

# INT. ICE SYMBOLS

## "THE EGG CODE"

### Stage of development (thickness) / Tykkelse (alder)

- 0 = ICE FREE/ISFRIT
- 1 = NEW ICE/NYIS
- 2 = NILAS (< 10 cm)
- 3 = YOUNG ICE (10-30 cm)/UNG IS
- 4 = 10-15 cm Grey ice/Grå is
- 5 = 15-30 cm Grey-white ice/Gråhvid is
- 6 = FIRST-YEAR ICE (30-200 cm)/VINTERIS
- 7 = 30-70 cm Thin f.y. ice/Hvid is
- 8 = 30-50 cm Thin f.y. ice, 1. stage/Hv.is, 1. stadium
- 9 = 50-70 cm Thin f.y. ice, 2. stage/Hv.is, 2. stadium
- 1• = 70-120 cm Medium f.y. ice/Middel vinteris
- 4• = > 120 cm Thick f.y. ice/Tyk vinteris
- 7• = OLD ICE (polar ice)/POLARIS
- 8• = Second-year ice/Andetårs is
- 9• = Multi-year ice/Mangeårig polaris
- ▲ = Ice of land origin/Gletscheris
- X = Undetermined (unknown)/Ubestemt (ukendt)

## INTERNATIONAL SEA ICE SYMBOLS

### used on radiofacsimile ice charts from Greenland waters

#### Aim and use

Many countries, including Denmark, have during several years been issuing ice charts by radio facsimile for the sake of navigation. Although the charts have served their purpose, the nations' use of their own set of symbols have caused considerable inconvenience to ships navigating in various ice infested regions.

Therefore, an international set of symbols has been developed. This symbology has been introduced New Year 1982 and will henceforward be used globally on operational radio facsimile ice charts.

For further information please call The danish Meteorological Institute, The Greenland Ice Branch, Copenhagen, 01-29 21 00.

#### Contents

The symbols advise on:

Ice concentration  
Stage of development (age)  
Floe size (form of ice)  
Openings in the ice  
Ice edges and boundaries  
Belts and patches  
Icebergs, bergy bits and growlers

Sometimes with supplementary information on:

