Quality Review and Exchange System for Tribes (QREST) Introduction

January 26, 2021

Webinar Logistics

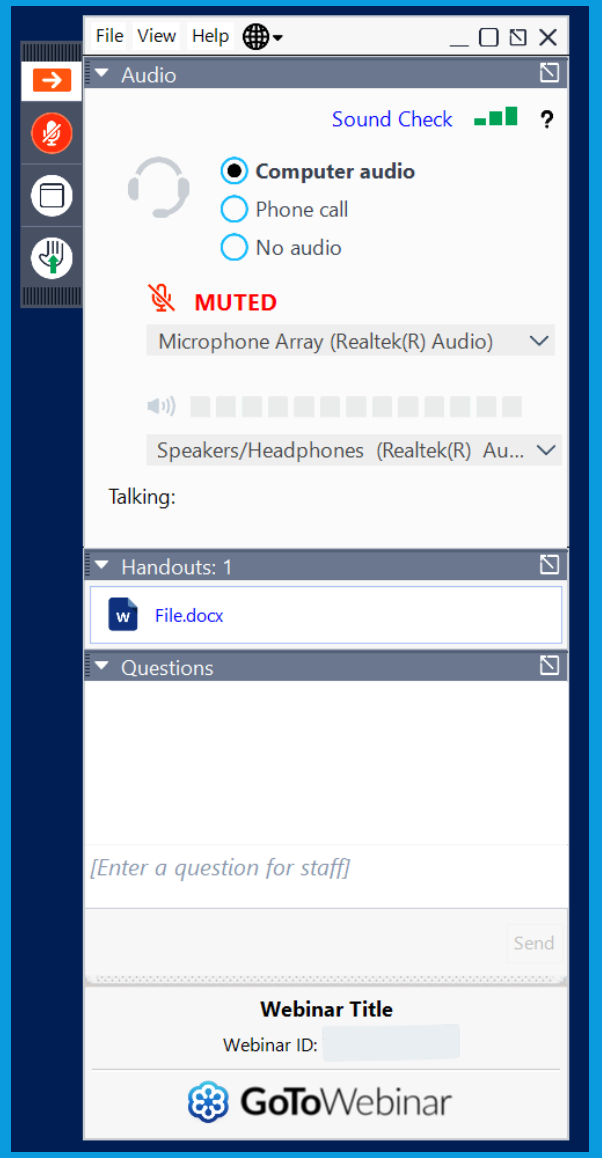
- Webinar is being recorded – URL for the recording will be in post-webinar email and posted at https://bit.ly/AIAQTPwebinars
- Please complete the webinar feedback survey – Link for the feedback survey will be in post-webinar email
- Certificates will be emailed to participants

Thank you for joining!

Submit questions in the "Questions" pane

Raise your hand if you would like to be unmuted

Download files from the "Handouts" pane



Presented by the Institute for Tribal Environmental Professionals
American Indian Air Quality Training Program
Questions? Contact Christal.Black@nau.edu

Today's objectives:

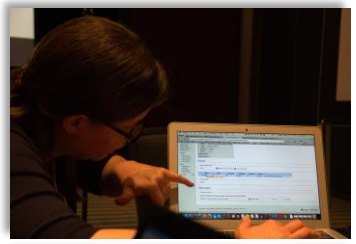
- Introduce QREST
  - Built for Tribal Agencies
  - Open source (no license fees, all code public)
  - TAMS Center managed
  - Tribal Agencies are their Agency Admins
  - Flexible: can manually import or automatically poll data, can use QC features or AQS node only
  - Help files, SOPs, videos, and individual assistance
- Learn more about your needs

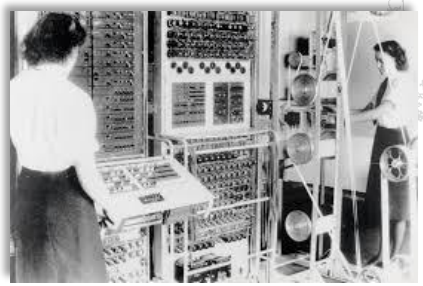
Poll Question 1

- Does your program now gather air data? y/n
- If yes, what do you use to manage the data?
  - We use MS Excel to review data and calculate summary statistics, make charts
  - Proprietary software (e.g. AirVision)
  - Tribal Data Toolbox (from the TAMS Center)
  - No current data management system, just collect the data
  - Use a contractor to manage our data

What is Open Source?

