

ADEC's Community-Based Air Sensor Network

Quarterly Call
September 10, 2024
10:00 AM AKST

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Housekeeping Items

- Mute – Please mute yourself for presentations.
- Please use chat during presentation as you have questions/comments.
 - 20-30 minutes of planned discussion time at end
- Mark your calendar for next call! **September 10, 2024 at 10 am AK time**



Agenda

Welcome!

Sensor network overview and progress

Data findings

Next steps

Questions and discussion





Focus of this call

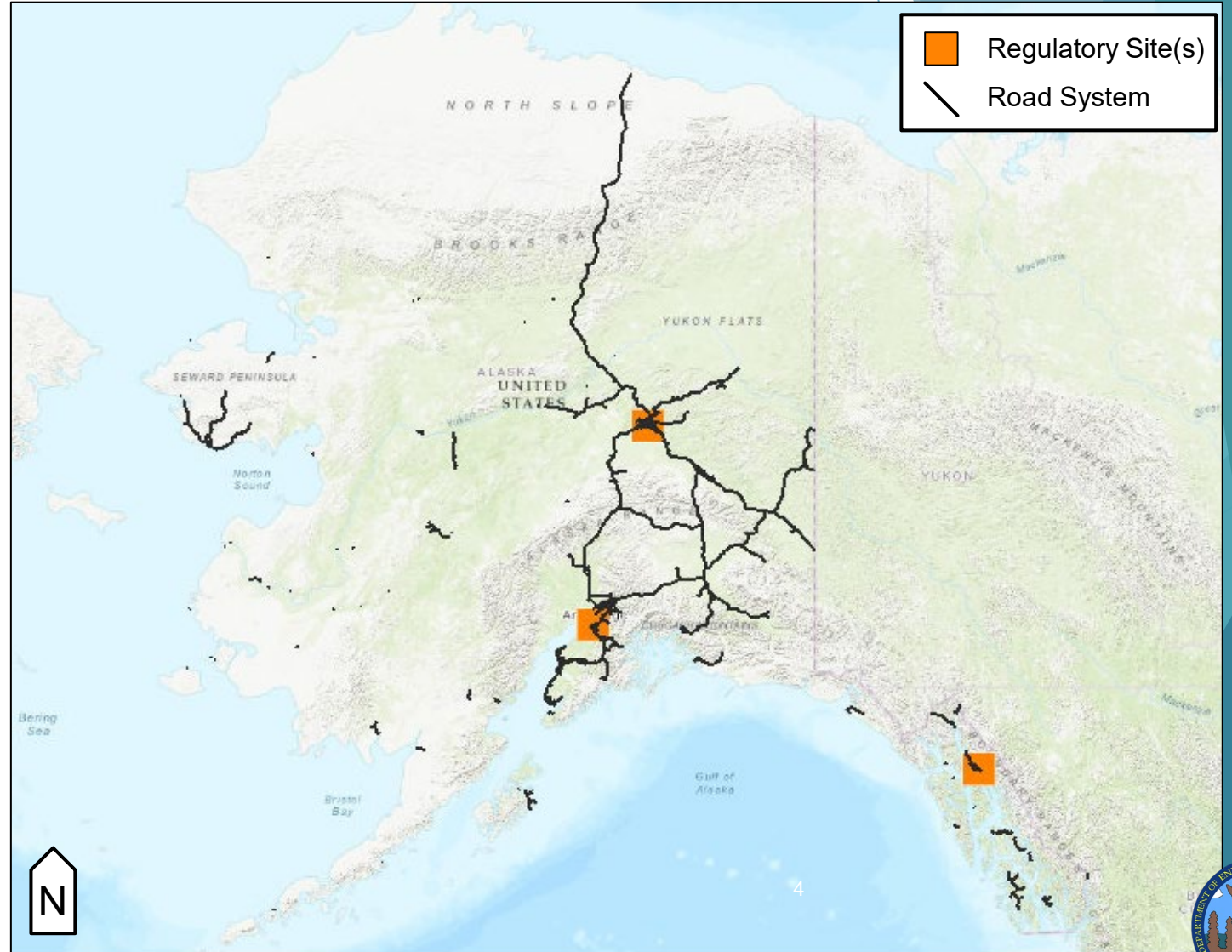
- ▶ Quarterly calls
 - ▶ Next is
 - ▶ 3-year project
- ▶ Share DEC updates
- ▶ Get input
- ▶ Workgroup style – discussion is encouraged!

Share Alaskan-based expertise



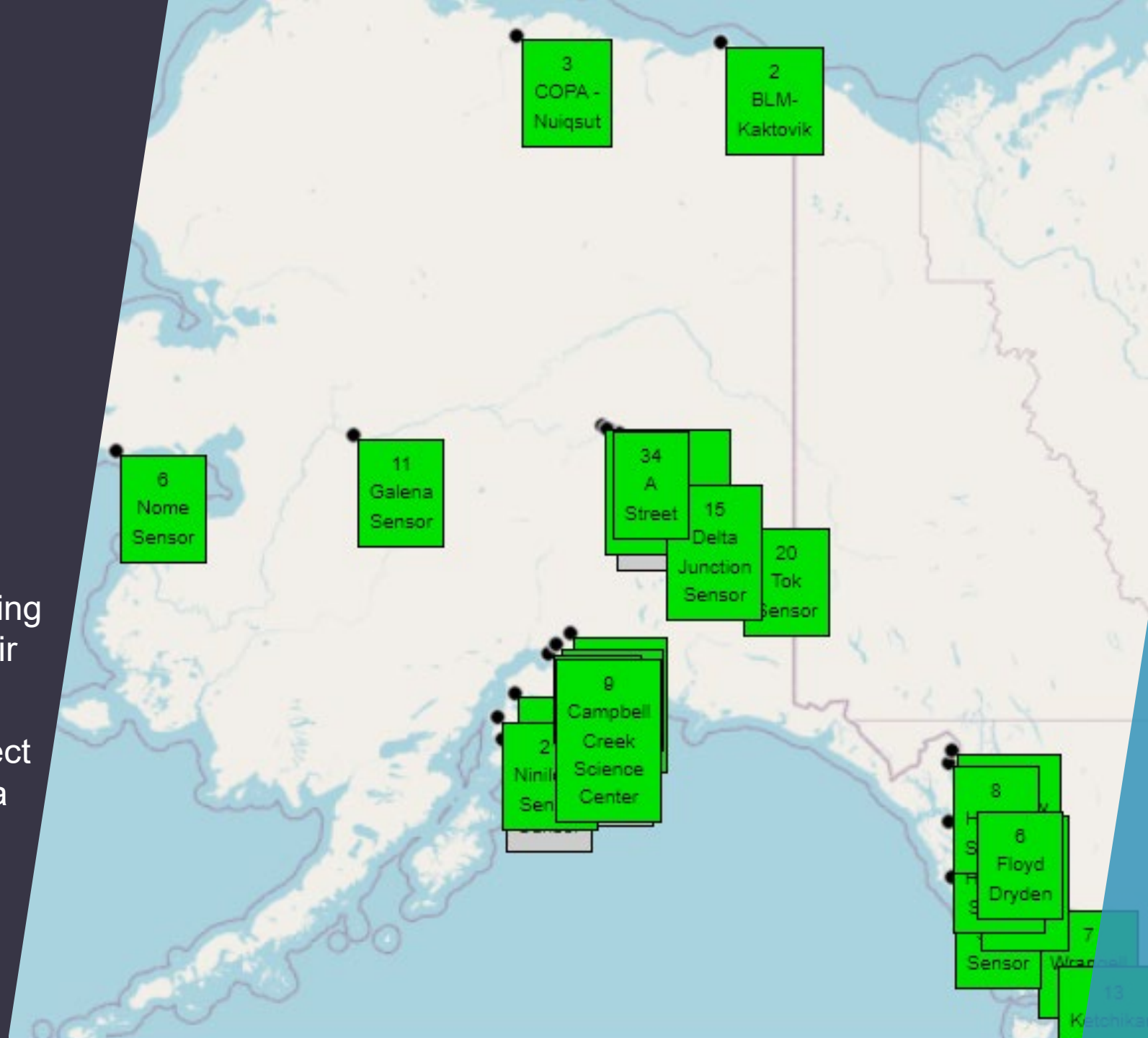
DEC's Regulatory Network

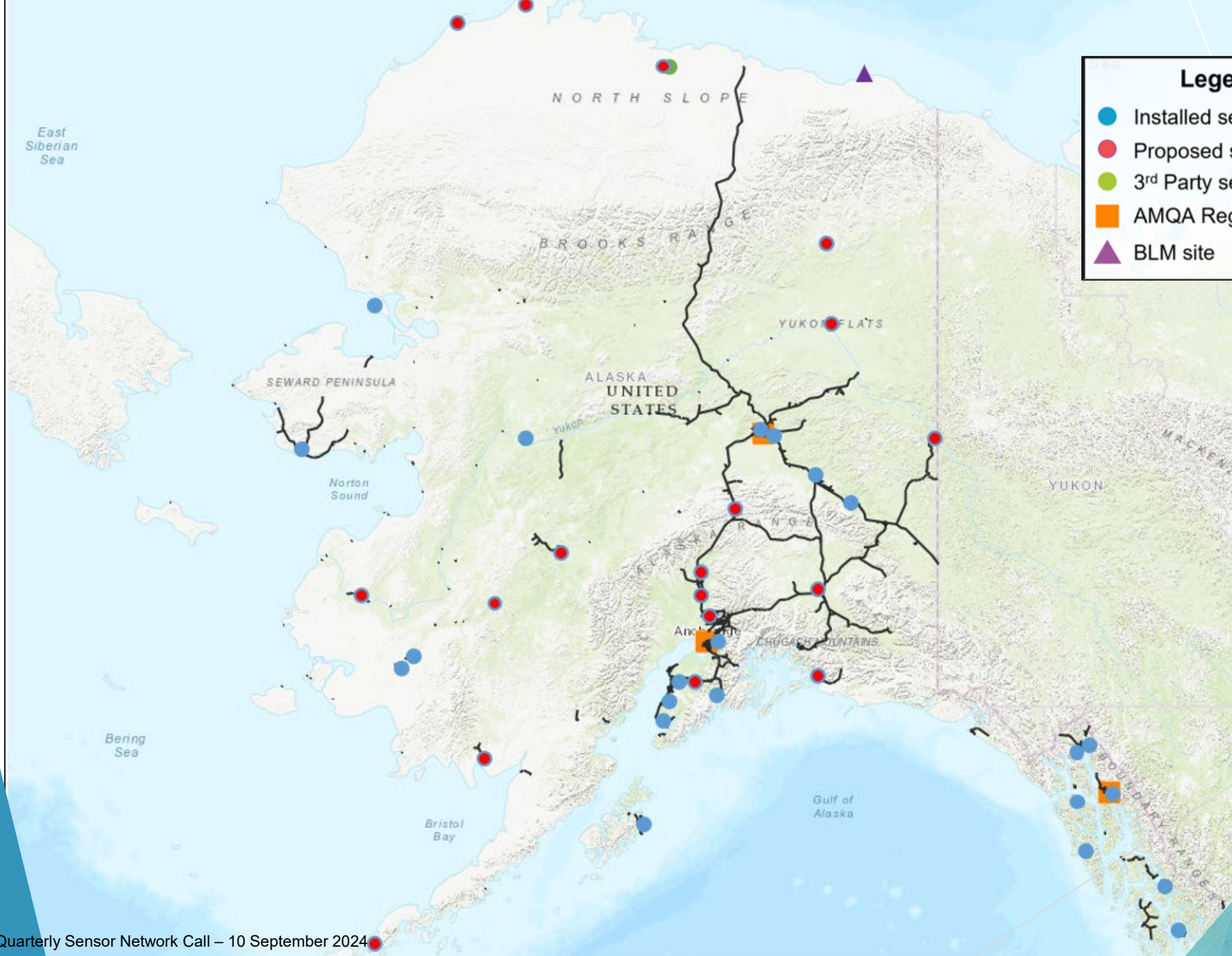
- ▶ Regulatory stations in 3 Metropolitan Statistical Areas (MSAs)
 - ▶ Anchorage / Mat-Su (4 sites)
 - ▶ Fairbanks (3 sites)
 - ▶ Juneau (1 site)
- ▶ Monitor criteria pollutants:
 - ▶ Particulate matter (PM_{2.5} and PM₁₀)
 - ▶ Gases:
 - ▶ Carbon monoxide (CO)
 - ▶ Nitric oxide (NO)
 - ▶ Ozone (O₃)
 - ▶ Sulfur dioxide (SO₂)



We are growing!

