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Proposals for the indexing of the Baltic Standard Stations according  
to the requirements of the International Catalogue for Ocean Data  
Stations (ICODS) issued by IOC.

by

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Background

World Data Center A -Oceanography has prepared for IOC standard ocean station information forms including chartlets to be contained in the International Catalogue for Ocean Data Stations (ICODS). This set covers all the world oceans and has a general index code Occxx, where

O gives indication of oceanographic data

(other numbers being used by WMO)

cc indicates the chartlet used, and

xx is the station number within the chartlet region

This index could also serve as a basis for indexing the Baltic Standard stations, if those stations which are only in national use will be omitted.

In this paper will be discussed the applicability of this ICODS-system to the work of indexing the Baltic Standard Stations (BSS), and as a result some modifications of the system are proposed and described in details.

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### Requirements

In order to obtain maximum effectivity, the index should

- be as short as possible (1)
- be compatible to other sea area indices (2)
- have possibility to amendments for future use (3)
- be unambiguous (4)
- contain, if possible, information on location (5)
- be applicable to internationally as well as nationally programmed stations (6)
- allow sufficient number of stations in any area of the sea (7)

### Discussion of the ICODS indexing system.

Of the given chartlets, No 14 and No 16 cover part of the Baltic region, at most up to about N 63<sup>o</sup>. However, the Bay of Bothnia is covered only by the circumpolar chartlet No 11/21/31 in which the Bay of Bothnia is so small, that it is impossible to plot the great number of stations, which exists in that region. Here one can also note that it is rather impractical and confusing to use two or three different chartlets to cover such a small geographic region, as the Baltic Sea.

Of the general index code Occxx it is allowed to use only two figures - xx - to the number of a station within one and the same chartlet. In the Baltic region there exist a great number of standard stations, if internationally as well as nationally programmed ones are included. Taking into consideration the requirement (6) above, two figures seem to be a too short index, at least if one wants every nation to use the same index for one and the same station.

The greatest advantage of using standardised indexing codes is of course the simplified reporting and retrieval of all observed data. However, much data are reported to ICES data center not only from the international stations, but also from stations contained in national programmes. It should be advantageous if also these stations could be included in the system. This requires that the code is flexible in its construction, to let the number of the two types of stations expand as may be required in the future.

Necessary changes of two basic parameters of ICODS.

The discussion above leads us to the conclusion that two things need to be modified in the basic ICODS system to make it applicable to the work of the Baltic scientists:

- a new chartlet (e.g. No 17) must be constructed. This chartlet should preferably cover the entire Baltic region. As an alternative, the new chartlet should <sup>be</sup> complementary to No 14, covering the region from the Åland Sea and up to and including the Bay of Bothnia.
- the general form of the indexing code must be expanded with one digit. This may be done by omitting the 0 in the code : ccxxx. In this way, station numbers up to 999 may be handled, if necessary.

IOC has been approached concerning these two items, but when this text is being written, no definite answers have yet been obtained.

Proposals for four possible ways of indexing the Baltic Standard Stations

In the following it is presupposed that the necessary changes of the basic ICODS system, as outlined above, can be accepted by IOC. The proposals are based partly on the earlier correspondence between the Senior Scientists of the Baltic Oceanographers and S. Carlberg and partly on the document "Finnish comments on the indexing of Baltic Standard Stations" presented at the business meeting at the 9th Conference of the Baltic Oceanographers in Kiel, April 1974. The material has then been further discussed and treated by the present authors,

"Swedish proposal"

This system, which partly is based on suggestions by Dr. K. Voigt, was presented in a circular letter by Carlberg to the Senior Scientists of the Baltic Oceanographers on 16 October 1973.

300 numbers were allotted to the international stations, and furthermore, each of the Baltic countries were given 100 numbers for national stations according to the scheme (referring to chartlet No 17):

International Baltic Stations	17000 - 17299	GDR	17600 - 17699
Finland	17300 - 17399	FRG	17700 - 17799
USSR	17400 - 17499	Denmark	17800 - 17899
Poland	17500 - 17599	Sweden	17900 - 17999

The system is very flexible and seems to provide space for a sufficient number of stations. The disadvantage is that the station code does not tell anything about the geographical positions of a station. Even if the numbering of the international stations is based upon the arrangement of the International Baltic Year stations, this does not provide any help for stations outside the Baltic proper, and not for new stations within that region either.