- A world community of users who, following the open source model, provide packages and code and advice in numerous forums, **completely free.**
- "**Open source**" means more than just code that is available free to anyone; it includes a philosophy (***the open source way***) for any kind of project that embraces and celebrates principles of open exchange, collaborative participation, rapid prototyping, transparency, meritocracy, and community-oriented development.

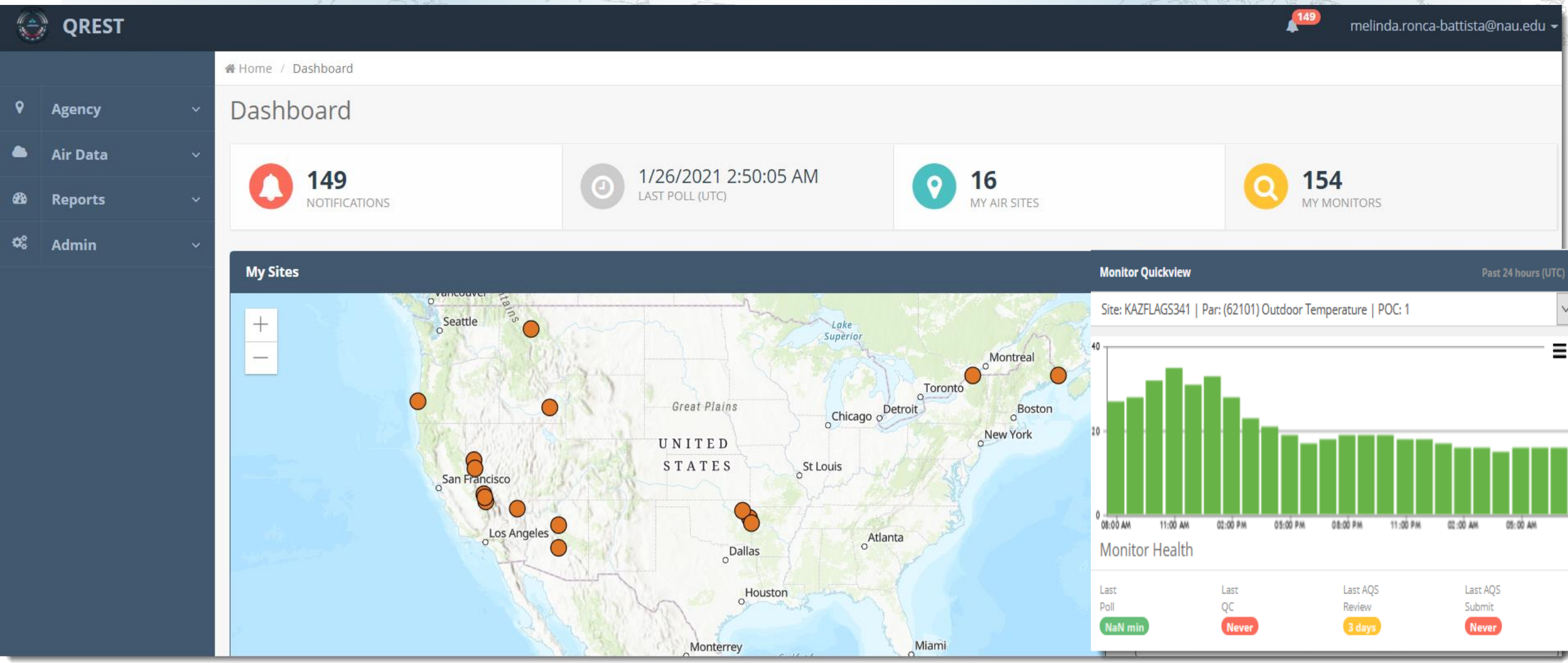




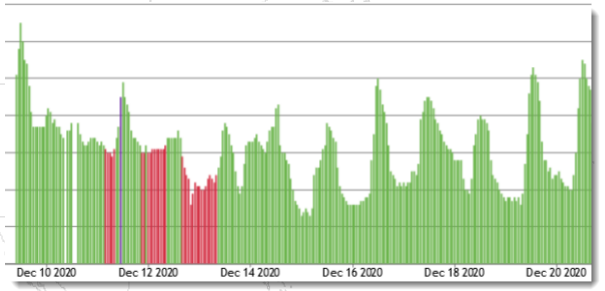
What is cloud software?

- Accessible from any internet browser
- Run on remote servers (aka computer processing and storage use rented from Microsoft or Amazon, or others)
- With open source software, this cloud system:
  - Has no software licensing fees,
  - can be modified and updated by any qualified contractor,
  - management costs can be minimal (e.g., ITEP manage; updating)
  - has low cloud storage costs – backed up every night
  - TAMS Center can push out changes to everyone as instruments/EPA guidance/laws change
  - *New features will be based on YOUR needs—this is your tool.

