

IS- OG BESEJLINGSFORHOLDENE  
I DE DANSKE FARVANDE

I VINTEREN 1983—84

ICE AND NAVIGATIONAL CONDITIONS  
IN THE DANISH WATERS DURING THE WINTER

1983—84

UDGIVET AF  
STATENS ISTJENESTE



## IS- OG BESEJLINGSFORHOLD I DE DANSKE FARVANDE I VINTEREN 1983-84.

Oplysningerne til nærværende beretning om is- og besejlingsforholdene i de danske farvande i vinteren 1983-84 er indsamlet og bearbejdet på lignende måde som i tidligere år. Da indrapporteringen fra isobservatorerne nu foregår i henhold til den nye Østersøkode, er udformningen af hæftets Tab. 3 dog ændret i overensstemmelse hermed.

Hæftets hidtidige Tab. 4, »Oversigt over inddragning af danske fyrskibe . . .«, skønnes at have mistet sin værdi, da der nu kun er to danske fyrskibe udlagt, og den er derfor udeladt.

### Almindelig oversigt

Luftens middeltemperatur i vintermånederne 1983/84 var for hele landet i henhold til oplysninger modtaget fra Meteorologisk Institut som følger:

November	+ 4,2	mod normalt + 4,9
	(antal døgn med frost 12, normalt 6,1)	
December	+ 1,5	mod normalt + 2,2
	(antal døgn med frost 15, normalt 14)	
Januar	+ 0,9	mod normalt + 0,1
	(antal døgn med frost 15, normalt 21)	
Februar	+ 0,1	mod normalt + 0,4
	(antal døgn med frost 21, normalt 19)	
Marts	+ 1,1	mod normalt + 1,6
	(antal døgn med frost 21, normalt 19)	

Lands gennemsnittet af lufttemperaturer var i efteråret 1983 normalt, og det samme gælder overfladevandets temperatur i de danske farvande.

I november, hvor luftens gennemsnitstemperatur blev 0,7 grad under normalen, fik vi i månedens sidste halvdel en frostperiode med temperaturer ned til + 12 grader. Den 18. november modtog vi vinterens første ismelding, det var fra Haderslev Fjord, men allerede den følgende dag blev fjorden rapporteret isfri igen.

Det ret kolde vejr fortsatte ind i december måned indtil d. 20', og vi modtog en del ismeldinger fra indre danske farvande, som kulminerede i antal d. 20', dette indebar dog ingen væsentlige hindringer for skibsfarten.

Resten af måneden var vejret relativt mildt, og decembers middeltemperatur kom kun til at ligge 0,7 grad under normalen, tilsvarende gjorde sig gældende for overfladevandets temperatur i de danske farvande.

I januar fik vi i månedens sidste halvdel en frostperiode på 15 døgn varighed med temperaturer ned til + 14 grader, men trods dette blev landsgennemsnittet af månedens luft- og vandtemperaturer ca. 1 grad over normalen for januar, hvilket skyldtes det ret milde vejr i månedens begyndelse.

I januar nåedes nogle dage op på 17 ismeldinger pr. dag fra indre farvande. I perioden 25. til 31. januar meldtes om så store isvanskeligheder i Limfjorden ved Aggersundbroen, forårsaget af særdeles ugunstige vind- og strømforhold, at bugserbåden Goliath Carl i dette tidsrum måtte sendes til assistance for skibsfarten i det pågældende farvand.

Februars vejr var i månedens første trediedel ret ustadigt og mildt. Resten af måneden domineredes af højtryksbetinget mest skyet opholdsvejr med temperaturer gennemgående lidt under frysepunktet. Lufttemperaturens landsgennemsnit blev 0,5 grad over det normale, og tilsvarende gjorde sig gældende for overfladevandets gennemsnitstemperatur.

Marts havde overvejende vind fra Øst og SØ. Vejret var ved månedens begyndelse relativt mildt med nogen nattefrost. Senere blev vejret koldere med temperaturer omkring frysepunktet og en del sne især i Jylland. Efter nogle døgn med mildt og tørt vejr uden nattefrost og dagtemperaturer mellem 5 og 10 grader faldt der den 10' en del snebyger, hvorefter vejret frem til den 25' var tørt og solrigt med nattefrost og dagtemperaturer lidt over frysepunktet. Omkring den 25' blev vejret mere ustadigt, og i resten af måneden var det mildt med regn og i Jylland en del sne.

Lufttemperaturens landsgennemsnit blev i marts 0,5 grad under normalen, medens overfladevandets gennemsnitstemperatur var normal for måneden.

Antallet af modtagne isobservationer fra danske isobservatorer tog af i den første uge af marts, og fra den 12' til den 25', hvor den sidste danske ismelding indløb, modtoges kun melding fra en enkelt observator.

De danske hovedfarvande var isfrie i hele vinterperioden, og statsisbryderne var på intet tidspunkt sendt til assistance for skibsfarten. Den eneste isbryderassistance formidlet af Statens Istjeneste, som var nødvendig i vinteren 1983-84, var, da bugserbåden Goliath Carl - som nævnt ovenfor - i den sidste uge af januar assisterede skibsfarten i Limfjorden ved Aggersundbroen.

Det blev i den forløbne vinter ikke aktuelt at udsende isberetninger fra Statens Istjeneste.

Vinterens første ismelding fra Sverige indløb den 28. november 1983, og sidste svenske ismelding indløb den 25. maj 1984.