#### Finnish 1<sup>0</sup> x 1<sup>0</sup> proposal

This proposal resembles somewhat of the Marsden square system. The Baltic region is subdivided into a maximum of 100 parts, each with 1<sup>0</sup> x 1<sup>0</sup> sides. This utilizes the first two digits of the three in the running number ccxxx. The third digit is used for the stations within each 1<sup>0</sup> x 1<sup>0</sup> subpart. This gives a maximum of 10 stations, something which in certain areas - e.g. the Belt Sea - seems to be too little. It may also be somewhat more difficult to handle national stations along with the international ones, as this should require coordination of the indexing also of the former. However, the system provides excellent information about the location of each station.

#### Finnish section proposal

This proposal requires that a number of points in the sections most used are fixed and a numbering system for these is formed. The criteria for the choice of sections should be discussed. The worst side of this idea is, that people use slightly different sections, and that certain regions are sparsely covered (if covered at all). However, this may be solved by standardizing some national sections in these regions.

As for the numbering, one might think of the following: The system is capable of handling up to 100 sections (00 - 99). Each section may have at most 10 stations. If one station belongs both to a transversal and a longitudinal section, the number for the latter will be chosen. In this way even sections with more than 10 stations can be described well. Space for future amendments is obtained in two ways: by using less than 10 stations per section and by the fact that 100 sections will hardly be reached in any foreseeable time.

As in the 1<sup>0</sup> x 1<sup>0</sup> proposal above, it may be somewhat difficult to handle national and international stations along with one another. Another disadvantage is that any new station, which one may want to add in the future, must be either a new section or a natural extension of an existing section.

An advantage is of course that the system gives good geographical information.

Regional proposal

If the section proposal above can be understood as somewhat regional in its construction, one can say that this fourth proposal is a mixture of the Swedish proposal and the section proposal.

The region used here are mainly those suggested by H. Wattenberg in 1949. However, as Wattenberg used 14 regions to describe the Baltic area, the number is here reduced to a maximum of 10 (see Figure 1). This uses the first digit (ccxxx) of the three in the running station number. The other two digits are used as follows:

For each section:

International Baltic Stations:	00 - 29	GDR	60 - 69
Finland	30 - 39	FRG	70 - 79
USSR	40 - 49	Denmark	80 - 89
Poland	50 - 59	Sweden	90 - 99

The numbering within each region could be somewhat modified, as compared with the section proposal, with the details depending on the region.

So, for instance, the code 17522 means international station No 22 in the Eastern Gotland basin shown in chartlet No 17, whereas 17652 means a national Polish station No 52 in the Arkona - Bornholm Sea. Thus the index code gives an indication of the geographical site of any station. The system is also flexible enough to handle national as well as international stations and allows amendments in the future.

The 30 international plus 7 x 10 national numbers for each region should be sufficient for any foreseeable use. However, in the largest region according to Wattenberg - the Eastern Gotland Sea - some 20 - 22 international stations are already accepted. Therefore the northern border of the two Gotland basins is proposed as N 58° 30', in order to allow for more additions in the future. The area between N 58° 30' and N 60° 30',

an "enlarged Åland Sea" may look a bit unusual. However, in this connection it must be remembered, that in the "traditional" Åland Sea about 95 per cent of the region is either Finnish or Swedish territorial waters. Therefore it should be unnecessary to save 30 numbers for international stations in such a small area.

#### Station indexing contra exact position of a station

Concerning certain stations, e.g. the Gotland Deep, considerable discussions have been going on about the exact position of the station. Quite naturally different opinions exist, because of small differences among the sea charts, inexact Decca information etc.

The indexing of the stations will by no means solve these problems. However, the important point is, that every research vessel should be able of reproducing the same position from occasion to occasion, getting the same maximum deep. Even if such positions, reported by different nations, are slightly apart they can still be accepted as the same station in the same basin. Thus they can be reported with the same index code even if the position in the logbooks differ. The great advantage of such routines will be a simplified exchange of data and a quicker search for specific data in the (computer) files.

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1 Proposal for a Chartlet 17 to be included in the International Catalogue for Ocean Data Stations (ICODS)

