

Evidence essay · Observation and data

Say what is uncertain, precisely

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Fictional author and institute · Editorial demonstration, not peer reviewed

ABSTRACT

Useful uncertainty communication identifies what is uncertain and what that changes. This essay separates observed quantities, their uncertainty, explanations, and policy decisions rather than allowing a vague caveat to weaken every statement. IPCC guidance supplies the distinction between confidence based on evidence and agreement and likelihood expressed as quantified uncertainty. NOAA's Greenland assessment illustrates the need to preserve measurement periods and context when comparing annual and partial-year estimates, and to distinguish reduced loss from recovery. The discussion also explains why shaded bands and plus-or-minus notation require definitions. Bounded claims about sampled places, seasons, or detections are more informative than blanket reassurance or dismissal. A decision still requires explicit consideration of consequences, affected people, and review triggers; an uncertainty interval cannot choose the policy.

Keywords: uncertainty communication · confidence and likelihood · measurement ranges · bounded claims · decision-making

Adapted from the Still North field journal. Original article. A source-based editorial text, not a report of original Still North research. Examples and imagery are illustrative.

The sentence “there is uncertainty” tells a reader almost nothing. Uncertainty about an instrument's response is different from uncertainty about whether one location represents a region, whether a mechanism explains a pattern, or which policy should follow. A useful explanation names the uncertain part and shows what it changes. It does not spread doubt evenly across an entire subject.

Nor does careful communication require every finding to sound tentative. Where evidence supports a clear statement, say it clearly. Then identify the limits that matter for interpretation. A reader should finish knowing both what can be relied on and which further conclusion would go beyond the evidence.

Keep four questions separate

First, what was observed or estimated? Second, how uncertain is that quantity? Third, how strong is the explanation for it? Fourth, what decision is being considered? A time series may show a robust change while the contribution of a particular local mechanism remains unresolved. A policy may require a choice before the mechanism is fully partitioned. None of those statements cancels the others.

The IPCC's 2010 guidance on consistent treatment of uncertainties, prepared for its Fifth Assessment Report, distinguishes confidence based on evidence and agreement from likelihood used for quantified uncertainty. It explicitly warns against treating confidence as a probability. High confidence is not a percentage that an editor can infer from how persuaded a speaker sounds.

When reporting an assessment, retain its calibrated terms and explain their meaning where necessary. Do not assign an IPCC-style label to a new claim without the underlying assessment process. If there is insufficient information to estimate a probability, saying so is more

informative than calling the outcome fifty-fifty. Equal chances and lack of knowledge are not the same state.

Explain the range that is actually shown

A shaded band could show uncertainty in an estimated mean, the spread among individual years, or a range across model results. These answer different questions. Name the quantity and method, not merely the graphical feature. A plus-or-minus symbol also needs a definition; it should not automatically be described as a 95% interval or as the full range of possible outcomes.

The NOAA Greenland Ice Sheet chapter reports a 2025 mass balance of -129 ± 50 gigatonnes for 1 September 2024 to 31 August 2025. It also discusses a separate ICESat-2 estimate covering only part of the year. A responsible summary preserves the period and measurement context. It does not turn a partial-year value that excludes summer melt into a competing estimate for the whole year.

The same chapter describes a smaller annual loss than the 2003–24 average, while explaining that the long-term pattern of net loss continues. “Less loss” and “recovery” are not interchangeable. Good uncertainty communication often depends less on adding caveats than on choosing a verb that describes the quantity correctly.

Replace vague caution with a bounded claim

Compare “the survey may be unreliable” with “the survey sampled accessible coastal sites in summer and cannot establish winter conditions offshore”. The second sentence identifies a useful record and its boundary. It suggests what additional observations would be needed. The first invites either blanket dismissal or blanket reassurance without helping anyone evaluate the evidence.

Likewise, “no calls were detected during the reviewed recordings” is more exact than “the animals had left”. The latter requires additional evidence about detection, behaviour, and coverage. Our acoustic observation explainer explores that distinction. Specific limits should remain close to a claim when it becomes a headline, caption, or excerpt.

Uncertainty does not choose the policy

A decision note should explain the consequences of acting, waiting, and being wrong in either direction. A low-probability outcome with severe consequences may deserve attention; a plausible outcome is not automatically probable. Identify whose exposure and costs are being considered, which options remain useful across several possible futures, and what new evidence would trigger a review. Those are explicit choices informed by evidence, not outputs that a confidence interval can make on its own.

In a public explanation, put the main finding first, the most relevant limit beside it, and the method within reach. Sources and methods sets that expectation across this site. The objective is neither maximum reassurance nor maximum alarm. It is enough precision that a reader can tell which next question would genuinely improve understanding.

References

1. IPCC's 2010 guidance on consistent treatment of uncertainties (ipcc.ch)
2. NOAA Greenland Ice Sheet chapter (arctic.noaa.gov)