Topography  
Stage of melting  
Snow cover

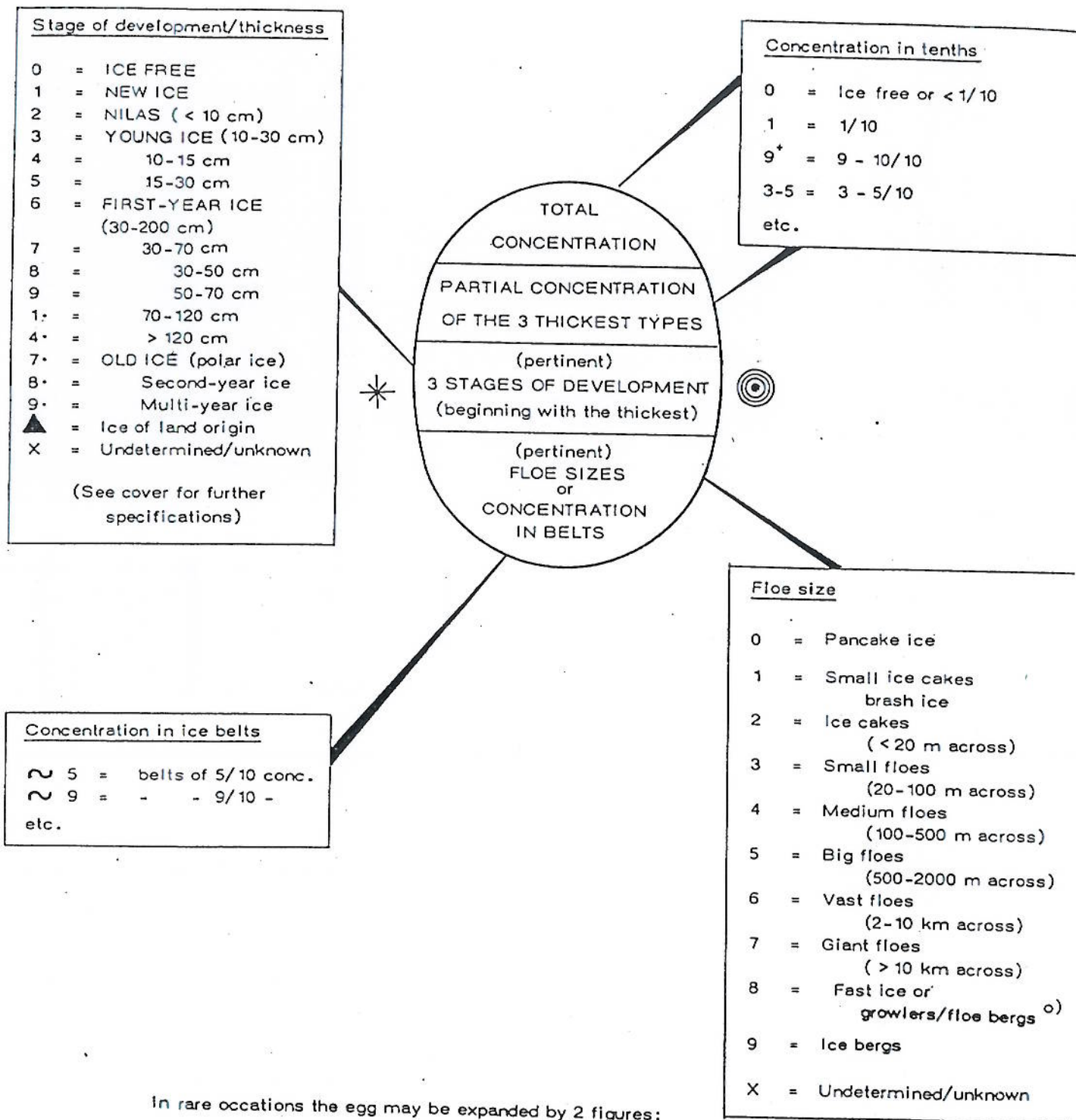
On Danish ice charts concerning Greenland waters (beginning from March 1982), only a selection of the symbols will be used. Other, rarely used symbols are listed on page 5.

#### Construction

The system consists of:

- I: The main symbol, "the EGG SYMBOL" (page 2-3)
- II: Other symbols (page 4-6)

1. EGG SYMBOL



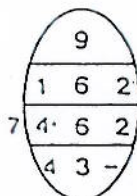
In rare occasions the egg may be expanded by 2 figures:

\* Sporadic (< 1/10 conc.) occurrence of ice thicker than indicated inside the egg may be indicated by a figure at this place.

o) When all partial concentrations inside the egg total considerably less than the top figure for "Total Concentration" the stage of development of the predominant of the remainder (thinner) ice types may be indicated here.

o) Fig. "8" in this table normally means fast ice. However, when glacier ice has been reported in the applying fig. for stage of development, fig. "8" tells that the indicated glacier ice is bergy bits and growlers (not bergs).

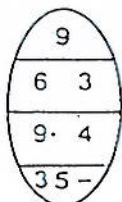
EXAMPLES I



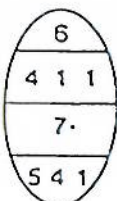
Total concentration 9/10, namely 1/10 stage 4\* (thick first-year ice (> 120 cm)) of floe size 4 (medium floes). 6/10 stage 6 (first-year ice, no further specifications) of floe size 3 (small floes). 2/10 stage 2 (nilas); floe size not indicated.

In addition there are scattered occurrences (< 1/10) of type 7\* (old ice/polar ice).

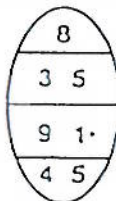
Note: When the floe size indications - like here - refer to the stage categories there will always be 3 figures (or 2 figures and a stroke).