- ▶ Map as of May 29th, 2024
- ▶ Continued expansion as we...
 - ▶ Swap out AQMesh w/ QuantAQs
 - ▶ Deploy more sensors
 - ▶ Collaborate with communities doing their own studies and display their data
 - ▶ Partnered with the AQEarth project to display Anchorage sensor data





Legend

- Installed sensor site
- Proposed sensor site
- 3rd Party sensor site
- AMQA Regulatory site
- ▲ BLM site





Bethel



Kotzebue



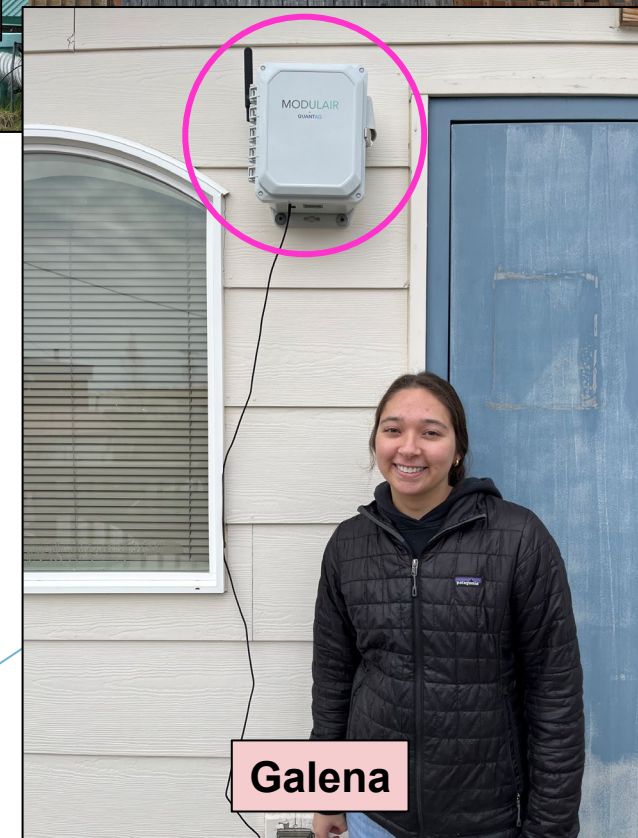
Kodiak



Napaskiak



Tok



Galena



Goldstream



Haines



Ketchikan



Skagway

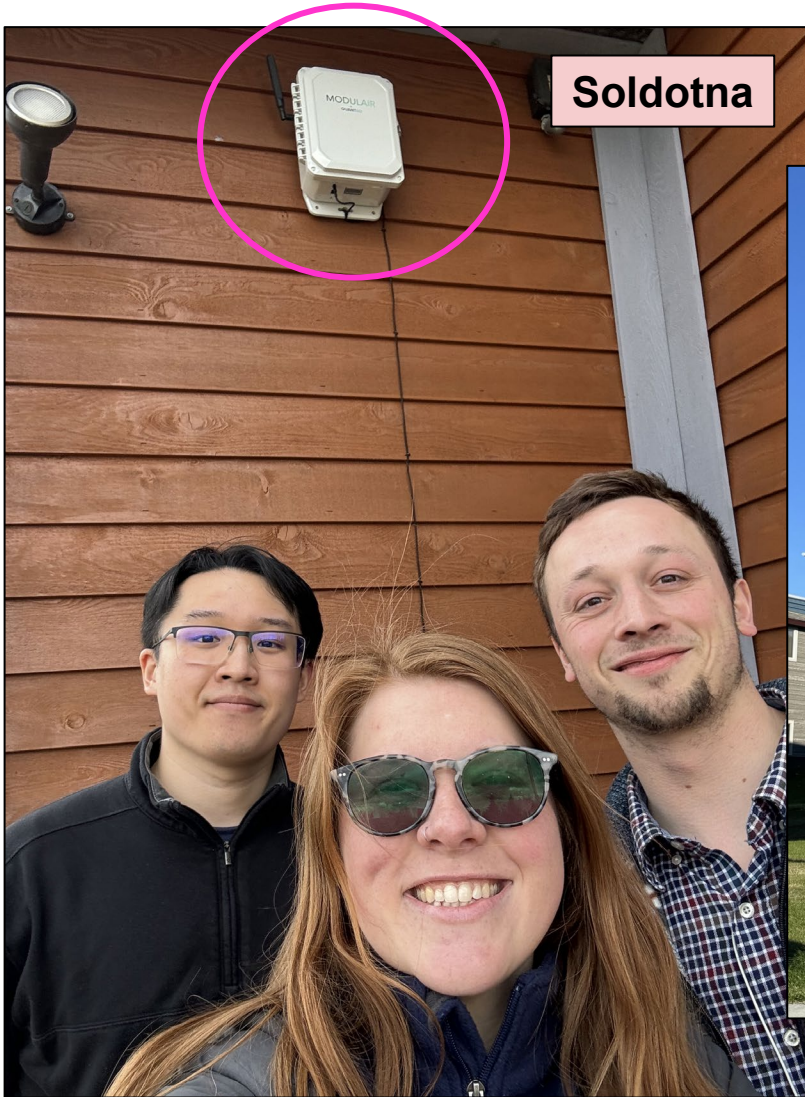


Hoonah

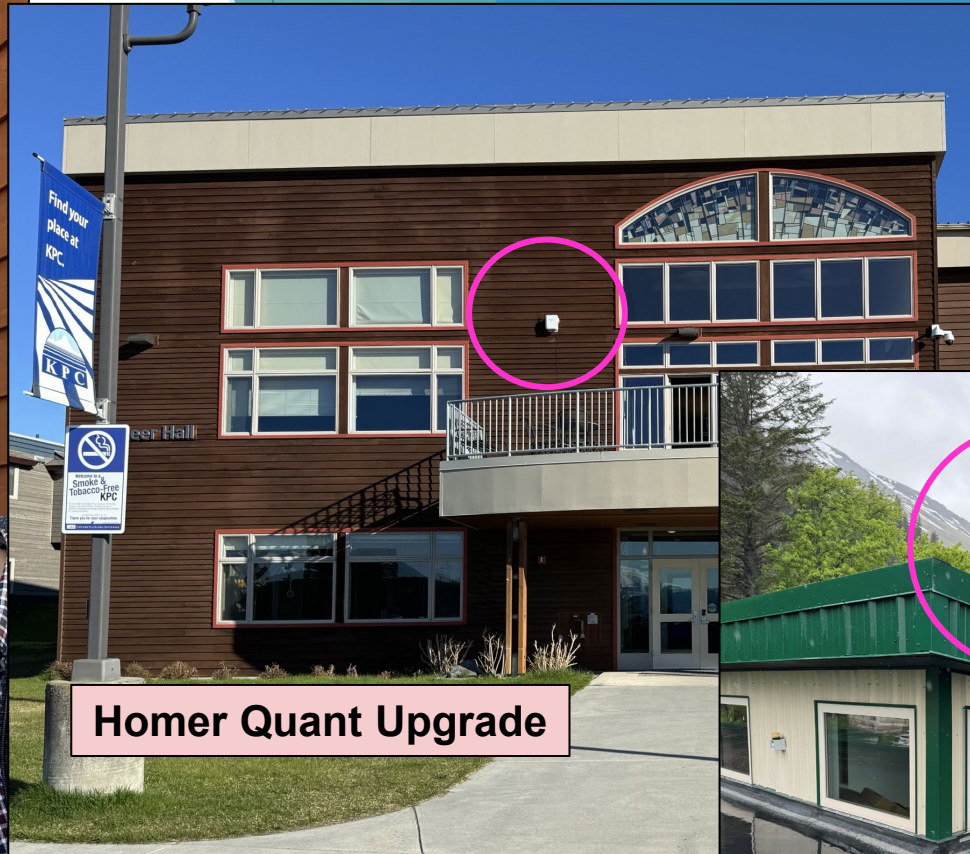


Delta Junction





Soldotna



Homer Quant Upgrade



Ninilchik



Seward Quant Upgrade





Nome



**Campbell Creek
Science Center**



Sitka



Badger



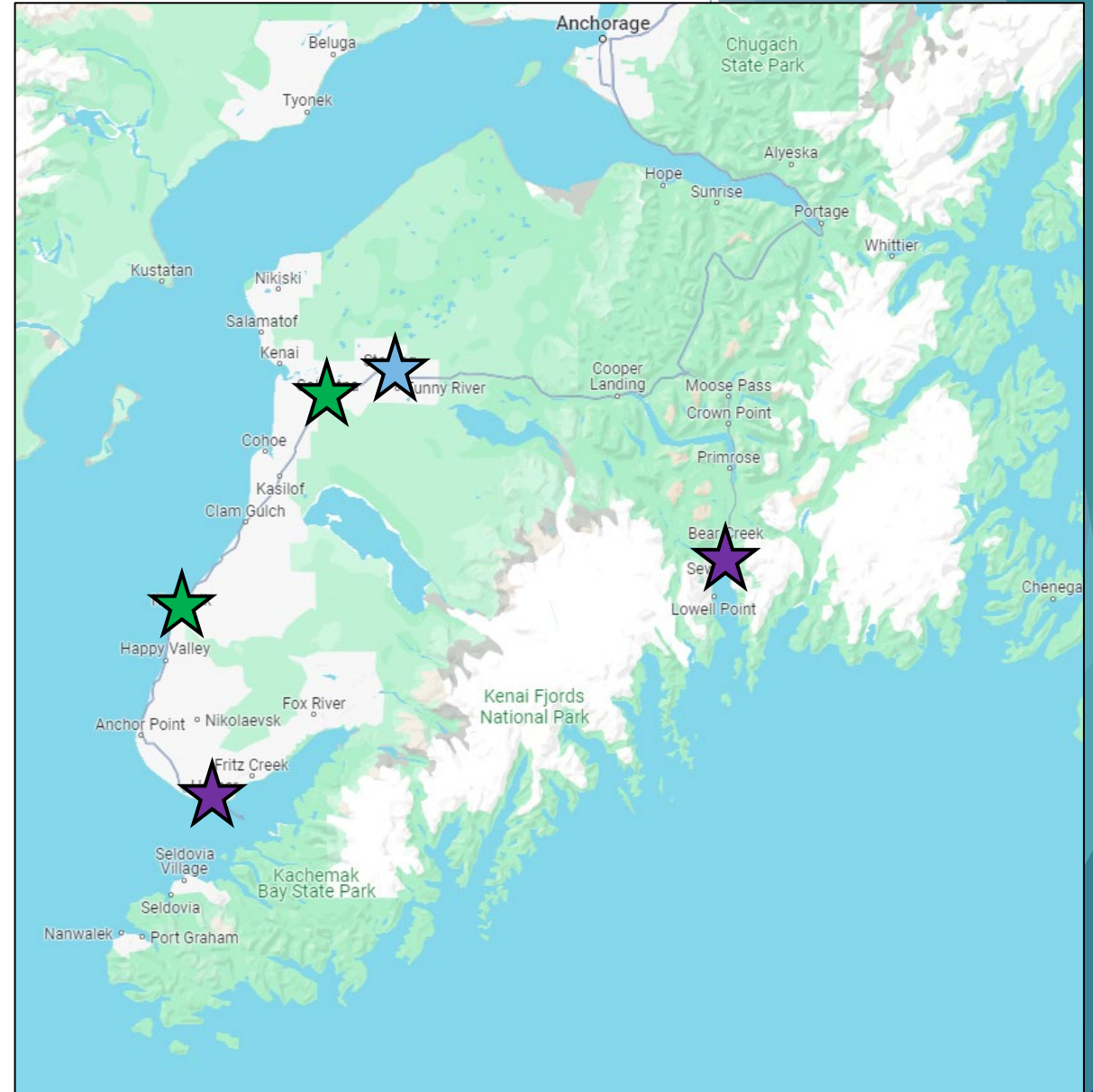
Kenai Peninsula Campaign

May/June 2024

Deployed **new** sensors in:

Replaced sensors in:

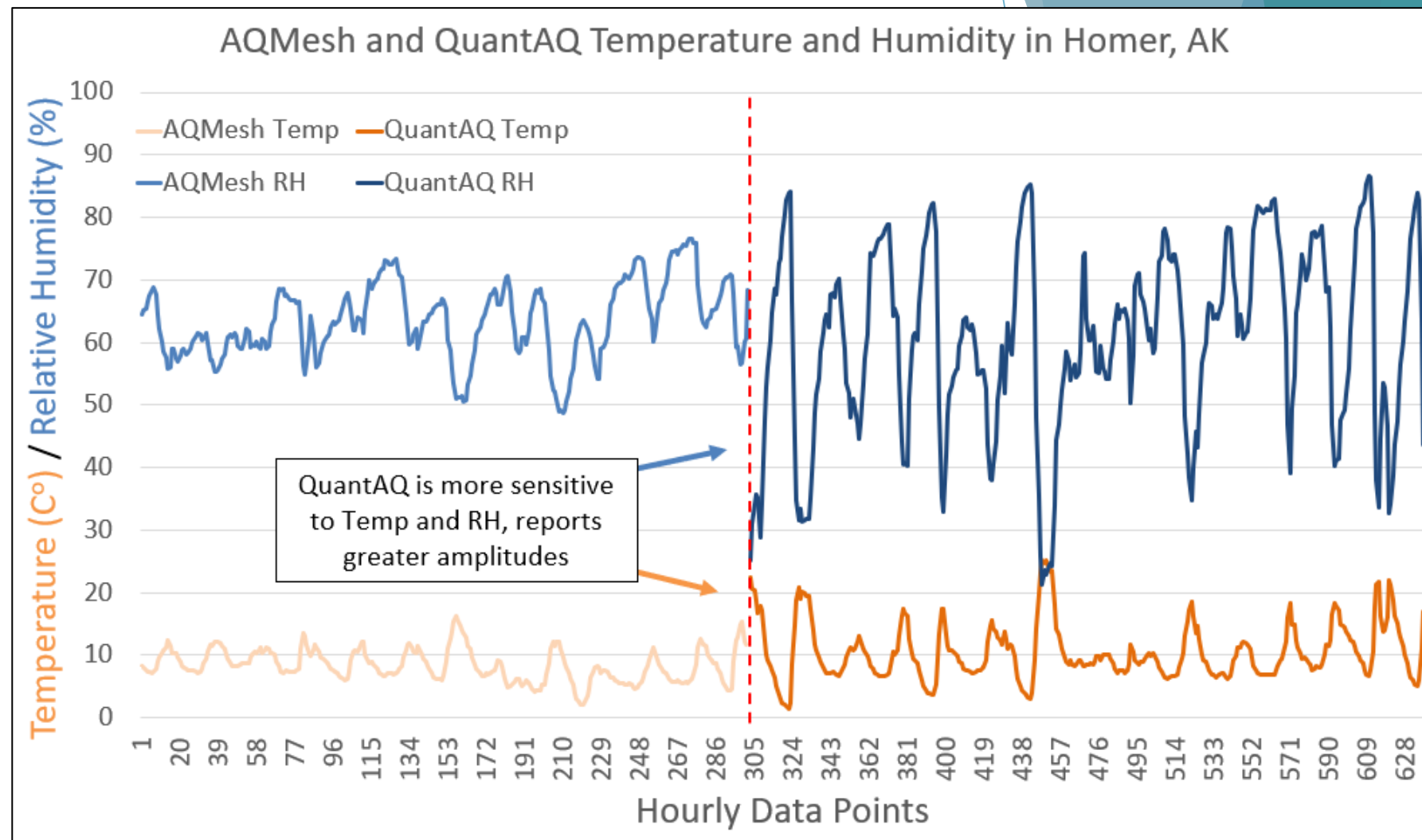
Planned sensors in:



Upgrading Sensors For Better Performance

More accurate sensors enable better understanding of local air quality.