Første ismelding fra Finland modtoges den 23. november 1983, og sidste finske ismelding den 28. maj 1984.

De på følgende sider viste tabeller angiver specialoplysninger om temperaturer og isforhold ved særlige observationssteder m.v.

Således viser:

- Tabel 1. Luftens middeltemperatur og afvigelser fra normalen fra seks vidt adskilte steder i landet.
- Tabel 2. Vinterens frostdøgn. Middeltallet for kuldesum er beregnet til 48,8 mod en middelvinters 100,5.
- Tabel 3. Fortegnelse over observationssteder, hvorfra isforekomster er rapporteret.
- Tabel 4. Udgået.
- Tabel 5. Sammenligning mellem de forskellige vintre.

Tabel 6. Statsisbrydernes virksomhed siden 1953/54.

Tabel 7. En skematisk oversigt over is- og besejlingsforholdene på strækningen Skagen-Gedser, henholdsvis gennem Storebælt og Øresund, endvidere løbene til Fredericia, Kalundborg og Stignæs, samt Limfjorden og Esbjerg i perioden 1929/30 til 1983/84.

Tabel 8. Kurver over overfladevandets middeltemperatur i gennemsejlingsfarvandene.

## ICE AND NAVIGATIONAL CONDITIONS IN DANISH WATERS DURING THE WINTER 1983-84.

Information for this report about ice- and navigational conditions in Danish waters has been obtained and prepared as in previous years, with the following two exceptions, however. The Danish iceobservers are now using the Baltic Sea Ice Code for reporting to this office, and the statistics contained in Tab. 3 of this report are now given in accordance with informations received from observers without rewriting.

Tab. 4 »Withdrawal of Danish lightvessels . . .« has been discontinued as most Danish lightvessels have by now been replaced by permanent lightbeacons.

### General Summary

According to information received from the Danish Meteorological Institute the mean air temperatures for the country as a whole were as follows during the winter months of 1983/84 (given in Centigrade).

November	+ 4,2	normally + 4,9
	(days with frost 12, normally 6,1)	
December	+ 1,5	normally + 2,2
	(days with frost 15, normally 14)	
January	+ 0,9	normally + 0,1
	(days with frost 15, normally 21)	
February	+ 0,1	normally + 0,4
	(days with frost 21, normally 19)	
March	+ 1,1	normally + 1,6
	(days with frost 21, normally 19)	

The average air temperatures were normal during the autumn of 1983, and so were the surface temperatures of the Danish waters.

During November, when the mean air temperature was 0,7 degree below normal, a frosty period was experienced with temperatures as far as 12 degrees below zero in the latter half of the month. On 18 November the first report of ice was received, it came from the Haderslev Fjord. On the following day, however, the fjord was reported to be icefree again.

During the month of December frosty weather prevailed until the 20th, and a number of reports of ice were received from inner Danish waters culminating on 20 December. The amount of ice did, however, not imply any significant effect to navigation.

During the remainder of December relatively mild weather prevailed, and the mean air temperature of the month was 0,7

degree below normal only, and so was the average temperature of the sea surface of the main Danish waters.

In January a frosty period of 15 days duration was experienced during the latter half of the month, but in spite of this the mean temperatures of air and sea surface were recorded as about 1 degree above the normal for January owing to relatively mild weather at the beginning of the month. During January some 17 daily reports of ice in inner Danish waters were received. And during the period 25th to 30th severe difficulties were reported from the Limfjorden at the Aggersundbridge caused by extremely unfavourable wind and current conditions. The icebreaking tug Goliath Carl had to be sent to assistance to shipping at Aggersund during this period.

During the first third of February weather was rather unstable and mild. The remaining part of the month was dominated by high pressure-determined, rather cloudy but dry weather with temperatures generally slightly below zero. Mean air temperature of the month was 0,5 degree above normal, and so was the average temperature of the sea surface.

The prevailing winds during the month of March came from East and Southeast. The weather was at the beginning of the month rather mild but with some night frosts. Later the weather became colder with some snow especially in Jutland. After some days with mild and dry weather without night frosts and with daytime temperatures between 5 and 10 degrees some snow squalls were experienced on the 10th. Then until the 25th the weather was dry and sunny with some night frosts and day temperatures just above zero. About the 25th the weather became more changeable, and during the rest of March the weather was mild and rainy with some snow in Jutland.

Mean air temperature of March was 0,5 degree below normal, while the average surface temperature of the seawater was normal for the month.

The number of iceobservations received from Danish observers diminished during the first week of March, and from the 12th until the 25th, when the last icereport of the season came to hand, only reports from one observer were received.

The main Danish waters were free of ice during the winter, and the government icebreakers were not sent to assistance to navigation at all. The only icebreaker assistance effectuated by the Government Icebreaking Service was, when the icebreaking tug Goliath Carl assisted shipping in the Limfjorden at the Aggersund bridge during the last week of January - as mentioned earlier.

The first icereport of the season from Sweden was received on the 28 November 1983 and the last on the 25 May 1984.

First icereport from Finland came on the 23 November 1983 and the last one on the 28 May 1984.

The tables on the following pages contain detailed information about temperatures and ice conditions at selected ice observation stations etc. as follows:

Table 1. Mean air temperatures and variations from the normal at 6 widely separated places in the country.

Table 2. Days with frost during the winter. The mean amount of cold has been calculated at 48,8 against the mean amount of a normal winter of 100,5.

Table 3. List of observation stations from where reports of ice formations have been submitted.