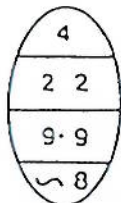
Total concentration 9/10, namely 6/10 multi-year ice in small floes. 3/10 grey ice (10-15 cm) big floes.



Total concentration 6/10. All ice is old ice, namely 4/10 big floes. 1/10 medium floes. 1/10 small ice cakes or brash.

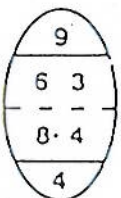


Total concentration 8/10, namely 3/10 multi-year ice (the dot after "1" makes a dot after "9" abundant) 5/10 medium first-year ice (70-120 cm). The ice is mainly composed of medium and big floes. No connection between floe size and stage of development is indicated.



Total concentration 4/10, namely 2/10 multi-year ice. 2/10 thin first-year ice, 2nd stage (50-70 cm). The ice is mainly distributed in belts of 8/10 conc.

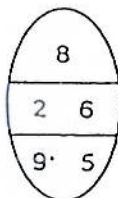
A dotted line indicates that the figures just below it are estimated:



Total concentration 9/10 6/10 are estimated to be second-year ice. 3/10 are estimated to be grey ice (10-15 cm). The ice consists mainly of medium floes.

EXAMPLES II

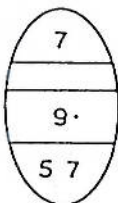
Often the egg will contain some of the possible information, only:



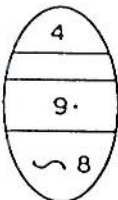
Total concentration 8/10, namely 2/10 multi-year ice. 6/10 grey-white ice (15-30 cm). No information is given on floe size.



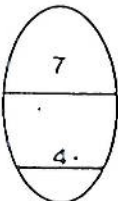
Total concentration 8/10, namely 3/10 vast floes. 5/10 small floes. No information is given on stage of development.



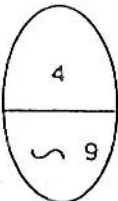
Total concentration 7/10. All ice is multi-year ice in big and giant floes.



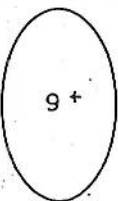
Total concentration 4/10. All ice is multi-year ice. The ice is mainly distributed in belts of up to 8/10. No information is given on floe size.



Total concentration 7/10. All ice is thick first-year ice (> 120 cm). No information is given on floe size.



Total concentration 4/10. The ice is mainly distributed in belts of up to 9/10. No information is given on stage and floe size.








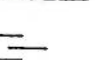





Total concentration 9-10/10. No other information is given.



II. OTHER SYMBOLS (the widely used ones only):

Concentration etc.

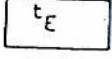
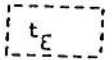
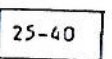
In order to facilitate readability of the chart, ice-covered areas may be hatched according to total ice concentration. However, new ice, dark nilas, and ice rind are normally not included in the hatching indication.

-  } fast ice with national variation of hatching to show stage of development.
-  }
-  9-10/10 consolidated pack ice  
compact pack ice  
very close pack ice
-  7-9/10 close pack ice
-  4-6/10 open pack ice
-  1-3/10 very open pack ice
-  < 1/10 open water
-  ice free (the symbol is distributed along the coast or ice edge)
-  bergy water (bergs or bergy bits; no pack ice)
-  new ice (the symbol may be scattered and superimposed on other hatching; the new ice may not necessarily be included in the total concentration figure)
-  belts and strings of ice



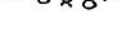



Symbols for ice of land origin

-  ice bergs, few resp. many
-  growlers, few resp. many






Specification of ice thickness

-  thickness measured (in cm)
-  thickness estimated (in cm)
-  thickness varies between 25-40 cm

