

## Arctic Meteorological and Geographical Observations on Dutch Whaling Vessels in 1758, 1759 and 1760

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### Abstract

Whaling and herring fisheries constituted major economic activities during the Dutch Golden Age (1600-1800). Whaling, in particular, contributed to the exploration of the Arctic. The focus of this paper is the analysis of five short published texts written by Pieter Cramer (1721-1776) that provide mid-18<sup>th</sup> century meteorological information as well as some observations on Arctic climate during summer season whaling in Greenland and Davis Strait.

**Key words:** Dutch whaling, meteorological and geographical observations, Greenland, Davis Strait

### 1. Dutch Whaling in the Arctic and Pieter Cramer

Pieter Cramer (1721-1776) was a wealthy Dutch merchant dealing in wool and Spanish linen in Amsterdam. He was extremely interested in natural history and assembled an extensive collection that included seashells, fossils and insects of all orders. Although he is mainly known as an entomologist his interests and capabilities were far-reaching. In 1770 he was elected Director of the Zeeland Society, a scientific society located in Flushing, in the Dutch province of Zeeland (*Verhandelingen uitgegeven door het Zeeuwsch Genootschap*, 1771). He was a member of *Concordia et Libertate*, a general cultural society founded in Amsterdam in 1748. His name is mentioned as Assessor in the list of Directors of *Concordia et Libertate* in the years 1762, 1763, 1764, 1765, 1767, 1768, 1771 and 1772. As a member of the society, he lectured on minerals, on rhizoliths, on electrical experiments, and on the law of accelerating motion. Cramer's main work *De uytlandsche kapellen* ("The Exotic Butterflies") was dedicated to *Concordia et Libertate*. In 4 volumes, more than 1650 butterflies from Asia, Africa and America are shown according to their actual size, are coloured by hand and described according to the Linnaeus classification system.

Pieter Cramer ordered that meteorological and geographical observations be made on board Dutch whaling vessels in Greenlandic and Davis Strait waters during the summers of 1758, 1759 and 1760. Thus he combined his situation as a wealthy merchant and Director of whaling vessels with his interest in Dutch

scientific and cultural societies. Consequently, Pieter Cramer authored five noteworthy short texts containing the collected Arctic information. The context here is that one or more ships belonging to Cramer took part in whaling expeditions around 1760. Whaling in Davis Strait was dominated by the Dutch in the 18<sup>th</sup> century. Van Sante (1770) lists Pieter Cramer, sometimes written as Pieter Kramer, as Director of the Greenland whaling in 1756 and as a Director of the Davis Strait whaling in 1769. His *Commandeur* (Captain) for the years 1756 to 1761 for the Greenland whaling was Pieter Wagenaar while Herman Pronk was his *Commandeur* for the years 1769 and 1770 for the Davis Strait whaling. Cramer asked *Commandeurs* to carry out meteorological and geographical observations during the whaling expeditions to Davis Strait and other regions of the Greenland seas.

Cramer's texts containing such information were published in the *Verhandelingen uitgegeven door de Hollandsche Maatschappye der Weetenschappen, te Haarlem* ("Treatises published by the Dutch Society of Sciences, in Haarlem"). The "Dutch Society of Sciences" was the major scientific society in the Netherlands in the 18<sup>th</sup> century. The texts are labeled as *Berichten aan de Maatschappye gegeeven* ("Accounts submitted to the Society") and are distinguished from the *Verhandelingen*. However, besides the name of the author of the paper no information on the Directors, the *Commandeurs* or the ship names are given. In order to try to identify this missing information a search has been made through eighteenth-century Dutch literature

including newspapers, magazines and books.

Dutch newspapers such as the *Amsterdamse courant*, the *Oprechte Haerlemsche courant*, the *Middelburgsche courant* and the monthly magazine the *Maandelykse Nederlandsche Mercurius* (“Monthly Dutch Mercurius”) inform their readers of the departure and arrival of whaling vessels to Greenland and to Davis Strait. Usually, the name of the ship, the wind direction at Texel, the catch and the load is mentioned which confirms and/or completes the information. Examples of this type of information are given below.

“Amsterdam, 12 April 1758. ... on 11 April are departed ... Pieter Wagenaar, ... all to Greenland.” - “Amsterdam, 31 July 1758 ... arrived at Texel on 29 July ... and Pieter Wagenaar, empty, from Greenland; the wind Northerly.”

