Department of Environmental Conservation's Air Monitoring Program
Community-Based Air Monitoring Project

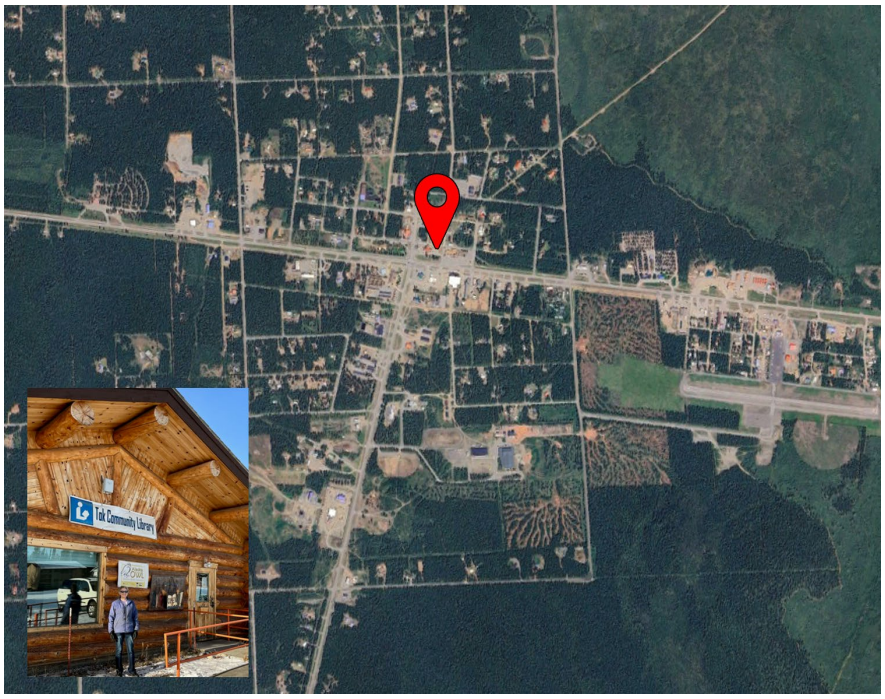
2024-25 Winter Season Air Quality Report for Tok

The QuantAQ MODULAIR™ sensor in Tok (63.3360 ° N, 142.9860 ° W) was installed on 10/26/2023.

The sensor measures for carbon monoxide (CO), ozone (O_3), nitrogen oxide (NO), nitrogen dioxide (NO_2), particulate matter ($PM_{2.5}$ and PM_{10}), temperature (°C), and relative humidity (RH). Data is collected every minute and is then processed into hourly averages.

The gaseous sensors in the original unit in Tok began malfunctioning on 12/1/2024 and the entire unit was replaced on12/2/2024. The new unit has operated without issue since its installation.

This data report covers the date range of October 1, 2024, to March 31, 2025, with data combined from both the original and replacement units.