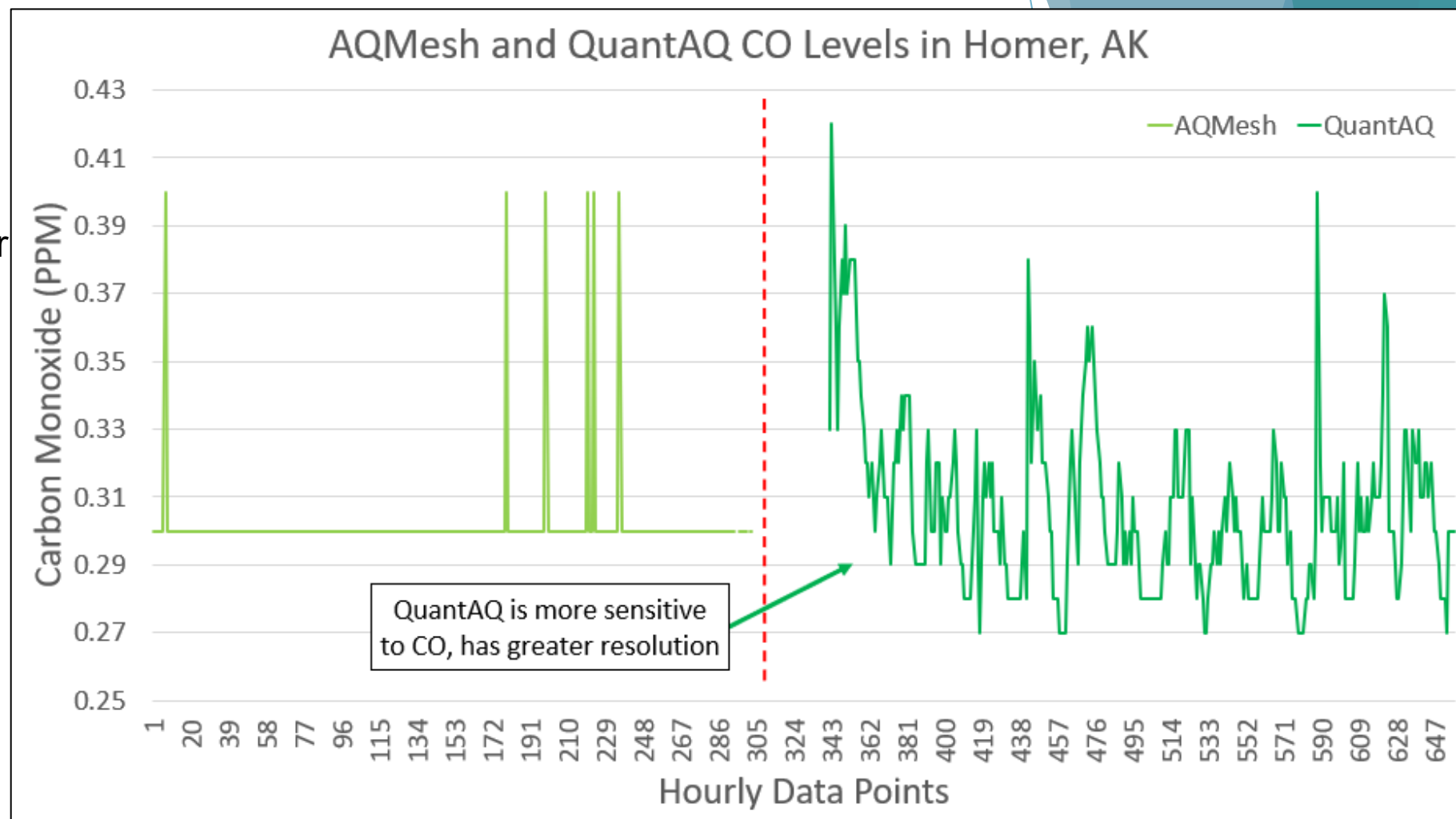
- More accurate determination when air quality reaches unsafe levels
- Better understanding of how pollutant concentration changes over time and space



Upgrading Sensors For Better Performance

More accurate sensors enable better understanding of local air quality.

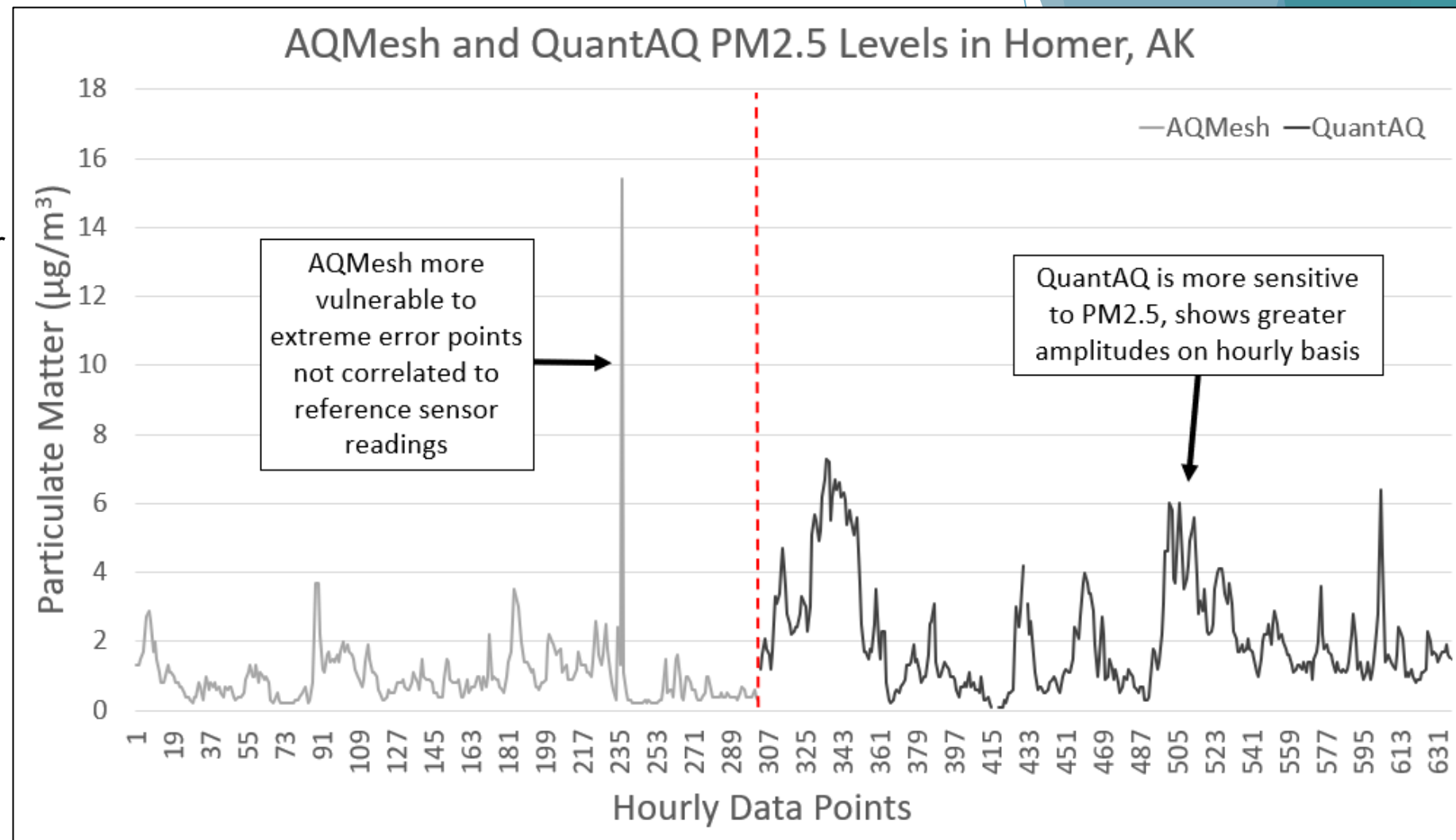
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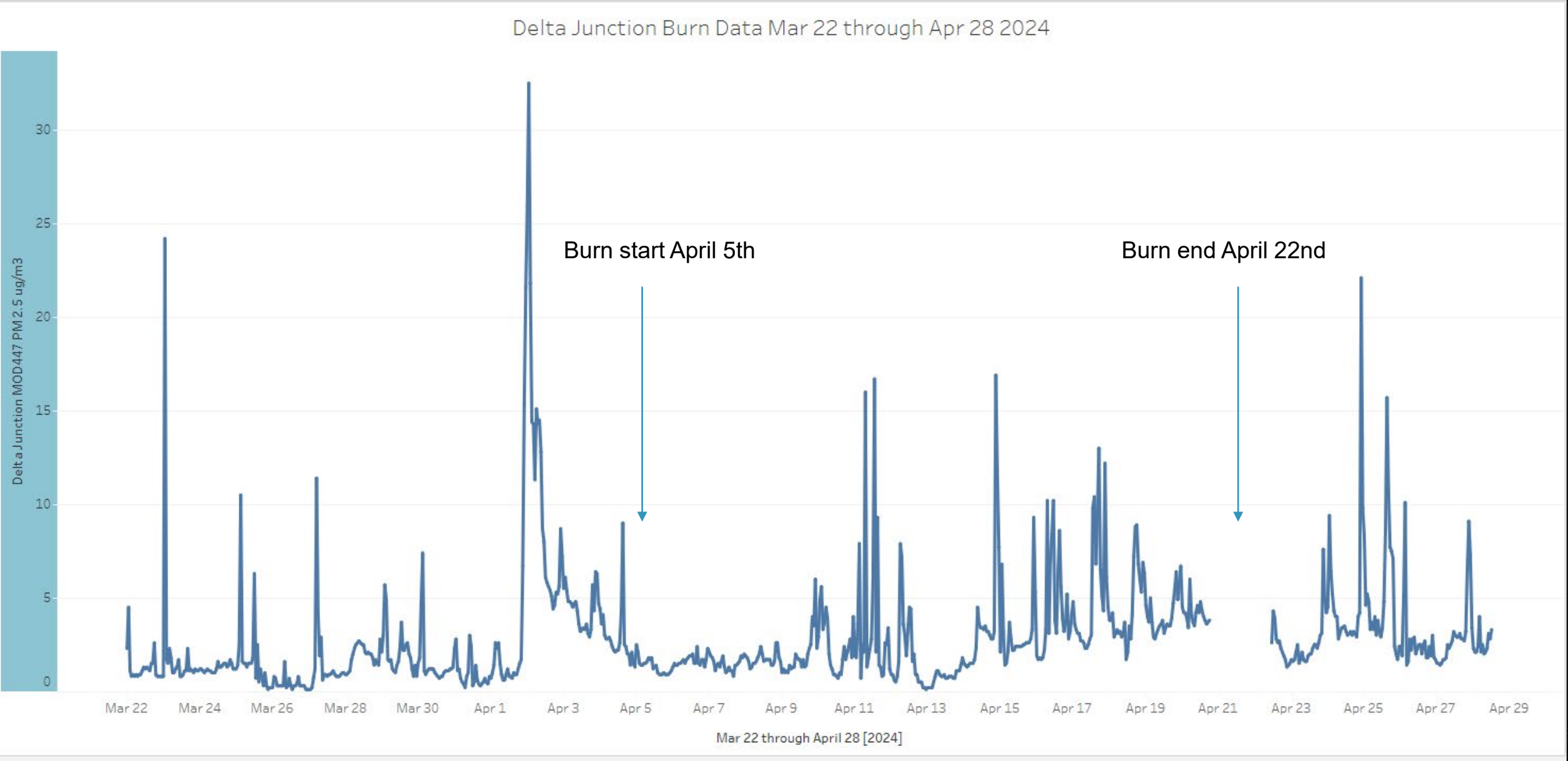
Upgrading Sensors For Better Performance

More accurate sensors enable better understanding of local air quality.

