MOUNT WASHINGTON®
OBSERVATORY

EDUCATIONAL PROGRAMS MENU | 2025-2026

WEATHER PROGRAMS

The Weather Around Us..... (K-1) (K-ESS2-1.)
Learn about the weather around us by exploring how MWOBS Weather Observers collect weather data. Then, learn how to take your own weather observations at your school to investigate weather trends!

Nimbus's Mount Washington Adventure.....(K-3)(K-ESS3-2.)
Nimbus needs your help! *Learn to identify weather patterns and explore forecasting basics to help prepare Nimbus for his hike to the summit of Mount Washington.*

The Science of Snowflake Bentley.....(K-4) (K-ESS2-1, 2-ESS2-3)
Learn about the snowflake science behind New England's iconic photographer "Snowflake Bentley". Students will explore snowflake formation and create their very own "snow-board".

Weather Tools & Instrumentation.....(2-5) (3-ESS3-1.)
Explore the exciting tools & instrumentation that MWOBS Weather Observers use to collect weather data. Learn about how Mount Washington's extreme conditions affect these tools & instrumentation, then participate in an Extreme Mount Washington Design Challenge. Will your instrument stand the test of Mount Washington?

WEATHER PROGRAMS (cont.)

Look Up!: Identified Aerial Phenomena.....(2-4) (3-ESS2-2)
Using a slide deck and hands-on demos, visualize some of the unique weather patterns that have occurred on Mount Washington and beyond.

Under Pressure.....(2-8) (3-ESS2-1; MS-ESS2-5)
Through a series of demos and hands-on activities, explore the role air pressure plays in weather and how it can vary over time and place. Learn what drives air pressure changes and how organisms adapt or acclimate to those changes.

Eye of the Storm: Design Challenge.....(2-8) (3-ESS3-1; 5-ESS2-1; MS-ESS3-2)
Mt. Washington is home to wind speeds that consistently exceed hurricane force. This program teaches students about hurricane formation and how powerful a storm needs to be to get classified as one. For older kids, the Coriolis effect is discussed. Working in groups, students use household items to create a stable structure that withstands storm surge and high wind speeds from an industrial fan.

Global Precipitation Patterns.....(2-8) (2-ESS2-3; 3-ESS2-1; MS-ESS2-4)
Use NASA data to explore Earth's circulation precipitation patterns through building 3D bar graphs for locations in your region and across the globe.

WEATHER PROGRAMS (cont.)

Extreme Mount Washington.....(3-5) (3-ESS2-1; 5-ESS2-1)
The weather conditions on Mount Washington can be drastically different than what you experience at your school. Take weather observations and how mountains influence weather by exploring the interactions between Earth's geosphere and atmosphere. ***MWOBS' signature program! This program can be scaled to meet other grade level standards.***

Wonderful World of Winter Weather.....(3-5) (3-ESS2-1)
Mount Washington is known for its winter conditions; extreme cold, high amounts of snow, heavy icing, and hurricane force winds. Explore MWOBS data, investigate notable storms, and decide if Mount Washington is truly the "Home of the World's Worst Weather".

Measuring Precipitation: Exploring Community Science.....
(3-6) (3-ESS2-1; MS-ESS2-5)
Explore how the equipment and procedure scientists use to measure precipitation through a water-balloon toss challenge! *The techniques learned in this lesson align with the CoCoRAHS community science protocol.*

When it Rains, Does it Always Pour?.....(5-8) (MS-ESS2-5)
What is considered "extreme"? Explore NOAA data from local and national weather stations to investigate notable precipitation events. Students will graph, analyze and explore data trends using the Common Online Data Analysis Platform.

WEATHER PROGRAMS (cont.)

Hot & Cold: The Science of Temperature.....(5-8) (MS-PS1-4)
Build a thermometer using homemade materials to learn what temperature is, how it is measured, and what causes it to change. Explore weather fronts and molecular behavior in systems at different temperatures.

The Atmosphere's Frozen Precipitation.....(5-8) (MS-ESS2-5; MS-PS1-1)
Use simulations to investigate various forms of frozen precipitation and what they tells scientists about the atmosphere. Practice snowflake identification, and build your own "snow-board"!

Earth's Circulation & Our Weather.....(6-8) (MS-ESS2-5; MS-ESS2-6)
Learn how Earth's atmospheric and oceanic circulation drive global weather patterns by developing and utilizing models. Then, expand your learning by exploring the complex interactions of air masses and their influences on regional weather through hands-on activities.

WEATHER PROGRAMS (cont.)

Weather Extremes: Predicting & Preparing.....(6-8)(MS-ESS3-2)
Extreme weather can be very exciting but can create hazards for communities. Explore the different types of extreme weather events and how meteorologists forecast extreme weather. Then, investigate how to best prepare for natural hazards and mitigate potential damage by participating in an Extreme Weather Safety Design Challenge.

Thunderstorms & Hail.....(6-8) (MS-ESS2-5; MS-ESS3-2)
I*nvestigate the formation of thunderstorms and exciting super-cells*! *Then, explore hail, how it forms, what information it can tell scientists about a storm, and the damage it can cause.*

Tornadoes & Science Behind Storm Chasing.....(6-8) (MS-ESS2-5; MS-ESS3-2)
We're not in Kansas anymore! *Learn about how some of the world's most intense storms storm and how scientists study them.*

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CLIMATE PROGRAMS

Extreme Climates.....(2-5) (3-ESS2-2.)
From ice-covered continents to volcanic deserts, uncover Earth's extreme climates and what creates them through engaging activities and participate in an Extreme Climates Postcards project.