Dashboard Provides Access and Control

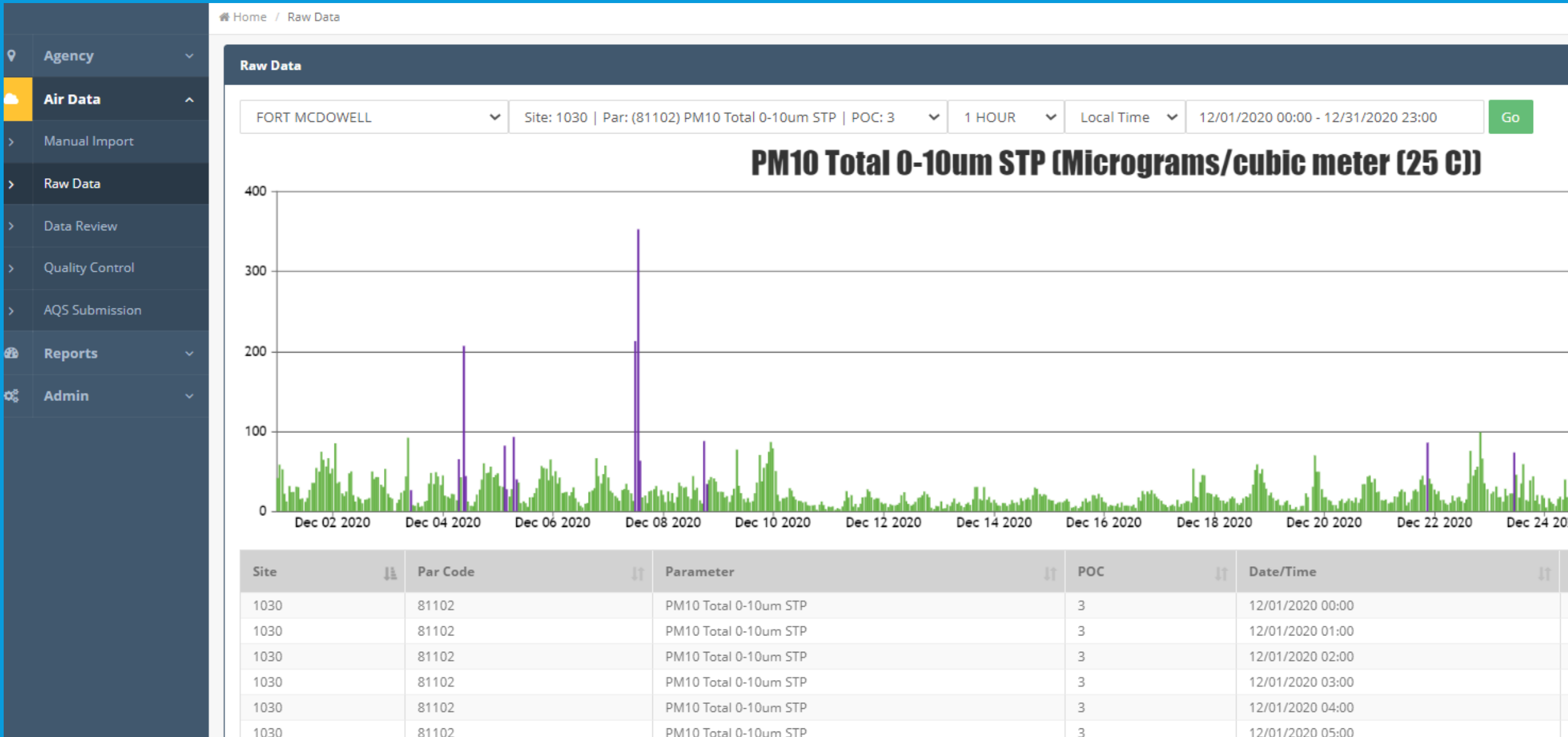


QREST Features:

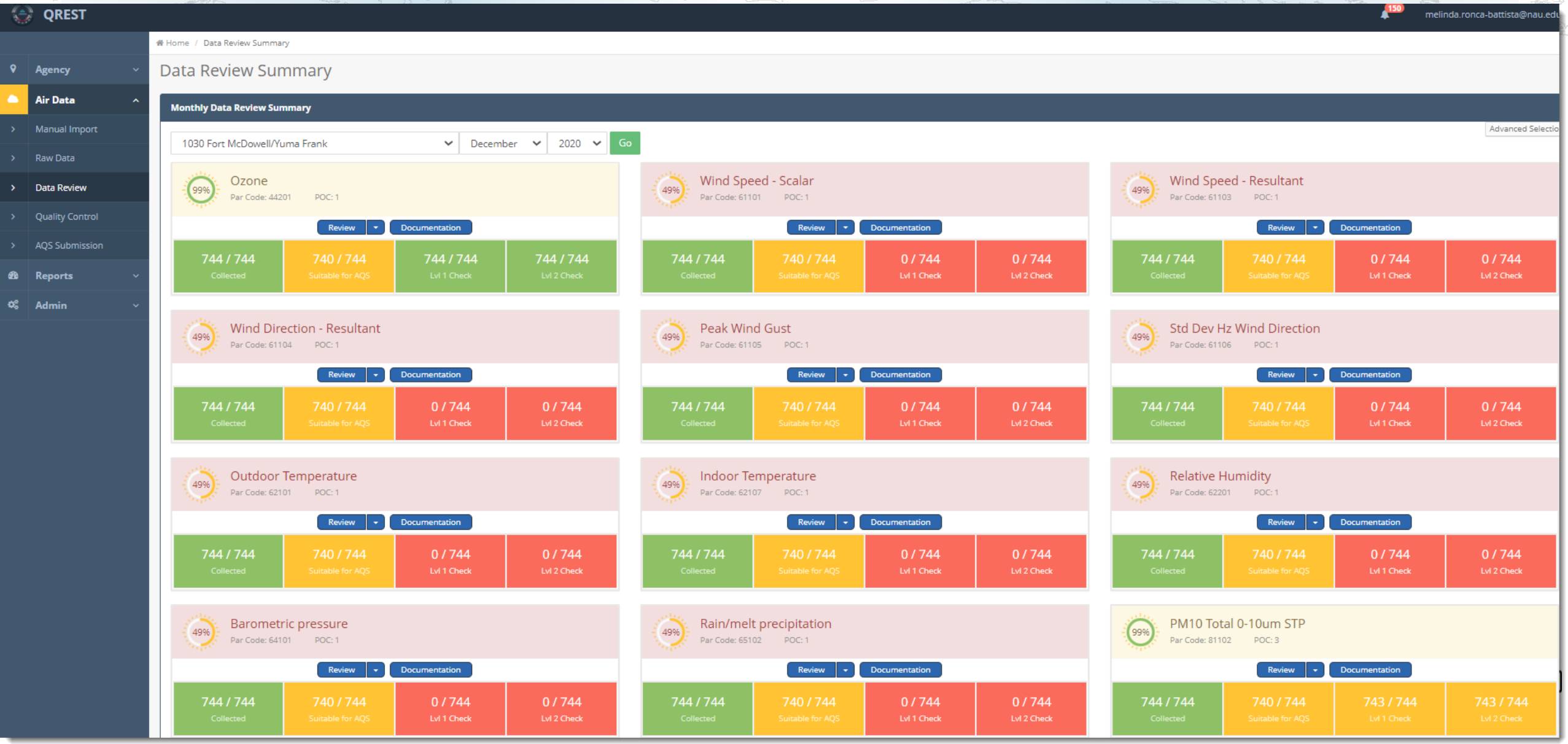


- Each Tribal Agency manages their own data and who has access,
- Audit trail of any changes—your Agency Admin sees all
- Charts and summary statistics exportable for reports,
- Provides a platform for fulfilling the independent quality assurance function (two levels of separation required between data gatherer and final data validation) required for regulatory and legally-defensible data,
- Reference and supporting data stored and accessible by data validators,
- Provide a public website with maps and (tribal-agency-approved) data,
- push data to the Exchange Network (AQS and the EPA's AirNow)