- More accurate determination when air quality reaches unsafe levels
- Better understanding of how pollutant concentration changes over time and space



Delta Junction Prescribed Burns April 5th through April 22nd



QuantAQ Early Insights – Sensors by Ecoregion

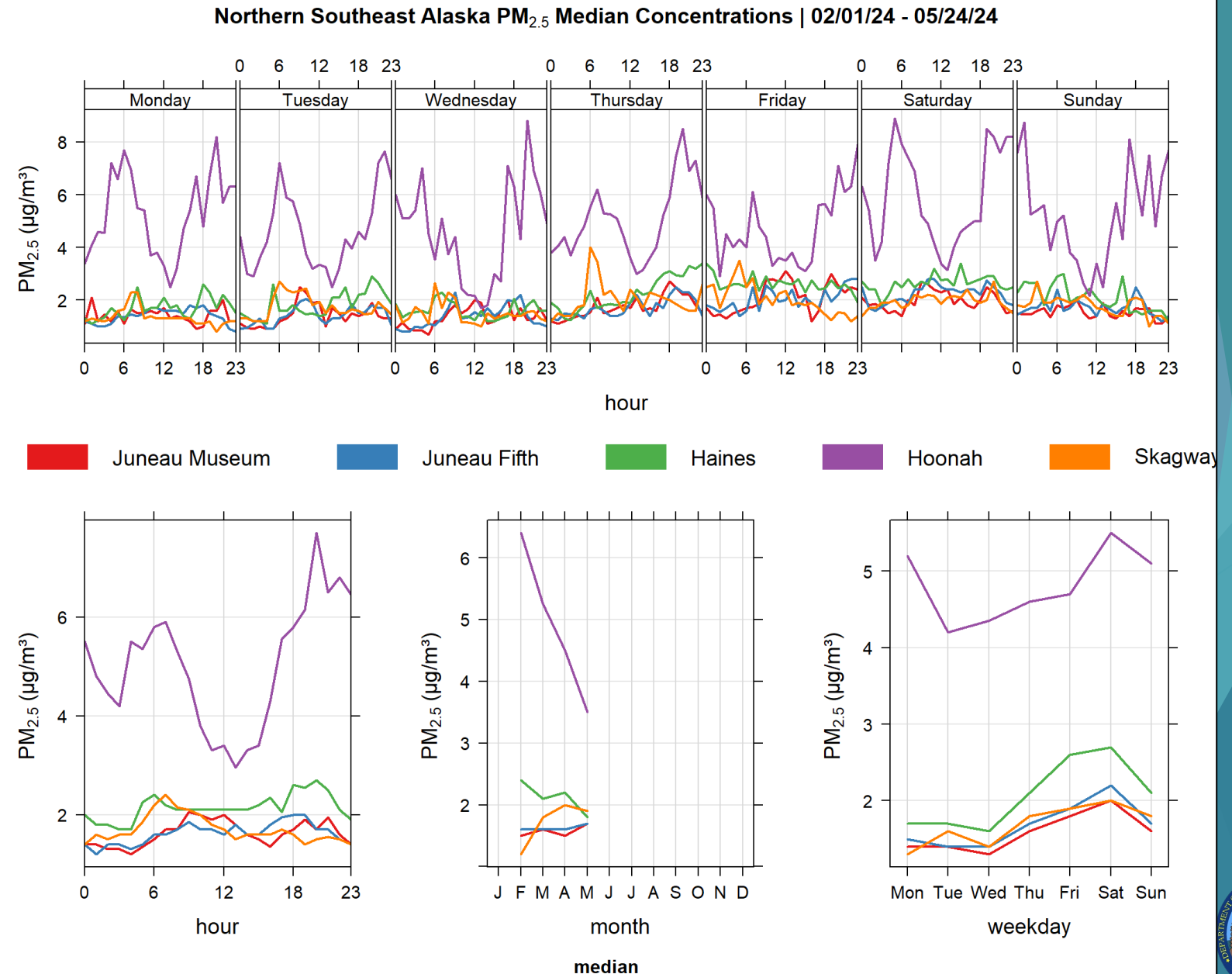
Quants in SE & Interior Alaska were deployed over the winter.

Begin to look at time variation (Diurnal/24-hour) plots.

- Comparing ecoregions of Alaska
- Can be used to compare pollutants to variables such as traffic and meteorological data.

Hourly Maximum PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)

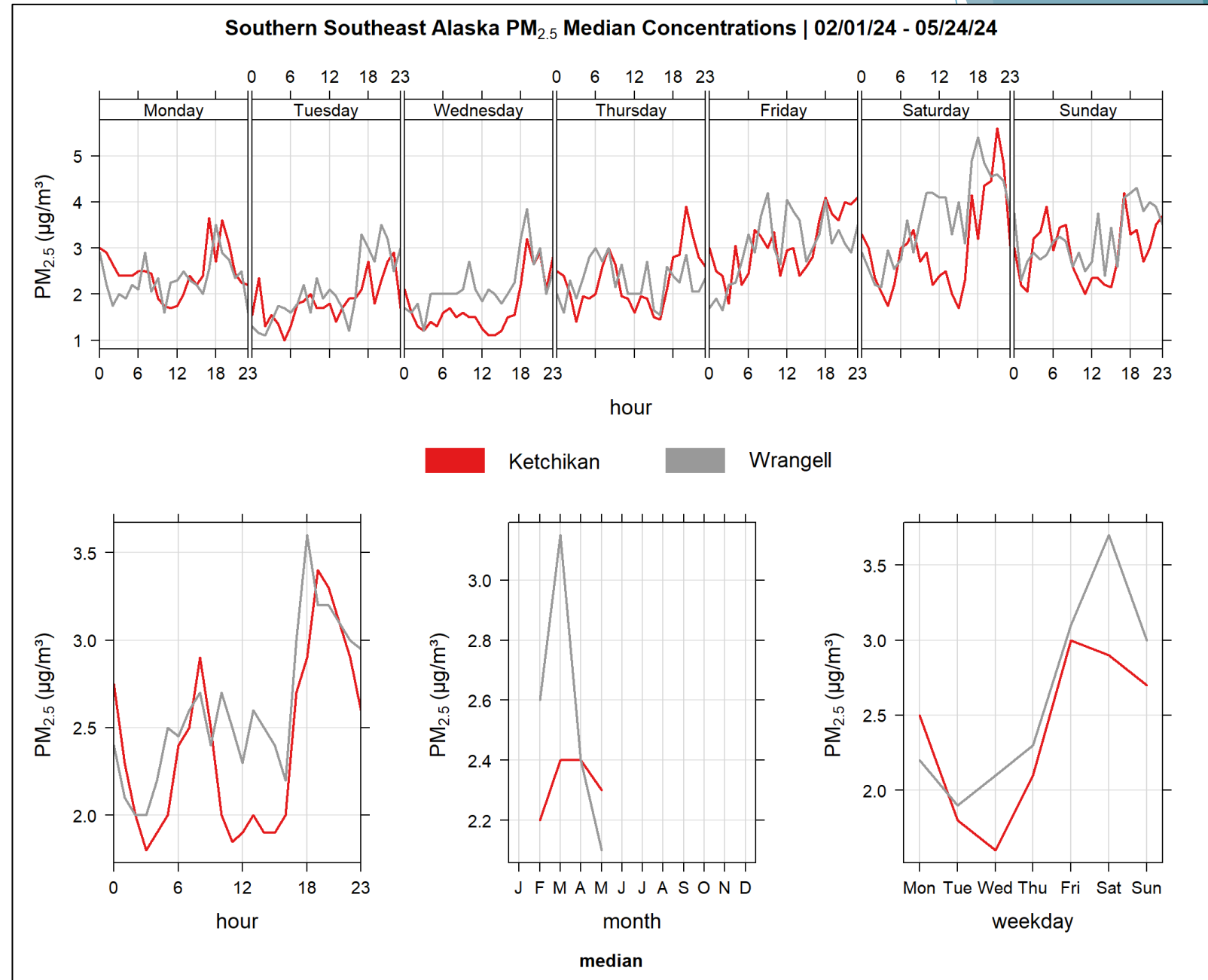
Juneau Museum	Juneau Fifth	Haines	Hoonah	Skagway
26.8	14.8	23.8	60.7	51.7



QuantAQ Early Insights – Southern Southeast Ecoregion

Hourly Maximum PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)