The communication in the ‘*Treatises of the Dutch Society*’ mentions 15 April 1758 as the departure day and 21 July 1758 as arrival day.

“Texel, 26 April 1759. ... On 23 April 1759 are sailed out ... ‘*t Huis Daalbende* (“The Daalbende House”), Pieter Wagenaar, ..., all to Greenland; the wind North N. East.”

Pieter Cramer’s father, Johann Jacob Cramer, was born in 1663 in “House Dalbenden”, near Urft, in the Eifel (in the German state of North Rhine-Westphalia). It is of interest to note that this ship of Pieter Cramer, ‘*t Huis Daalbende*, was clearly named for his father’s house (Roepke, 1956).

On the list of Dutch Greenland ships arriving in the harbours of the country Pieter Wagenaar is included as *Commandeur* on ‘*t Huys Daalbende* arriving on 21 August 1759, with 1 whale and 30 barrels (*Maandelykse Nederlandsche Mercurius*, November 1759, pp. 187-190). According to Cramer’s paper the ship left on 7 April 1759 and returned on 26 July 1759. It may therefore be questioned if it deals with the same ship sailing to Greenland.

“Texel, 21 April 21 1760. ... On 20 April 1760 are sailed out, all to Greenland, ... ‘*t Huis te Daalbende*, Pieter Wagenaar, ...: the wind S. West.”

“Amsterdam, 20 August 1760. On 18 August arrived at Texel ... and Pieter Wagenaar, with 1 whale, 40 quarteel, the wind S.W.”

According to Pieter Cramer’s article the sailing out started on 15 April 1760 and the ship returned at 15 August 1760.

It is noted that, in general, the first and last days of the meteorological and geographical observations in the published papers regarding the ship left Texel or would arrive at Texel do not correspond to the dates mentioned in the Dutch newspapers or monthly magazine. Furthermore, the observations usually start when the ship has left the *Rede van Texel*, a roadstead off the Dutch island of Texel near the village Oudeschild. Similarly, the observations end before the

ship arrives. The geographical coordinates of the *Rede van Texel* are: 53° 03’ N, 4° 51’ E.

This complicates the identification of the whaling vessel sailing in 1759 and in 1760 to Davis Strait as Pieter Cramer is not mentioned for whaling in Davis Strait in those years. It may be speculated that the *Commandeur* was Hendrik Pronk on the *Maria Christina* as Pronk is Cramer’s *Commandeur* for the Greenland whaling, 1762 to 1771.

“Texel, 30 March 1759. On 26 March sailed the *Maria Christina*, Hendrik Pronk, to Davis Strait, the wind W. S. West.” - “Amsterdam, 8 August 1759. ... arrived at Texel on 7 August ... Hendrik Pronk, 3 whales, 136 q., the wind W. Northwest.” - “Texel, 14 March 1760. On the 13<sup>th</sup> are sailed ... the *Maria Christina*, Hendrik Pronk, all to the Davis Strait, the wind S. West.” - “Amsterdam, 18 August 1760. On 17 August did arrive at Texel ... Hendrik Pronk, 3 whales and 140 quarteel of whale-oil from Davis Strait.”

## 2. Meteorological and Geographical Observations

Meteorological observations on board the whaling ships were generally carried out twice a day at 7 am and at noon. However, for the year 1758 these observations were taken at 7 am and at 7 pm. The thermometer with which these observations were made was a Fahrenheit scaled thermometer. Following the instructions of Pieter Cramer, the thermometer was hung in the corridor to the cabin in which the *Commandeur* slept. The reason for this somewhat sheltered location is that Cramer had experienced that his metal clock broke into pieces the year before as a result of the extreme frost and he also did not want any of the crew to accidentally damage the thermometer (Cramer, 1761, *Berichten*, 6(1), p. 380)

The following meteorological observations were carried out: air temperature, wind direction using 16 or 32 cardinal directions, and a description of the state of the sky, including the wind strength. The state of the sky and the wind strength are expressed in Dutch 18<sup>th</sup> century nautical terms. The geographical observations are limited to the latitude (degrees, minutes) The longitudinal observations are only given for the whaling vessel sailing to Davis Strait in 1759. These latitudinal observations are expressed using the zero meridian at Pico de Teide on the Canary Islands and are expressed from 0° to 360° East. However, due to the technical problems inherent in early longitudinal observations longitude was only observed when the whaling vessel was in the North Sea, crossing the Atlantic Ocean and entering Davis Strait and on the same return journey. On its return travel the whaling vessel crossed the North Atlantic south of Iceland and the Faroe Islands, sailed between the Shetland islands and the Orkney islands to the North Sea.

