

ADEC's Community-Based Air Sensor Network

Quarterly Call
June 11, 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





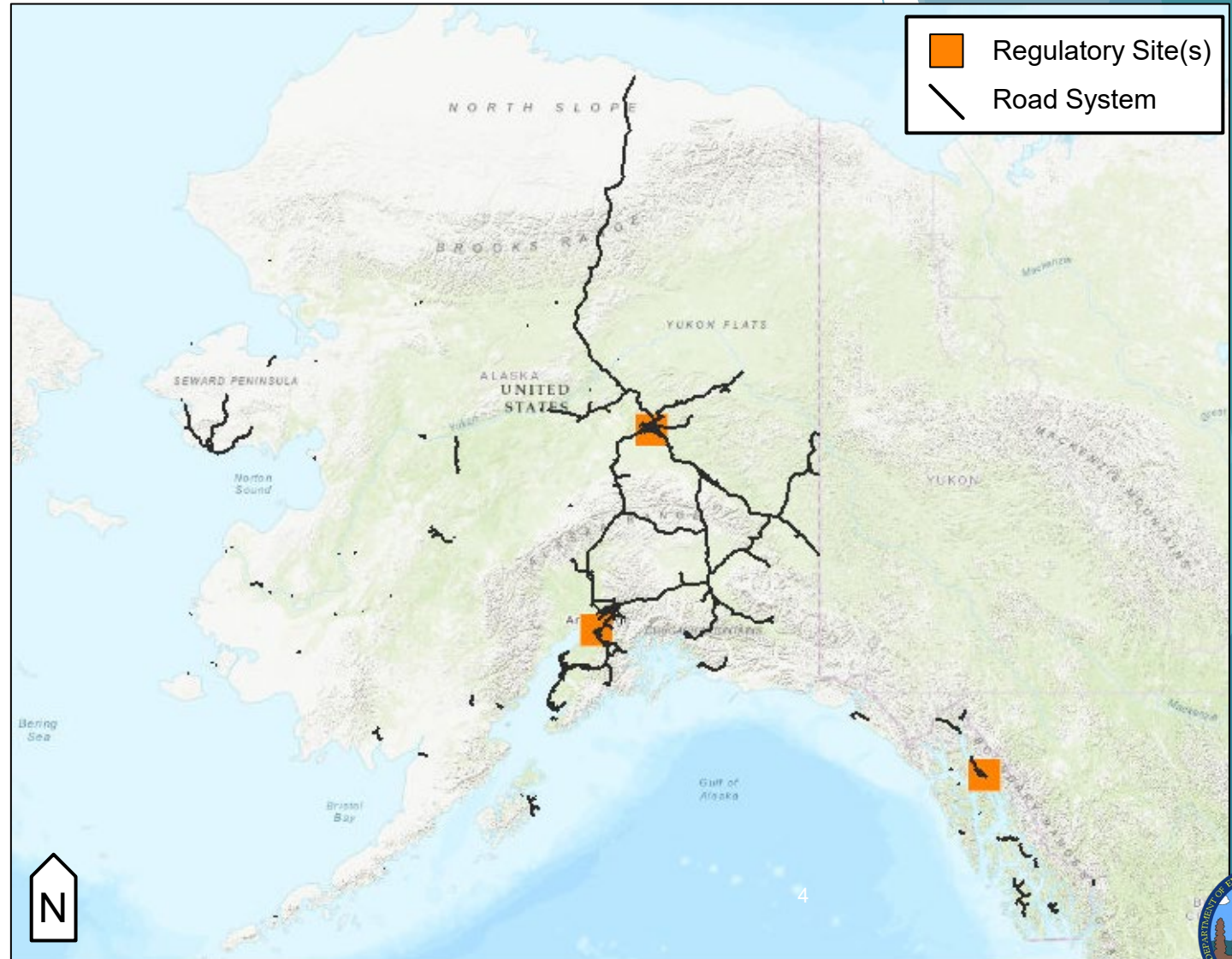
Focus of this call

- ▶ Quarterly calls
 - ▶ Next is Sept 10th at 10 am
 - ▶ 3-year project
- ▶ Share DEC updates
- ▶ Get input
- ▶ Workgroup style – discussion is encouraged!

Share Alaskan-based expertise

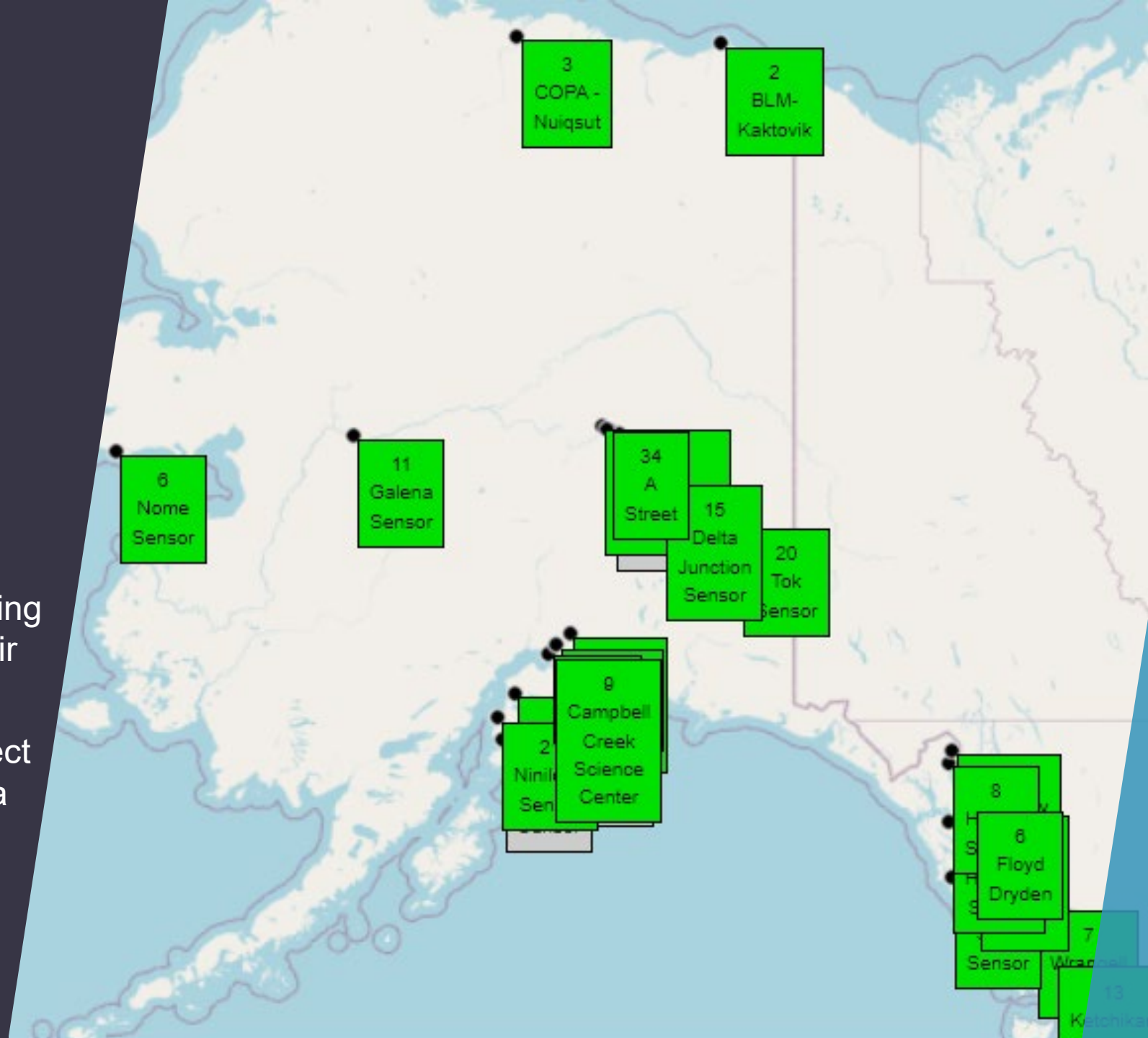
DEC's Regulatory Network

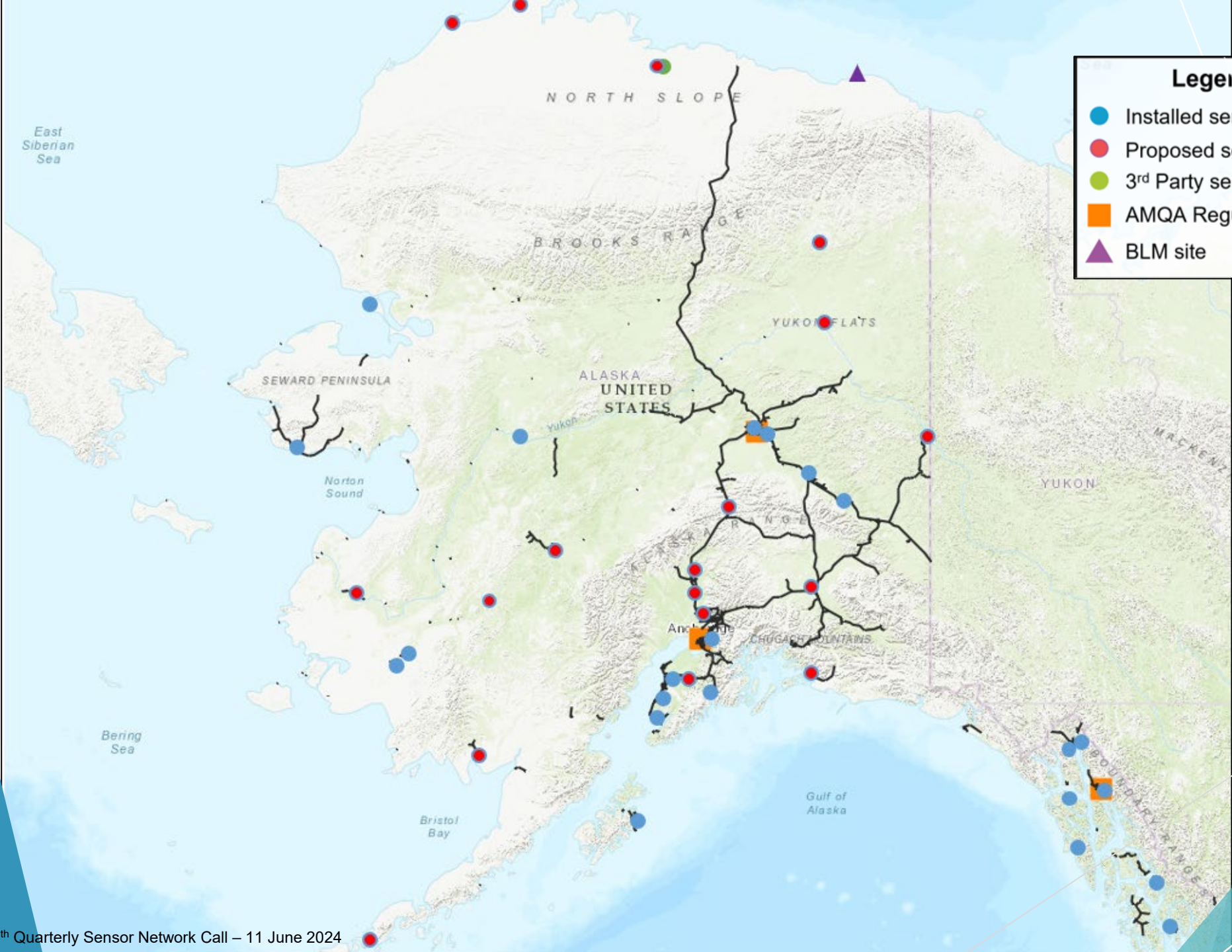
- ▶ Regulatory stations in 3 Metropolitan Statistical Areas (MSAs)
 - ▶ Anchorage / Mat-Su (4 sites)
 - ▶ Fairbanks (3 sites)
 - ▶ Juneau (1 site)
- ▶ Monitor criteria pollutants:
 - ▶ Particulate matter (PM_{2.5} and PM₁₀)
 - ▶ Gases:
 - ▶ Carbon monoxide (CO)
 - ▶ Nitric oxide (NO)
 - ▶ Ozone (O₃)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

