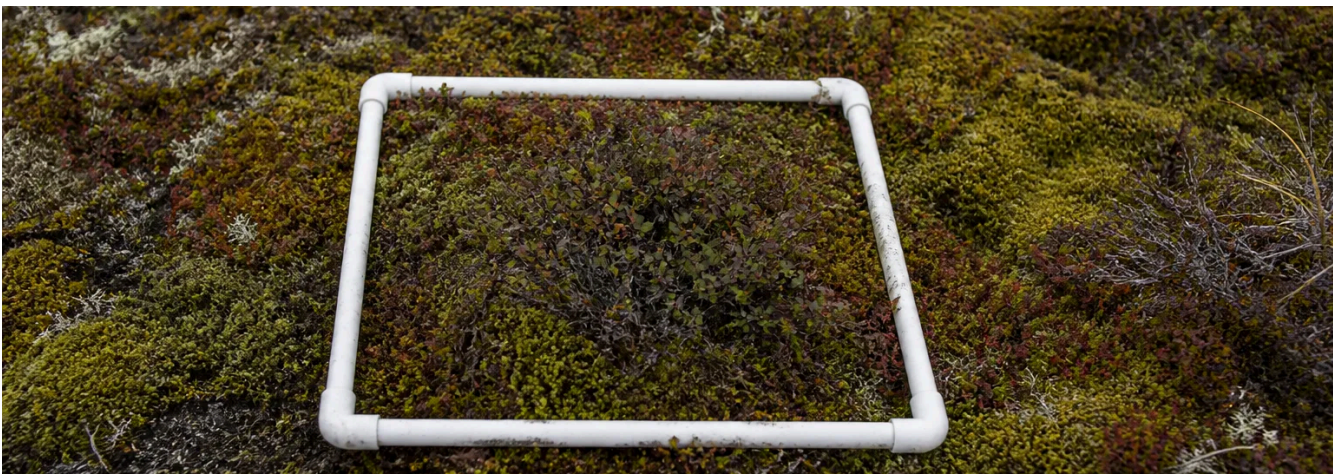


Arctic Classroom Inquiry Pack

What does a greener tundra tell us, and which questions should come next?

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· Edition 1



Generated illustration, not an observation plot or a source for calculating vegetation change.

1. Teacher's starting point

This pack offers two 45-minute sessions for learners roughly aged 12 to 16, adaptable to reading confidence and available time. The learning goal is not to memorise a climate headline. It is to distinguish an indicator, an explanation, and a judgement, then design a question that evidence could help answer.

Prepare paper, pencils, the source cards below, and access to the linked NOAA chapter if possible. A teacher can provide accessible extracts or describe its figures without requiring individual devices. Keep captions and source details with any extract. No travel, experiment, purchase, personal disclosure, or contact with an Arctic community is required.

The [NOAA Arctic Report Card Resource Kit](#) offers wider educator resources and an observe, question, and think approach. This pack is an independent fictional institute resource, not a NOAA-approved lesson or a claim of curriculum accreditation.

Learning agreement. Curiosity does not require certainty. Learners may revise an answer, request a clearer explanation, or write an unresolved question. Do not grade personal feelings about climate change or ask pupils to defend their household's choices.

2. Session one: from noticing to a bounded claim

First 10 minutes: show the generated cover illustration and ask learners to separate visible features from things they cannot know. They can notice plants and a frame. They cannot establish a real location, season, species list, trend, or measurement from this image. Explain that a realistic-looking illustration is not evidence of fieldwork.

Next 15 minutes: read the two source cards. Ask learners to underline the quantity, circle the time span, and mark unfamiliar words. Define “circumpolar” as around the polar region, “indicator” as a quantity used to learn about a system, and “biomass” as living biological material. NDVI is an index, not a count of species.

Source card A, paraphrased from NOAA. In 2025, the circumpolar mean maximum tundra greenness value was third highest in the 26-year MODIS satellite record. Keep “mean maximum”, the sensor, and the record length attached to the result.

Source card B, paraphrased from NOAA. Greenness is assessed with the Normalized Difference Vegetation Index, which uses visible and near-infrared light. The chapter reports widespread long-term greening and local areas of decline; field studies help explain drivers and consequences.

Both cards come from [NOAA, Tundra Greenness 2025](#). They are published findings, not measurements made by learners or Still North. The cover illustration does not illustrate the specific MODIS result.

Next 15 minutes: compare these statements: “NOAA reports a high circumpolar greenness indicator”; “every tundra place became greener in 2025”; “more greenness means every species benefits”. Ask which is supported, which overgeneralises place, and which adds an unsupported judgement about ecological outcomes.

Final 5 minutes: each learner writes a claim with one source detail and one limit. An acceptable start is: “The NOAA chapter reports..., using..., but this alone cannot tell us...”. Retain these first drafts for revision in session two.