Daily $PM_{2.5}$ Air Quality Index (AQI) for October 1, 2024 - March 31, 2025

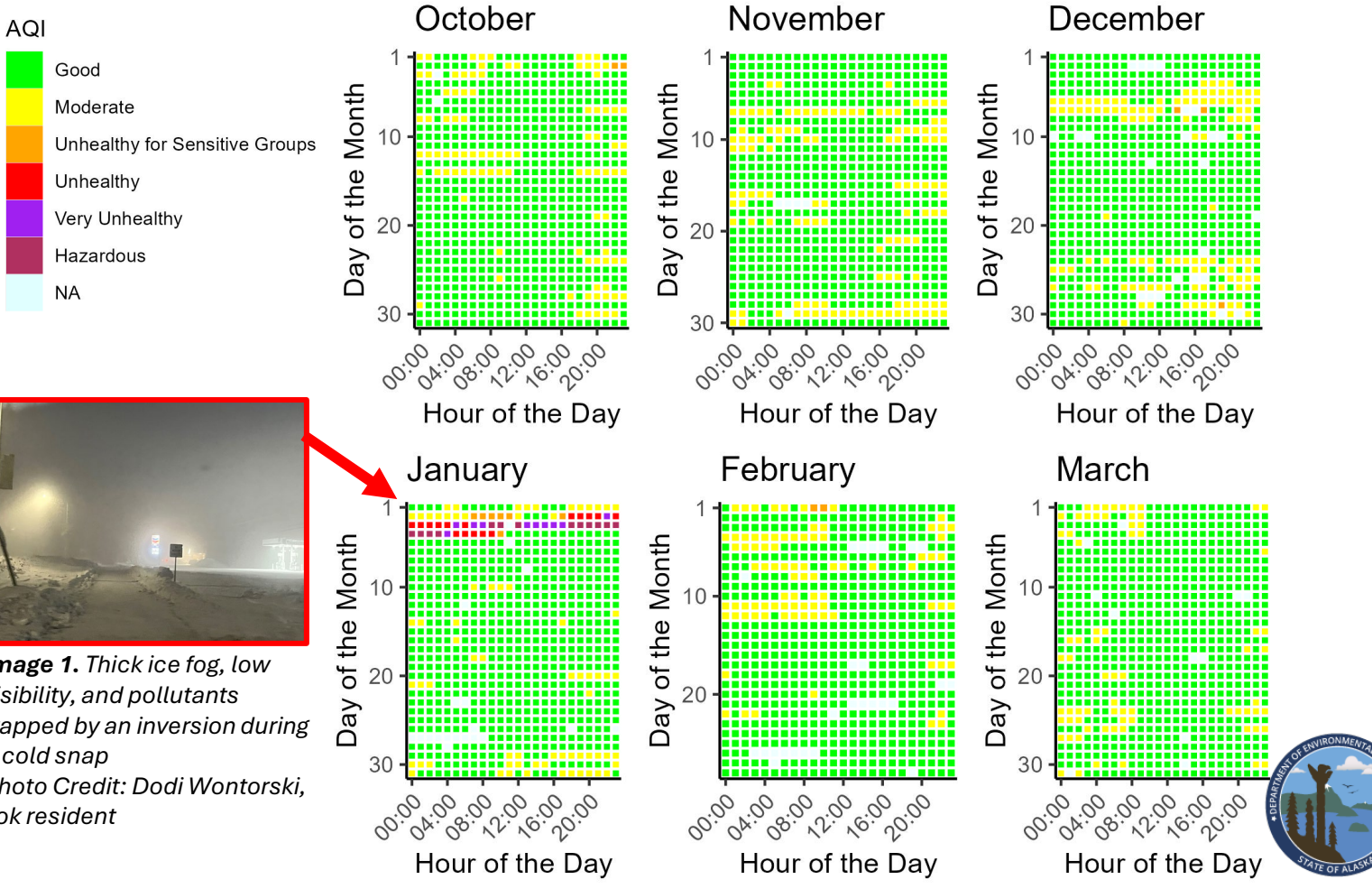
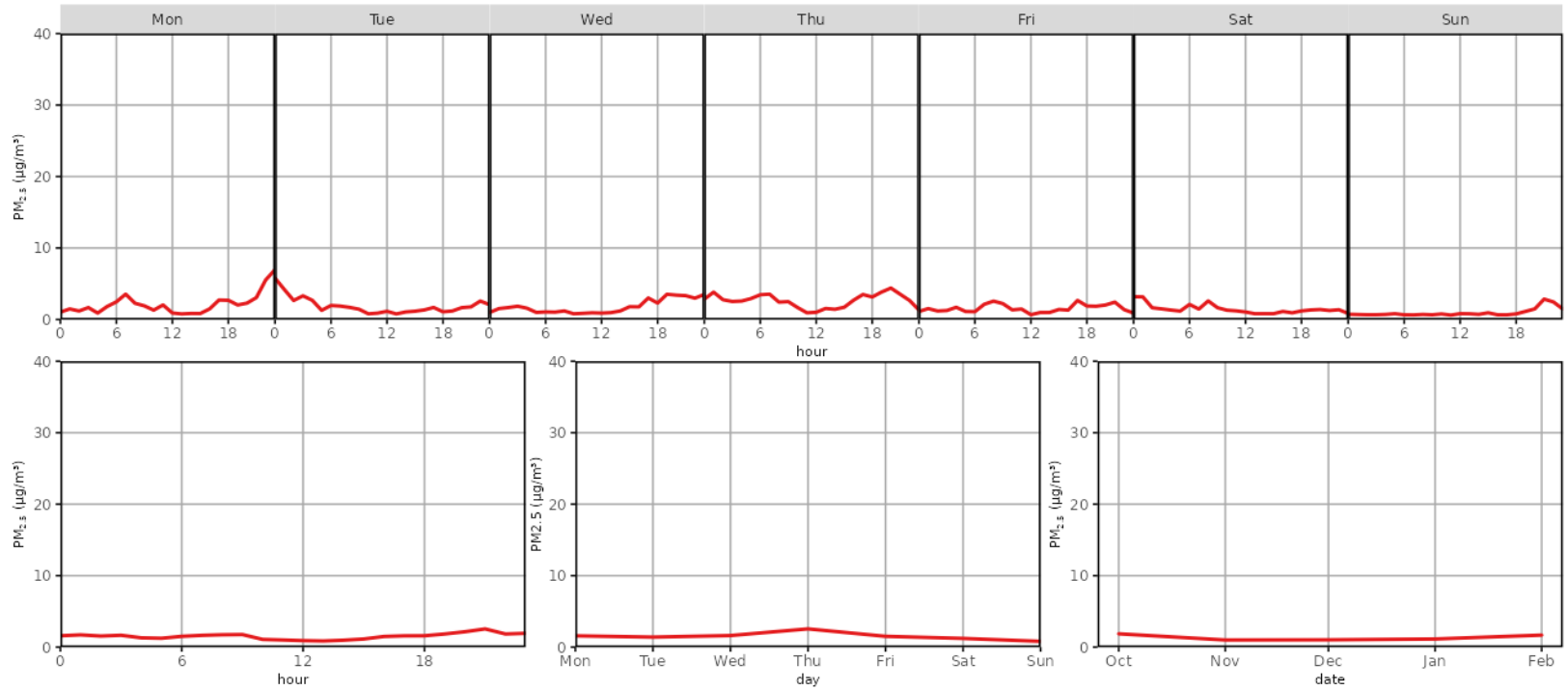


