J. Eggvin has shown that it is possible to prepare and disseminate rapidly charts and sections of such oceanographic parameters as surface temperature and salinity, bottom temperature, depth of thermocline etc. The Meeting definitely felt that measures should be taken to expand the said pilot project into a more stable, continuous programme. However, being not yet aware of what the Sub-Committee on Telegraphic Communication, of Oceanographic Data (of the Hydrographical Committee) will recommend, the Meeting is not in a position to give a precise recommendation. Nevertheless, the Meeting wishes to emphasize that, should the project place too great a strain on the resources of the Bergen Laboratory, its repetition in the future could instead be carried out by the Service Hydrographique. (When considering this proposal due attention must be paid also to 30 above.)

#### J. Financial Consequences

36. Additional means are required for completion of data volumes from joint investigations:
- a) Overflow Expedition. 10,000 D. kr. needed.
  - b) Conjoint Herring Surveys of 1960 and 1961. 4,000 D. kr. needed, corresponding to the saving from the printing of the hydrographic report on these surveys.
  - c) Baltic Expedition of 1964. Unesco will probably provide the means.
  - d) RHENO Expedition of 1965. (Too early to make any estimates.)
  - e) Skagerack Expedition of 1966. (Too early to make any estimates.)
37. To speed up the printing of the delayed volumes of the ICES Oceanographic Data Lists, 60 volumes up to the end of 1962, substantial budgetary measures are necessary. It is estimated that the said 60 volumes can be printed well before the end of 1969 if a new allocation of 10,000 D. kr. is given to the purpose during each of three successive years.
38. In order to prepare tables and other summaries from the punched card data, one sorting machine has to be rented for some 8,400 D. kr. per year for the sorting of the punched cards.
39. A reasonably fire- and sound-proof archive room is needed for the storage of the punched cards and for holding the sorting machine.
40. Even if publication of the ICES Oceanographic Data Lists is discontinued in a few years time, except for those mentioned in 14, the work load of the Service Hydrographique will increase and necessitate the employment of extra staff.

Ilmo Hela

Jens Smed