Table 4. Discontinued.

Table 5. A comparison between winters.

Table 6. The activity of the government icebreakers from 1953/54 to date.

Table 7. Informations in tabular form of ice and navigational conditions from the Skaw to Gedser through the Great Belt and The Sound respectively, and in the approaches to Fredericia, Kalundborg, Stignæs and Esbjerg, and also through the Limfjorden in the period from 1929/30 to 1983/84.

Table 8. Graphic curve showing the mean temperature of surface water of main through passages.

Tab. 1.

## Luftens middeltemperatur samt afvigelserne fra normalen i vinteren 1983—84.

Mean-temperature of the air and variations from normal temperature during the winter 1983—84.

Måned (Month)	Mean temp. Variations	Dokkedal *)	Fanø	Læsø	København	Næsgård	Hammer- odde **)
November .....	middeltemp. afvigelse .....	3.9 -0.3	5.6 0.0	4.7 -0.5	4.7 -0.7	4.7 -0.6	5.5 -0.2
December .....	middeltemp. afvigelse .....	1.8 0.0	3.0 +0.1	2.4 -0.1	2.3 -0.2	1.7 -0.6	2.7 -0.2
Januar .....	middeltemp. afvigelse .....	0.5 +1.0	2.0 +1.4	0.5 +0.6	1.8 +1.7	1.9 +1.9	2.4 +1.9
Februar.....	middeltemp. afvigelse .....	0.4 +1.2	0.8 +0.6	0.3 +1.0	0.7 +0.8	0.7 +0.9	0.7 +0.7
Marts .....	middeltemp. afvigelse .....	0.8 -0.3	1.5 -0.8	0.5 -0.9	1.6 -0.3	1.6 -0.3	1.2 -0.1

\*) Normaler fra Ll. Vildmose

\*\*) Normaler fra Sandvig

Tab. 2

## Kuldedøgn i vinteren 1983—84.

Frosty days during the winter 1983—84.

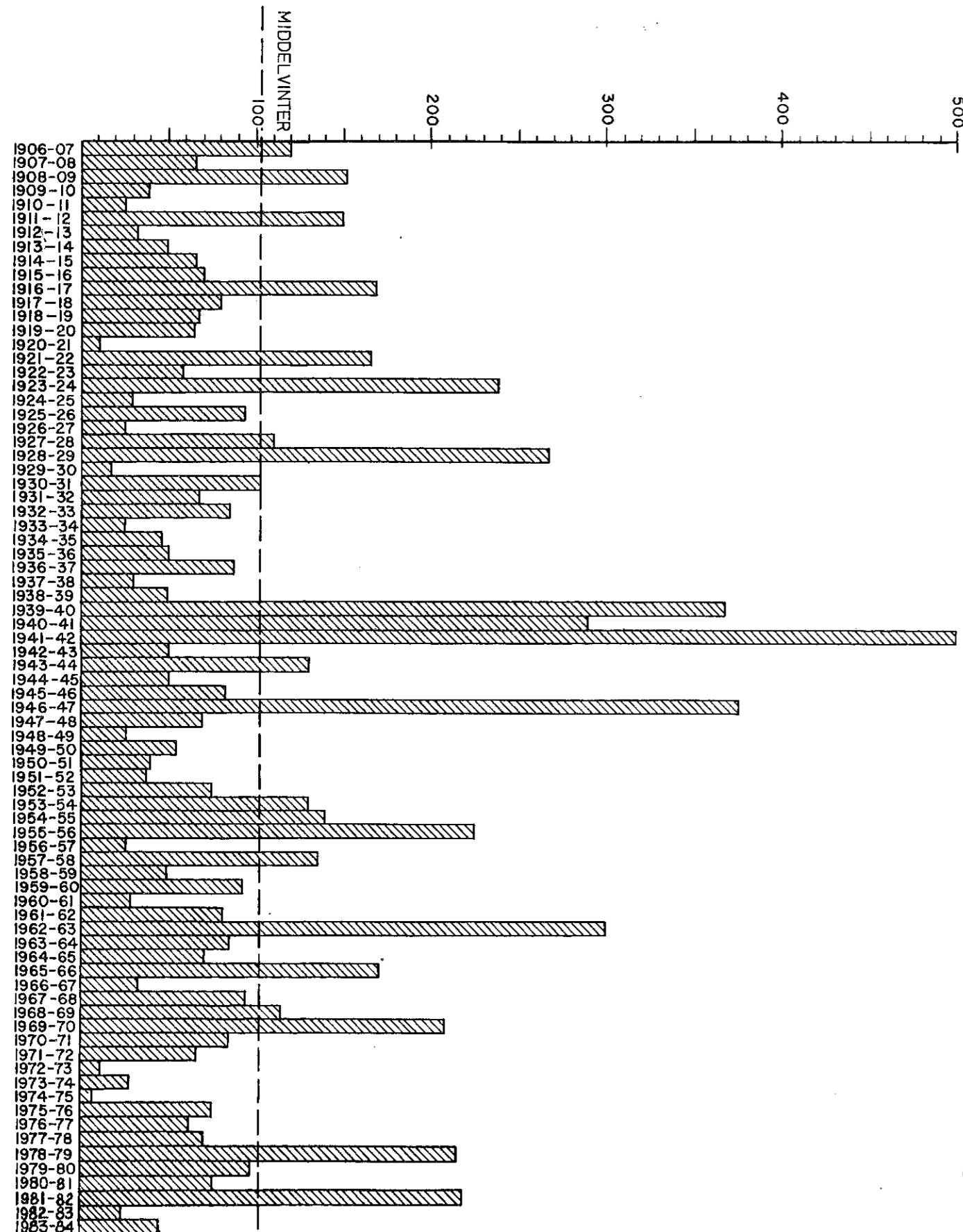
Sted (Place)	Frostdøgn og frostperioder (Dates and periods with frost)												Samlet kuldesum (Amount of Cold)	
Dokkedal	a	21_23/11	29/11_2/12	10_17/12	8_10/1	15_16/1	18/1	20_26/1	13/2	15_20/2				
	b	3	4	8	3	2	1	7	1	6				
	c	-3.7	-11.2	-12.7	-7.8	-1.0	-1.6	-14.0	-1.7	-5.4				
Fanø	a	24_25/2	28/2	2/3	9_10/3	17_20/3	24/3							
	b	2	1	1	2	4	1							
	c	-0.9	-0.2	-1.1	-0.5	-2.8	-0.3							-64.9
Læsø	a	30/11_1/12	10/12	15_17/12	9_10/1	20_26/1	12_14/2	16_20/2	25/2	19_20/3				
	b	2	1	3	2	7	3	5	1	2				
	c	-6.8	-2.4	-6.6	-2.9	-11.8	-2.6	-10.3	-0.6	-1.6				-45.6
Landbohøjsk.	a	13/11	28/11_1/12	10_12/12	17_18/12	9_10/1	20_27/1	13_20/2	22_23/2	25/2				
	b	1	4	3	2	2	8	8	2	2				
	c	-2.3	-6.7	-4.8	-2.1	-7.2	-25.3	-9.1	-0.8	-0.8				
Næsgård	a	2_3/3	9_10/3	11/3	14/3	17_20/3	22_24/3							
	b	2	2	1	1	4	3							
	c	-0.9	-1.1	-0.3	-0.5	-5.2	-4.3							-71.4
Hammerodde	a	13/11	29/11_2/12	10_13/12	15/12	17/12	9_10/1	21_23/1	12_20/2	17_19/3				
	b	1	4	4	1	1	2	3	9	3				
	c	-0.7	-8.8	-9.9	-0.1	-0.9	-2.6	-9.2	-10.8	-2.0				-45.8
Hammerodde	a	17/11	30/11_2/12	10_16/12	9_10/1	21_23/1	26/1	1/2	12_20/2	18/3				
	b	1	3	7	2	3	1	1	9	1				
	c	-0.3	-6.5	-17.4	-1.0	-4.0	-1.3	-0.2	-11.1	-0.3				-42.1
Hammerodde	a	1/12	10_11/12	14_15/12	10/1	22_23/1	12_14/2	15_20/2	28/2	9/3				
	b	1	2	2	1	2	3	5	1	1				
	c	-0.9	-1.5	-2.0	-1.4	-1.1	-2.5	-6.9	-0.2	-1.1				
Hammerodde	a	17_20/3	22/3											
	b	4	1											
	c	-4.7	-0.6											-22.9