3. Learner worksheet: build an answerable question

Start with something you genuinely want to understand. Then ask what you would compare, over which place and period, using which evidence. An interesting question may require information unavailable in this lesson. Identifying that need is a valid result; inventing the missing measurements is not.

Worked question revisions, not new findings

Starting question	More useful version	Evidence needed
Is the Arctic getting better?	What does the MODIS circumpolar MaxNDVI series show over 2000 to 2025?	The published series, caption, and methods.
Are there more plants everywhere?	Where does the published map show positive and negative greenness trends?	The map, legend, trend period, and regional boundaries.
Do animals benefit?	Which changes in plant species, seasonal timing, and forage would matter for a specified animal?	Relevant ecological studies, not greenness alone.

The third revision is a planning question, not one the source cards can answer. Do not select an animal and invent its response. Note which expertise and published evidence would be needed. A broader regional pattern and a local ecological effect can both matter without one being a substitute for the other.

Your inquiry note

1. My question, in one sentence: _____.
2. The place, time span, and quantity I mean: _____.
3. The source that could help: _____.
4. What I would compare, and why it is a fair comparison: _____.
5. Information I do not yet have: _____.
6. A result that would make me revise my idea: _____.

Exchange notes with a partner. Ask whether they can identify the proposed evidence without guessing. Replace vague words such as “better”, “more”, and “healthy” with a defined quantity or an explicit question about whose interests and which outcomes are being considered.

4. Session two: explanations, choices, and peer review

First 10 minutes: revisit the first-session claims. Ask learners what they would now keep, qualify, or remove. Make it normal to improve a sentence rather than protect it. A good revision may be shorter because an unsupported conclusion has gone.

Next 15 minutes: build a relationship map using the terms plants, snow, soil moisture, grazing, disturbance, and seasonal timing. Use arrows labelled “could influence”, not “proves”. The NOAA chapter describes interacting drivers and consequences; learners should distinguish relationships described in the source from hypotheses they would need to investigate.

A fictional reasoning example: a pupil proposes that taller shrubs might change snow distribution. That is a possible mechanism to investigate, not a measurement from the classroom. Ask what observations would help, what times of year would matter, and why a single summer photograph would be insufficient.

Next 15 minutes: swap inquiry notes and use the response prompts below. Partners should identify one precise strength, one unsupported step, and one useful next source or question. They are reviewing reasoning, not deciding whose concern is most worthy.

Peer response prompts

Look for	Try saying
Traceable evidence	I can find your claim in this source detail...
A scale mismatch	This regional result may not answer your local question because...
An interpretation leap	This explanation would need additional evidence about...
A useful uncertainty	The missing information most likely to change your answer is...

Final 5 minutes: write a revised answer and one remaining question. Allow an oral, typed, drawn-and-labelled, or supported written response. The same reasoning goal can be met through different modes; access should not depend on producing a dense paragraph quickly.

If learners propose collecting local observations as an extension, keep it optional and within ordinary school safeguarding, access, and site rules. Do not disturb habitats, identify private locations, or ask pupils to gather other people’s knowledge. A classroom planning exercise is complete without fieldwork.

5. Teacher response guide and next steps

Look for a clear separation between what the source reports and what a learner thinks it may mean. The supported statement in session one is the bounded NOAA greenness result. “Everywhere” is unsupported because the chapter describes regional variation. Universal benefit is unsupported because an indicator does not by itself evaluate consequences for all species or people.

Expected limits include the sensor record, spatial averaging, the meaning of the index, and the need for additional ecological evidence. Do not demand all of them in every answer. Ask for the limit that matters most to the learner’s question, explained in their own words.

Feedback without a climate-attitude score

Developing	Secure	Extending
Names a source but leaves the quantity vague.	Names the quantity, relevant period, source, and a meaningful limit.	Explains how an additional observation could distinguish alternative interpretations.

Keep the Arctic present as a lived homeland, not an empty laboratory. The NOAA educator kit links Indigenous-authored material and monitoring perspectives. Read those resources in their own context; do not ask learners to role-play an Indigenous person or speak for an Arctic community. A technical question about vegetation can coexist with questions about who sets research priorities and controls information.

For a further session, use one published figure with its complete caption and ask groups to produce different outputs: a careful headline, an explanatory diagram, or a research question. Keep the same requirement for source, scale, and limit. Compare how formats change what is easy to communicate and what may disappear.

Finish with an exit prompt: “One detail I will now check before repeating an environmental claim is...”. This makes the lesson portable to another subject without pretending that one pack establishes scientific expertise.

Demonstration disclosure. Still North and its named staff are fictional. Generated imagery and fictional reasoning examples are illustrative, not observations. Sources are NOAA’s Tundra Greenness 2025 chapter and Arctic Report Card Resource Kit; neither endorses this pack.