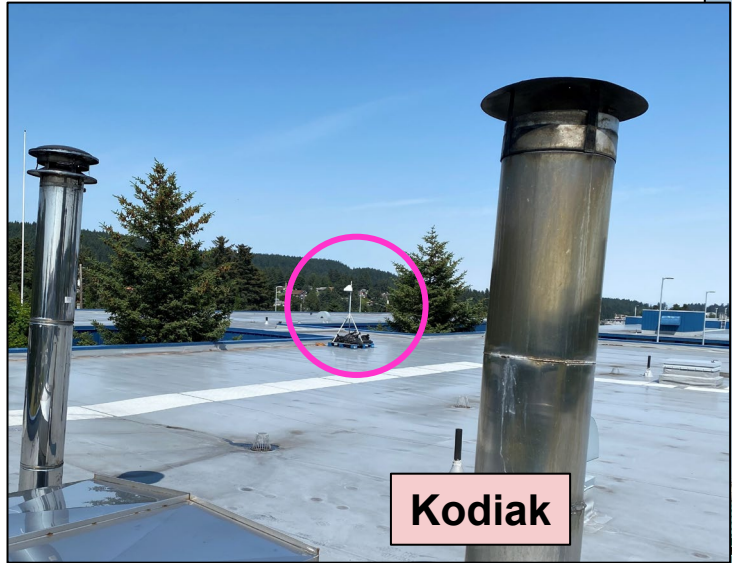




Bethel



Kotzebue



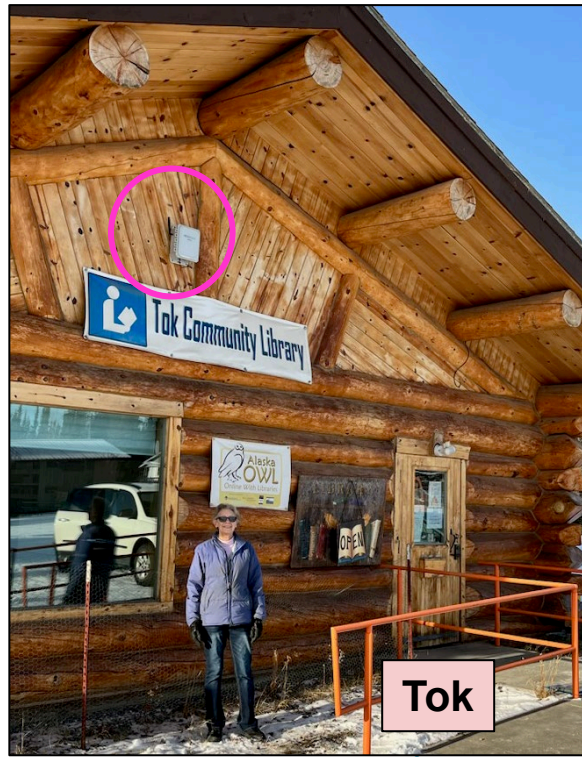
Kodiak



Napaskiak



Goldstream



Tok



Galena



Haines



Ketchikan



Skagway



Hoonah



Delta Junction



Kenai Peninsula Campaign

May/June 2024

Deployed **new** sensors in:

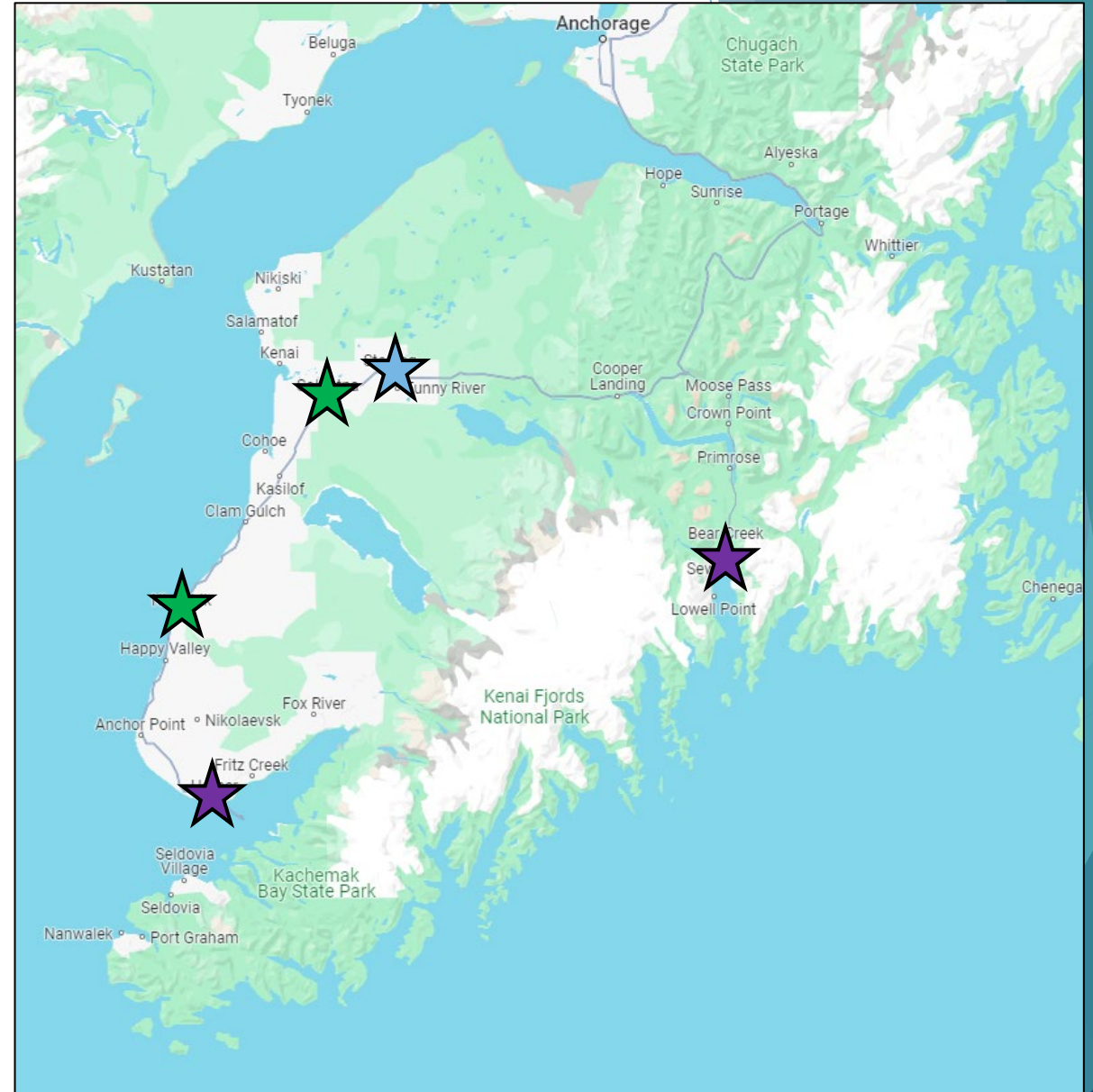
- Soldotna
- Ninilchik

Replaced sensors in:

- Homer
- Seward

Planned sensors in:

- Sterling



New deployments!



Soldotna



Homer Quant Upgrade



Ninilchik



Seward Quant Upgrade



New deployments!



Nome



Campbell Creek Science Center



Sitka



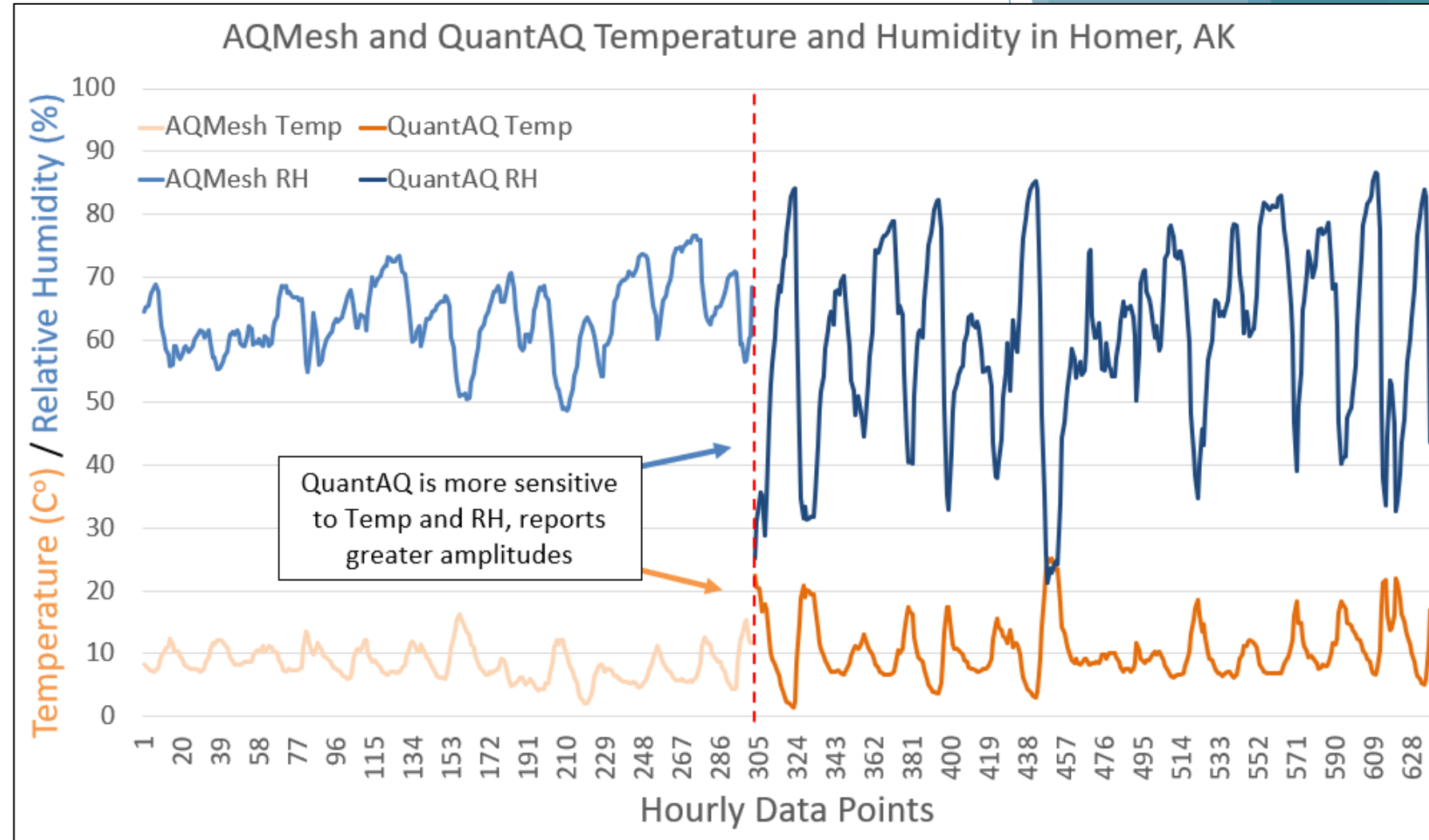
Badger



Upgrading Sensors For Better Performance

More accurate sensors enable better understanding of local air quality.

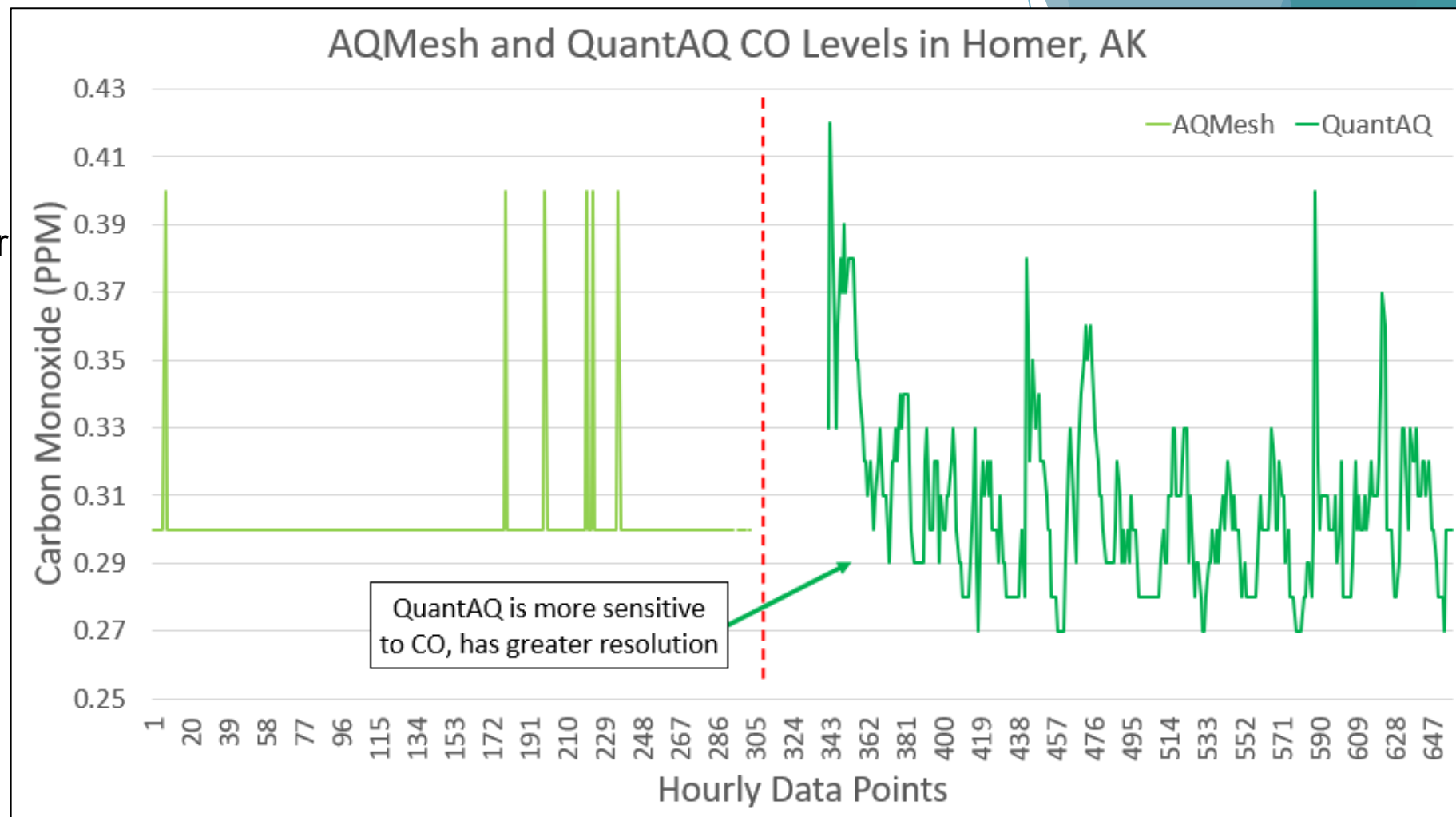
- More accurate determination when air quality reaches unsafe levels
- Better understanding of how pollutant concentration changes over time and space



Upgrading Sensors For Better Performance

More accurate sensors enable better understanding of local air quality.