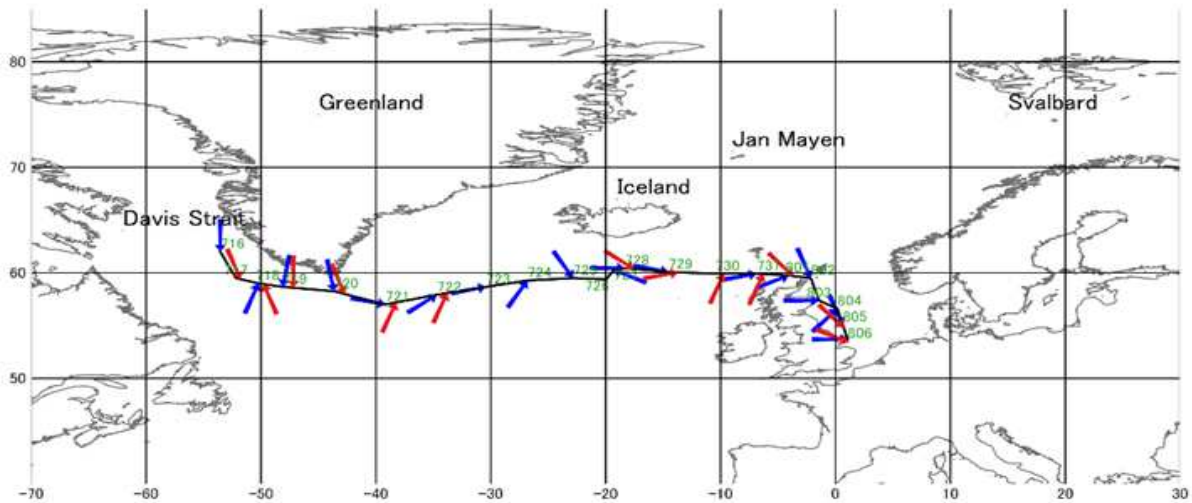


Fig. 1 Return ship-route and wind directions at 7 am (blue arrow) and at 12 noon (red arrow) of Pieter Cramer's whaling ship to Davis Strait in 1759.

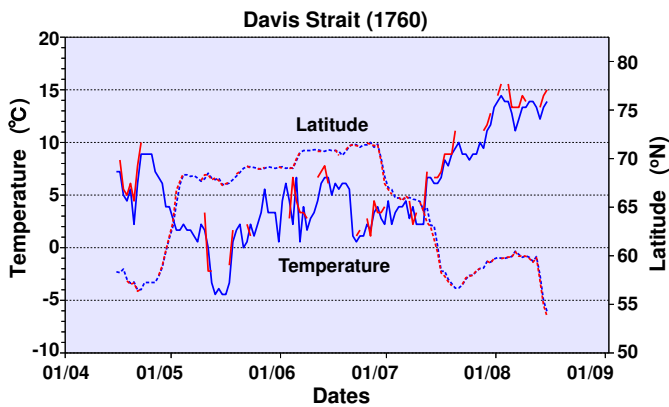


Fig. 2 Temperature observations at 7 am (full line blue) and at noon (full line red) and the latitude observations at 7 am (dashed line blue) and at 12 noon (dashed line red) of Pieter Cramer's whaling ship to Davis Strait in 1760.