N.B.: a - datoer for perioder med frost  
(dates of frosty periods)b - antal dage hvor middeltemperaturen har været under 0°  
(number of days with mean temperatures below 0°)c = kuldesum = summen af frostperiodens daglige middeltemperaturer  
(amount of cold = sum of daily mean temperatures within the frosty period)Middeltal  
Mean amount—48.8

Tab. 2a.

## Skematisk oversigt over middeltal af kuldesummer for vintrene 1906-07 til 1983-84.

Graphic summary of Mean Amounts of Cold for winters 1906-07 to 1983-84.



## ØSTERSØKODEN

(ASTK)

## Første tal i koden:

- A: Koncentration af is.
- 0 Isfrit.
  - 1 Åbent vand - mindre end 1/10.
  - 2 Spredt drivis - 1/10 til mindre end 4/10.
  - 3 Åben drivis - 4/10 til 6/10.
  - 4 Tæt drivis - 7/10 til 8/10.
  - 5 Meget tæt drivis - 9/10 til 9<sup>+</sup>/10\*).
  - 6 Kompakt drivis, inklusive sammenfrosset drivis - koncentrationen 10/10.
  - 7 Fastis med drivis udenfor.
  - 8 Fastis.
  - 9 Åben rende i meget tæt eller kompakt drivis eller rende langs den faste iskant.
  - X Ukendt.

\*) 9<sup>+</sup>/10 betyder 10/10 iskoncentrationen med åbninger.

## Tredie tal i koden:

- T: Isens udseende, flagestørrelse eller topografi.
- 0 Tallerkenis, isskotte, isskive, kvadderis - mindre end 20 m i tværmål.
  - 1 Isflager 20 til 100 m i tværmål - små isflager.
  - 2 Isflager 100 til 500 m i tværmål - mellemstore isflager.
  - 3 Isflager 500 til 2000 m i tværmål - store isflager.
  - 4 »Kæmpe« isflager eller jævn is - mere end 2000 m i tværmål.
  - 5 Overlappende is (Pakis).
  - 6 Kompakt snesjap eller isklumper, eller kompakt kvadderis.
  - 7 Skruis eller skruisvolde.
  - 8 Smeltevandshuller (Våger) eller mange smeltevandspytter på overfladen.
  - 9 Rådden is.
  - X Ukendt.

