



**MOUNT WASHINGTON
AVALANCHE CENTER**



Joint Internship with MWOBS & USFS (MWAC): Avalanche Forecasting Focus

Updated: September 2023

Education and Experience

Interns should either have completed or be in process with an undergraduate or graduate degree in weather, climate, and environmental sciences or a related discipline.

About the Position

This unique internship is a collaborative effort between the Mount Washington Observatory (MWOBS), and the Mount Washington Avalanche Center, a program of the United States Forest Service (USFS). The Mount Washington Observatory (MWOBS) has operated a weather station at the summit of the Northeast's highest peak for ninety years. USFS lands surround Mount Washington as well, encompassing almost 800,000 acres in the White Mountains National Forest.

This is an immersive internship for 16 weeks, with participants expected to know they will work multiple weeks in a row. Interns will be given one week off per month but may choose to remain in housing from either organization during this time. Time off will also be given weekly on an ad hoc basis as each organization's work flow and schedules allow. Each organization will provide:

An opportunity at the **Mount Washington Avalanche Center** to gain hands-on experience in the specialized field of avalanche forecasting, with an emphasis on both meteorological observations and snowpack analysis. As part of a dedicated team supported by the USFS, you'll be engaged in daily forecast planning sessions, directly contributing your meteorological expertise to real-time, life-saving avalanche forecasts.

The role is perfectly suited for meteorology students eager to apply their academic knowledge in challenging real-world scenarios. Given the extreme weather conditions often encountered, this internship serves as an intensive training ground for those aspiring to work in demanding environments. Whether it's interpreting intricate weather models or evaluating snowpack stability in the field, every day brings a unique set of challenges and learning opportunities.

You'll collaborate closely with seasoned avalanche forecasters and other outdoor professionals, benefiting from their years of experience and tapping into a wealth of institutional knowledge. As you deepen your understanding of the complex interplay between weather conditions and avalanche risk, you'll also be enhancing your analytical, problem-solving, and communication skills.

In addition, you'll have the chance to engage with a range of stakeholders—volunteers, students of avalanche courses, and backcountry winter enthusiasts. These interactions not only add a community and educational dimension to the role but also offer valuable experience in public speaking and technical communication.

By the end of the internship, you'll have not only fortified your meteorological skills but also gained a better understanding of avalanche science, field safety protocols, and community engagement, in alignment with USFS standards and objectives.



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At **Mount Washington Observatory (MWOBS)** interns will take part in daily operational duties of our summit observation team, help with generating forecasts, aid in education and outreach, and undertake one research project related to their work with Mount Washington Avalanche Center on avalanche forecasting.

Interns at MWOBS live and work with one of two weekly shifts of MWOBS summit staff. All interns will have a working goal of gaining competency performing daily meteorological observations as well as learning basic rules to coding METAR observations. Opportunities for professional development and career advancement exist with this position.

MWOBS primary focus is the hourly observations that make up the historical record of the summit station. However, our mission statement highlights three main areas of activity: observation, research, and education. As an intern at the Mount Washington Observatory, your main goals will be directed toward competency in a variety of tasks that help support the mission and make up general summit operations.

Duties

A Typical Workday at Mount Washington Avalanche Center

Your day begins early, often before the sun rises, as mountain weather and avalanche conditions are dynamic and require constant attention. Well before the daily avalanche forecast is published at 7am, you'll delve into analyzing the most recent meteorological data to determine avalanche hazards for the day. These mornings are intellectually rigorous, requiring attention to detail as you sift through multiple data streams, assessing their relevance and synthesizing them into actionable insights. Your contributions are critical at this stage; they directly inform the avalanche forecasts that help keep backcountry users safe. Once the day's forecast is finalized, it is disseminated to the public via multiple channels, including the Avalanche Center's website, social media, video messaging tools, and direct contact with visitors or guided groups.

Fieldwork plays a crucial role in this internship. If you're scheduled to go into the field, expect to bring your skis, (or backcountry snowboard), ice axe, and crampons for safe travel across hazardous mountain terrains, carefully navigating around and near avalanche-prone areas. To further bolster our safety measures, the team engages in regular avalanche rescue training exercises, a necessary protocol for anyone traveling in avalanche terrain. During these outings, you'll work alongside senior forecasters, applying established field techniques to collect invaluable snowpack data and meteorological measurements. Weather conditions can be exceptionally challenging, with winds sometimes exceeding 50 mph and temperatures dropping below -10F. Despite these conditions, meticulous planning, rescue training, and execution are paramount to ensure safe operations in and around avalanche terrain. It's an intense but rewarding experience that teaches you how to maintain a margin of safety during operations.