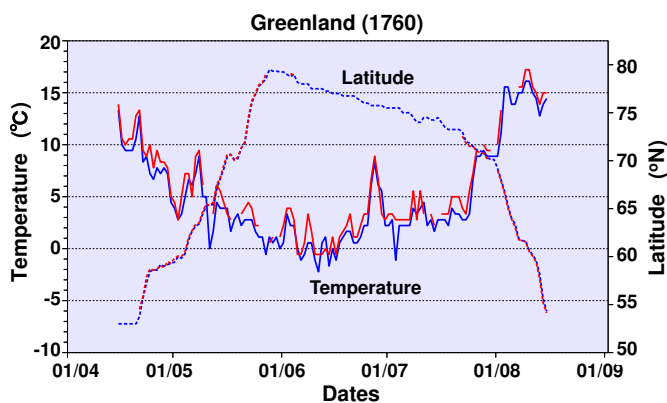


Fig. 3 Temperature observations at 7 am (full line blue) and at noon (full line red) and the latitude observations at 7 am (dashed line blue) and at 12 noon (dashed line red) of Pieter Cramer's whaling ship to Greenland in 1760.

Figures 2 and 3 represent the twice-a-day temperature observations of the Dutch whaling ships to Davis Strait and to Greenland in 1760 based upon the data in Pieter Cramer's texts. On 28 May 1760, the latitude of 79° 30' N was reached. However, on the whaling expedition to Greenland in 1758 the latitude of 80° N was maintained from 26 June to 4 July 1758. The explorer William Scoresby reached 81° 30' N near Svalbard on the ship *Resolution* on 23<sup>rd</sup> May 1806 (Takahashi, 2019). From 10 May 1760 to 24 June 1760 the temperature varied in the order of 30° to 40° F. However, on the whaling expedition in 1758 to Greenland the temperature fell below 30° F for the period 26 April 1758 to 29 May 1758. A warmer vs. a colder summer year in the North Atlantic?

As there are no longitude observations when whaling, it is interesting to compare the latitude observations in Davis Strait with locations known through Dutch whaling history. Cape Farewell, the most southern tip of Greenland, is at 59° 46' N. In Pieter Cramer's texts, the most northerly location in Davis strait in 1759 was 71° 30' N and in 1760 was 71° 40' N. This is slightly below the location 72° 47' N of Upernavik but near the well-known locations of Dutch whaling at Rode Bay [Ogaatsuk], Disko Bay, Egedesminde [Aasiaat] and Jacobshavn [Ilulissat]. Similarly, the most northerly location of the Greenland whaling was 80° N in 1758, 78° 30' N in 1759 and 79° 30' in 1760; the location of the island Jan Mayen (Norway) is 70° 59' N and Smeerenburg on Svalbard is 79° 44' N.

In the context of latitudes and whaling, it is interesting to plot the temperature observations vs. the latitude observations as registered in Pieter Cramer's 5 short texts dealing with the years 1758, 1759 and 1760 in the eastern Greenland seas region and with the years 1759 and 1760 in Davis Strait. In Figures 4 and 5 the temperature observations are represented as coloured

dots per year in function of the latitude observations. The start and return of the whaling vessel is shown in the top left quarter of the figure. These dots represent relatively mild temperatures in spring and summer during the crossing of the North Sea and of the Atlantic Ocean. For the Davis Strait whaling, the vertical group of red dots around the latitude  $67^{\circ}$  N seem to indicate a colder period in the summer of the year 1759. In the Greenland whaling the dots remain between  $5^{\circ}$  C and  $15^{\circ}$  C for latitudes approximately below  $67^{\circ}$  N. They drop to between  $0^{\circ}$  C and  $10^{\circ}$  C for latitudes between  $67^{\circ}$  N and  $75^{\circ}$  N, and for latitudes between  $75^{\circ}$  N and  $80^{\circ}$  N the temperature ranges between  $-10^{\circ}$  C and nearly  $+10^{\circ}$  C, depending on the daily weather conditions.

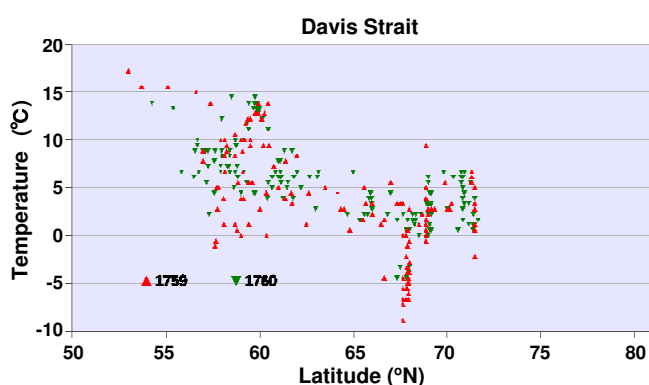


Fig. 4 Graph showing the temperature observations in terms of latitude observations for Pieter Cramer's whaling vessels in 1759 (red colour) and in 1760 (green colour) in Davis Strait whaling.