## Anden tal i koden:

- S: Istykkelse og art.
- 0 Is mindre end 5 cm tyk - nyis eller mørk tyndis.
  - 1 Is 5 til 10 cm tyk - lys tyndis eller isskorpe.
  - 2 Is 10 til 15 cm tyk - grå is.
  - 3 Is 15 til 30 cm tyk - gråhvid is.
  - 4 Is 30 til 50 cm tyk - hvid is.
  - 5 Is 50 til 70 cm tyk - hvid is.
  - 6 Is 70 til 120 cm tyk.
  - 7 Is overvejende tyndere end 15 cm med forekomst af tykkere is.
  - 8 Is overvejende gråhvid med forekomst af is tykkere end 30 cm.
  - 9 Is overvejende tykkere end 30 cm med forekomst af tyndere is.
  - X Ukendt.

## Fjerde tal i koden:

- K: Besejlingsforhold.
- 0 Skibsfart uhindret.
  - 1 Sejlads vanskelig eller farlig for træskibe uden isforhudning.
  - 2 Sejlads vanskelig for stålskibe, der er svagt bygget eller har ringe maskinkraft. Sejlads for træskibe selv med isforhudning ikke tilrådelig.
  - 3 Sejlads uden isbryderhjælp er kun mulig for stærkt byggede skibe egnet for sejlads i is og med god maskinkraft.
  - 4 Sejlads foregår i rende uden isbryderhjælp.
  - 5 Isbryderhjælp gives kun til skibe egnet for sejlads i is og af special størrelse.
  - 6 Isbryderhjælp gives kun til skibe af særlig isklasse og special størrelse.\*)
  - 7 Isbryderhjælp gives kun til skibe efter særlig aftale.
  - 8 Sejladsen indstillet indtil videre.
  - 9 Sejladsen ophørt.
  - X Ukendt.

\*) Særlig isklasse er i Østersøområdet defineret som den gældende finsk-svenske isklasse.

## THE BALTIC SEA ICE CODE

(ASTK)

## First cipher:

- A - Amount and arrangements of sea ice
- 0 Ice free
  - 1 Open water - concentration less than 1/10
  - 2 Very open drift ice - concentration 1/10 to less than 4/10
  - 3 Open drift ice - concentration 4/10 to 6/10
  - 4 Close drift ice - concentration 7/10 to 8/10
  - 5 Very close drift ice - concentration 9/10 to 9<sup>+</sup>/10\*.)
  - 6 Compact drift ice, including consolidated drift ice - concentration 10/10
  - 7 Fast ice with drift ice outside
  - 8 Fast ice
  - 9 Lead in very close or compact drift ice or along the fast ice edge
  - X Unable to report

\*) 9<sup>+</sup>/10 means 10/10 ice concentration with openings

## Third cipher:

- T - Topography or from of ice
- 0 Pancake ice, ice cakes, brash ice - less than 20 m across
  - 1 Small ice floes - 20-100 m across
  - 2 Medium ice floes - 100-500 m across
  - 3 Big ice floes - 500-2000 m across
  - 4 Vast or giant ice floes - more than 2000 m across - or level ice
  - 5 Rafted ice
  - 6 Compacted slush or shuga, or compacted brash ice
  - 7 Hummocked or ridged ice
  - 8 Thaw holes or many puddles on the ice
  - 9 Rotten ice
  - X No information or unable to report

## Second cipher:

- S - Stage of ice development
- 0 New ice or dark nilas (less than 5 cm thick)
  - 1 Light nilas (5-10 cm thick) or ice rind
  - 2 Grey ice (10-15 cm thick)
  - 3 Grey-white ice (15-30 cm thick)
  - 4 White ice, first stage (30-50 cm thick)
  - 5 White ice, second stage (50-70 cm thick)
  - 6 Medium first year ice (70-120 cm thick)
  - 7 Ice predominantly thinner than 15 cm with some thicker ice
  - 8 Ice predominantly grey-white (15-30 cm thick) with some ice thicker than 30 cm
  - 9 Ice predominantly thicker than 30 cm with some thinner ice
  - X No information or unable to report

## Fourth cipher:

- K - Navigation conditions in ice
- 0 Navigation unobstructed
  - 1 Navigation difficult or dangerous for wooden vessels without ice sheating
  - 2 Navigation difficult for unstrengthened or low-powered vessels built of iron or steel. Navigation for wooden vessels even with ice sheating not advisable
  - 3 Navigation without icebreaker assistance possible only for high-powered vessels of strong construction and suitable for navigation in ice
  - 4 Navigation proceeds in lead or broken ice-channel without the assistance of an icebreaker
  - 5 Icebreaker assistance can only be given to vessels suitable for navigation in ice and of special size
  - 6 Icebreaker assistance can only be given to vessels of special ice class and special size\*)
  - 7 Icebreaker assistance can only be given to vessels after special permission
  - 8 Navigation temporarily closed
  - 9 Navigation has ceased
  - X Unknown

\*) Swedish-Finnish ice class.



Sammenligning mellem  
Comparison between

Tab. 5.

