Virtual Field Labs

3-Part Video Series Exploring Climate Questions
with Leading Climate Scientists

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Virtual Field Labs

3-Part Video Series Exploring Climate Questions with Leading Climate Scientists

U.S. Ice Drilling Program-School of Ice
Co-Authors: Louise Huffman-Director of Education and Outreach
Bill Grosser-School of Ice Facilitator
NSTA 2021

• Combines lab and field experiences
• Delivered digitally icedrill-education.org
• Middle school through college
• Independently or teacher-led

• Leading climate scientists
• Diverse presenters
• Three-part series
• Student engagement throughout
Virtual Field Labs Agenda

• Warm-up ice core activity

• Connection to VFL’s and supplemental materials

• 1-min to 3-minute video samples showing format and content connections (chemistry, biology, geology, math, NGSS SEP)

• Supporting activities and resources (www.icedrill-education.org)

• Q and A
Virtual Field Labs
Zoom Notes

Zoom: Speaker Mode
Zoom: Chat

Questions-Private to Louise Huffman
Data Sharing-Everyone
Virtual Field Labs
Student Notebooks

“Students should write accounts of their work, using journals to record observations, thoughts, ideas and models. They should be encouraged to create diagrams and to represent data and observations with plots and tables as well as written text, in these journals.”

The NSTA Quick-Reference Guide to the NGSS, K-12
Virtual Field Labs
Data Source for VFL Investigations

U.S. Ice Drilling Program
Some ice core facts...
Some ice core facts...
Some ice core facts...

Snowfall that accumulates in spring and summer seasons forms light bands.

Snowfall that accumulates in fall and winter seasons forms dark bands.
Collecting Direct Data

How many years of climate data are captured in this ice core sample?

Scientific Consensus: Type your estimate into the chat box on zoom.
<table>
<thead>
<tr>
<th>Estimated Years of Captured Climate Data</th>
<th>Number of Identical Counts</th>
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<td>14</td>
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**Histogram of the Number of Years**

Estimated Years of Captured Climate Data

13 14 15 16 17 18 19 20 21

Number of Identical Counts

5 4 3 2 1 0
### Estimated Years of Captured Climate Data

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#### Histogram of the Number of Years

- The histogram shows the distribution of the number of years of captured climate data.
- The highest frequency is for the year 14, with 5 identical counts.

![Histogram](image)
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Histogram of the Number of Years

Estimated Years of Captured Climate Data
One thing I notice about the data is...

One thing I wonder about the data is...

Scientific Consensus: How many years of climate data are captured in this ice core sample?

The data suggest that the number of years of climate data captured in this ice core is...
Actual Ice Cores
- Longest core ~ 2-miles
- ~800,000 years of climate data
Virtual Field Labs
Data Source for Investigations
2-min Clip
Virtual Field Labs

• Targeted specific investigable questions related to ice core science.
• Involves students in data collection and analysis.
• Includes video clips of scientists in the field collecting actual data and ice cores.
• Student processing that leads to additional discussion and investigation.
Virtual Field Labs
1-minute clip

Episode #1

• Video samples of personal connections to scientists
Virtual Field Labs
1-minute clip

Episode #1

• Video samples of personal connections to scientists
Virtual Field Labs
1-minute clip

Episode #1

• Video samples of personal connections to scientists
Virtual Field Labs
1-minute clips

- Focused investigable questions
• Focused investigable questions
Virtual Field Labs
1-minute clip

- Diverse presenters
Virtual Field Labs
1.5-minute clip

- Diverse presenters
Virtual Field Labs

2 minute clip

- Video samples of content connections (chemistry, biology, geology, math)
Virtual Field Labs
3-minute clip

- Video samples of content connections (chemistry, biology, geology, math)
Virtual Field Labs
2 minute clip

• Video samples of content connections (chemistry, biology, geology, math)
Virtual Field Labs
1-min clip

• Video samples of NGSS Science and Engineering Practices (SEP)
Virtual Field Labs
Agenda

• Supporting activities and resources (www.icedrill-education.org)
Virtual Field Labs

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Additional Quality Climate Classroom Resources

Free downloadable book from polareducator.org
Virtual Field Labs

• Supporting activities and resources (www.icedrill-education.org)

• Q and A

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