

Reading an Arctic Evidence Chart

A desk guide for keeping the measurement, comparison, and conclusion together.

Author: Amina Okafor, science director · 17 October 2026 · Edition 1



Generated illustration, not a satellite measurement, a research figure, or a record of Still North fieldwork.

1. Read the contract before the curve

A chart makes an agreement with its reader: a particular quantity was assembled for a particular place and period using stated methods. Before asking whether a line rises or falls, recover that agreement. A screenshot without its caption is an incomplete source, even when its colours and logo look familiar.

Open the original publication beside the figure. Read the title, caption, axis labels, legend, and methods. Write one sentence describing what each plotted point represents. “Arctic ice” is insufficient. “A monthly average of Arctic sea-ice extent, in million square kilometres” is a quantity you can compare responsibly.

Use this guide in three passes. First, identify the measurement. Second, test the comparison. Third, write a claim that cannot outrun the evidence. Work with a colleague if possible: one person proposes the interpretation, while the other looks for a detail that would change it.

Start with a question. Are you investigating a seasonal contrast, a long-term change, or a local decision? A chart can answer one well and another badly. An Arctic-wide extent curve is not an assessment of a particular crossing, coastline, or animal population.

2. Keep neighbouring quantities separate

The [NOAA Arctic Report Card 2025 sea-ice chapter](#) defines extent using a concentration threshold of at least 15%. Extent counts the area of qualifying grid cells. It is not the same as the fraction of those cells actually covered by ice, nor does it describe thickness. The chapter discusses age and thickness separately because they answer different questions.

Fictional arithmetic exercise, not an observation or a satellite product

Toy cell	Cell area	Ice concentration	Included in toy extent?
A	100 km ²	80%	Yes
B	100 km ²	60%	Yes
C	100 km ²	20%	Yes
D	100 km ²	5%	No

Under this explicitly simplified rule, extent is 300 km². Ice-covered area within the three retained cells is $80 + 60 + 20 = 160$ km². The two answers differ without either being a mistake. Actual products have additional retrieval, masking, and processing choices; this exercise teaches the distinction, not their full algorithms.

Now imagine cell C drops from 20% to 14%. The toy extent loses a whole 100 km² cell, although the concentration change was six percentage points. Thresholds make certain changes in the underlying field look abrupt in a summary. That does not make extent useless. It makes the definition essential.

Record whether the chart shows concentration, extent, area, thickness, volume, or age. Check whether a regional boundary, coastal mask, or sensor changed. When two products disagree, first compare those definitions before treating the difference as a scientific contradiction.

Your quantity sentence: This figure shows _____, measured or estimated using _____, for _____.

3. Match the time and the reference

A daily extreme, a monthly mean, and a seasonal total are different statistics. NOAA's 2025 sea-ice Table 1 gives a September daily minimum of 4.60 million km², ranked tenth lowest, and a September monthly average of 4.75 million km², ranked eleventh lowest. These are published NOAA results, not Still North measurements. Neither value corrects the other.

In a briefing, keep the statistic attached: "September daily minimum" rather than "September ice". If comparing years, use the same statistic in both. If comparing a figure with a table, check for rounding, data revisions, and provisional values before assuming the publication contains an error.

An anomaly is a difference from a reference, not an absolute amount. In a fictional temperature exercise, a monthly reference mean of -12°C and a current value of -10°C produce an anomaly of $+2^{\circ}\text{C}$. That positive anomaly does not mean the air is above freezing. Moving the reference period can change the displayed anomaly without changing the original temperature.

Comparison passport: complete before using two numbers together

Check	Figure A	Figure B
Region and boundary	Write region	Write region
Statistic and time window	Daily, monthly, or other?	Same definition?
Unit and reference period	Record both	Record both
Version and status	Final or provisional?	Same release?

A rank depends on the available record. It says where a year sits within that record, not how large the difference is or whether neighbouring ranks are meaningfully distinct. A one-year rise also does not, by itself, reverse a multi-decade trend. State the time span used to estimate the trend, and avoid treating a fitted line as a forecast.

4. Ask what the shading means

Never call a shaded envelope “uncertainty” until its legend says so. In Figure 2 of the NOAA sea-ice chapter, grey shading shows the historical maximum-to-minimum range for 1979 to 2024. It is not a confidence interval around the black 2025 line. Other figures can shade standard deviations, model spread, percentiles, or missing coverage.

Those meanings are not interchangeable. Instrument uncertainty concerns the measurement system. Natural variability describes changes in the system being observed. Sampling uncertainty concerns what incomplete observations allow us to infer. A product may include some of these and not others. If no uncertainty is plotted, look in the methods rather than concluding it is zero.

Check the vertical scale. A narrowed axis can help reveal variation but exaggerate its visual drama. A zero baseline matters especially for comparing bar lengths; line charts may reasonably use another range if clearly labelled. Check equally carefully for reversed axes, logarithmic scales, and unequal time intervals.

Fictional editorial exercise

An editor sees a small upward movement at the end of a long downward series and writes, “The Arctic has recovered.” Identify three missing supports: the chosen measure, the period over which recovery is assessed, and evidence that the movement persists beyond ordinary variability. A defensible replacement might describe the year-to-year movement while retaining the longer context. It should not invent a cause.

Then list two possible explanations that the chart alone cannot separate, such as a real short-term change and a processing revision. Look for a release note or a linked analysis that narrows the alternatives. This is a research task, not an invitation to make all explanations sound equally likely.

Legend translation: The shaded region means _____. It does not show _____. The source explains it at _____.

5. Leave a claim another reader can trace

Use a short evidence note whenever a chart leaves your desk. Name the source, figure number, product version where available, retrieval date, quantity, region, period, reference, and the limitation most relevant to your question. Keep the original link with the caption when slides or screenshots travel.

Evidence-to-claim worksheet

Layer	Write here
Description	What does the plotted evidence directly show?
Interpretation	Which mechanism is supported by additional sources?
Limit	What cannot be resolved at this scale or with this method?
Decision	What choice is proposed, by whom, and using what other information?

For a final check, ask a reader to reconstruct your comparison without asking you a question. If they cannot tell a daily minimum from a monthly average, the note needs work. If they can trace the figure but your conclusion still jumps from an Arctic total to a local safety claim, the reasoning needs work.

There is no prize for the strongest headline. A useful chart reading makes one bounded claim clear enough to test, update, and use. Leave an explicit open question when the required information is absent rather than filling the gap with confident language.

Sources and further practice

- [NOAA, Sea Ice 2025](#): definitions, Figure 2, Table 1, methods, and data references.
- [NSIDC, Science of Sea Ice](#): formation, age, motion, and physical properties behind the indicators.

Demonstration disclosure. Still North is a fictional institute created for the SearchCue demonstration. Its named staff and generated images are illustrative. Fictional exercises above are not environmental observations. This guide is not navigation or ice-safety advice.

Reading an Arctic Evidence Chart · Amina Okafor · 17 October 2026. Text remains selectable; primary sources remain authoritative for their results.