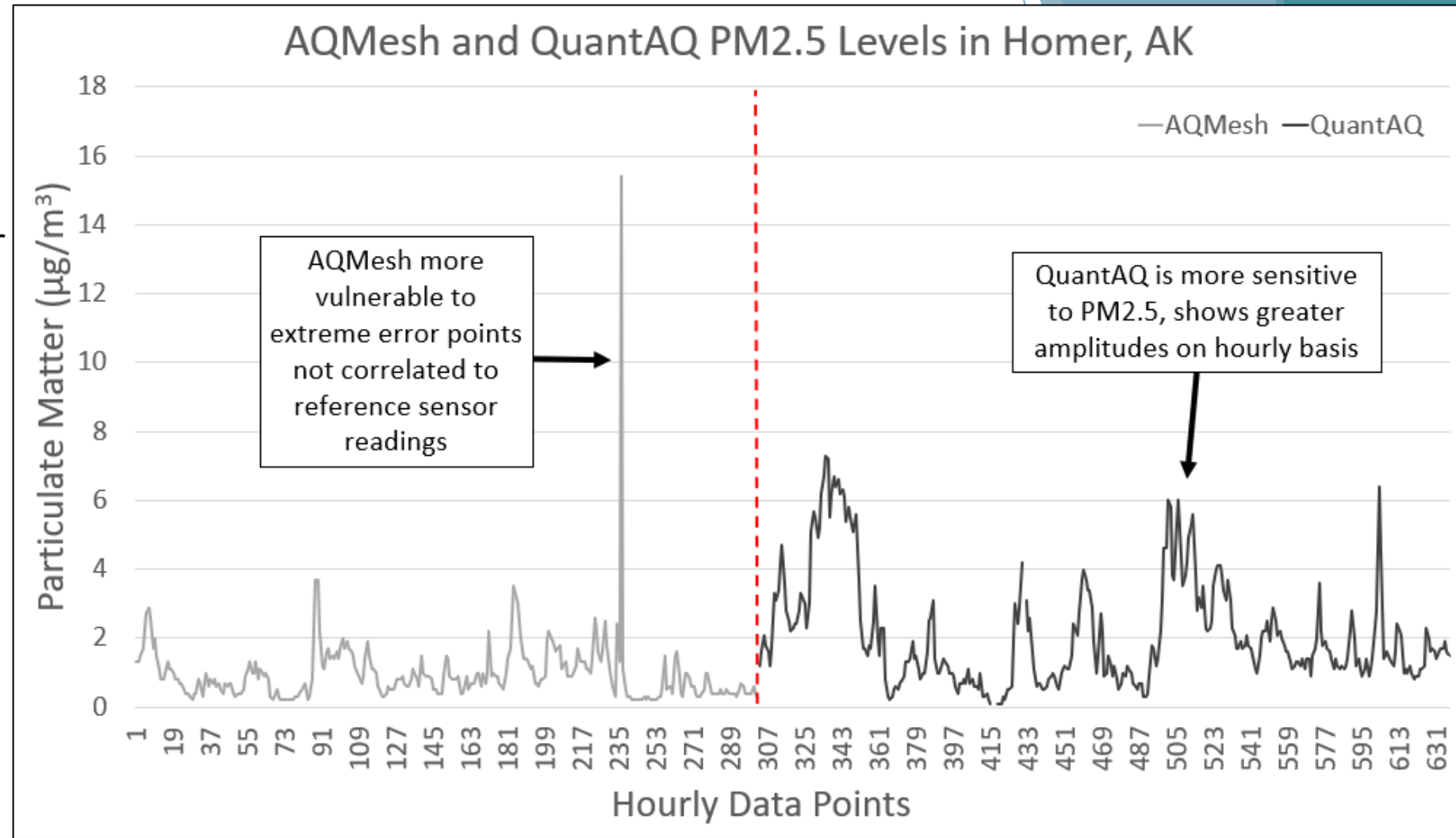
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Upgrading Sensors For Better Performance

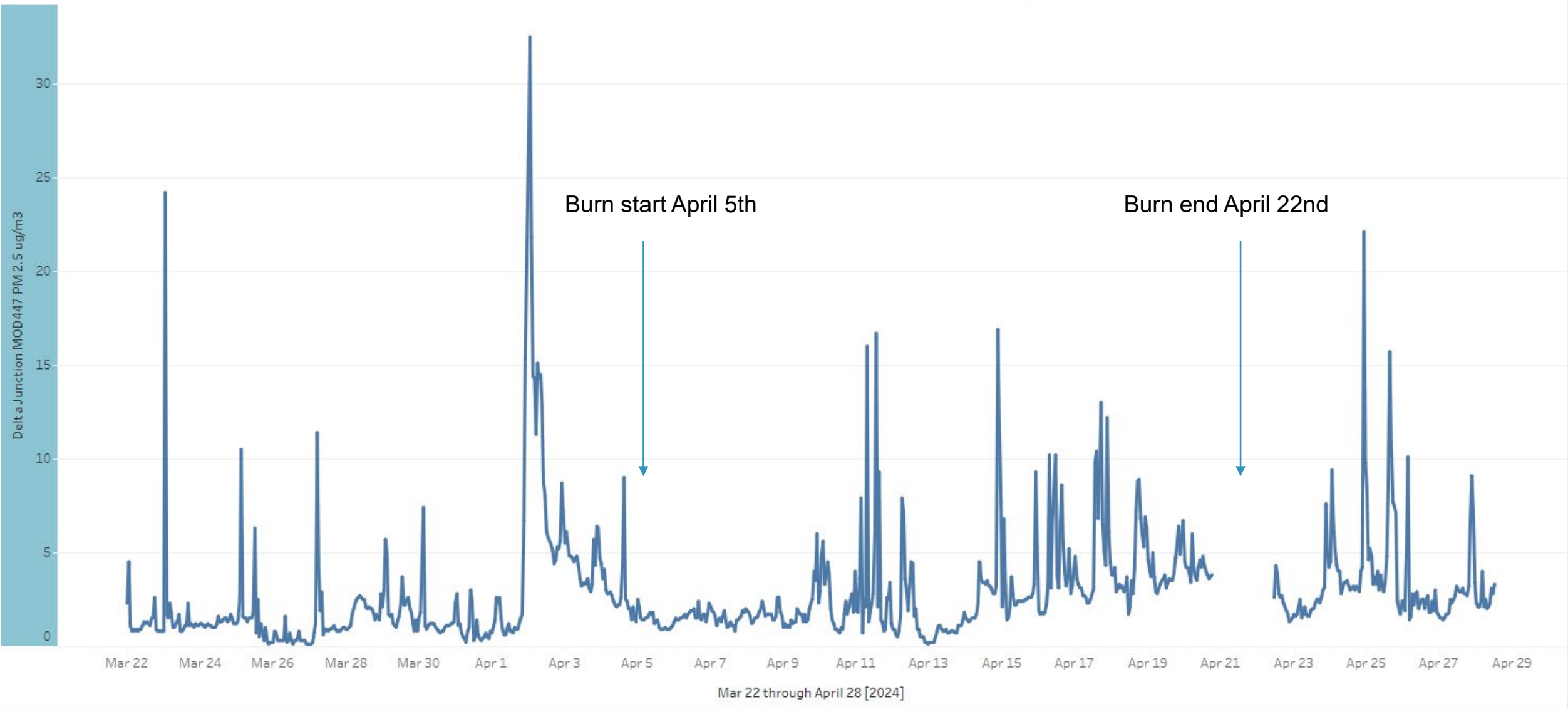
More accurate sensors enable better understanding of local air quality.

- 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

Delta Junction Burn Data Mar 22 through Apr 28 2024



QuantAQ Early Insights – Sensors by Ecoregion

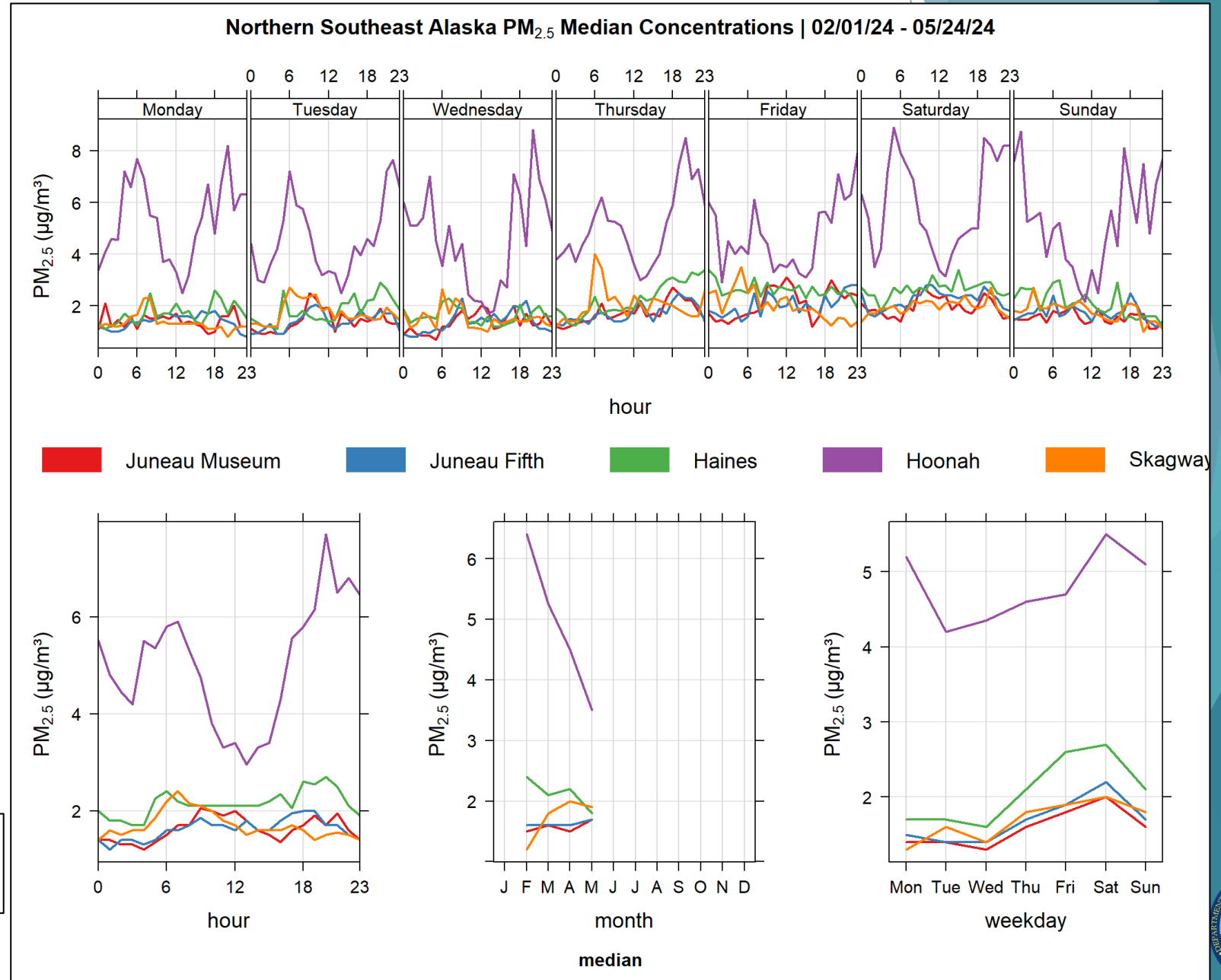
Quants in SE & Interior Alaska were deployed over the winter.

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.