Earth's Climate System.....(3-5; 8+)(5-ESS2-1; HS-ESS2-2; HS-ESS2-4; HS-ESS3-6)
For elementary & middle school students, explore Earth's "spheres" and investigate the complex interactions between these systems utilizing hands-on models.
For high school students, develop models to discover how energy transfer between Earth's systems affects climate over varying timescales. Then, you'll utilize data to investigate how a change to one of Earth's systems can create climate feedbacks. You'll also determine how these relationships between Earth's systems can be modified by human activity.

Microclimates and the Greenhouse Effect.....(3-6; 8+) (3-ESS2-2; MS-ESS3-5; HS-ESS2-4)
Explore climate forces and feedback loops that drive the greenhouse effect and cause global climate change. Younger students will build a microclimate with household items that either maximizes or minimizes heating. Older students will investigate the greenhouse effect on a molecular level through demos and online simulations.

CLIMATE PROGRAMS (cont.)

Mount Washington's Climate Zones.....(6-8) (MS-ESS2-6)
Investigate what determines a microclimate, then explore Mount Washington's three distinct climate zones, including the Alpine Tundra. Then, using MWOBS data, discover why Mount Washington's alpine tundra is unique. ***This program is best suited for field trips, though it can be adapted for classroom experiences if requested.***

Seasons & Uneven Heating.....(6-8)(MS-ESS2-6)
Learn how the rotation and unequal heating of the Earth drives atmospheric and oceanic circulation. Then, develop a model that describes how these patterns influence regional climates.

Climate Change: Global-to-Local Impacts.....(6-8; 9-12) (MS-ESS3-5.; HS-ESS2-4.)
For middle school students, investigate data and utilize hands-on activities to uncover what processes have contributed to the rise in global temperatures over the past century. Learn about how human activities and natural processes influence climate overtime through hands-on experiments.
For high school students, explore the geologic record to learn how the complex interactions between Earth's systems, changes in solar energy and human activities can cause changes to global and regional climate. Investigate Earth's orbit, tectonics, ocean and atmospheric circulation, glaciers, vegetation and human activities through engaging laboratory experiments.

CLIMATE PROGRAMS (cont.)

Unlocking Earth's Past Climate: Ice Cores.....(6-8; 9-12) (MS-ESS3-5.; HS-ESS2-6; HS-ESS3-1)
Discover paleoclimatology and how proxy records help scientists understand Earth's past to predict it's future. Students will examine ice core models to explore how ice informs us about historic atmospheric conditions.

Climate Change & Maple Syrup.....(6-8) (MS-ESS2-6)
Investigate data to determine how climate change is impacting New England's maple syrup industry. Students will use the Common Online Data Analysis Platform (CODAP) to explore climate and maple production data.

Climate Modeling: What Can We Predict About Future Climate?..... (9-12) (HS-ESS3-5.)
Explore the world of climate modeling! Learn how to utilize climate models and geoscience data to predict what our future global climate might look like. Then, pick a region to make an evidence-based forecast of how that region may be impacted by our changing climate.

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EARTH SCIENCE PROGRAMS

Mount Washington Rocks!.....(2-8) (2-ESS1-1; 4-ESS1-1; MS-ESS2-3)
Using rock samples from Mount Washington, learn about different rock types and which kinds are common on Mt. Washington. For older students, learn about the mountain-building events that formed them and when they occurred. Visualize the formation of sedimentary, metamorphic, and igneous rocks with a hands-on activity.

Glacial Awareness.....(2-8) (2-ESS1; 2-ESS2; 4-ESS2-1; MS-ESS2-2)
Mount Washington's surface is scarred with glacial features from its time during multiple ice ages, making it a great resource for studying our region's glacial history and the consequential erosion. Using rock samples, fun demos, and a hands-on activity, learn about the names of glacial features, how they form, and how to identify them.

Geology and the White Mountains.....(6-8)(MS-ESS1-4; MS-ESS2-2)
Learn about the exciting geologic history of the White Mountains by exploring various tectonic and glacial events. Then, learn how to identify notable geologic features throughout the White Mountains!

AVALANCHE!.....(6-8; 9-12) (ESS2D; ESS3B)
Whether you're a beginner or a well-experienced outdoorsman, understanding avalanche conditions and emergency protocol can be a matter of life or death. As Mount Washington is known for the World's Worst Weather, learn how this can impact its avalanche conditions.

ADDITIONAL PROGRAMS

The Beauty of Data: Exploring Data with Art.....
One of the most important responsibilities of a scientist is reporting their findings! Learn about the world of science communication and the many creative ways data can be shared with your community.

History of Mount Washington.....
Mount Washington has an incredible history of scientific exploration, world records and danger. Learn about Mount Washington and MWOBS' history by investigating what it was like to be a weather observer living on the "Rockpile" during the 1930's.

Backcountry Safety.....
Learn about backcountry safety in the White Mountains by learning how to interpret the Mount Washington Observatory's "Higher Summits Forecast" and how to "now-cast".

Meteorology and METAR: How Pilots Use Weather Data.....
Understanding weather data is critical to pilots. Learn about what goes into weather observations and the basics of interpreting FAA METAR code. Then, explore the aviation meteorology and the unique hazards that mountainous terrain poses to aircraft.

ADDITIONAL PROGRAMS (cont.)

Life as a Weather Observer.....
Have you ever wondered what it's like to live and work at the "Home of the World's Worst Weather"? Chat with a MWOBS Weather Observer by meeting them in-person or virtually as they connect with you from the summit of Mount Washington.

Careers in Meteorology & Climate Sciences.....
From careers on Mount Washington to careers in Antarctica, chat with a MWOBS Weather Observer about the fun and exciting careers available to you in the fields of meteorology and climate sciences.

CUSTOM PROGRAMS

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