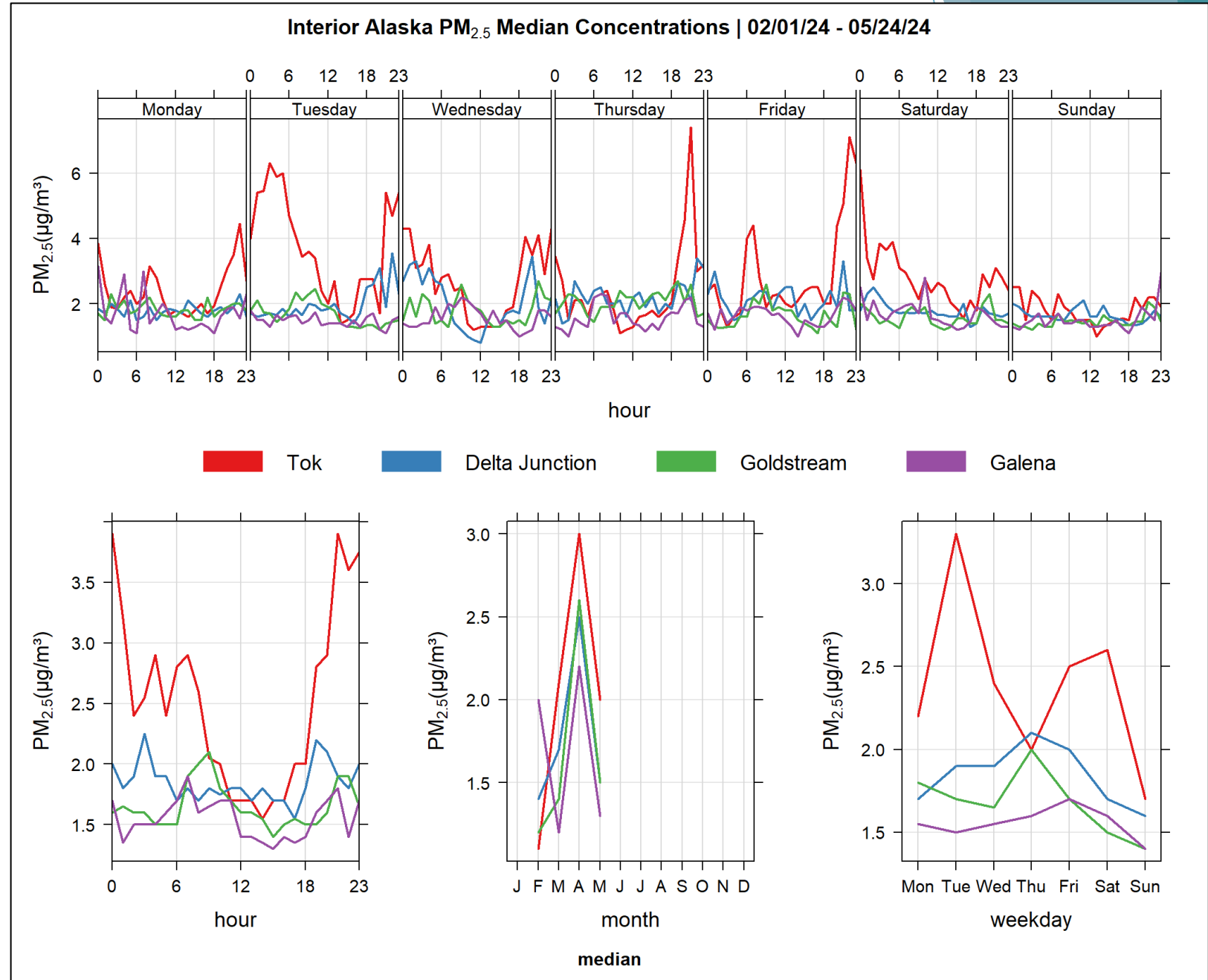
Ketchikan	Wrangell
44.2	21.1



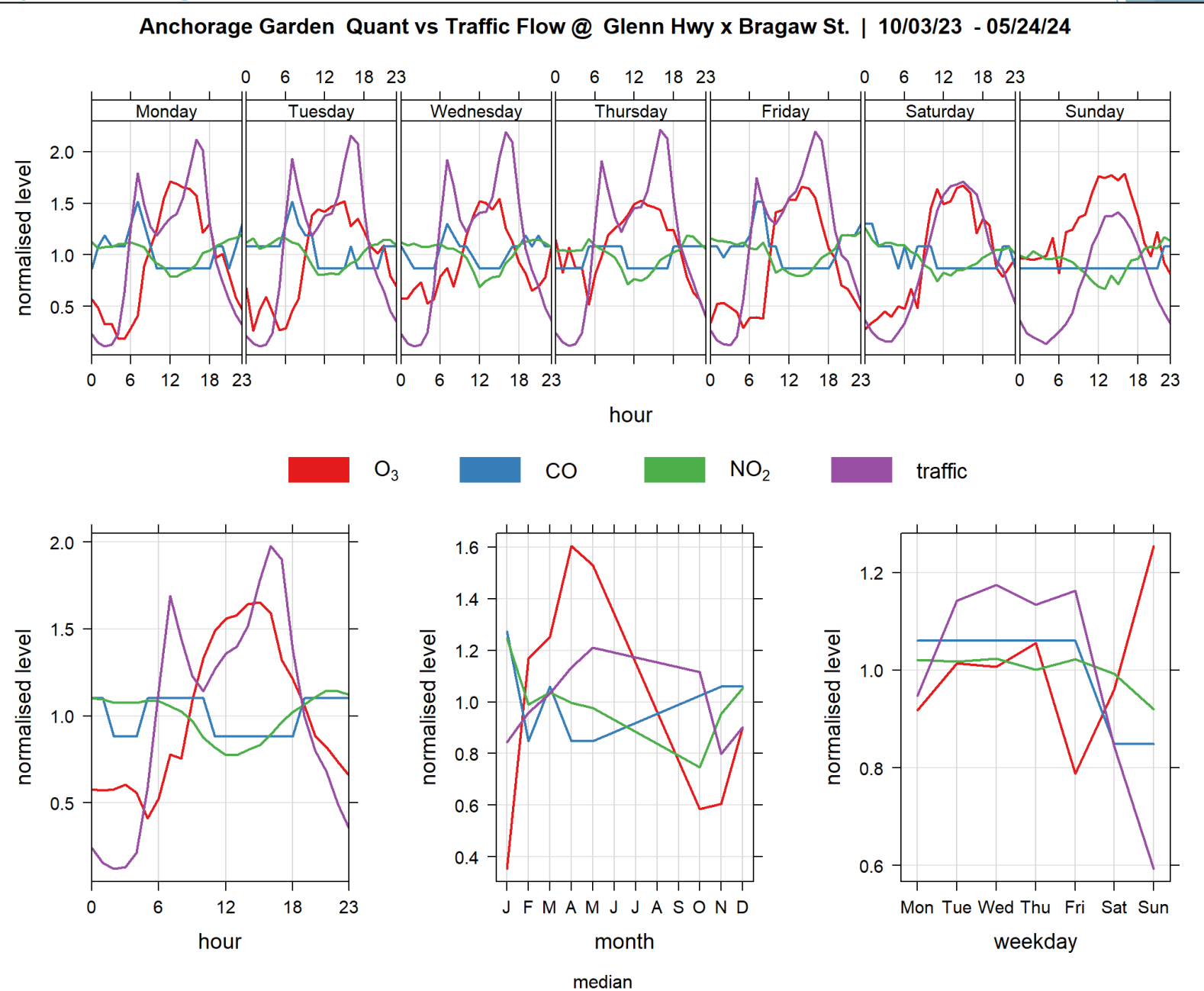
QuantAQ Early Insights – Interior Ecoregion

Hourly Maximum PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)

Tok	Delta Junction	Goldstream	Galena
80.2	81.1	44	97.1



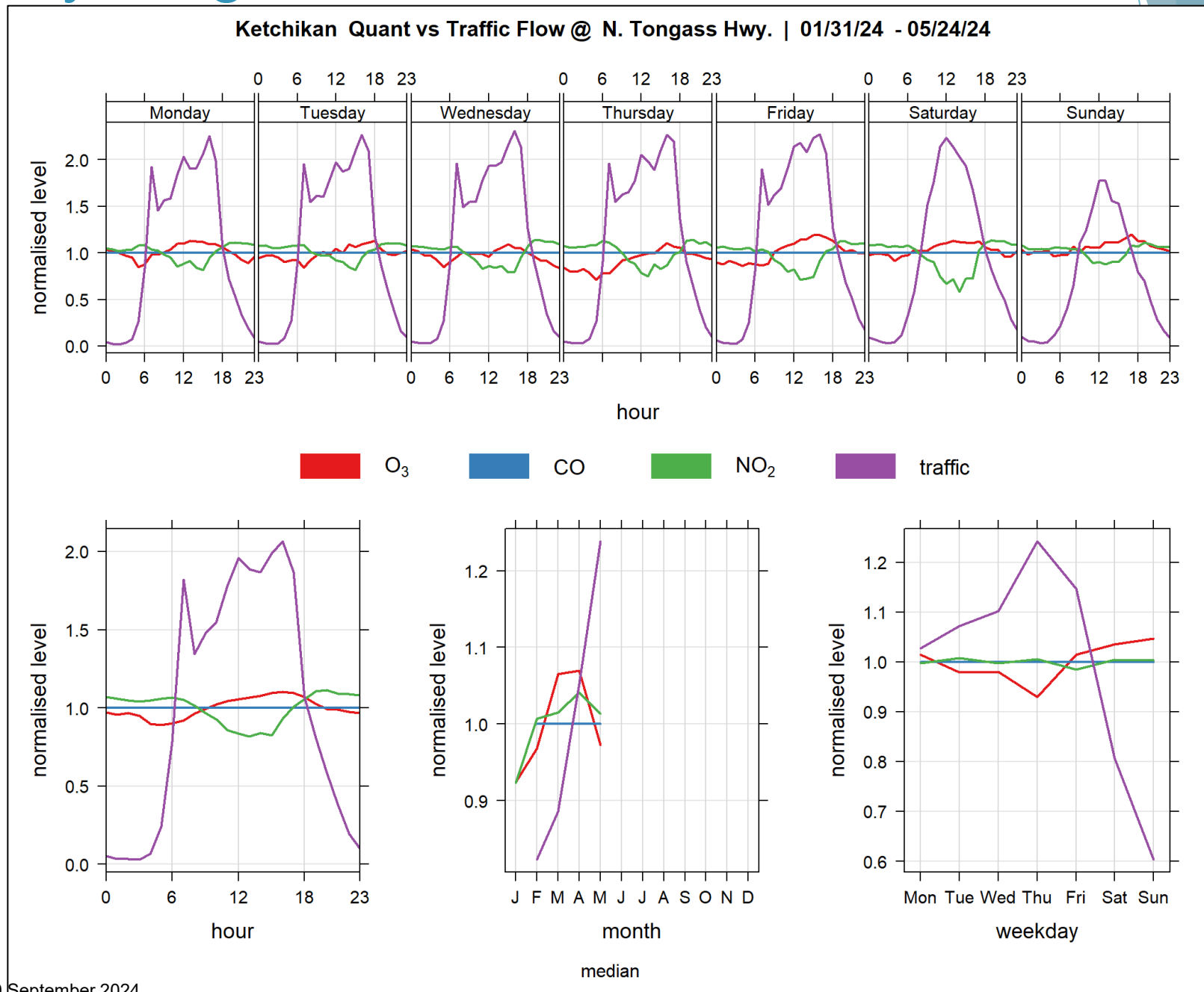
QuantAQ Early Insights – Sensors vs. Traffic



DOT Traffic Data



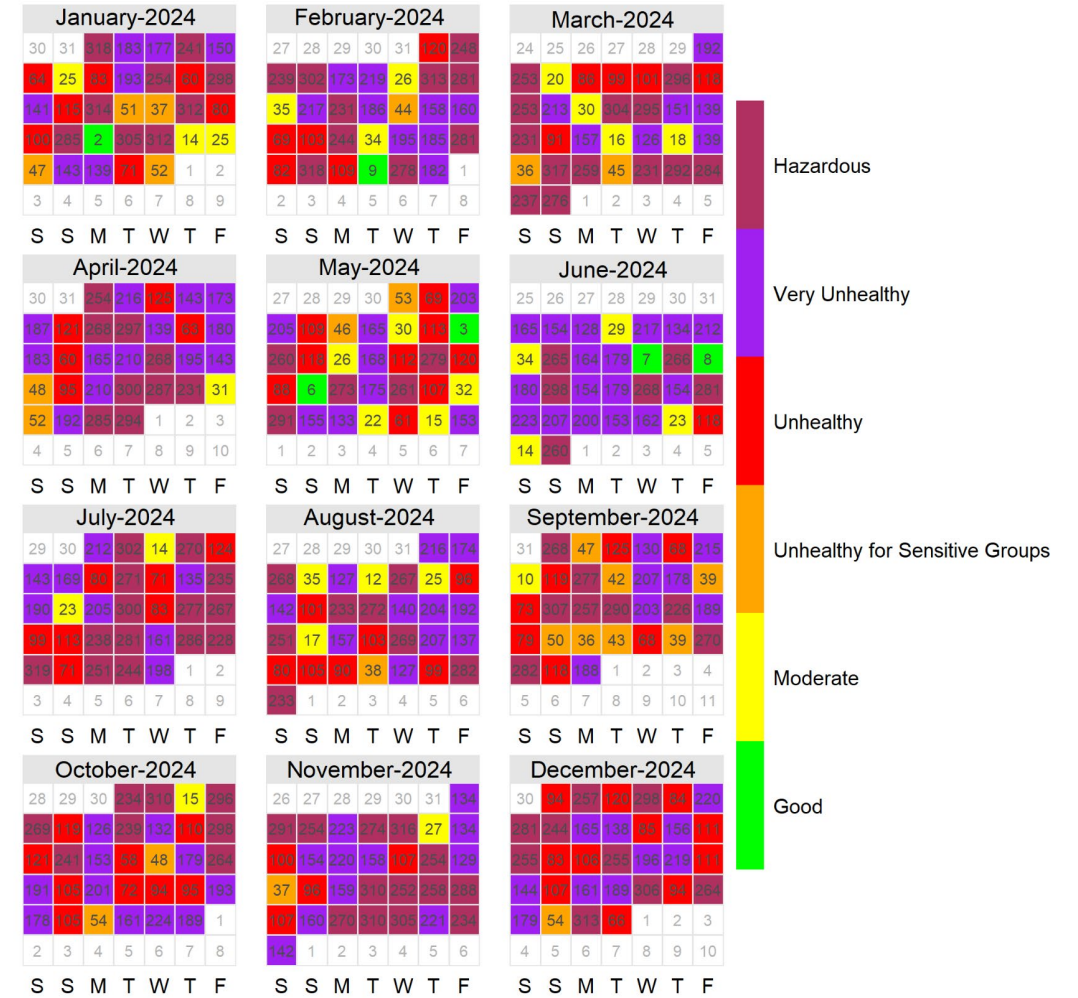
QuantAQ Early Insights – Sensors vs. Traffic



