EarthViewer: Exploring Climate

hhmi | BioInteractive

Click & Learn
Student Worksheet

INTRODUCTION

Launch or download the app from the EarthViewer Resource webpage. Tips for using the App:

- Spin the Earth with your finger to get a 360-degree view of the world
- Zoom in or out by pinching or spreading your fingers on the screen
- Use the silver slider to view the changing Earth through geologic time
- To switch between the three timelines, use the pinch or spread gesture
- Select "CHARTS" to explore data on climate, atmospheric composition, and biodiversity
- Select "VIEW" to display different types of information such as fossils, impact events, cities, geologic events, and biological events
- Select "IN DEPTH" to learn more about select Earth system topics

PROCEDURE

Begin exploring Earth's climate history by following the steps below and answering the questions.

1. Over the last 540 million years, icecaps covered at least one of the Earth's poles during three intervals.
   a. When were those intervals?

   b. Use the CHART button to find an approximate temperature range for the three intervals.

2. Pinch on the timeline to view all of Earth history.
   a. What did the planet look like when global temperatures were less than 5 °C? *(hint: average global temperatures can be found using the CHART feature.)*

   b. Tap "VIEW" and select "Geologic Events", tap on the flag that opens on the timeline at 2200 million years ago.
      i. What are these events called?

      ii. How do they start?

      iii. How do they end?

3. Use a spread gesture on the timeline until you see only the last 100 years.
   a. What do the colors on the globe represent?

   b. What was the average global temperature for the period 1951-1980?

c. Based on the temperature chart, how much has the Earth warmed in the last 100 years?

d. Tap each of the variables on the top chart and describe the trend in relation to temperature.

i. % Oxygen: *in the atmosphere oxygen has remained constant as the temperature has increased.*

ii. Carbon dioxide:

iii. Day Length:

iv. Luminosity:

v. Biodiversity:

4. Based on the average global temperature and the trend over the last 100 years, how many years will it take until we are outside of the range you identified in Q1b?