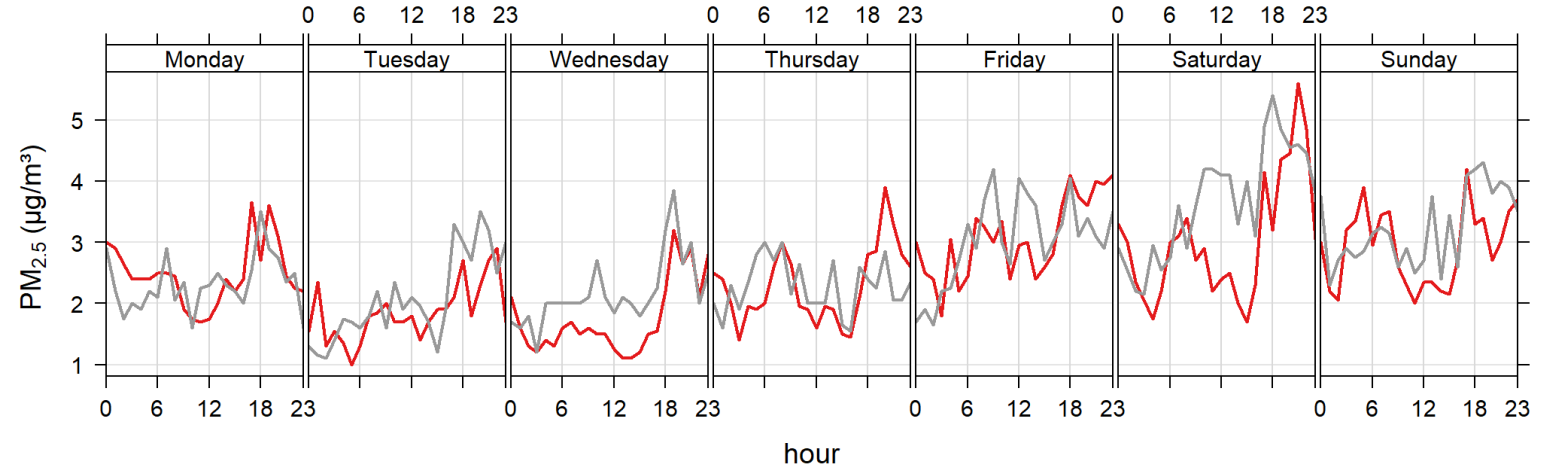
Hourly Maximum PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)

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



QuantAQ Early Insights – Southern Southeast Ecoregion

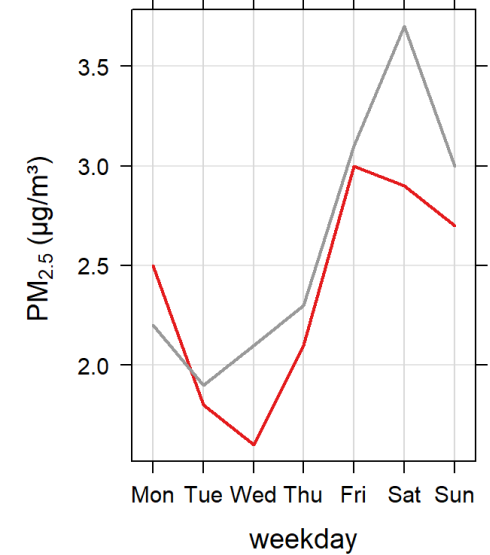
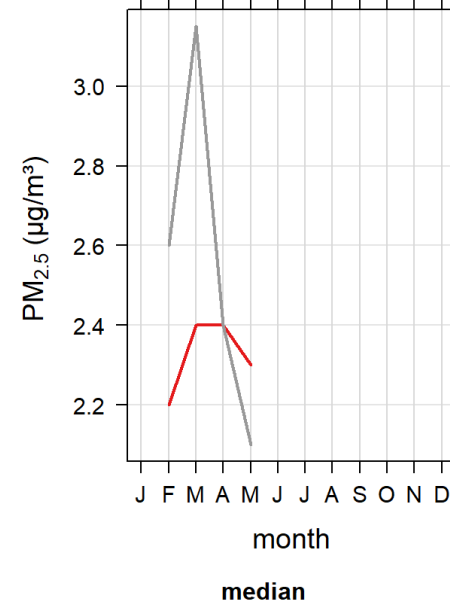
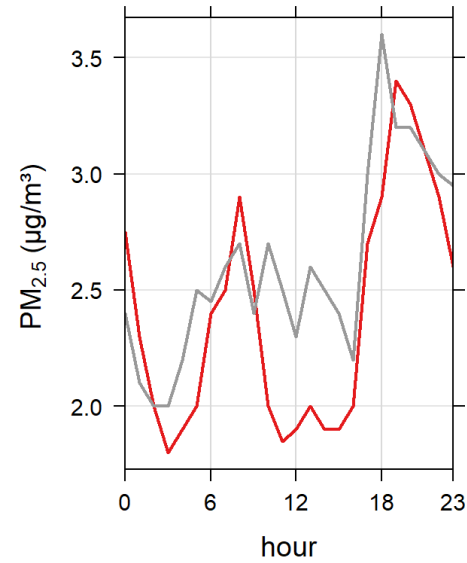
Southern Southeast Alaska PM_{2.5} Median Concentrations | 02/01/24 - 05/24/24



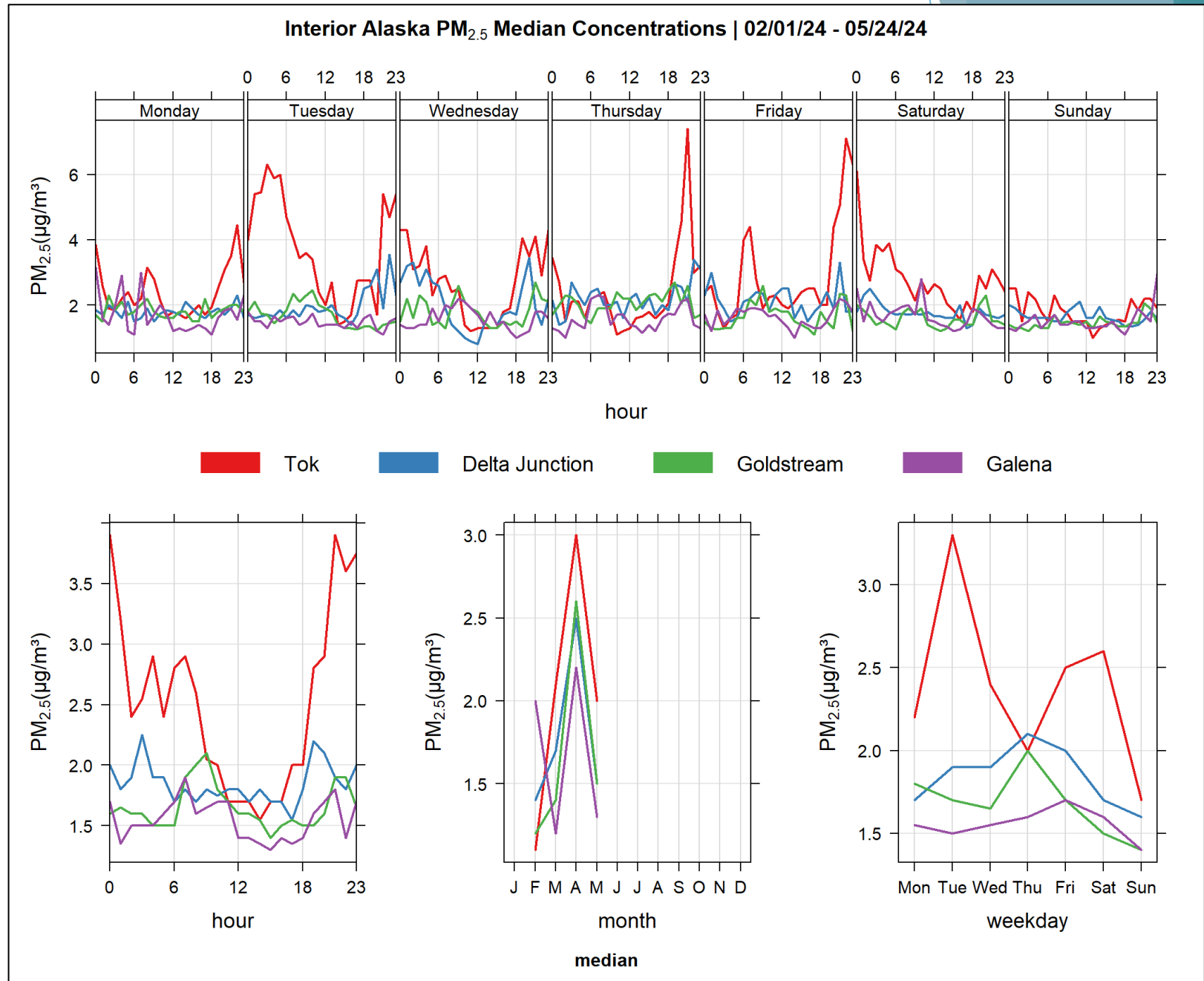
Hourly Maximum PM_{2.5} Concentration (µg/m³)

Ketchikan	Wrangell
44.2	21.1

■ Ketchikan ■ Wrangell

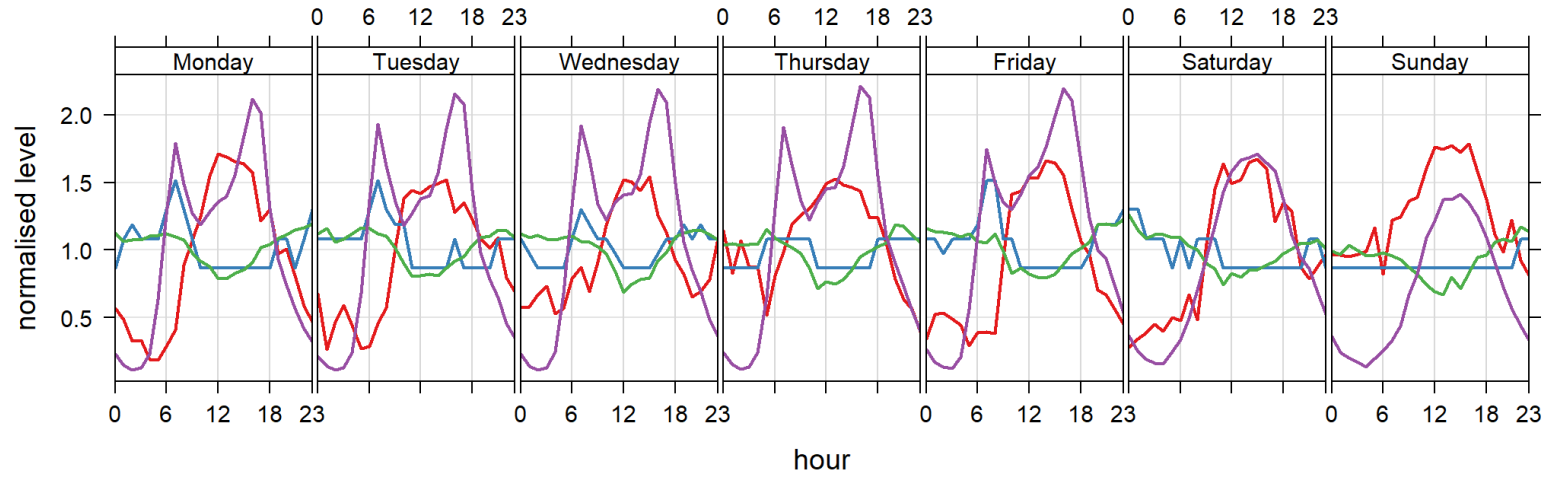


QuantAQ Early Insights – Interior Ecoregion

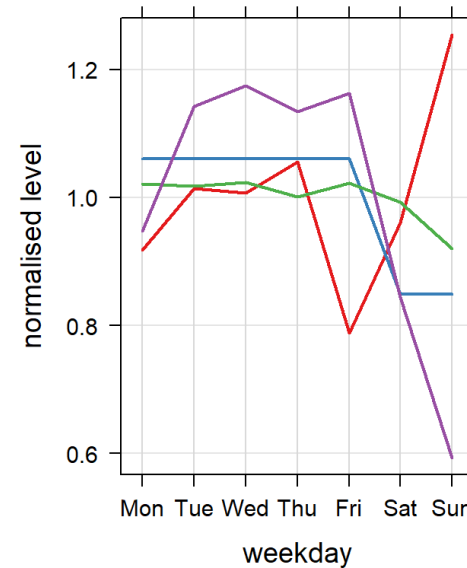
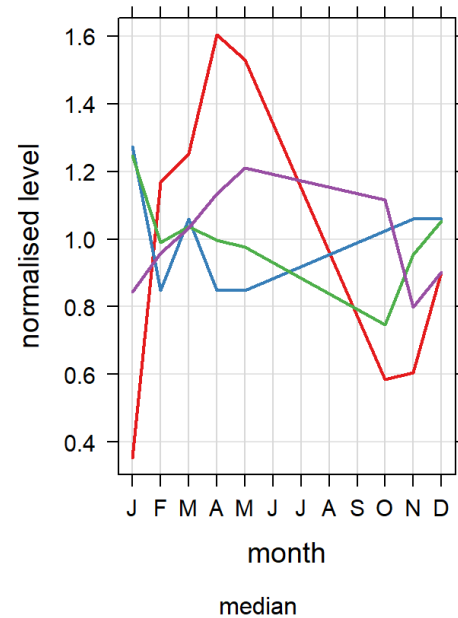
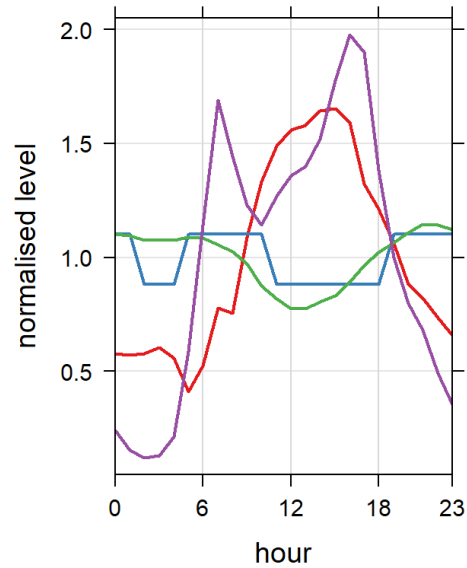


