*Teaching Notes - Evaluate*

**Overview:**

In this assessment, students will answer the big idea question from the beginning of the unit using the Claim-Evidence-Reasoning method. Example questions could be, “What role do aerosols play in climate change?” or “How do aerosols affect climate?” Their answer to the question is their “claim”. A claim should be supported by evidence from past lessons and activities. Evidence can just be listed, and should not be explained. Evidence can come from data, notes, video statements, etc. In the reasoning section, students explain how their evidence relates to their claim. At this point they are providing reasoning as to why their evidence supports their claim. This type of writing assignment takes time to understand. Modeling the steps is necessary the first few times students answer questions this way. If students are familiar with this procedure, give them the rubric and let them begin.

**The Lesson:**

* Explain Claim-Evidence-Reasoning (CER) method of answering scientific questions
* Discuss the grading rubric and make sure each student has a copy
* If needed, model CER with students and guide them in making their claim and help them list evidence

Make sure students understand that aerosols are short lived and therefore affect regional climates, NOT on a global scale. Below are examples and non-examples for claims and evidence. The “reasoning” section should be in paragraphs and must explain the evidence and how it relates to the claim. For example, if a student listed “some aerosols provide a cooling effect” as a piece of evidence, they would explain how the aerosols cool the atmosphere (become CCN, more surfaces for water to condense on, clouds are visibly whiter and reflect the light energy which causes cooling.)

* Claim examples:
  + Aerosols affect the local climate by producing more clouds, therefore increasing the albedo and causing cooling.
  + Aerosols affect the local climate by absorbing incoming solar radiation due to their dark color and causing warming.
* Claim non-examples:
  + Aerosols have no effect on climate.
  + Aerosols in the form of dust can come from Africa.
* Evidence examples:
  + Secondary organic aerosols (SOAs) change in the atmosphere as they travel
  + Some aerosols provide a cooling effect
  + Some aerosols provide a warming effect
  + Soot comes from organic sources, such as forest fires
  + Aerosol particles can become CCN
  + SOAs are short lived
* Evidence non-examples:
  + Pico is located in the North Atlantic
  + Pico Mountain in an inactive stratovolcano
  + The Azores is an archipelago

The attached rubric can be used as is, or edited for your own grading. Included on the rubric are sections for posters, presentations and citations. These can be omitted if time does not allow for it.