



**Current Research**  
Summer 2022:  
Wind & Humidity Trends  
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Wind & Humidity Trends, by 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



## Wind & Humidity Trends



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.

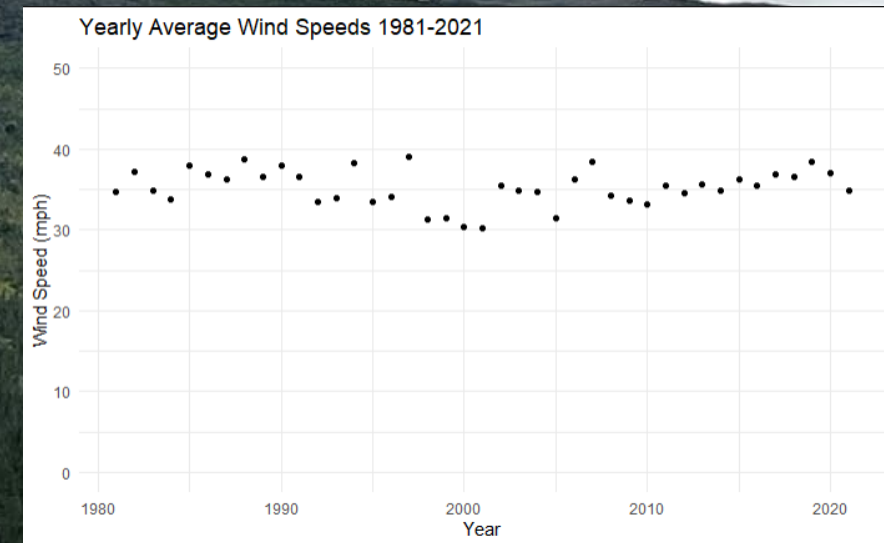


## Wind & Humidity Trends

**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



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