Current Research
Summer 2022:
Wind & Humidity Trends
Naomi Lubkin and Larz von Huene
What are the long-term wind speed and moisture trends on Mount Washington, and how are they affecting tree line, where the alpine zone begins?

Objectives:
• Update trends of wind speed and moisture (relative humidity/fog) on Mount Washington through 2021
• Understand how wind and humidity trends may be affecting the alpine zone
• Harmonize current wind data with historic records
Tree line in the White Mountains is one of the lowest in the world, sitting around 4,500 feet. Harsh weather is a limiting factor for growth at high elevations. In sub-freezing temperatures, high winds and fog lead to the build-up of rime ice, which causes mechanical damage and abrasion to exposed trees.

Shifting winds and relative humidities may affect the frequency of damaging rime events. This project seeks to understand long-term trends in these important climate indicators.
Preliminary findings: Since 1981, wind speeds have not changed significantly except for a slight increase in April and a slight decrease in December. Moisture levels also have not experienced significant shifts in this time frame. However, the frequency of events conducive to rime ice (i.e. sub-freezing, high winds, and high relative humidity/fog) in certain winter months is declining, which may be making higher elevations slightly less harsh for vegetation and could lead to changes in tree line.

Future research:
• Continued statistical analysis of wind/humidity trends
• Further homogenization of historic and present data through analysis of instrument location changes
• Investigate how other climate trends may be affecting tree line

Learn more at mountwashington.org/research