

Report on CINECA Data and Information Exchange

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General about CINECA

The idea of a Cooperative Investigation of the Northern part of the Eastern Central Atlantic (CINECA) emanated from the Symposium on "The living resources of the African Atlantic Continental Shelf between the Straits of Gibraltar and Cape Verde", organized in 1968 by ICES with the support of FAO. The Symposium revealed that the oceanographic and biological description of the area off North-west Africa was very incomplete. At the same time the area is of particular interest to marine science, since it is one of the major upwelling areas of the world's oceans. It offers itself to basic studies of physical and biological processes connected with the upwelling phenomenon, as well as to studies of the influences these processes have upon the migrations of commercially important fish stocks.

With the above in mind it was decided to carry out a joint investigation of the area 10°N-36°N, from the west coast of Africa to 30°W, this definition of the area not to be considered a strict limitation: the investigation should take place in relation to scientific problems rather than to geographic boundaries. The investigation is coordinated by ICES, IOC and FAO (CECAF).

The International Coordinating Group (ICG) for CINECA at its first meeting (April 1970) agreed that CINECA would consist of a number of major elements:-

- a) compilation of available data to describe the meteorological, oceanographic and biological features of the area;
- b) monitoring of environmental and biological parameters (including fisheries aspects) in the area over several years;
- c) conducting surveys in order to provide synoptic pictures of the environmental and biological parameters in large parts of the area, including acoustic surveys and exploratory fishing; and
- d) conducting detailed co-operative studies in areas more limited in space than those covered by the surveys under c).

From this it will appear that the investigations fall into two categories:-

1. Descriptive investigations. A description in time and space of the circulation in the lower atmosphere, current systems, physical and chemical characteristics of water masses, distribution of pelagic and benthic organisms, and of bottom configuration, including sedimentation.

2. Analysis of processes. This study should aim at investigating the interaction between the atmosphere and the sea-surface, physical processes operating below the surface, interaction between the physico-chemical environment and the biosphere, biological processes from primary production through several trophic levels, and interactions between the ocean and its floor.

The CINECA investigations started in 1970, and have been carried on every year since then, by a number of research vessels working in the area on national programmes following the guidelines laid down by the ICG. The highlights of the investigations are, however, the multiship surveys carried out in February and August 1973, when a tight grid of oceanographic stations was worked in accordance with closely coordinated detailed plans.

Exchange of Data and Information

1. Data inventories. For reporting of observations made on cruises the ROSCOP form was adopted. The completed forms, with track charts, are supplied to the ICES Service Hydrographique which transmits slightly edited versions to the two World Data Centres (WDCs) and publishes them, with the track charts, as annual Reports on Oceanographic Cruises in the CINECA Region, in the series "ICES Oceanographic Data Lists and Inventories" (IODLI). Published were:

Vol.1: 1971 and 1972. With an annex for 1970,
(IODLI No.14)

Vol.2: 1973. With an annex for 1972.
(IODLI No.17)

Vol.3: 1974 (in preparation).

As requested by Resolution EC-IV.4 of the IOC Executive Council the Service Hydrographique of ICES will also prepare an inventory of all data received from the CINECA area. This will be in accordance with CINECA Recommendation 2:-

"that all countries participating in the CINECA operations are requested to provide the Service Hydrographique with a list of such data from the CINECA area which are available in their National Data Centres or other national institutions; and that the Service Hydrographique should make available an inventory of all data from this region to the participating countries".

2. Descriptive Cruise Reports. A description of the work carried out on a cruise, sometimes with some preliminary results, is generally supplied by the operating agency for publication in the CINECA Newsletters, issued by ICES. These also contain lists of publications reporting results of investigations in the area.

3. Exchange of data. In the start the ICG decided that all cruise data would be sent to the World Data Centres, Regional Centres and the Special Data Centres in accordance with the agreed procedure for data from Joint Investigations. With regard to hydrographic data it was specifically stated by the ICG that "these would be available in the World Data Centres, and it was agreed that there would be no need for storing additional complete sets of the same data in other centres, such as for instance the Service Hydrographique of ICES".

However, when later the multiship surveys were planned the ICG decided that with regard to the physical, chemical and appropriate biological data from these surveys "each participating country supply data copies to the ICES Service Hydrographique before 1 July 1974. The Service Hydrographique will supply copies to the World Data Centre System ...". In accordance with this decision the main part of these data have now been received (cf. Annex), and copies will be supplied to the WDC system.

As sea surface temperature and wind are such important parameters in the study of the upwelling an effort was made to obtain additional observations of these parameters during the multiship survey periods. Thanks to the good offices of the Secretary General of WMO, ship masters were requested to make such observations when passing the area during these periods. In response to this ICES received more than 10.000 observations. They have now been transferred to marine meteorological punch cards and will be worked up by the Service Hydrographique.

Apparently the Service Hydrographique is now considered as data centre for the CINECA project in general. Thus the IOC Executive Council in its Resolution EC-IV.4

"Urges Member States participating in CINECA to ensure early submission of data collected within the CINECA area to the Service Hydrographique of ICES, as the regional data centre for the investigation and through it to the existing world data centre system ...".