Greenville Air Quality Index

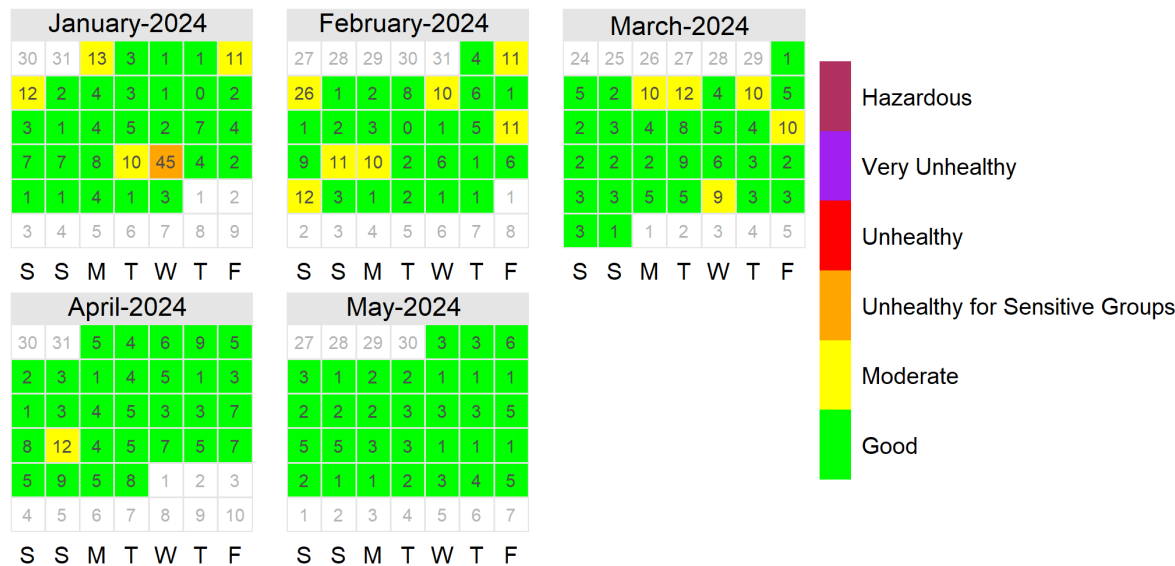


Smogsville Air Quality Index

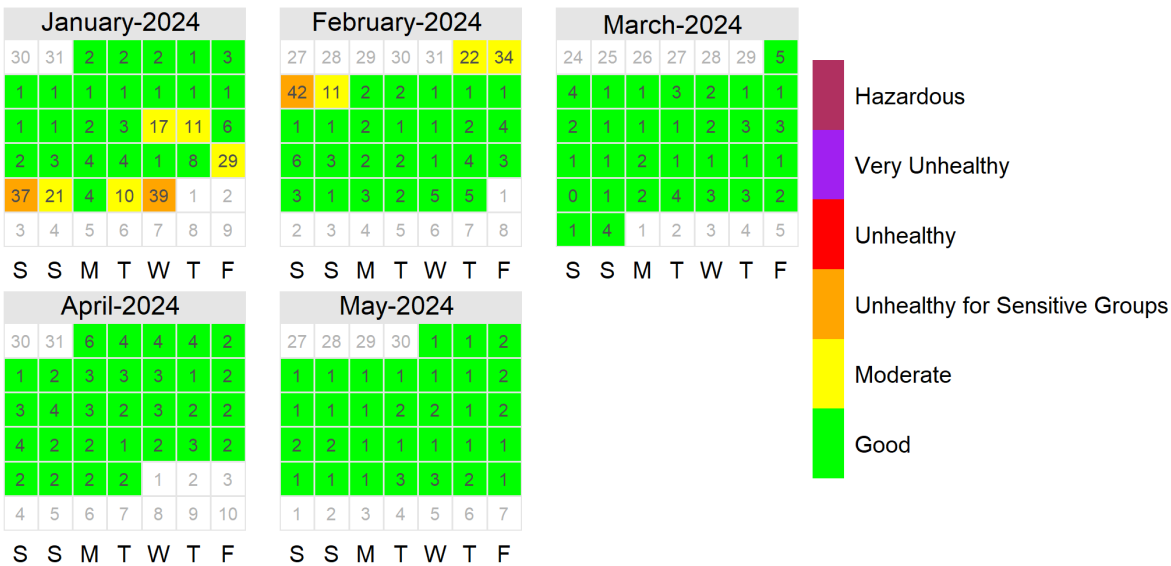


Interior – PM2.5 Air Quality Index

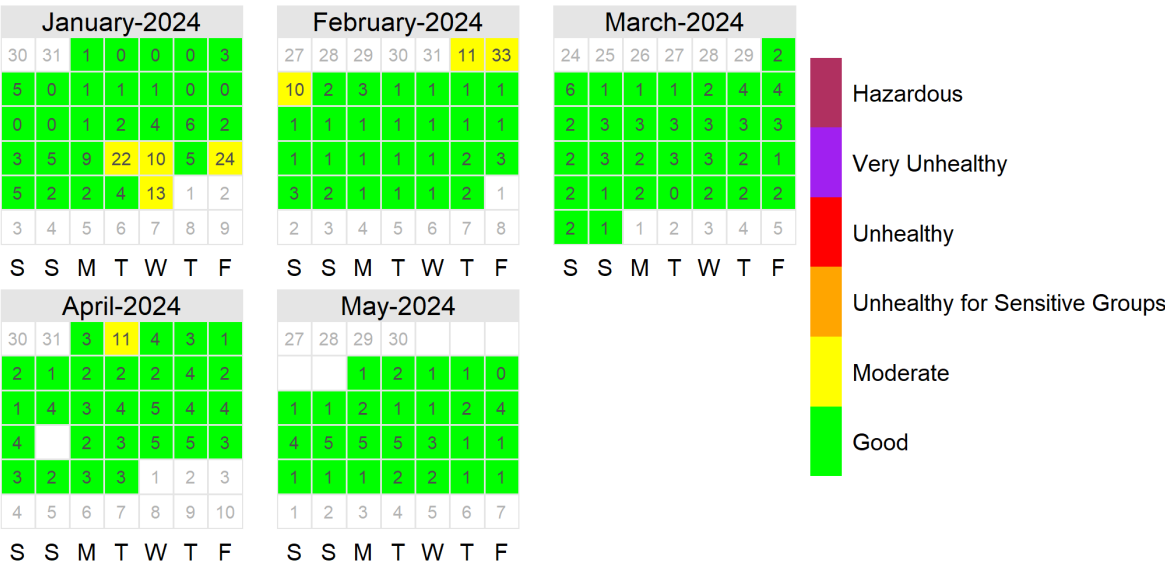
Tok Air Quality Index



Galena Air Quality Index



Delta Junction Air Quality Index



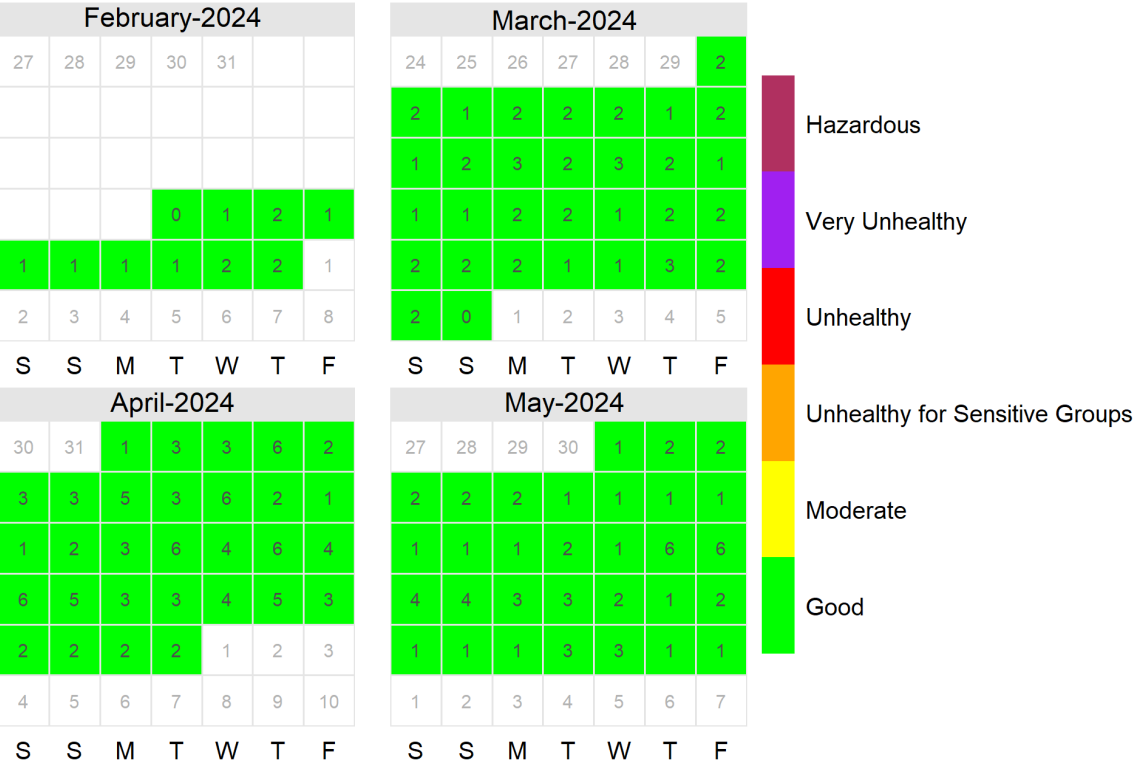
The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

- Tok February 3
- Tok May 10
- Galena January 26-27
- Galena January 31-February 2
- Galena May 10
- Delta Junction February 2-3
- Delta Junction May 1-6
- Delta Junction May 10
- Delta Junction May 19-20

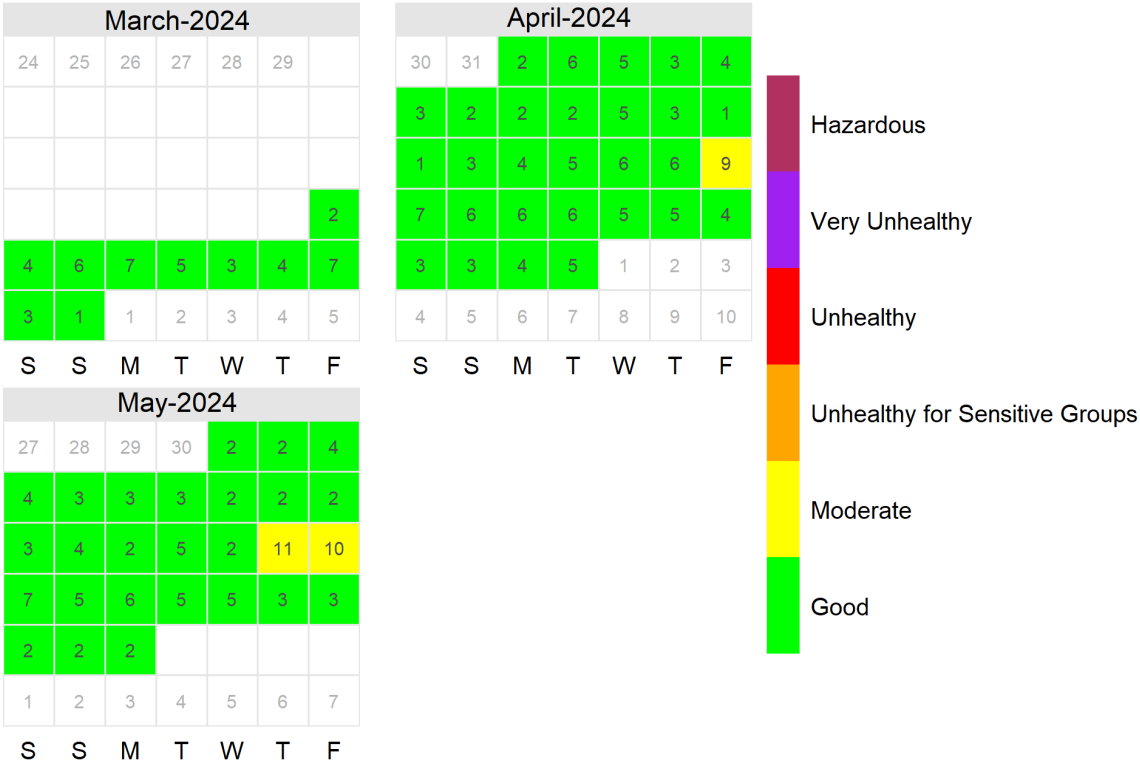


Interior- Outside of Fairbanks - PM2.5 AQI

Goldstream Sports Air Quality Index



Badger Air Quality Index



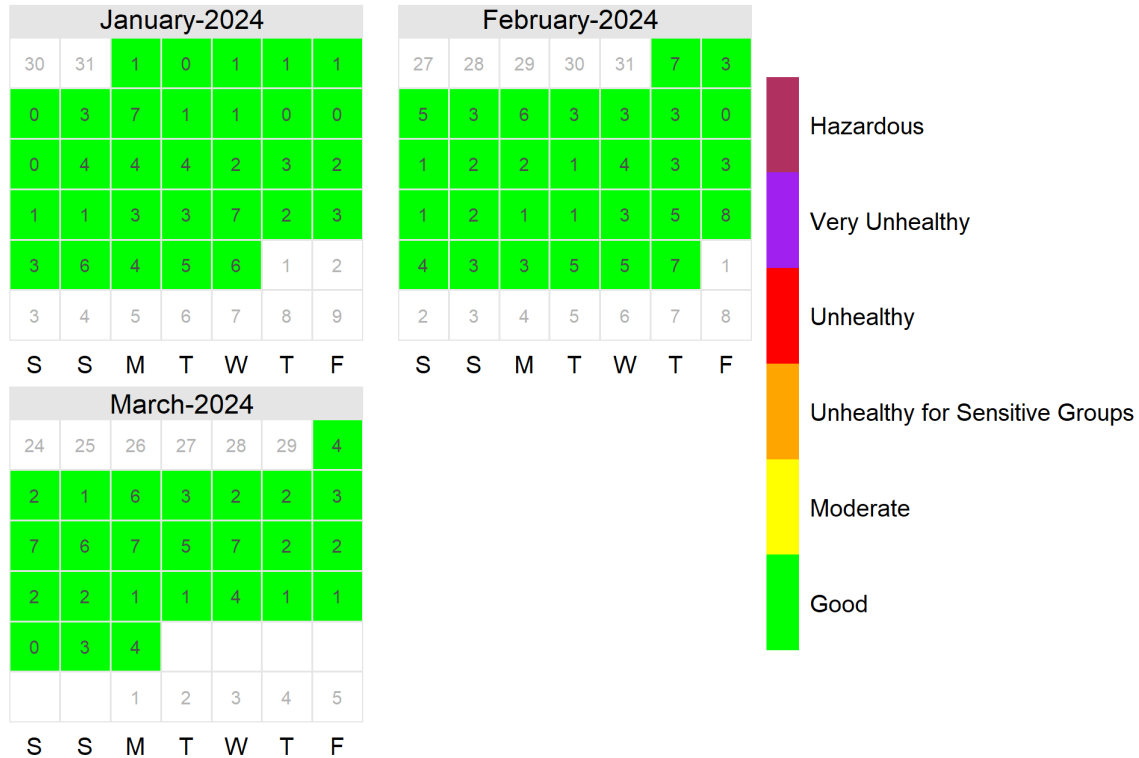
The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