Symbols for limits

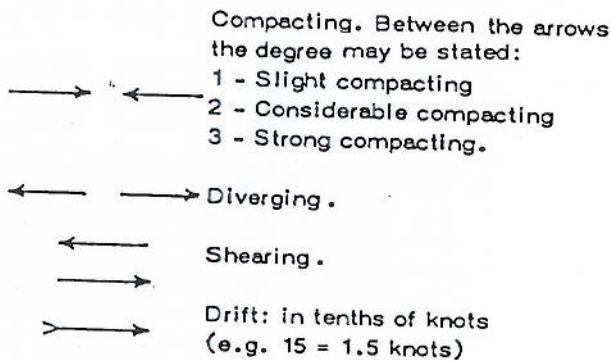
-  undercast
-  limit of visual observation
-  limit of radar observation
-  visual or satellite observed ice edge/boundary
-  ice edge/boundary by radar
-  estimated ice edge or boundary

Openings/topography

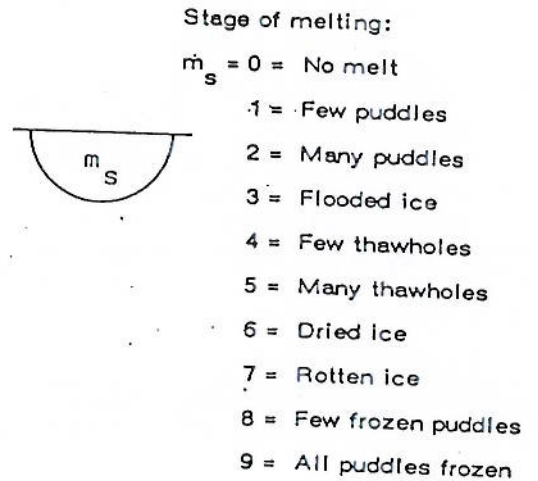
-  cracks in the area
-  single crack
-  lead (the width (in m) may be added)
-  frozen lead
-  ridges/hummocks (concentration "C" in tenths)

RARELY USED SYMBOLS

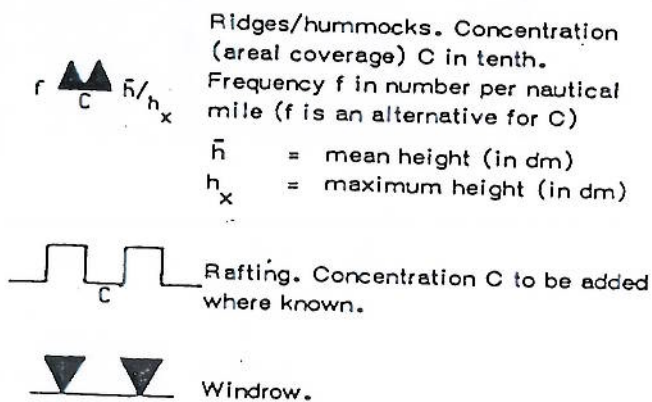
Symbols for dynamic processes



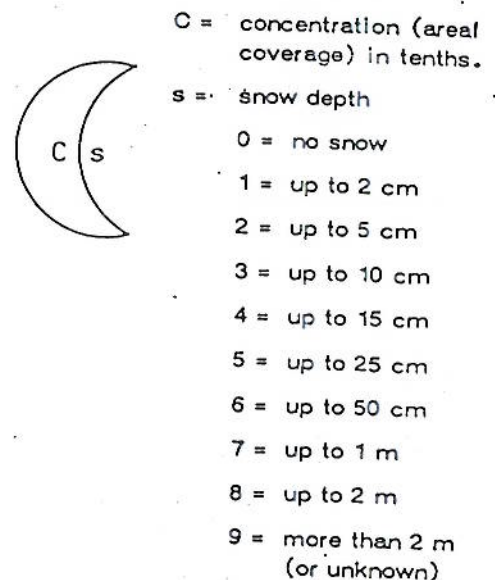
Symbol for stage of melting



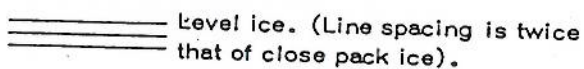
Symbols for topography features



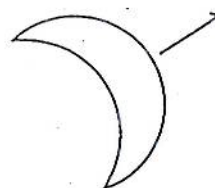
Symbols for surface features



Additional symbols for regional use



The orientation of the symbol will show the direction of sastrugi, as follows:



Icebergs:



n = number of icebergs

- 00 = none
- 01 = 1
- 02 = 2
- 03 = 3
- 04 = 4
- 05 = 5
- 06 = 6
- 07 = 7
- 08 = 8
- 09 = 9
- 10 = 10
- 11 = 11
- 12 = 12
- 13 = 13
- 14 = 14
- 15 = 15
- 16 = 16
- 17 = 17
- 18 = 18
- 19 = 19
- 20 = 1-9
- 21 = 10-19
- 22 = 20-29
- 23 = 30-39
- 24 = 40-49
- 25 = 50-99
- 26 = 100-199
- 27 = 200-499
- 28 = 500 or more

YY = day number in the month

few      many

The triangular symbol may have been further specified:



growlers and/or bergy bits (height \* < 5 m)



iceberg (size unspecified)



iceberg, small (height \* 6-15 m)



iceberg, medium (height \* 16-45 m or length 61-122 m)



iceberg, large (height \* 46-75 m or length 123-213 m)



iceberg, very large (height \* 75 m or more, or length 213 m)



tabular berg (size medium)



ice island



radar unspecified (suspected berg)



floe berg (ice of sea origin)

\* Note: Heights refer to the above water portion only.

Comments to the East Coast chart "DD June YY"

(The chart is a non-real fictive example to show as many normally used symbols as possible).

The fjords are covered by fast ice, while compact pack ice is present along the ocean coast. The thickness of the fast ice in Scoresby Sund has been measured to 75 cm (30"). In the entrance of that fjord there is a polynya. New ice has formed in the shore lead (flaw lead) north of the polynya. The compact (9<sup>+</sup>) pack ice outside consists of 5/10 multi-year ice (polar ice) in vast floes and 4/10 grey-white ice (15-30 cm) in small floes. Further out the ice concentration is 6/10, all ice being vast and small floes of multi-year ice. To the south of this there is 8/10 nilas. The nilas has not been hatched thus indicating that it is a smaller menace to navigation than the other ice on the chart. Outside the ice edge scattered bergs and (locally many) growlers are present.

To the west of the nilas 7/10 pack ice is present, namely 5/10 multi-year ice and 2/10 grey-white ice. The form is mainly vast and medium floes. Further to the south the mean concentration of pack ice is 5/10; however, belts of 8/10 are present.