QuantAQ Early Insights – Sensors vs. Traffic

Anchorage Garden Quant vs Traffic Flow @ Glenn Hwy x Bragaw St. | 10/03/23 - 05/24/24



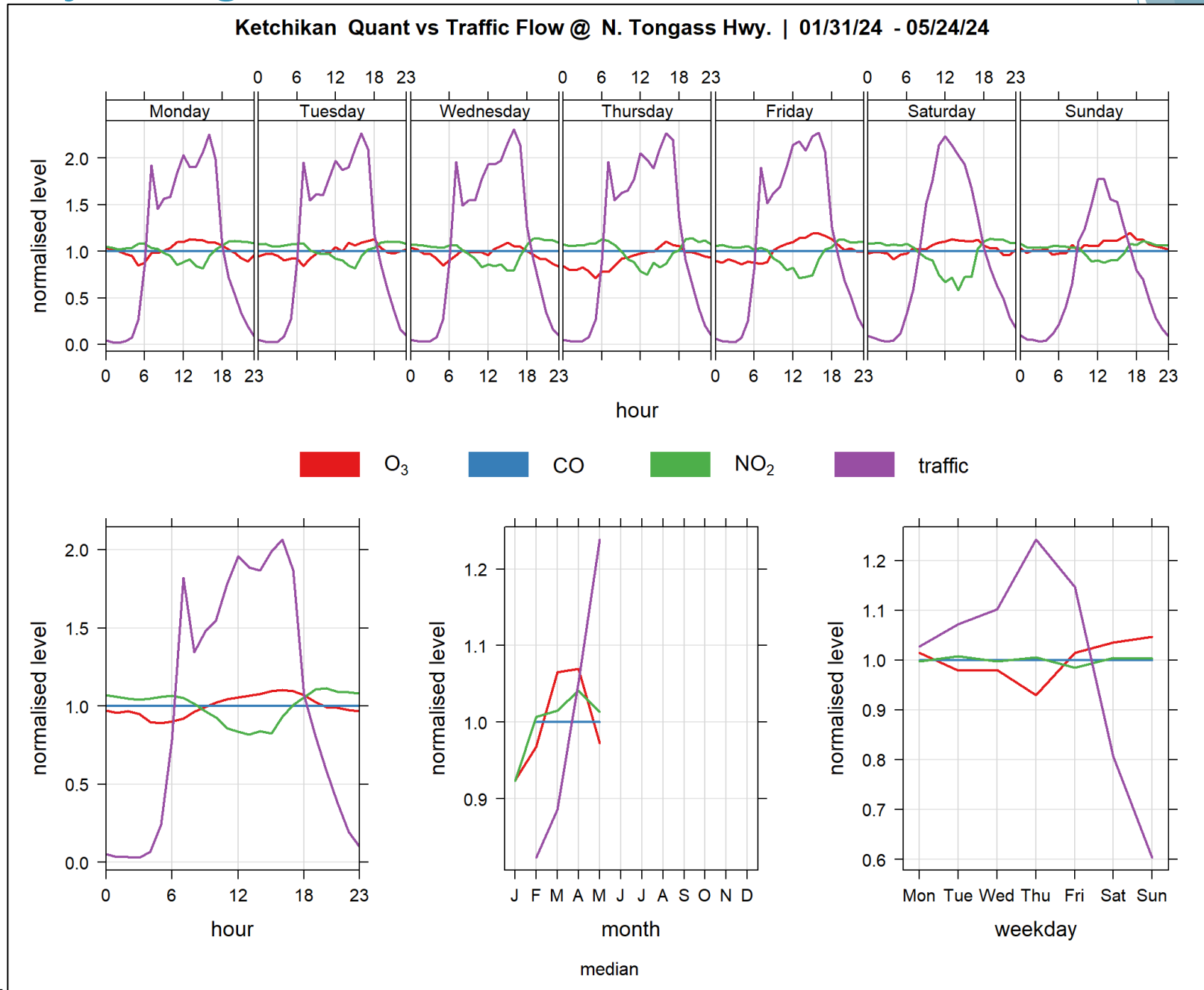
■ O₃
 ■ CO
 ■ NO₂
 ■ traffic



DOT Traffic Data



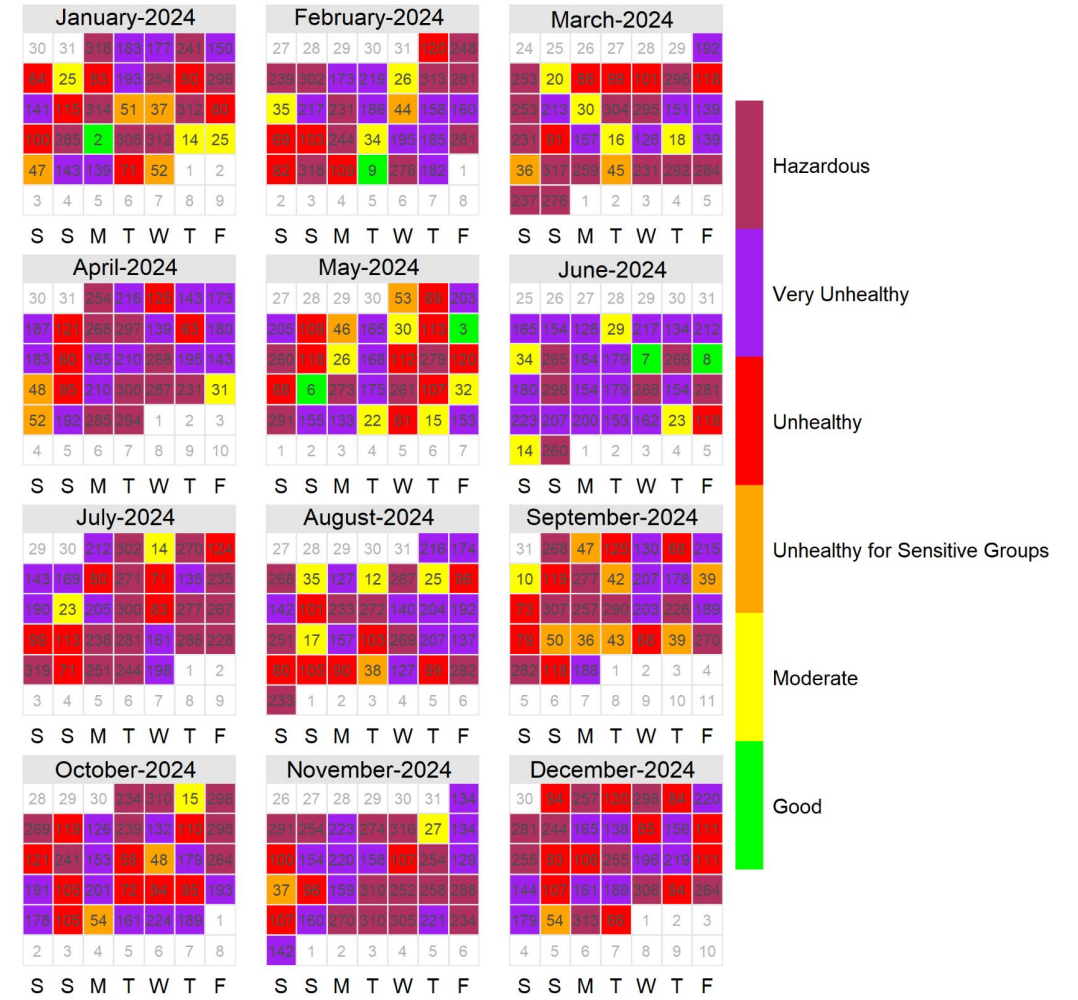
QuantAQ Early Insights – Sensors vs. Traffic