Gennemsnitligt antal dage med is for: Average number of days with ice in:	1906 —07	1907 —08	1908 —09	1909 —10	1910 —11	1911 —12	1912 —13	1913 —14	1914 —15	1915 —16	1916 —17	1917 —18	1918 —19	1919 —20	1920 —21
Åbne farvande ..... (Open waters)	6.6	0.2	18.6	0.1	0.0	17.7	0.3	0.1	0.0	0.1	21.4	1.2	0.7	0.0	0.0
Havne ved åbent farvand ..... (Harbours at open waters)	17.4	2.9	28.4	2.2	0.5	20.4	3.2	2.1	0.5	2.7	33.5	6.1	4.4	2.7	0.0
Tildels lukkede farvande ..... (Partly closed waters)	24.2	6.7	41.0	2.1	0.2	35.1	6.2	4.6	2.7	3.7	50.7	9.1	8.5	6.9	0.1
Havne ved lukkede farvande ..... (Harbours in closed waters)	52.8	25.5	69.2	14.2	9.6	49.1	18.4	15.0	16.9	18.1	71.6	34.3	28.6	24.8	1.5
Lukkede farvande ..... (Closed waters)	57.9	32.2	66.3	20.7	5.6	52.9	19.1	16.6	19.3	22.1	78.5	48.1	31.1	41.0	4.1
Alle stationer ..... (All stations)	30.3	10.1	38.8	5.7	2.4	31.5	7.4	6.0	6.1	7.3	44.9	15.3	11.6	11.9	0.9
Middeltal af kuldesum for stat. i tab. 2.... (Mean amount of cold for stations in Tab. 2)	121.1	65.8	151.6	37.9	23.9	128.6	31.9	49.2	66.3	68.2	169.5	79.4	65.2	64.3	11.3

1942 —43	1943 —44	1944 —45	1945 —46	1946 —47	1947 —48	1948 —49	1949 —50	1950 —51	1951 —52	1952 —53	1953 —54	1954 —55	1955 —56	1956 —57	1957 —58	1958 —59	1959 —60	1960 —61	1961 —62
0.0	0.0	1.0	0.3	65.0	0.6	0.0	0.2	0.0	0.1	1.9	13.6	9.0	29.6	0.1	5.5	0.2	1.8	0.0	0.0
3.3	0.0	2.0	2.2	70.0	0.8	0.0	2.9	1.3	0.5	4.3	25.1	13.4	29.8	0.2	9.5	0.3	5.0	1.4	0.4
2.1	0.0	3.4	1.4	78.0	2.8	0.0	2.8	1.9	0.6	4.6	32.0	18.6	37.7	0.2	7.2	1.3	7.7	1.3	2.1
11.9	1.3	16.7	15.3	85.6	15.1	0.5	11.7	11.0	4.7	16.3	45.5	42.3	48.0	2.2	28.8	9.2	24.1	7.4	13.6
14.6	1.5	20.7	17.8	97.3	20.4	1.5	15.2	16.3	6.1	21.5	52.0	51.8	56.8	3.5	44.9	12.5	36.2	11.3	21.1
7.1	0.7	9.8	8.2	82.0	9.1	0.5	7.2	7.0	2.7	10.7	35.7	30.2	42.7	1.4	21.1	5.6	17.2	4.9	8.7
49.4	131.1	49.5	82.5	378.0	67.0	(23.8)	53.7	38.4	34.4	72.9	129.3	139.2	226.0	22.4	135.1	43.9	87.6	23.9	78.9

1983 —84
0.3
0.0
1.0
7.3
7.0
3.5
48.8

de forskellige vintre.  
the various winters.

1921 —22	1922 —23	1923 —24	1924 —25	1925 —26	1926 —27	1927 —28	1928 —29	1929 —30	1930 —31	1931 —32	1932 —33	1933 —34	1934 —35	1935 —36	1936 —37	1937 —38	1938 —39	1939 —40	1940 —41	1941 —42
30.6	2.5	40.3	0.0	0.4	0.0	7.0	48.4	0.2	1.0	0.3	1.3	0.0	0.0	0.5	8.5	0.0	0.3	56.5	47.1	71.1
34.4	10.1	51.2	0.2	5.8	0.0	17.8	49.3	0.0	4.1	1.3	5.1	0.3	0.0	2.7	17.7	0.0	1.3	61.6	58.2	72.5
37.5	8.2	71.3	0.0	10.7	0.3	19.9	61.2	0.7	8.3	2.1	7.6	0.7	0.8	3.0	21.2	0.7	3.2	74.7	60.5	82.4
52.7	20.5	97.6	1.3	36.9	6.3	47.6	79.5	7.0	27.1	12.7	21.5	6.5	7.9	15.5	33.4	7.0	14.2	84.1	74.3	85.7
52.9	23.8	111.3	2.0	53.2	4.3	57.5	87.1	8.5	37.1	15.2	26.8	9.5	11.0	22.6	43.9	9.4	20.1	97.3	84.7	93.6
39.4	11.0	68.0	0.5	16.9	1.7	25.4	62.3	2.9	12.9	6.3	12.2	3.4	4.0	9.6	26.4	3.8	8.6	78.5	67.3	83.6
165.4	57.5	238.8	27.9	94.4	21.8	110.3	266.7	16.6	101.8	67.1	84.0	23.2	44.6	49.7	86.3	28.7	47.5	368.5	290.7	497.5

