

Evolution of Climate Science



Learning Outcomes

By the end of this activity learners will:

- Explore the evolution of climate science
- Learn about key events in the history of climate study
- Explore the debate around climate science denial

Curriculum Connections

Alberta

- Grade 10 Science
- Grade 10 Social Studies
- Grade 11 Social Studies

British Columbia

- Grade 10 Science
- Grade 10 Environmental Science
- Grade 11 Environmental Science
- Grade 12 Environmental Science

Ontario

- Grade 10 Science
- Grade 12 Canada & World Studies

Length of Activity

1 – 1.5 hours

Materials List

- Topic Backgrounder
- Marking Rubric
- Internet Enabled Device

Activity: Step 1

Climate modeling holds significant importance in the understanding of climate change, as it helps scientists predict future implications of continued temperature increase of the Earth's surface. Scientists have spent decades understanding climate and making significant progress in the use of climate models.

Using the backgrounder, explain to the students the history of climate modeling and its role in shaping policy. **(15 minutes)**

Activity: Step 2

In groups or individually, complete the following activities:

1. Students will explore the timeline of the scientific study of climate modeling by visiting the link provided by the [Carbon Brief](#). When students click on the link by Carbon Brief, they will see a timeline with different events highlighted. Students are encouraged to explore the events listed below and learn about them by reading the description. **(20 minutes)**

Suggested events to focus on:

- Lewis Fry Richardson published a book titled "Weather Prediction by Numerical Process" in 1928.

- Guy Callendar’s seminal paper published in 1938.
 - Norman Phillips’ first general circulation model in 1956.
 - The establishment of a modelling group at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado, in 1964.
 - Syukuro Manabe and Richard Wetherald’s seminal climate modelling study in 1967.
 - Creation of United Nations Environment Program in 1972.
 - The Met Office’s first general circulation model in 1972.
 - The Charney Report in 1979.
 - James Hansen’s three scenarios published in 1988.
 - The first Intergovernmental Panel on Climate Change (IPCC) report published in 1990.
 - The Coupled Model Intercomparison Project (CMIP) launched in 1995.
 - The IPCC’s sixth (and most recent) assessment report was published in 2017.
2. Individual journal reflection, or class discussion: “Which event from ‘Timeline: The history of climate modelling’ provided by the Carbon Brief did you find the most significant and why?” **(10 minutes)**

Activity: Step 3

Using the backgrounder, introduce the debate around climate science denial, debunking typical myths referenced by skeptics. **(10 minutes)**

Activity: Step 4

Watch this video with students exploring the typical myths around climate change:
<https://www.youtube.com/watch?v=OWXoRSIxyIU> **(7 minutes)**

Activity: Step 5

Debunking common myths activity. **(20 minutes)**
 In groups, students will grab a chart paper and create two columns titled i) “Common Myths About Climate Change” and ii) “Debunking Climate Change Myths”. After creating the two columns, students will write

the five common myths provided below in the first column:

- Myth 1: The earth’s climate has changed before; therefore, anthropomorphic climate change is a lie.
- Myth 2: The earth’s temperature is actually cooling.
- Myth 3: It’s the sun - i.e., the earth’s temperature has increased because of solar activity.
- Myth 4: There is no global scientific consensus that there is manmade climate change.
- Myth 5: Climate change is not that bad.

Using the resource provided below, students will find the myth in the list and write the scientific explanation debunking the myth:

- Open the link given here <https://www.skepticalscience.com/global-warming-positives-negatives.htm>
- Find the myth in the list and click on explanation under “What the science says”
- Read the basic, intermediate and advanced scientific explanation debunking the myth, summarize the explanations and write in the second column of the chart
- Share charts with other fellow students