Greenville Air Quality Index

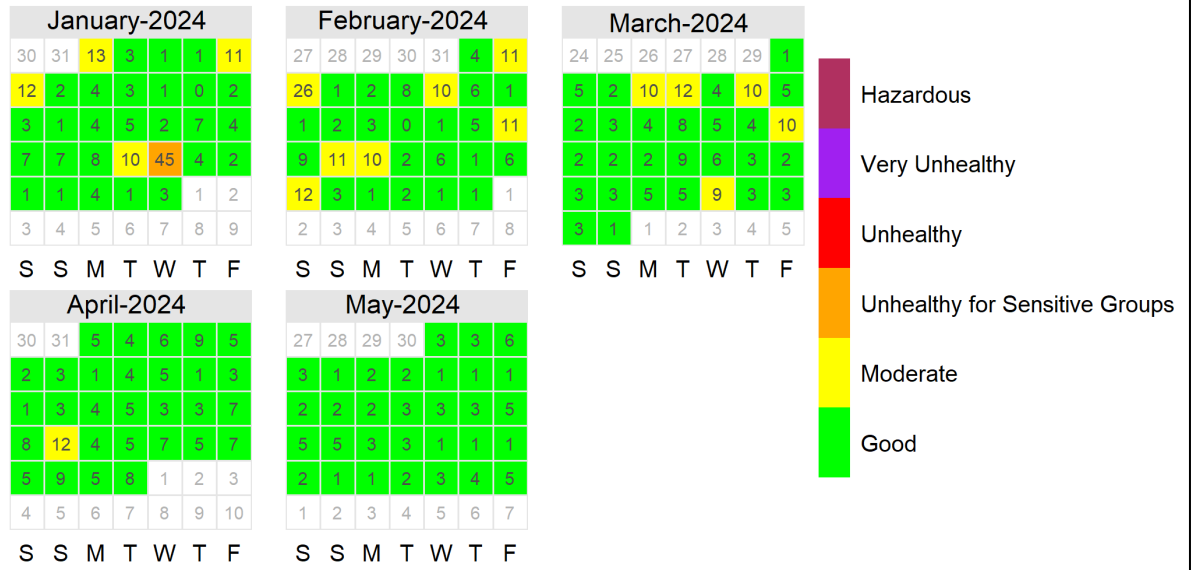


Smogsville Air Quality Index

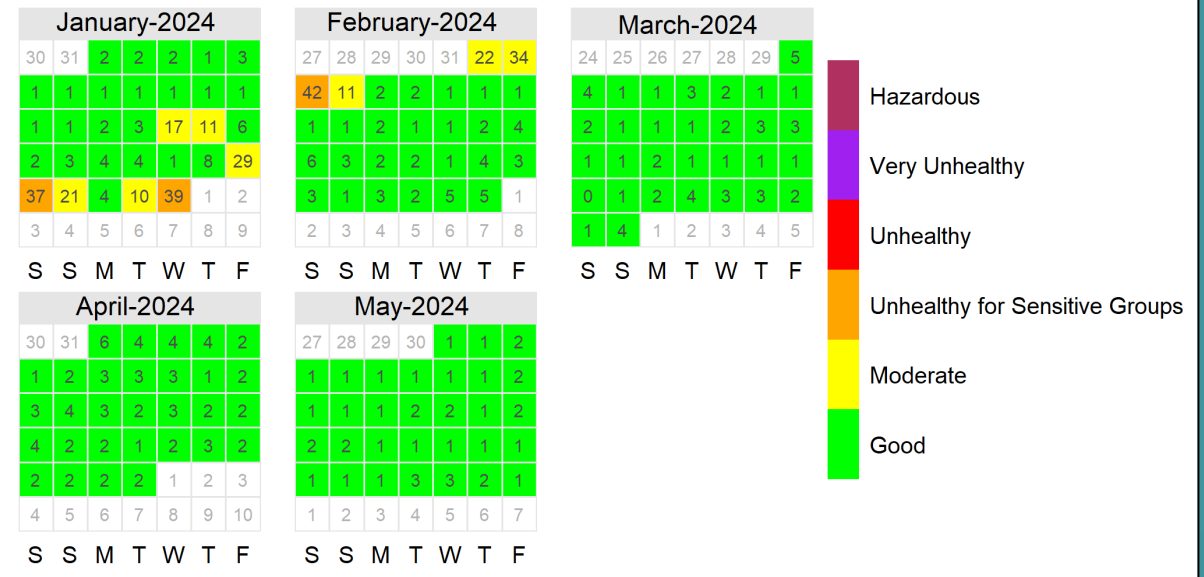


Interior – PM2.5 Air Quality Index

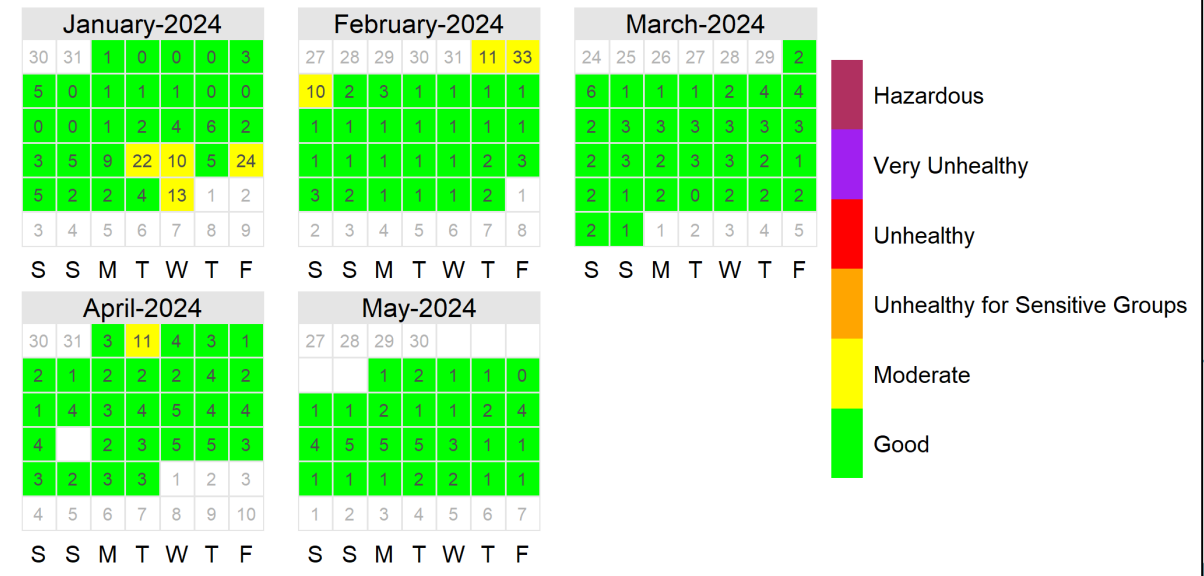
Tok Air Quality Index



Galena Air Quality Index

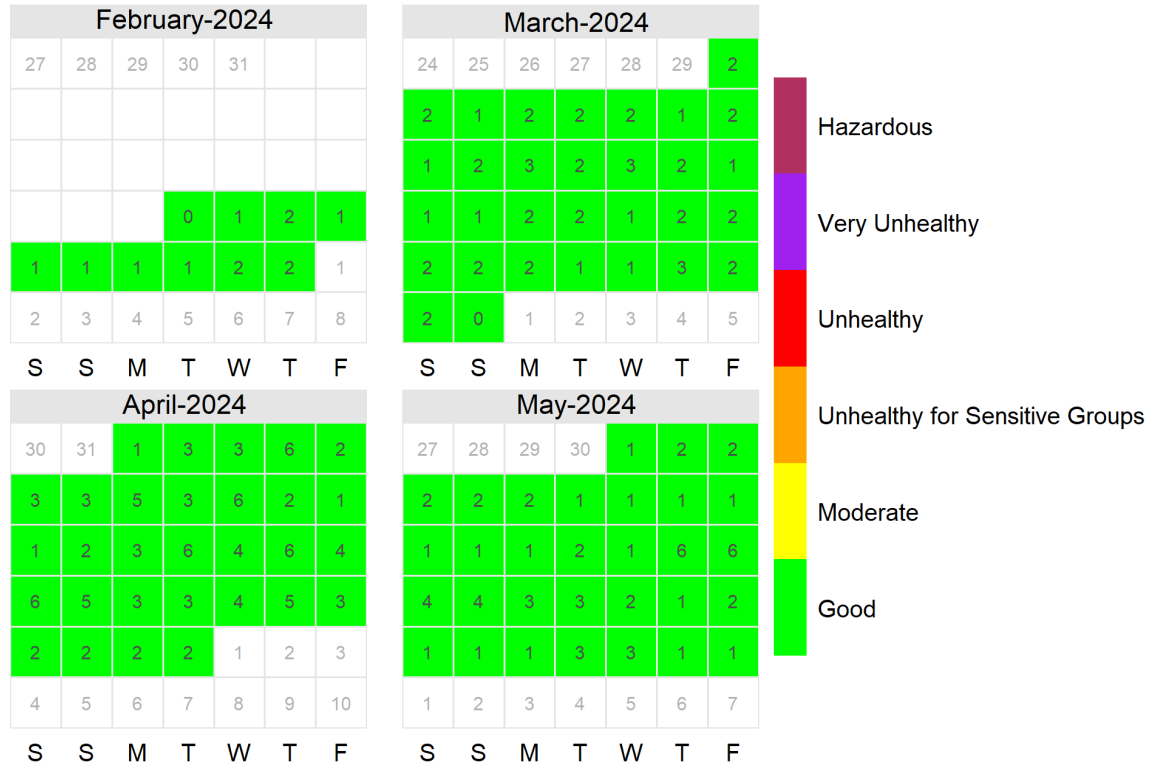


Delta Junction Air Quality Index

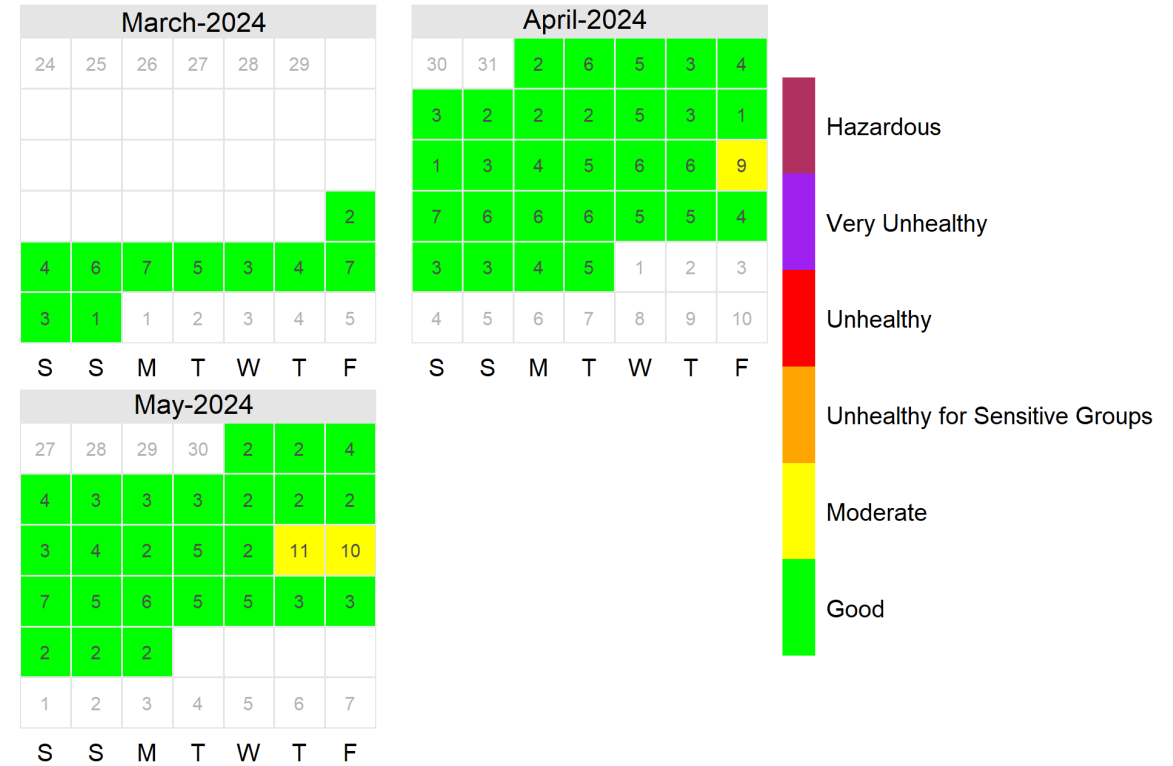