1962 —63	1963 —64	1964 —65	1965 —66	1966 —67	1967 —68	1968 —69	1969 —70	1970 —71	1971 —72	1972 —73	1973 —74	1974 —75	1975 —76	1976 —77	1977 —78	1978 —79	1979 —80	1980 —81	1981 —82	1982 —83
60.0	0.0	1.8	16.9	0.0	1.0	4.8	29.4	1.6	5.8	0.0	0.0	0.0	0.8	1.4	2.1	36.5	4.4	0.7	26.1	0.3
63.6	1.2	3.2	24.3	0.0	2.3	13.8	42.1	4.2	12.3	0.0	0.0	0.0	0.5	2.8	3.8	49.7	6.6	0.8	31.7	0.0
79.8	2.9	6.4	23.6	0.3	4.2	9.6	53.7	5.0	16.7	0.2	0.2	0.0	3.6	6.8	7.2	62.8	12.3	2.0	45.5	0.7
85.7	21.0	16.1	41.9	3.6	17.7	39.1	76.3	17.3	32.0	3.0	2.0	0.8	13.8	18.9	15.6	74.6	33.0	9.5	67.6	5.0
98.6	27.4	21.0	53.5	5.7	23.5	53.3	95.3	22.3	38.7	3.8	3.2	1.0	17.3	26.0	18.0	83.3	42.9	10.7	77.3	4.0
81.7	12.4	11.3	34.4	1.9	11.7	26.9	65.2	11.7	24.0	1.7	1.3	3.4	7.8	12.0	10.0	61.4	21.3	5.2	53.5	2.3
300.3	82.9	67.9	163.0	31.5	94.1	116.2	208.4	83.9	66.6	10.6	27.8	7.2	75.0	62.4	70.3	215.2	97.7	75.6	218.7	23.9

Statsisbrydernes virksomhed.  
Activity of the Government icebreakers.

Tab. 6.

	Elbjørn bygget 1953 built 1953	Danbjørn bygget 1965 built 1965	Isbjørn bygget 1966 built 1966	Thorbjørn bygget 1980 built 1980	
1953-54 ....	30/1-27/3	—	—	—	
1954-55 ....	22/2-15/3	—	—	—	
1955-56 ....	1/2-28/3	—	—	—	
1956-57 ....	—	—	—	—	
1957-58 ....	—	—	—	—	
1958-59 ....	—	—	—	—	
1959-60 ....	22/1-11/2	—	—	—	
1960-61 ....	—	—	—	—	
1961-62 ....	—	—	—	—	
1962-63 ....	8/1-13/4	—	—	—	
1963-64 ....	—	—	—	—	
1964-65 ....	3/3-17/3	—	—	—	
1965-66 ....	15/1-27/2	12/2-26/2	16/2-28/2	—	
1966-67 ....	—	—	—	—	
1967-68 ....	13/1-27/1	—	—	—	
1968-69 ....	20/2-11/3	—	—	—	
1969-70 ....	26/2-24/3	17/1-21/3	9/2-10/3	—	»Elbjørn« udlånt til Søværnet som opmålingskib. fra 23/3-13/10 1972.
1970-71 ....	—	—	—	—	fra 14/4-10/10 1974.
1971-72 ....	2/2-17/2	—	—	—	fra 14/4-10/10 1975.
1972-73 ....	—	—	—	—	fra 14/4-13/10 1976.
1973-74 ....	—	—	—	—	fra 14/4-15/10 1977.
1974-75 ....	—	—	—	—	
1975-76 ....	—	—	—	—	
1976-77 ....	—	—	—	—	
1977-78 ....	—	—	—	—	
1978-79 ....	20/2-3/4	26/1-27/3	4/1-28/3	—	»Danbjørn« udlånt til Søværnet som opmålingskib. fra 12/4-29/9 1978.
1979-80 ....	—	—	—	—	fra 1/5-14/10 1979.
					fra 16/4-17/10 1980.
1980-81 ....	—	—	—	2/3-9/3	Isbrydning på Ångermanelven, Sverige, »Thorbjørn« udlånt til Søværnet som opmålingskib. fra 21/4-30/9 1981.
1981-82 ....	22/1-18/2	9/1-7/2	19/1-10/2	28/12-8/3	»Thorbjørn« udlånt til Søværnet som opmålingskib. fra 4/5-15/10 1982.
1982-83 ....	—	—	—	—	
1983-84 ....	—	—	—	—	

Is- og besejlingsforholdene i hovedfarvandene i vintrene 1929/30 til 1983/84

Tab. 7. Navigational conditions for main waters during winters 1929/30 to 1983/84