- Goldstream April 5
- Goldstream May 10
- Badger May 10
- Badger May 27

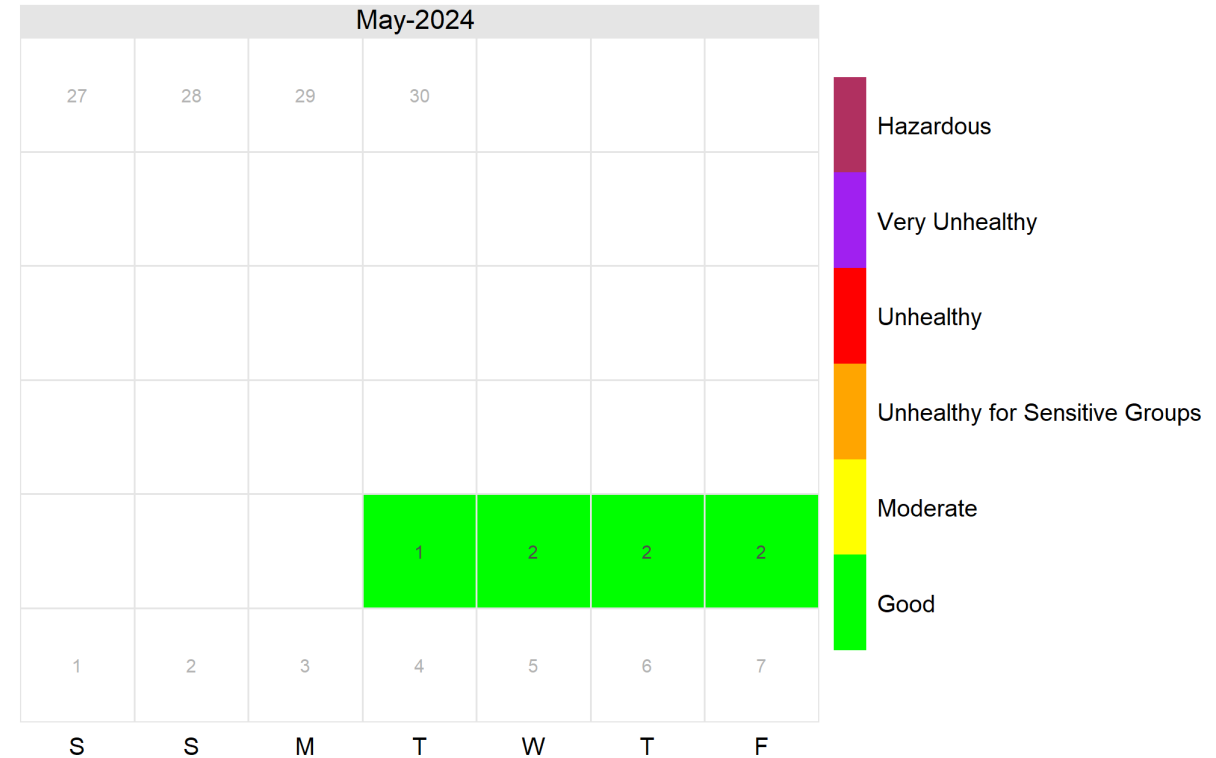


Western Alaska - PM2.5 AQI

Napaskiak Air Quality Index



Nome Air Quality Index



The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

Napaskiak February 13

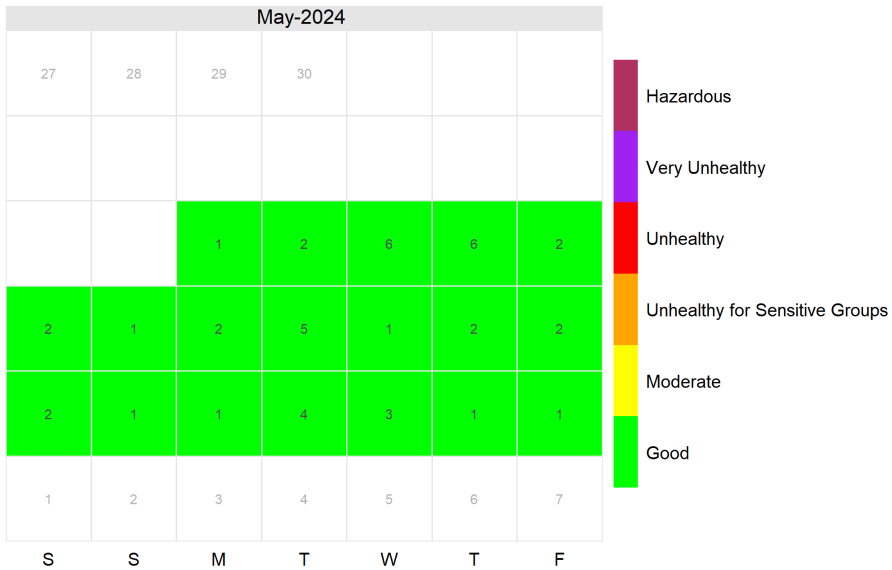
Napaskiak May 25

Nome May 28

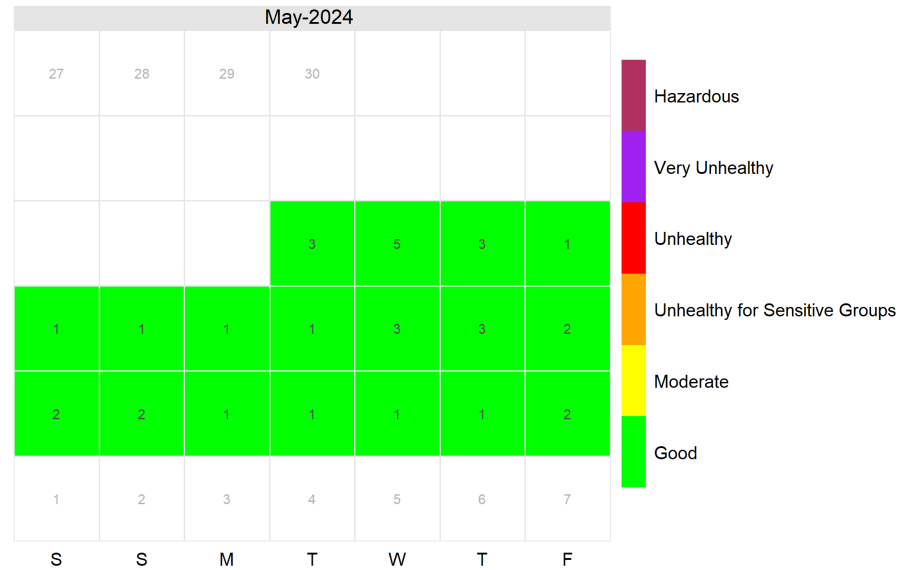


Southcentral - PM2.5 AQI

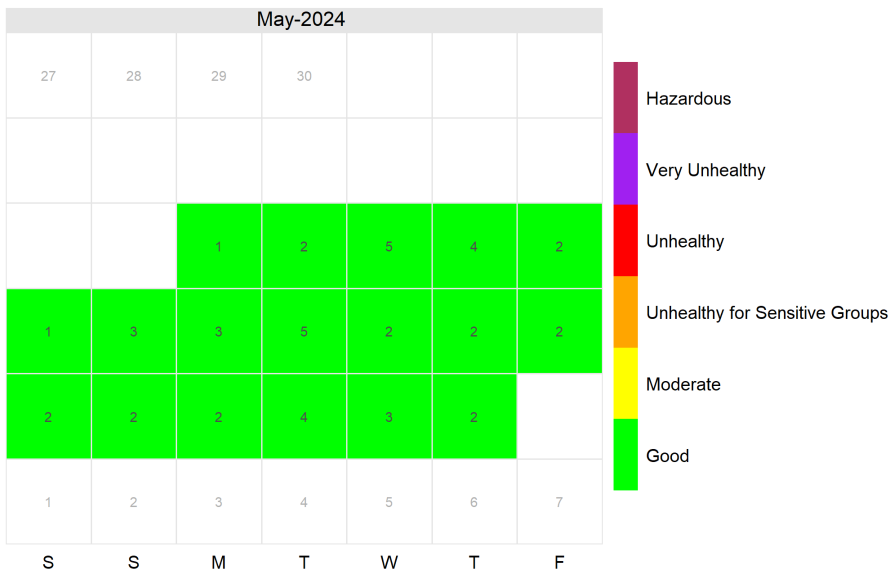
Soldotna Air Quality Index



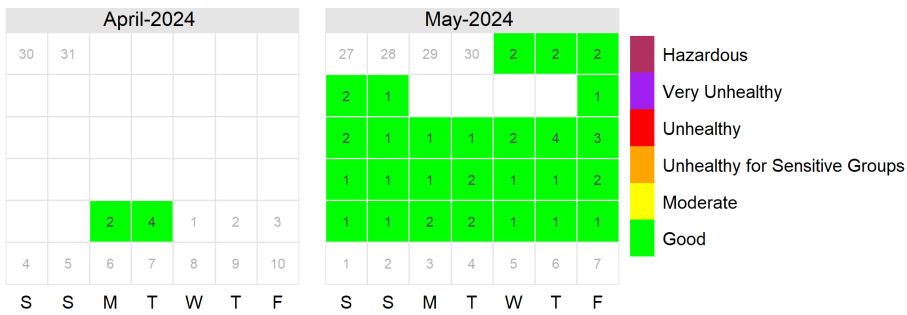
Homer Air Quality Index



Ninilchik Air Quality Index



Campbell Creek Science Center Air Quality Index



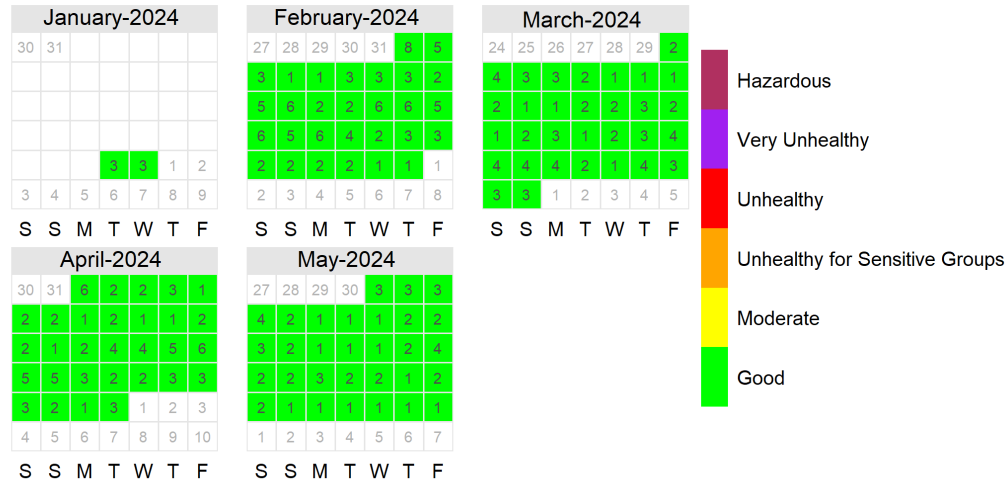
The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

- Soldotna May 13
- Homer May 14
- Homer 28-29
- Ninilchik May 13
- Campbell Creek Science Center April 29
- Campbell Creek Science Center May 5
- Campbell Creek Science Center May 10