Interior- Outside of Fairbanks - PM2.5 AQI

Goldstream Sports Air Quality Index

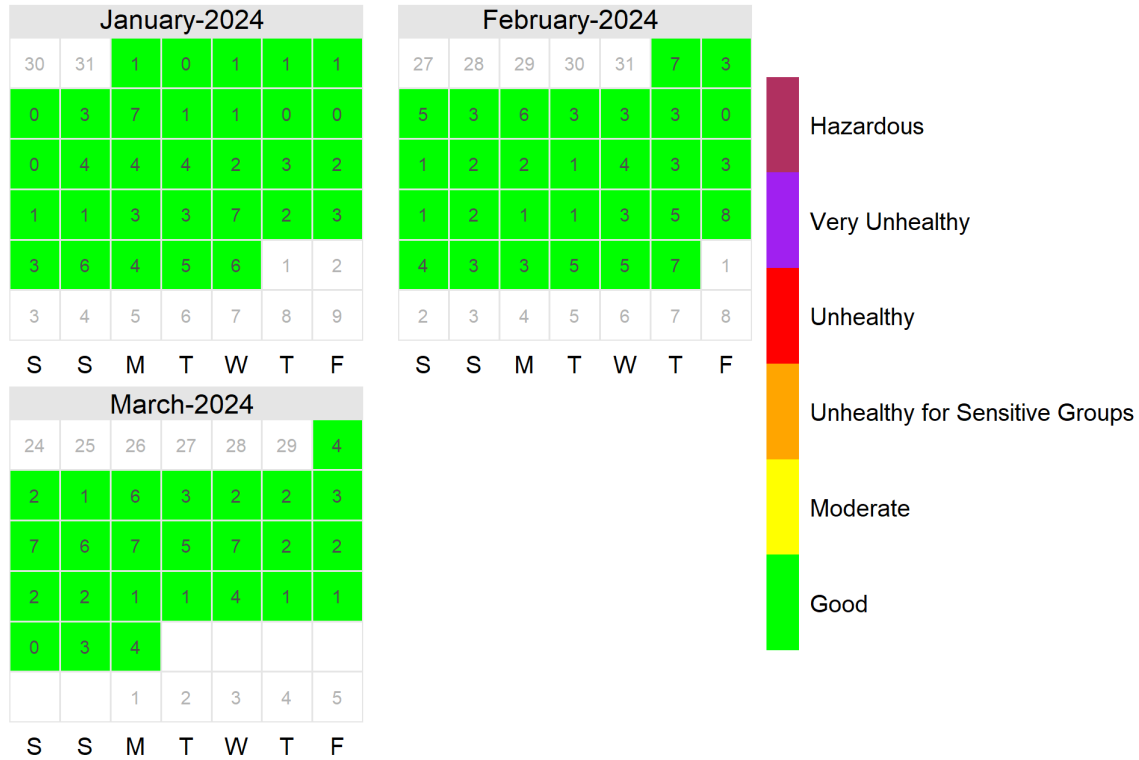


Badger Air Quality Index

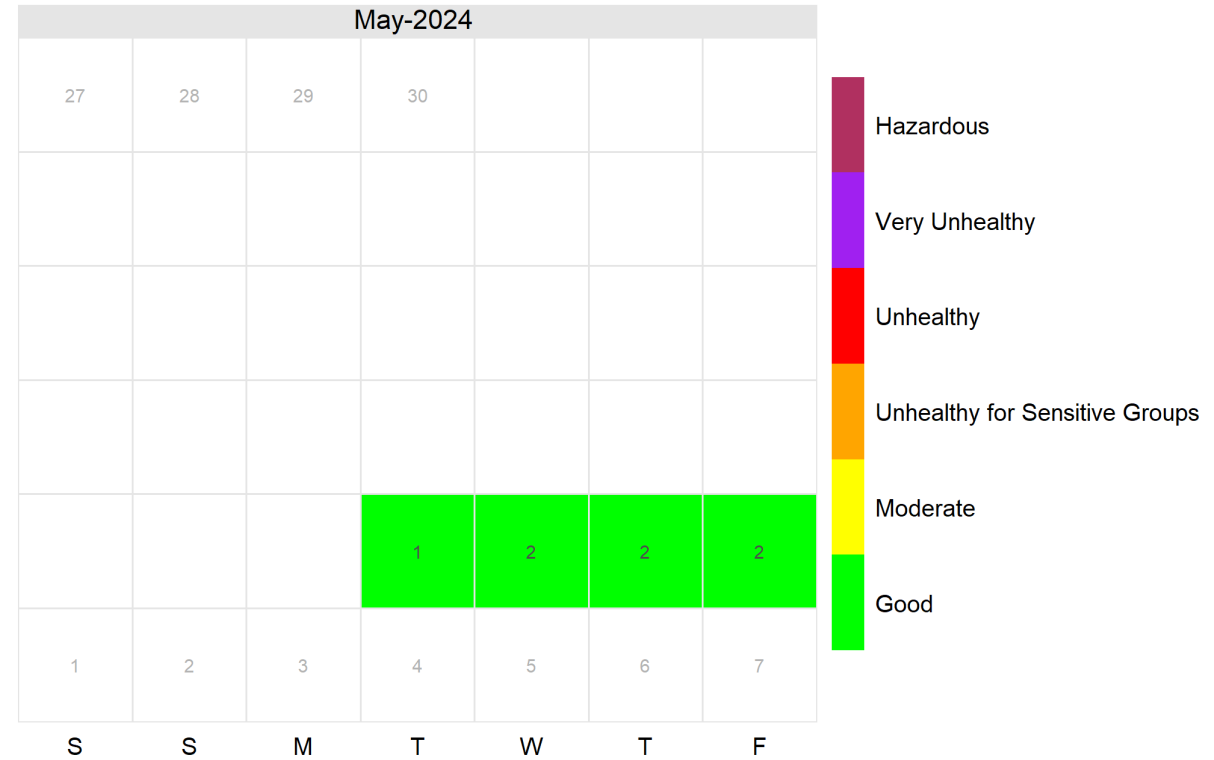


Western Alaska - PM2.5 AQI

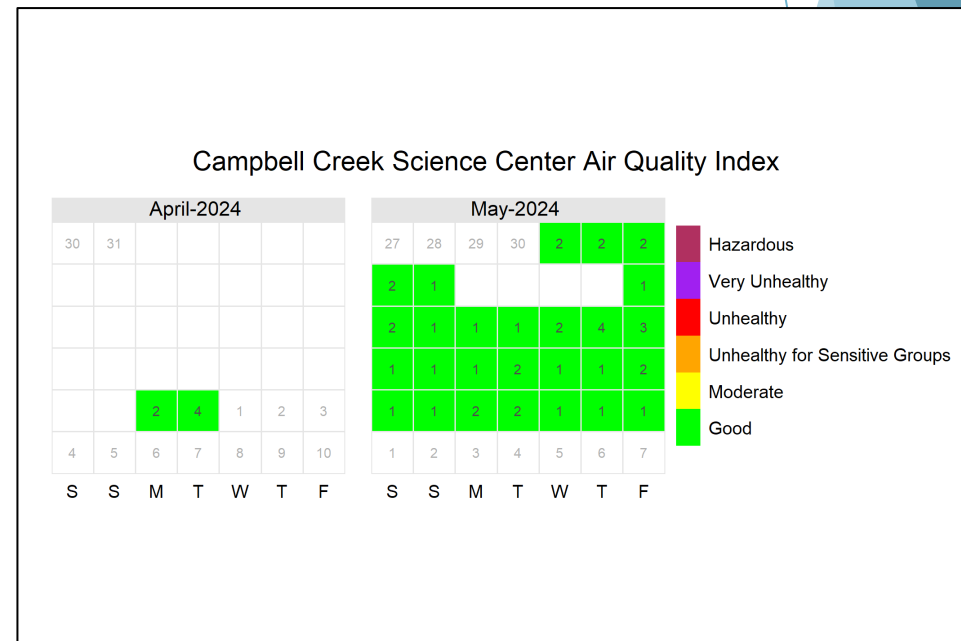
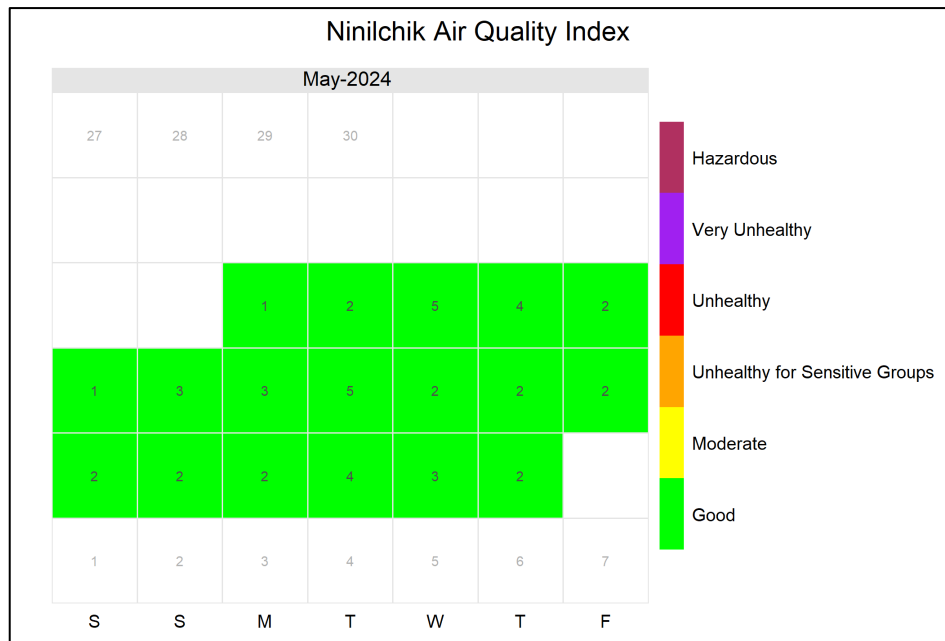
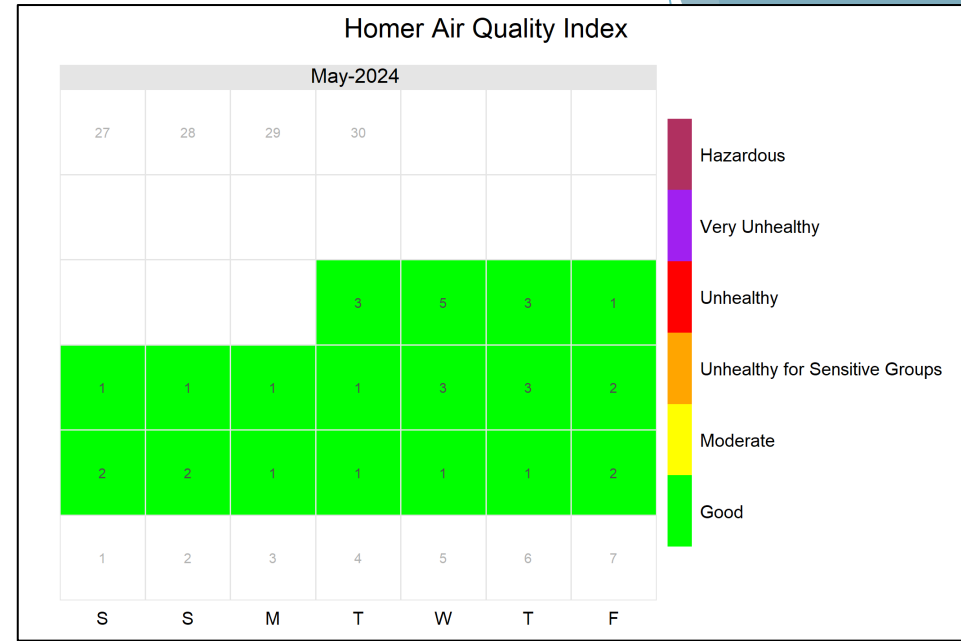
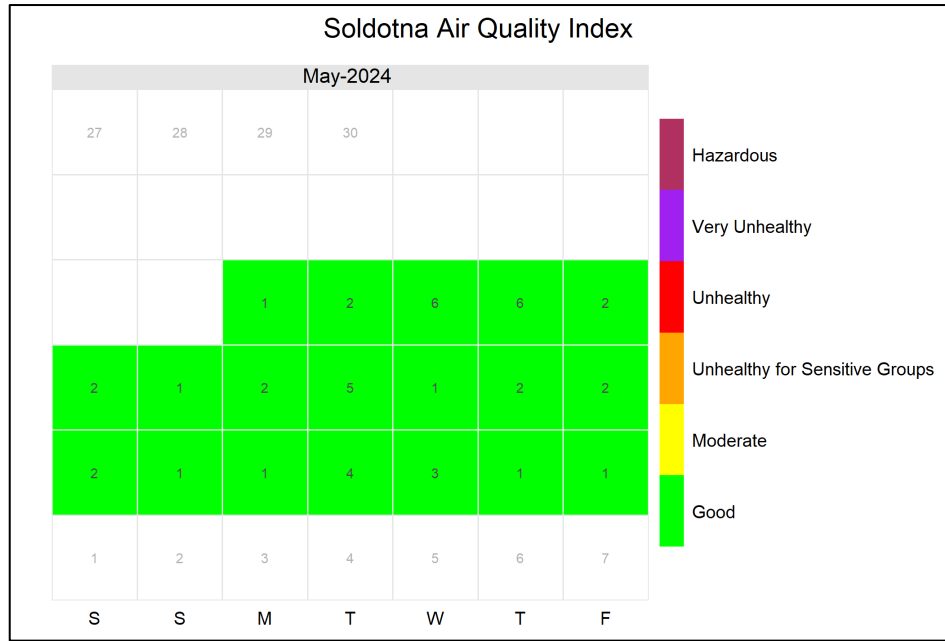
Napaskiak Air Quality Index