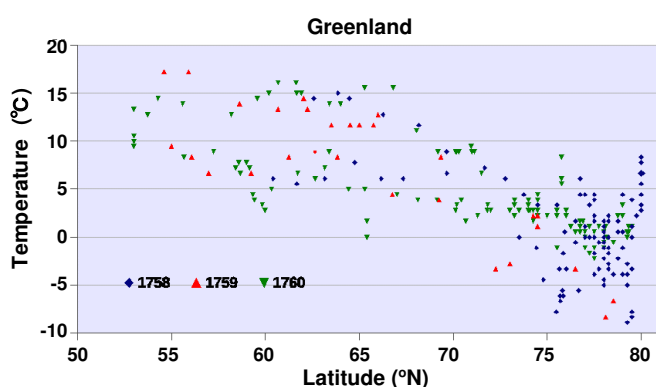


Fig. 5 Graph showing the temperature observations in terms of latitude observations for Pieter Cramer's whaling vessels in 1758 (black colour), in 1759 (red colour) and in 1760 (green colour) in Greenland whaling.

The graph in figure 5 representing the temperature observations in terms of the latitude in the Greenland whaling shows three different groups: the numerous dots when whaling at latitudes between  $70^{\circ}$  N and  $80^{\circ}$  N, and the dots representing the thermal conditions when sailing to or sailing from the whaling areas. These dots clearly indicate the change of temperature with latitude and could be represented by a straight regression line with different slopes due to the different seasons when sailing.

The groups of dots on a vertical line may refer to chasing a whale or a group of whales, to the cutting of a caught whale or to the prolonged stay on one of the whaling harbours such as Disco Bay, Rode Bay in Davis Strait, or Jan Mayen or Smeerenburg in the Greenland whaling. It is also possible that the whaling vessel got caught in drift ice at northern latitudes and remained immobile for a short time.

### 3. Anton Rolandson Martin's Meteorological and Geographical Observations in the Arctic

Carl Linnaeus, the renowned Swedish botanist and professor at Uppsala University, suggested that his student, Anton Rolandson Martin (1729-1786) travel with a whaler to the Arctic. This was *De Visser* ("The Fisherman"), a small fishing boat, in Dutch a *hoeker*, ("hooker"). The vessel was owned by the Swedish Gothenburg-based Greenland Company with the Dutchman Jan Dircks Claessen as Captain and a mixed Dutch and Swedish crew.

During the journey Martin made systematic weather observations. Three times a day: at 6 o'clock in the morning, at noon and at midnight, he carried out temperature observations, recorded the dominating wind direction and the weather of the day. Latitude was determined at noon by measuring the sun's height above the horizon. The vessel departed Gothenburg on 17 April 1758 and reached the same harbour on 24 July 1758. Martin's Arctic observations together with Pieter Cramer's ones are among the first explorations of the meteorology of Polar Oceans (Martin, 1758a, 1758b, Hagström, 2018).

### 4. Conclusion

The meteorological observations, together with latitudinal information carried out aboard 5 Dutch whaling vessels in the years 1758, 1759 and 1760 are among the earliest ones in the Polar oceans. The short papers containing this information are authored by Pieter Cramer, a merchant from Amsterdam. The name of the Director, the *Commandeur* and of the vessels are not specified in these short texts but contemporaneous 18<sup>th</sup> century newspapers, journals and published material have provided insights into these questions.

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## Summary in Japanese

和文要約

### 1760年前後のオランダ捕鯨船による北極域の気象学的・地理学的観測

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捕鯨とニシン漁業は、オランダ黄金時代(1600-1800)の主要な経済活動の担い手であった。とくに捕鯨は北極圏の探査に貢献した。5編の短報が出版され、グリーンランドとデービス海峡における夏季捕鯨中の北極気候下での限られた地理的観察とともに18世紀半ばの気象観測の状況が明らかになった。さらに、これらの短報に記載されている船長、指揮官、船の名前の特定が試みられている。

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