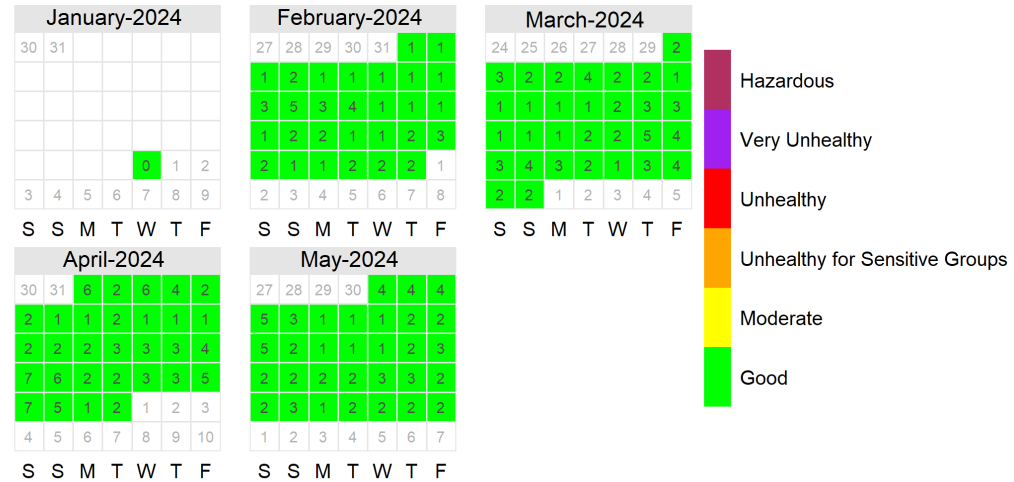


Southeast (slide 1) - PM2.5 AQI

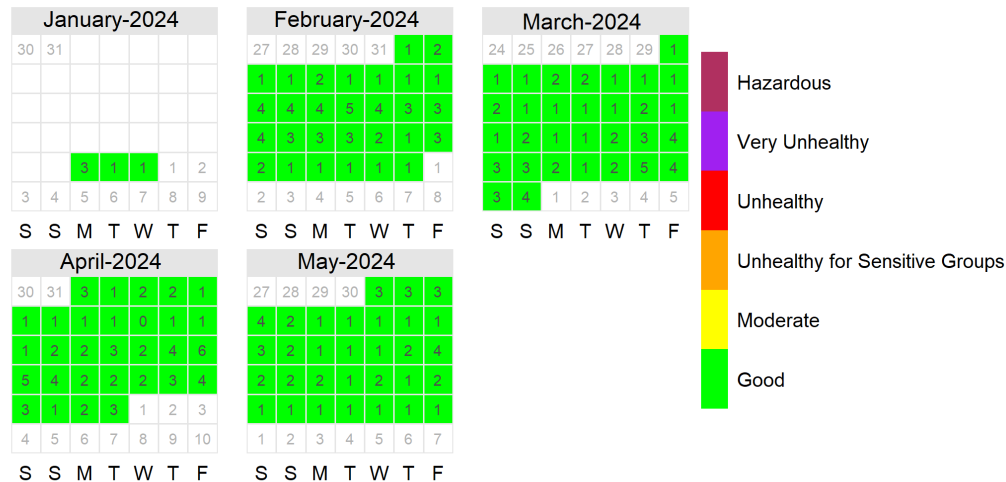
Haines Air Quality Index



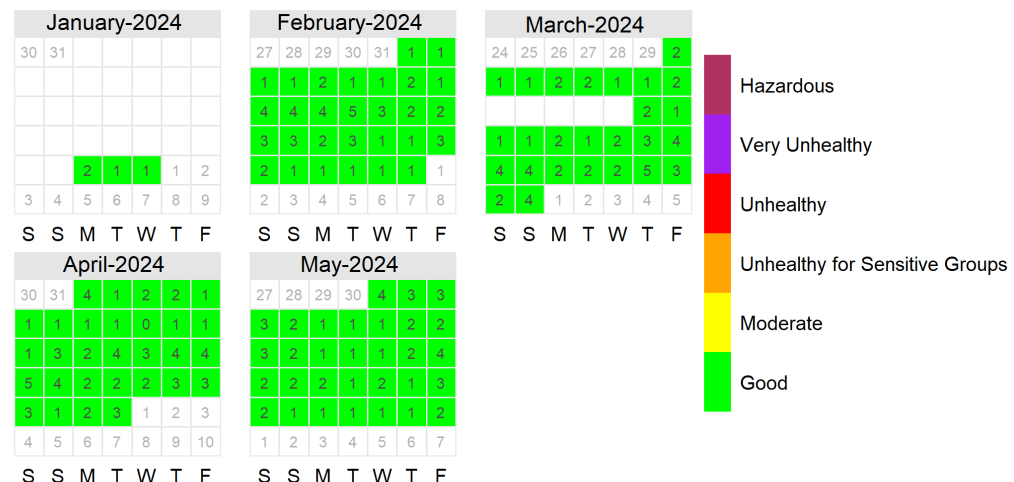
Skagway Air Quality Index



Juneau 5th Street Air Quality Index



Juneau Museum Air Quality Index

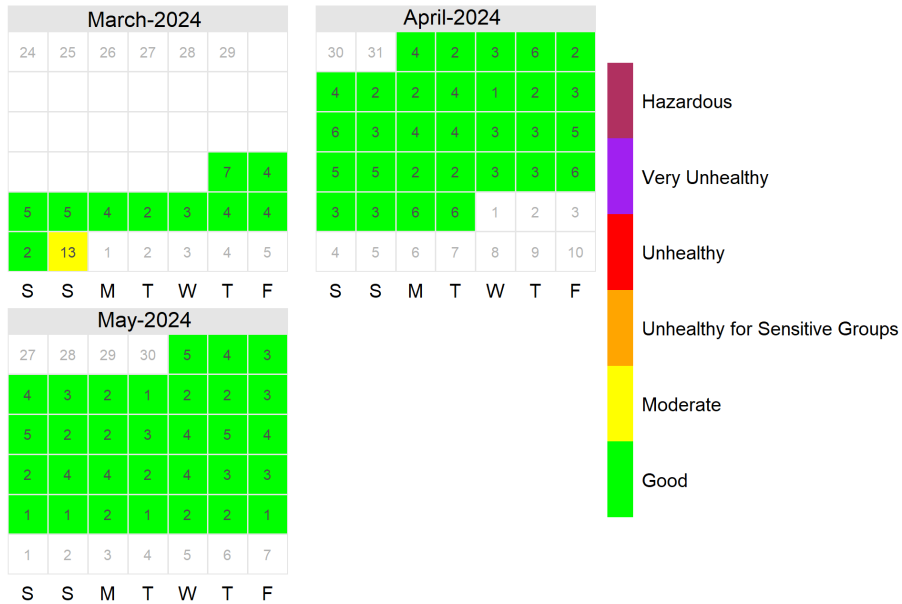


The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

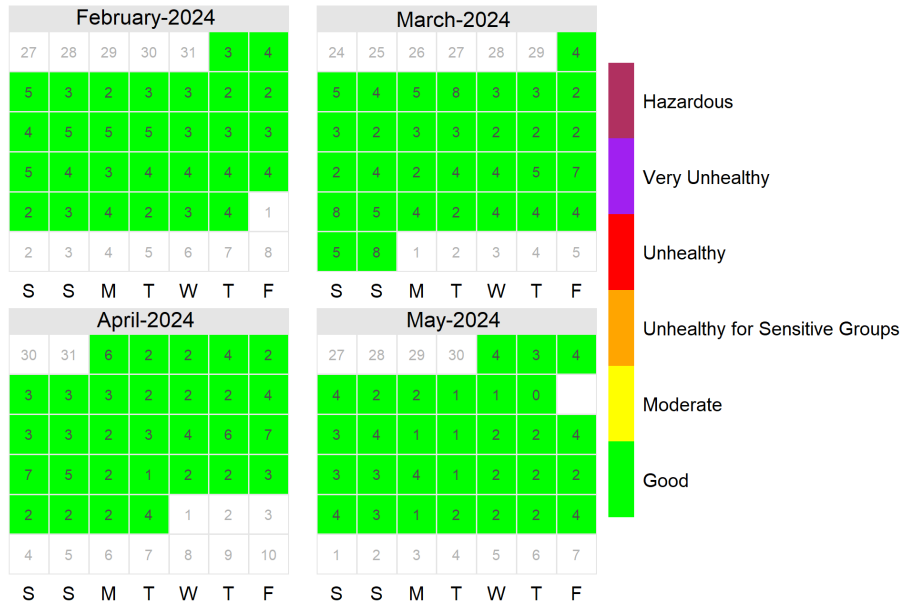
- Haines January 30
- Haines May 10
- Skagway January 31
- Skagway May 10
- Juneau 5th Street January 29
- Juneau 5th May 10
- Juneau Museum January 29
- Juneau Museum March 8
- Juneau Museum March 14
- Juneau Museum May 10

Southeast (slide 2) - PM2.5 AQI

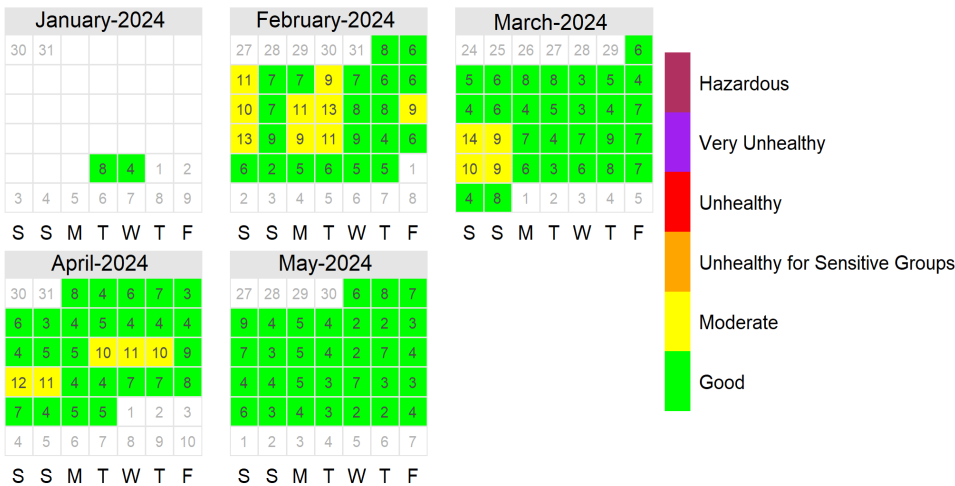
Sitka Air Quality Index



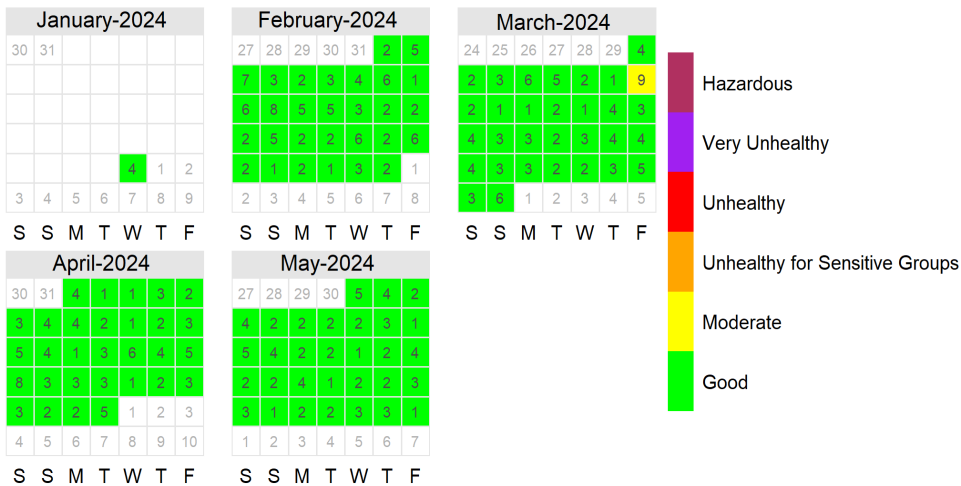
Wrangell Air Quality Index



Hoonah Air Quality Index



Ketchikan Air Quality Index



The following days' AQI calculations were made with less than 18 hours of valid data for the 24-hour period:

- Sitka March 22
- Sitka May 10
- Wrangell February 1
- Wrangell February 7-8
- Wrangell May 3
- Wrangell May 5-6
- Wrangell May 10
- Wrangell May 21-22
- Hoonah January 30
- Hoonah May 10
- Hoonah May 29
- Ketchikan January 31
- Ketchikan March 11
- Ketchikan May 10





Rowing in the same direction

- ▶ **Looking for Community Champions**
 - ▶ Finding a location and deployment
 - ▶ Receive training on sensor
 - ▶ Join the network! On the map, network calls, semiannual data reports
 - ▶ Data available at request
- ▶ **We want to host your air quality data on our website!**
- ▶ **Researching new sensor technology**
- ▶ **DEC sensor network collaboration**
 - ▶ Contact us for direct collaboration
 - ▶ Future calls and knowledge share
 - ▶ Semiannual data report- what do you want to see?



Local Air Quality Observations

Link for: [Local Air Quality Observations jotform](#)

Local Air Quality Observations

This form serves as a repository for Alaska Department of Environmental Conservation's Air Monitoring and Quality Assurance (DEC AMQA) team to collect observations on local conditions or events in a community that may impact air quality or air quality sensor data validity.

What community sensor do you have a local observation for? *

Please Select

What time does this local condition/event start?

MM-DD-YYYY

HH : MM

PM

Date

Hour Minutes

What time does this local condition/event start?

MM-DD-YYYY

HH : MM

PM

Date

Hour Minutes

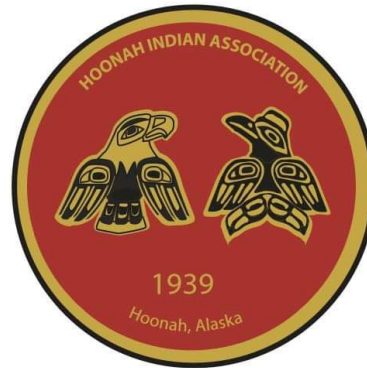
What local condition or event occurred?

Please Select

Please provide any additional details about what you observed if you have any. For example: does this observation seem out of the norm for your local community?



Thank you to our community partners!

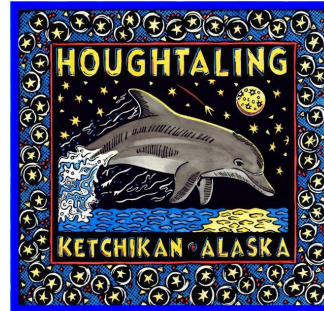
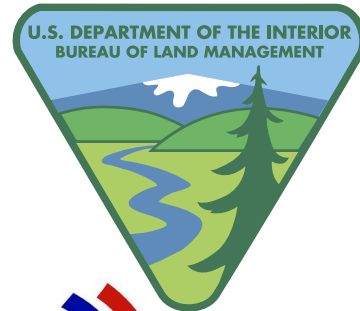


**NORTON SOUND
HEALTH CORPORATION**



Kenai Peninsula College
UNIVERSITY of ALASKA ANCHORAGE

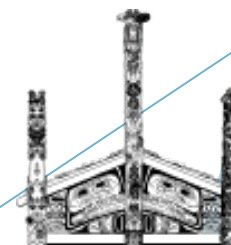
- ▶ Cathedral of the Nativity of the Blessed Virgin Mary
- ▶ Tok Community Library
- ▶ Ninilchik Library
- ▶ Soldotna Seniors Center



**ALASKA STATE
LIBRARIES
ARCHIVES
& MUSEUM**



Kodiak Island Borough



**Ketchikan
INDIAN COMMUNITY**



Questions

- ▶ Next quarterly call date: September 10th @ 10-11am. Link in chat will take you to registration and will be emailed to our contact list.
- ▶ Visit our Air Quality website: <https://dec.alaska.gov/air/air-monitoring/responsibilities/database-management/alaska-air-quality-real-time-data/> (or Google 'Alaska air quality' and look for DEC AQI link)
- ▶ Contact info is in chat and in QR code

Resources

- ▶ Not sure what sensor to buy?
 - ▶ EPA Air Sensor Toolbox: epa.gov/air-sensor-toolbox
 - ▶ South Coast AQMD's AQ-SPEC program and evaluations: aqmd.gov/aq-spec
 - ▶ Contact us!
- ▶ ANTHC's PurpleAir program – contact Ida Clark
- ▶ Register for next call: <https://events.gcc.teams.microsoft.com/event/37ff7fb8-e60f-4027-8a46-71875dac05d1@20030bf6-7ad9-42f7-9273-59ea83fcfa38>

Contact us