Nome Air Quality Index

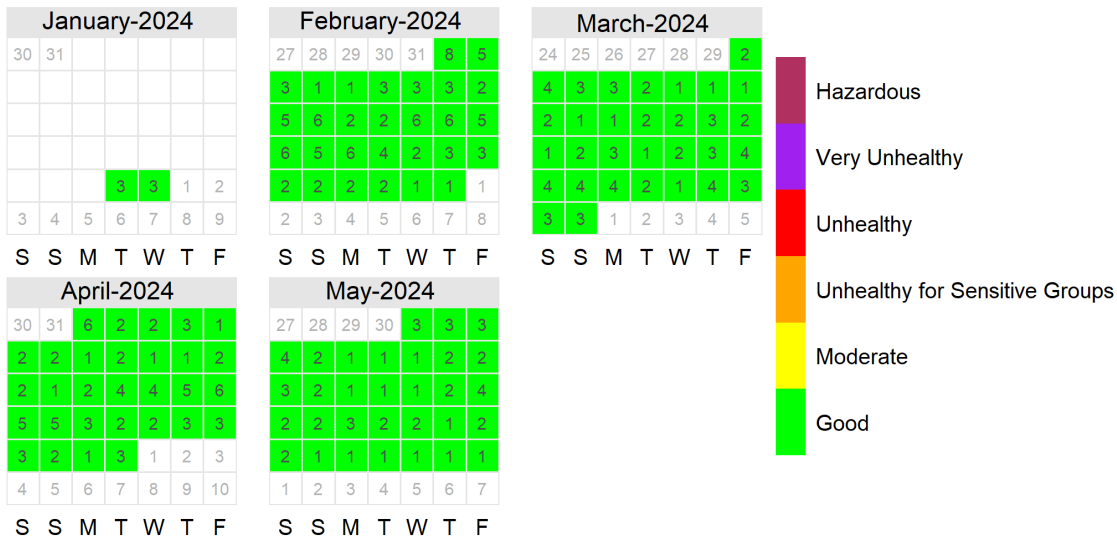


Southcentral - PM2.5 AQI

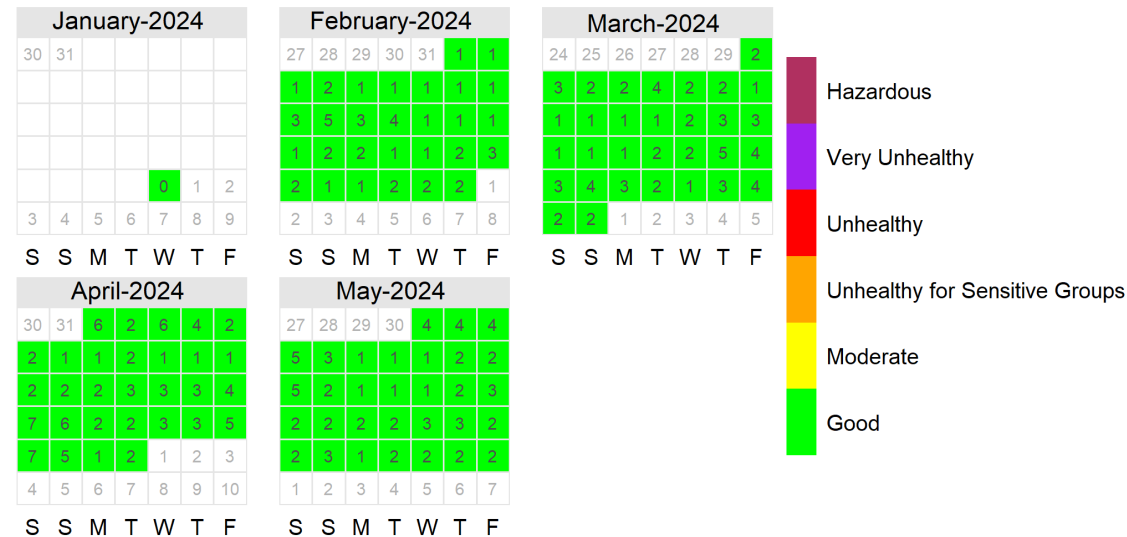


Southeast (slide 1) - PM2.5 AQI

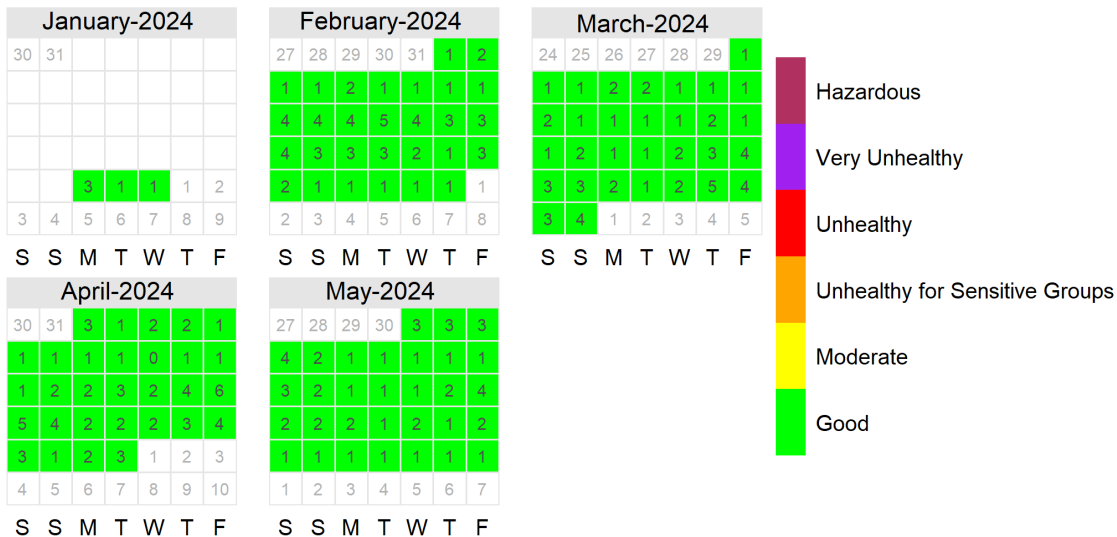
Haines Air Quality Index



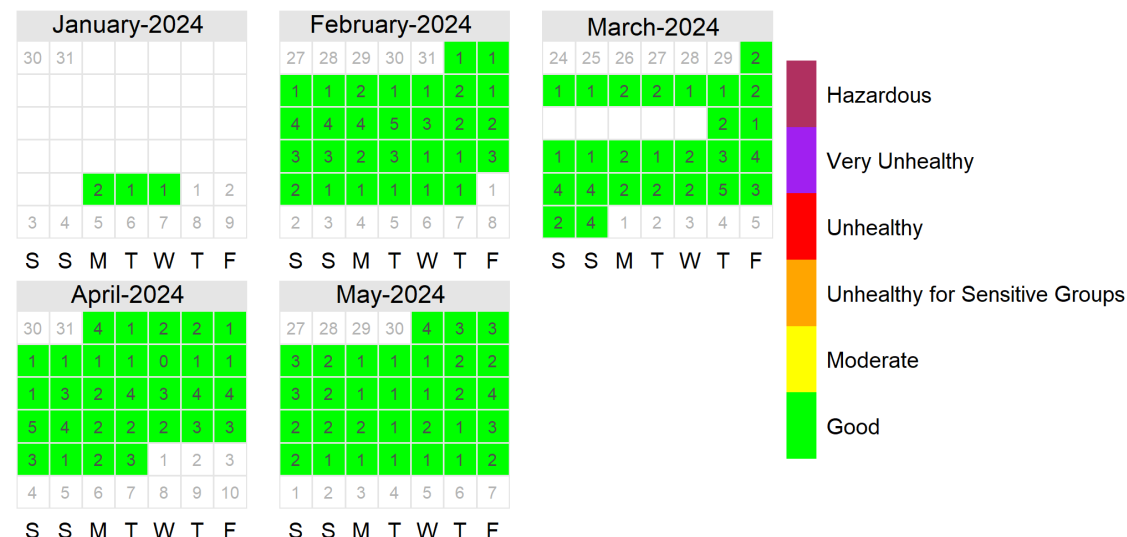
Skagway Air Quality Index



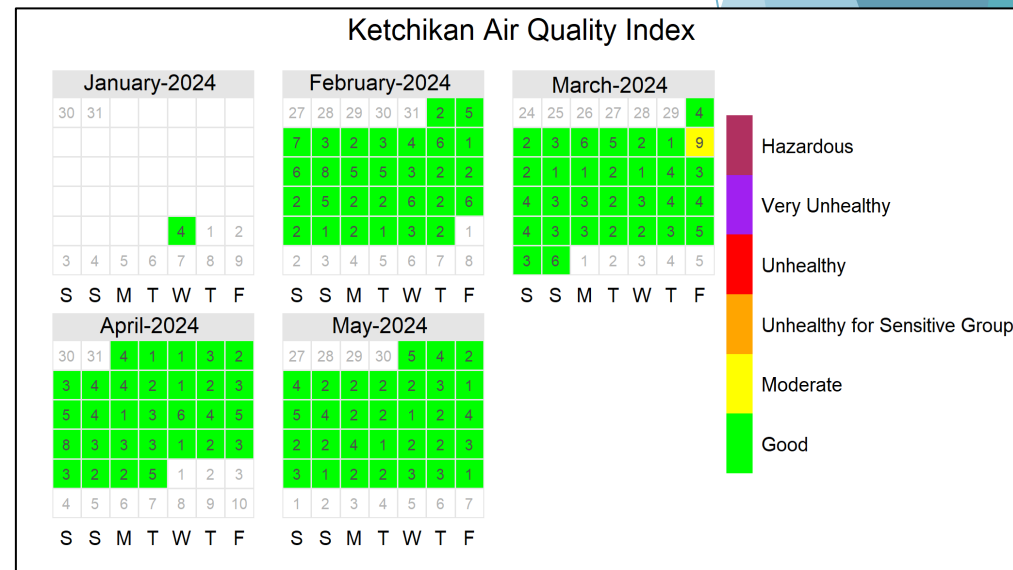
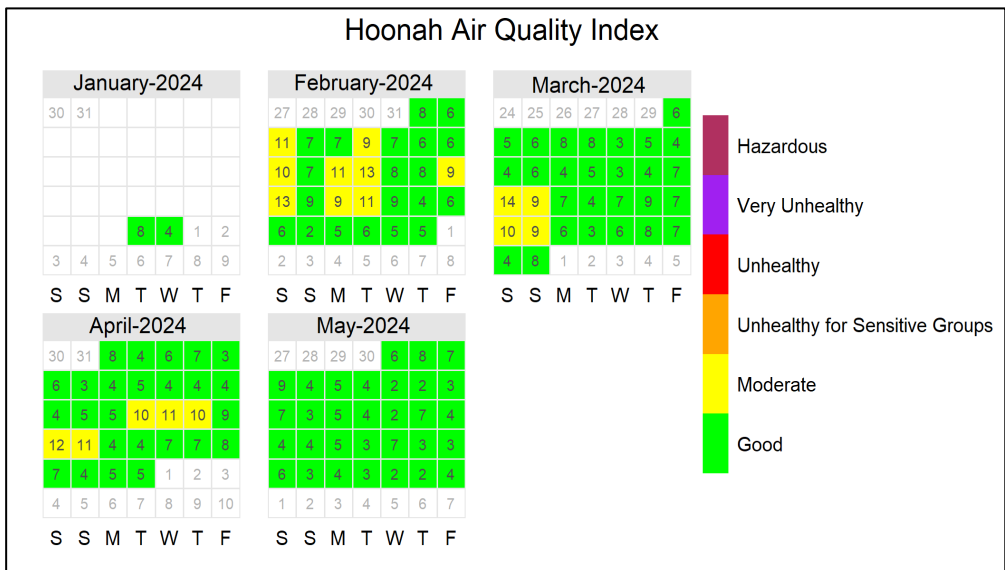
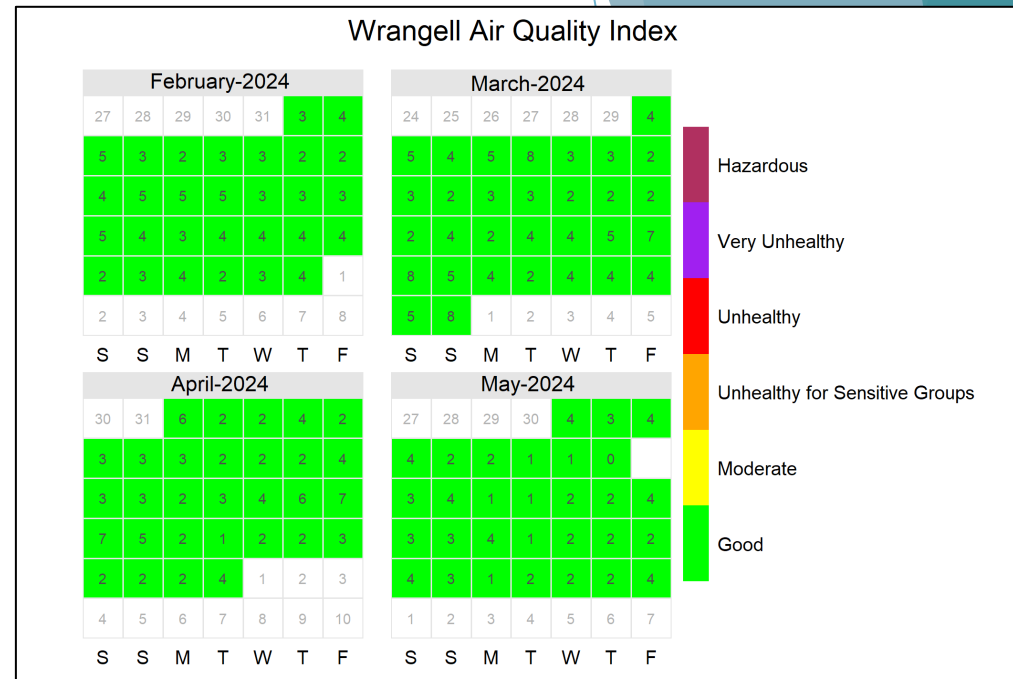
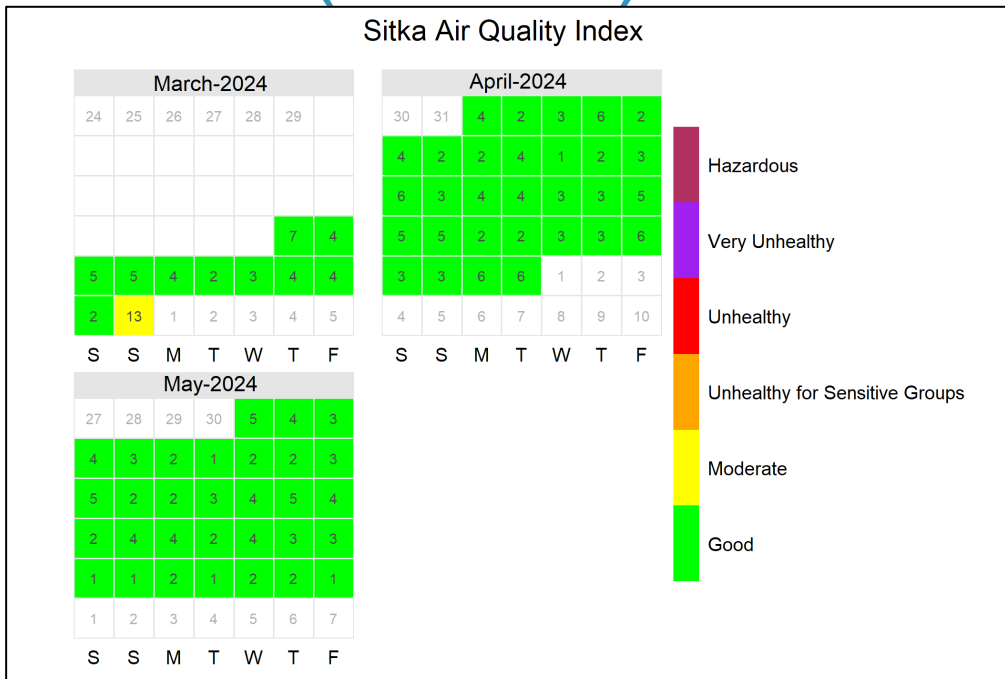
Juneau 5th Street Air Quality Index



Juneau Museum Air Quality Index



Southeast (slide 2) - PM2.5 AQI





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? *

What time does this local condition/event start?

Date

Hour Minutes

What time does this local condition/event start?

Date

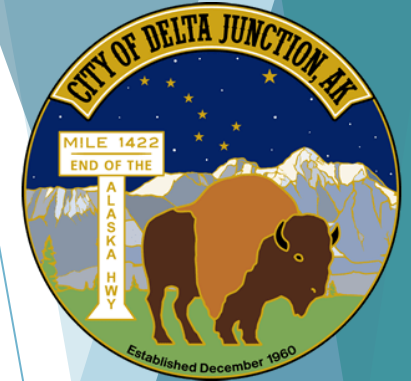
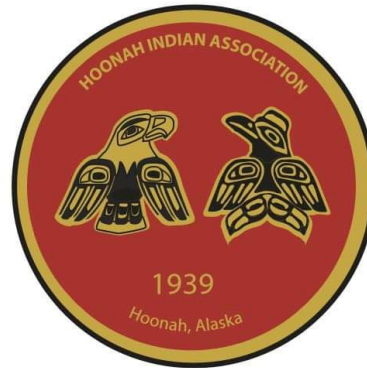
Hour Minutes

What local condition or event occurred?

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!

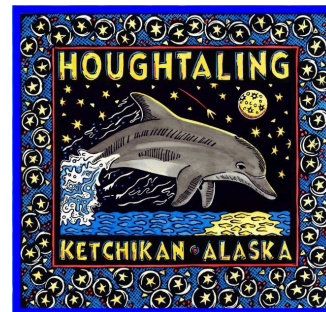
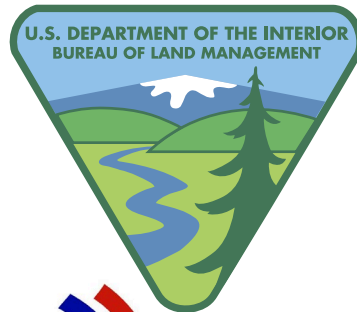


**NORTON SOUND
HEALTH CORPORATION**

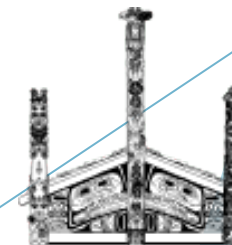


Kenai Peninsula College
UNIVERSITY of ALASKA ANCHORAGE

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



CITY & BOROUGH OF WRANGELL
GATEWAY TO THE STIKINE



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