Image 1. *Thick ice fog, low visibility, and pollutants trapped by an inversion during a cold snap*
Photo Credit: Dodi Wontorski, Tok resident

2024-25 Winter Season Air Quality Report for Tok

Median $PM_{2.5}$ Concentrations for October 1, 2024 - March 31, 2025



Descriptive Statistics of Air Pollutants*

Parameter	1-hr $PM_{2.5}$ (µg/m³)	24-hr $PM_{2.5}$ (µg/m³)	1-hr PM_{10} (µg/m³)**	24-hr PM_{10} (µg/m³)**	1-hr O_3 (ppb)	1-hr NO_2 (ppb)	1-hr NO (ppb)	1-hr CO (ppb)
Min	0.05	0.33	0.00	0.25	0.00	2.77	1.40	0.30
Mean	5.55	6.04	10.87	8.99	20.69	19.33	4.75	0.58
1st Max	355.30	201.14	3057.00	65.42	56.40	30.80	37.18	1.40
2nd Max	321.27	74.46	872.00	62.54	55.50	29.25	35.91	1.30

Data Discussion

Tok's $PM_{2.5}$ ambient air quality for the winter 2024-25 season fell mostly in the "good" range of the Air Quality Index (AQI; more information about the AQI is provided on page 3) with multi-day periods of slightly elevated of $PM_{2.5}$ concentrations each month of the reporting period. January experienced the most significant $PM_{2.5}$ concentrations with AQI levels reaching "hazardous" for several hours. This occurrence was caused by an extreme cold snap and inversion, trapping pollutants (including smoke from home heating and fuel emissions) at ground level for several hours. Local observers noted significant smog and difficulty seeing due to the trapped haze (see Image 1, page 1). Temperature inversions such as this are known to trap pollutants and reach into higher AQI levels but resolve quickly as temperatures warm back up. Diurnal patterns show little variability of $PM_{2.5}$ concentrations across different times of day, days of the week, or months of the reporting period.

* These statistics are based on preliminary data readings and are intended to provide a brief overview of sensor activity. Finalized data may be obtained upon request and through our annual statistical reports. Data from the community sensor network is non-regulatory and not comparable to the EPA's National Ambient Air Quality Standards (NAAQS; more information about the EPA NAAQS is provided on page 3).

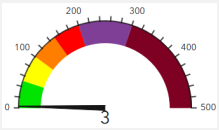
** PM_{10} particle sensors are influenced by weather events such as fog and snow due to hygroscopic effects, creating false maximum values that do not pose health risks.

Resources

Alaska Department of Environmental Conservation

EPA NAAQS Information

Air Quality Index (AQI) Basics



Real-Time AQI Data

Data Access

To access historical data for your community's sensor, please email a request to: AMQA-Data-Request@alaska.gov . Data will be provided in Excel or .csv format.

Questions or Comments?

Please contact us!

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