Post-fieldwork, you may find yourself engaging with the community. Occasionally, you may find yourself involved in educational outreach, such as presenting localized weather reports to MWAC volunteers or discussing safety protocols with backcountry enthusiasts.

After a long but fulfilling day, you'll realize that each challenge brings you one step closer to becoming a well-rounded meteorological professional equipped to handle the complexities of mountain safety.



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Duties of Mount Washington Observatory Interns

- Work a full ten-hour work day while on shift, including attending weekly meetings, recording hours and (with staff) setting and revising personal goals.
- Gaining competency performing observations and learning basic rules to coding METAR observations. This will involve a careful study of both the KMWN Station Weather Manual and the FMH-1 as well as shadowing observers.
- Learning the procedure to independently provide MWOBS weather station tours.
- Aiding in Extreme Mount Washington Museum operations including: interpretation of exhibits and general interaction with visitors.
- Contributing to the web content produced daily at MWOBS including weekly blog and social media posts. This may include photography that highlights a chronology of weather and events at the summit or images of other summit events.
- Taking part in both map discussions and the recording of forecasts under the tutelage of the summit staff, with an eye toward contributing to the White Mountains Higher Summits and other regional forecasts.
- Helping with making the summit presentable for visitors, guests and members.
- Planning and completing one research project with MWOBS staff, partner university faculty, or other partner institutions including the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service, Howard University, Appalachian Mountain Club, United States Forest Service, or other). Project topics might be based in meteorology, climate, environmental science, environmental policy, technology or science communications.
- Exploring the summit, the buildings, and the surrounding mountains and trails.
- Other duties as needed and assigned by a supervisor.

Key Responsibilities

Forecasting Support

- Interpret and analyze weather data to inform forecasts
- Collaborate with MWAC Avalanche Forecasters in daily forecaster meetings
- Collaborate with MWOBS staff at shift change meetings and on shift

Community Engagement and Education

- Develop and present localized weather reports to stakeholders

Fieldwork

- Assist in daily field data collection and adhere to safety guidelines

Outreach and Information Dissemination

- Support MWAC and MWOBS outreach and educational efforts and identify new partnership opportunities

Data Management and Analysis

- Maintain collected meteorological and snowpack data

Software and Technology

- Assist/instruct in the use of meteorological software



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Avalanche Rescue Training

- Participate in training exercises related to avalanche rescue

Professional Development

- Attend relevant webinars, workshops, and conferences
- Identify other opportunities with MWOBS on research and publications

Search and Rescue

- Assist with emergency response scenarios or real-world avalanche incidents, provided it's appropriate and safe.

Qualities and Skills

The below qualities and skills are not required from applicants and many will be taught during the course of the internship. All interested students are encouraged to apply. However, candidates with pre-existing competencies in these areas will be given preference in the application process.

General

- Curious and inquisitive, with a willingness to ask questions
- Ability to be on-call for both day and night shifts.
- Friendly and clear with public requests for help, excellent communication skills.
- Takes the initiative to help the team when needed, good at problem-solving.
- Good at observation of surroundings, safety, and the natural environment.
- Able to analyze charts, tables, and data.
- Willing to understand METAR code, know why it is used, and how to code weather conditions.
- Strong verbal and written communication skills are essential for effective interactions with team members and the public.
- Familiarity with software tools relevant to meteorology, including weather modeling software, GIS systems for terrain analysis, or data logging software.
- Exceptional analytical and problem-solving skills, with an ability to synthesize complex data into actionable insights.
- Demonstrated ability to work effectively in a team setting, including collaborations with seasoned avalanche forecasters.
- A proactive approach, with a willingness to take the initiative in various aspects of the work.
- Must be willing to work in a range of weather conditions, including extreme cold and wind, and be prepared for potentially long working days.

Outdoor

- Ability to safely navigate mountainous terrain using ice axes and crampons.
- Capable of carrying a heavy winter pack in difficult mountainous conditions, including hiking or skiing 3-6 miles in snow.

Technical

- Skilled in reading, interpreting, and applying meteorological models and data for avalanche forecasting.



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- Basic understanding of snow mechanics and avalanche risk is beneficial.
- A basic certification in Avalanche Safety, such as Recreation Level 1 or higher, is a plus but not mandatory.
- A WFR or EMT certification is desirable but not mandatory.

Benefits

All MWOBS internships are supported by a generous stipend to cover travel and living costs. Payment is spread equally across this 16-week winter internship. This internship also comes with housing and meals on the summit of Mount Washington when you are on shift with MWOBS, and housing for when you are on shift with the Mount Washington Avalanche Center.