In accordance with this we intend to establish a data bank for the region. As indicated above an inventory of the data will be prepared, as also requested by Resolution EC-IV.4. A sort of inventory covering the period 1901-1956 is already available in Rapports et Procès-Verbaux, vol.159, pp.30-31 (1970).

4. Bi-weekly SST charts. In order to follow the development of upwelling in the area synoptic sea surface temperature charts, prepared regularly, may be assumed to be of great value. It was therefore much appreciated that the National Weather Service of Morocco undertook this task, in accordance with a recommendation from ICG, and has prepared and distributed bi-weekly charts regularly since February 1972.

5. Satellite and aircraft observations in the CINECA area. During the multiship operations and in other periods observations mainly of SST, but also such that might be interpreted in terms of pigments, were made in the CINECA area by US satellites (NOAA-2, ERTS-I, Skylab) and by aircraft mission. Ground truth data were obtained from vessels participating in the multiship surveys, aboard which continuous measurements of chlorophyll, sea surface temperature and the dust load of the atmosphere were made.

Special mention should be made of the international pilot study in the exchange of selected satellite sensed data carried out in the CINECA region in spring 1974. An evaluation of the sample high-resolution imagery which the U.S. NODC provided to CINECA participants is being undertaken by Dr. K.-H. Szekiela.

6. Working up of data. It was found that there is no need to publish the data as they will be easily accessible at the Data Centres. It was agreed, however, that the physical, chemical and appropriate biological data from the multiship surveys in February and August 1973 should be worked up in sections and horizontal charts showing the distribution of the various parameters.

A Task Team, chaired by Dr. H. Mittelstaedt, will coordinate the preparation of sections and charts showing the distribution of temperature, salinity and sigma-t. Efforts will first be concentrated on the material collected during the first multiship survey (February 1974).

With regard to the zooplankton and micronekton collections of the multiship surveys the analysis of this material will be considered by a workshop which is also expected to advise the ICG on the appropriate presentation of the results of the analysis.

7. CINECA Symposium. The CINECA investigations have meant a considerable intensification of the marine research in the area, with regard to both general scientific studies and assessment of the resources. The ICG for CINECA, therefore, has recommended that a symposium be held in the early part of 1977 with the purpose of providing a synthesis of the oceanographic and fisheries research in the area, particularly in relation to studies of the Canary Current System and its living resources.

ANNEX

Data in the ICES Service HydrographiqueCINECA region, 1970-1973

| | | Hydro Stat. | " | " | " |
|--------------------|-------------------------------------|-------------|----|-------|---------|
| | | | BT | Chem. | Surface |
| <u>1970</u> | | | | | |
| German Dem. Rep. | "Alex. von Humboldt" | 27/8-8/11 | x | x | x |
| Germany, Fed. Rep. | "Meteor" cr.19 | 20/1-4/2 | x | | |
| | " cr.21 | 14/9-22/10 | x | | x |
| <u>1971</u> | | | | | |
| France | "Charcot" I | 22/1-15/2 | x | | |
| | "Charcot" II | 15/3-29/4 | x | x | |
| German Dem. Rep. | "Alex. von Humboldt" | 16/9-17/12 | x | x | x |
| Germany, Fed. Rep. | "Meteor" cr.23 | 30/4- 2/5 | x | | |
| Spain | "Cornide de Saavedra" (Sahara I) | 20/6- 3/8 | x | x | |
| | " (Sahara II) | 16/8-18/9 | x | x | |
| U.K. | "Hydra" | 1-12/12 | | x | x |
| <u>1972</u> | | | | | |
| France | "Jean Charcot" CINECA III | 10/7- 5/8 | x | x | |
| Germany, Fed. Rep. | "Planet" | 19/1-12/3 | x | x | |
| | "Meteor" | 26/2- 9/3 | | x | |
| Mauritania | Radial par 20°40'N | | x | | |
| | " 20°50'N | | x | | |
| | " 19°25'N | | x | | |
| | Bouée Gazelle | | x | | |
| | " Chasseloup | | x | | |
| | Port Nouadhibou | | x | | |
| Spain | "Cornide de Saavedra (Maroc-Iberia) | 20/6-19/7 | x | x | |
| | " (Norcanarias) | 2-24/8 | x | x | |

ANNEX cont.

1973

| | | | |
|--------------------|-----------------------|-------------|-----------|
| France | "Thalassa" | CINECA IV | 29/7-18/8 |
| Germany, Fed. Rep. | "Meteor" | cr.30 | 28/1-21/2 |
| Senegal | 6 Coastal Stations | | daily |
| Spain | "Cornide de Saavedra" | (CINECA I) | 4-19/2 |
| | " | (Atlor II) | 3-24/3 |
| | " | (Atlor III) | 19/4-1/5 |
| | " | (CINECA II) | 10-23/8 |
| U.K. | "Discovery" | cr.52 | 2/2-24/2 |

Also 10 000 marine met. observations

| Hydro Stat. | BT | Chem. | Surface |
|-------------|----|-------|---------|
| X | | X | |
| X | X | X | |
| X | | X | |
| X | | X | |
| X | | X | |
| X | | X | |
| X | | X | |
| | | | X |
| | | | X |