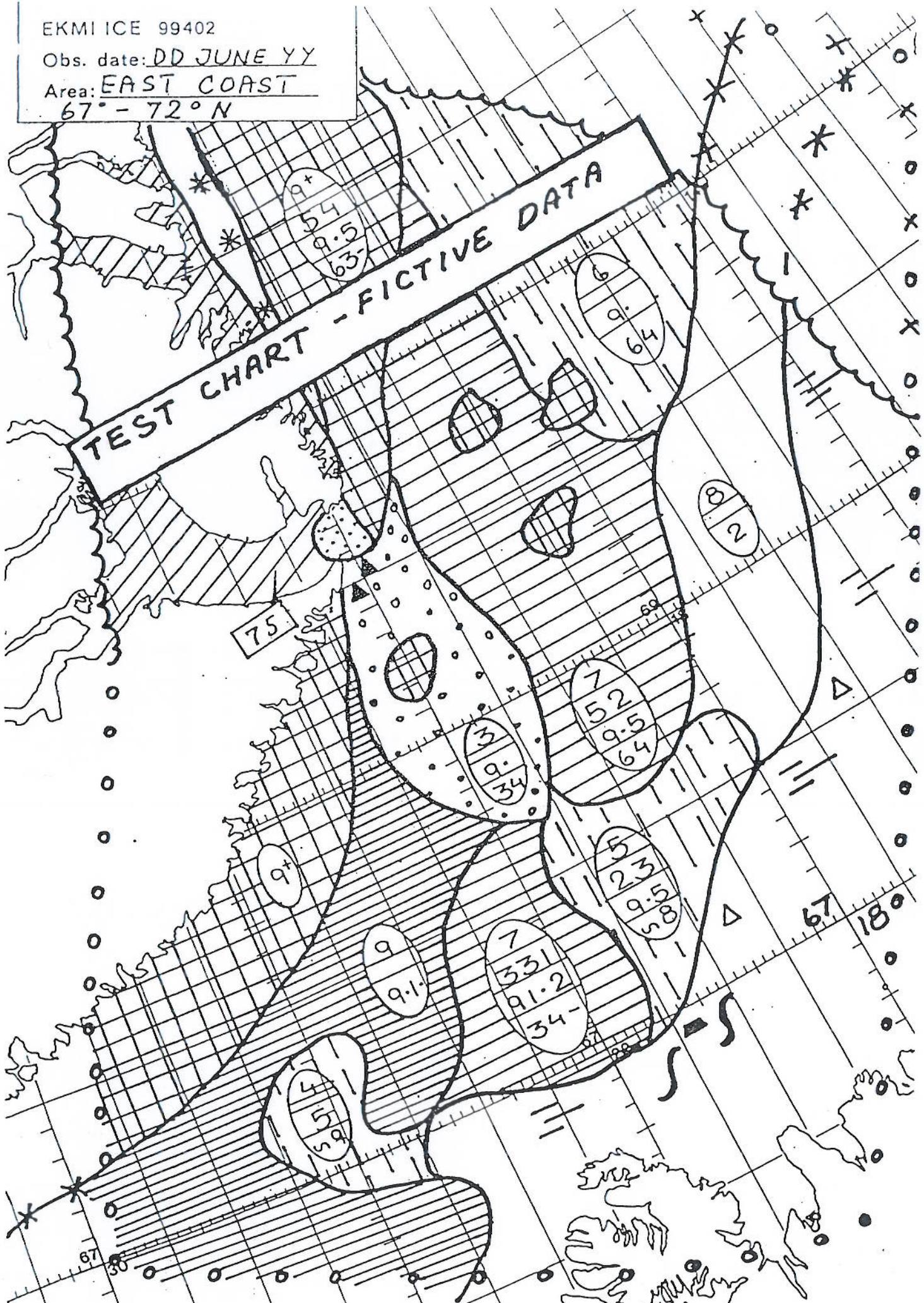
In the northern part of the chart clouds have made visual observation impossible. However, the ice edge and the boundary between nilas and multi-year ice have been defined by radar observation.

EKMI ICE 99402

Obs. date: DD JUNE YY

Area: EAST COAST

67° - 72° N





Kommentarer til Kap Farvel kortet

1. april 1981:

Den observerede havis er udelukkende storsis, hvorfor alderen ikke er angivet. Ofte ligger isen, som her, mest i bæltter. I det åbne vand er der mange isbjerge og skosser. Den vestlige del af observationsområdet har været skydækket for observatøren, hvorfor iskanter, isbæltter og isbjerge kun er radarobserveret og angivelse af koncentrationer udeladt.

Comments to Cape Farewell Icechart

April 1st, 1981:

Apart from bergs and growlers only old ice is present, whence no indication of the stage of development is given. Like here, the ice is often mainly arranged i belts. Many bergs and growlers are present in the open water. Clouds have obscured the observation of the western part of the area; therefore, for this area only radar information on ice edges and bergs are given, but no concentration figures.

EKMI ICÉ 99401

Obs. date: 1st APRIL 1981

Area: KAP FARVEL