	Antal vintre observeret No. of winters observed	Antal vintre med is No. of winters with ice	Forhold under vintre med is Conditions during icewinters			Besejlingsforhold Navigational Conditions			
			Tidligste dato for tilsningens begyndelse Earliest date of ice forming	Seneste dato for isperiodens slutning Latest date of ice period ending	Højeste antal dage med is Max. no. of days with ice	Højeste antal dage skibsfarten påvirket Max. no. of days navigation affected	Højeste antal dage isbryderhjælp nødvendig Max. no. of days icebreaker assist. requir.	Sejlsindsstillet Navigation closed	
							Antal vintre No. of winters	I alt dage Total no. of days	
Fra Skagen til Gedser gennem Øresund eller Storebælt, endvidere løbene til Fredericia, Kalundborg og Stigsnæs samt Limfjorden og Esbjerg.									
From The Skaw to Gedser through The Sound or Great Belt, and approaches to Fredericia, Kalundborg and Stigsnæs, furthermore the Limfjorden and Esbjerg.									
Skagen fyr, farvandet mod S .....	55	20	3-1	30-3	62	57	13	3	69
Læsø Østerby, farvandet mod Ø .....	55	20	29-12	4-4	72	68	17	4	88
Anholt fyr, farvandet mod Ø .....	55	20	4-1	6-4	72	67	13	2	12
Fornæs fyr, farvandet udfør .....	55	17	3-1	6-4	63	54	4	5	104
Sejrø fyr, farvandet mod V og SV .....	55	14	9-1	9-4	80	65	15	4	80
Ballen, farvandet udfør .....	45	12	4-1	4-4	85	76	6	6	120
Røsnæs fyr, farvandet mod V .....	46	14	8-1	13-4	81	66	21	4	73
Romsø fyr, farvandet mod Ø .....	54	15	8-1	8-4	79	69	7	4	106
Sprogø, Østerrenden .....	55	23	24-12	21-4	92	77	13	2	69
Sprogø, Vesterrenden .....	55	19	24-12	21-4	87	75	12	2	82
Omø fyr, farvandet mod Vest .....	55	21	1-1	17-4	89	80	15	4	158
Spodsbjerg, farvandet udfør .....	55	18	7-1	22-4	93	83	8	2	84
Albuen, farvandet mod Vest .....	55	28	23-12	20-4	98	77	14	3	72
Keldsnor fyr, Langelandsbælt .....	55	16	8-1	22-4	93	80	22	3	86
Keldsnor fyr, farvandet mod SØ .....	55	15	8-1	22-4	93	81	27	3	78
Gedser fyr, farvandet V for revet .....	55	28	22-12	4-5	104	91	15	2	44
Gedser fyr, farvandet Ø for revet .....	55	27	22-12	5-5	105	103	14	2	44
Til Fredericia:									
Vesborg fyr, farvandet mod S .....	55	14	6-1	6-4	75	63	11	2	25
Æbelø fyr, farvandet .....	55	12	2-1	10-4	79	77	26	4	202
Fredericia, Bæltet udfør .....	54	14	2-1	8-4	68	54	10	4	98
Til Kalundborg:									
Kalundborg yderfjord .....	55	17	5-1	12-4	81	66	1	4	72
Kalundborg inderfjord .....	55	16	5-1	12-4	87	69	20	3	59
Til Stigsnæs:									
Agersø Sund .....	49	35	16-12	17-4	95	83	32	5	220
Øresund:									
Nakkehoved fyr, farvandet udfør .....	54	19	4-1	29-4	75	60	17	1	2
Helsingør, farvandet udfør .....	55	27	4-1	3-5	94	84	15	3	43
København, Sundet udfør .....	54	27	27-12	4-5	100	79	66	0	0
Kastrup, farvandet udfør .....	44	26	24-12	4-5	112	110	25	4	145
Drogden fyr, Drogden .....	54	26	22-11	2-5	114	96	42	3	87
Drogden fyr, Køge Bugt N-del .....	55	29	27-12	5-5	105	100	8	2	60
Flinterenden .....	55	25	2-1	4-5	97	89	20	2	39
Stevens fyr, farvandet udfør .....	55	23	3-1	5-5	105	103	54	2	46
Limfjorden:									
Hals Barre fyr, farvandet .....	55	29	27-12	6-4	68	57	17	6	159
Hals, indløb over barren .....	55	35	1-12	13-4	90	84	22	5	176
Aalborg-Hals .....	55	43	30-11	15-4	100	95	27	5	166
Aalborg, fjorden ud for byen .....	55	47	30-11	15-4	84	82	17	5	153
Aalborg, fjorden mod vest .....	55	48	30-11	15-4	103	103	69	8	342
Draget .....	24	21	28-11	8-4	106	104	56	4	63
Aggersund .....	54	52	24-11	23-4	134	95	62	10	399
Løgstør, farvandet mod Øst .....	55	48	17-11	12-4	109	103	73	8	329
Løgstør, farvandet mod Vest .....	55	48	12-12	22-4	112	102	62	7	343
Løgstør Bredning .....	55	43	11-12	20-4	118	117	109	6	332
Livø Bredning .....	55	43	11-12	18-4	116	113	105	6	329
Skive, havnen .....	55	54	4-11	14-4	106	103	83	7	329
Skive, fjorden til Lundehage .....	55	54	4-11	15-4	139	125	97	7	331
Feggesund .....	55	45	10-12	20-4	122	122	109	5	267
Thisted, Bredning .....	55	38	10-12	19-4	114	112	51	8	388
Thisted, havnen .....	55	42	10-12	14-4	96	91	21	8	340
Nykøbing Mors, havnen .....	55	48	22-11	14-4	101	90	74	6	219
Nykøbing Mors, Sallingsund .....	55	39	11-12	16-4	100	89	68	7	281
Struer, Venø Sund .....	55	38	1-12	13-4	102	102	88	7	260
Struer, havnen .....	55	49	30-11	9-4	113	111	93	7	265
Oddesundbroen, Oddesund .....	55	36	11-12	15-4	107	102	60	4	156
Nissum Bredning .....	55	26	22-12	12-4	96	86	30	4	262
Lemvig havn og Lem Vig .....	55	46	28-11	8-4	106	104	69	6	280
Thyborøn, Sælhundeholmløbet .....	31	13	22-12	22-3	51	30	22	0	0
Thyborøn, havnen .....	31	13	17-12	26-3	70	8	0	0	0
Thyborøn, kanalen .....	55	19	21-12	12-4	56	29	3	1	2
Esbjerg, havnen .....	55	34	16-12	4-4	84	35	0	0	0



Tab. 8.

### Overfladevandets middeltemperaturer i gennemsejlingsfarvandene.

*Mean temperatures of surface water of main through passages.*