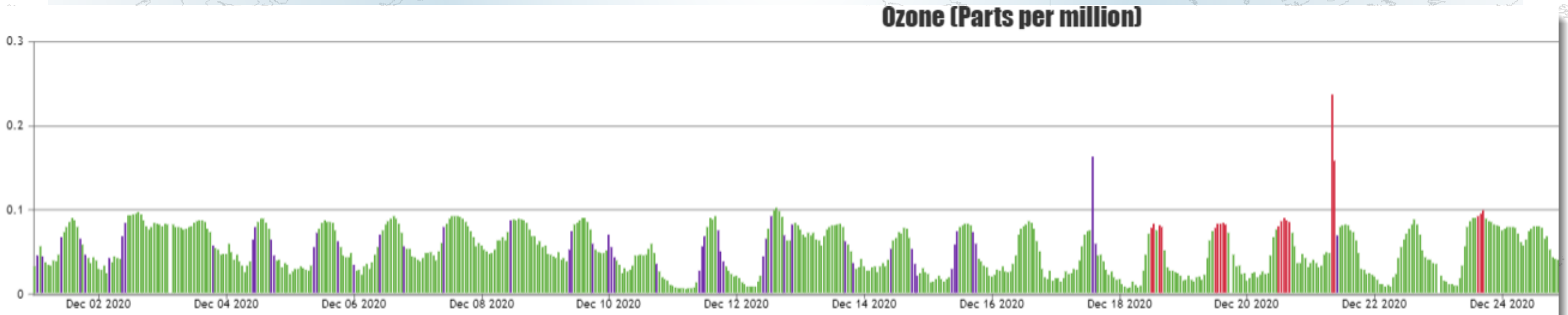
To know your data is to love your data:



- Your Data Available Anytime, Anywhere (with internet access)



3 Levels of Data Review



Back

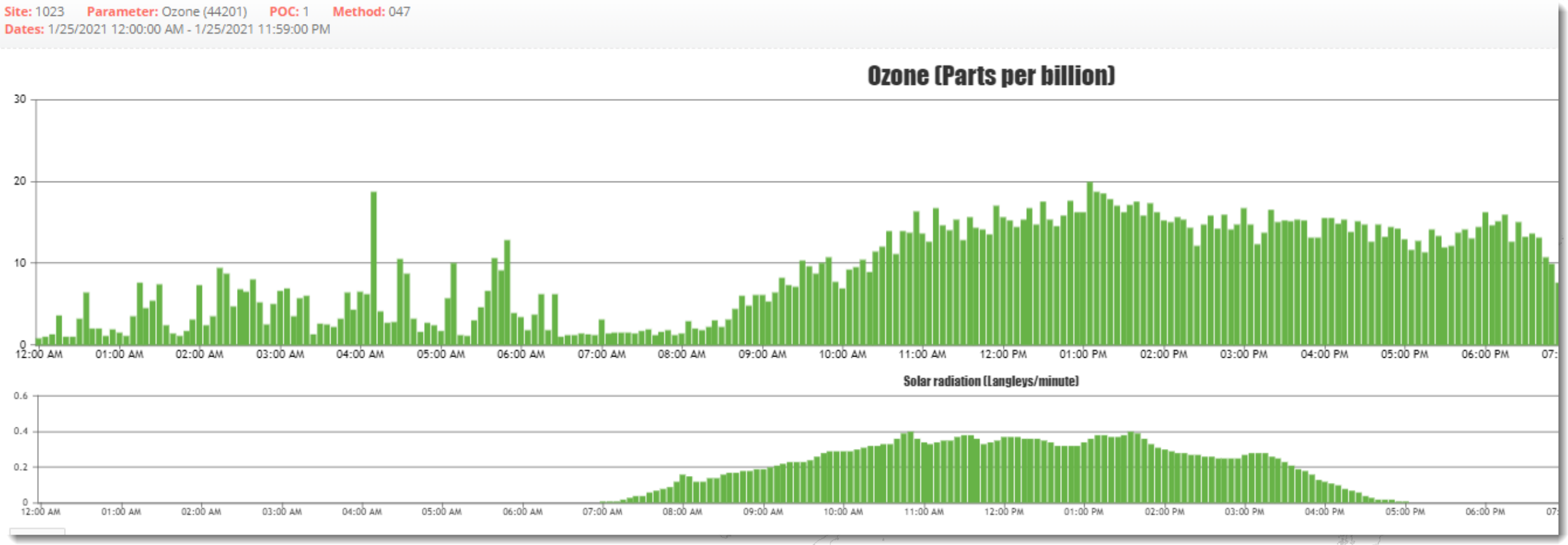
All	Site	Par Code	Parameter	POC	Local Std Time	Value	Unit	QREST Flags	AQS Null Code	AQS Qual Codes	Suitable for AQS	Lvl 1	Lvl 2
☐	1030	44201	Ozone	1	12/01/2020 00:00	0.032	Parts per million			1V	Y	Karen Shaw 12/29/2020	Karen Shaw 12/29/2020
☐	1030	44201	Ozone	1	12/01/2020 01:00	0.045	Parts per million	JUMP		1V	Y	Karen Shaw 12/29/2020	Karen Shaw 12/29/2020
☐	1030	44201	Ozone	1	12/01/2020 02:00	0.056	Parts per million			1V	Y	Karen Shaw 12/29/2020	Karen Shaw 12/29/2020

Poll Question 2

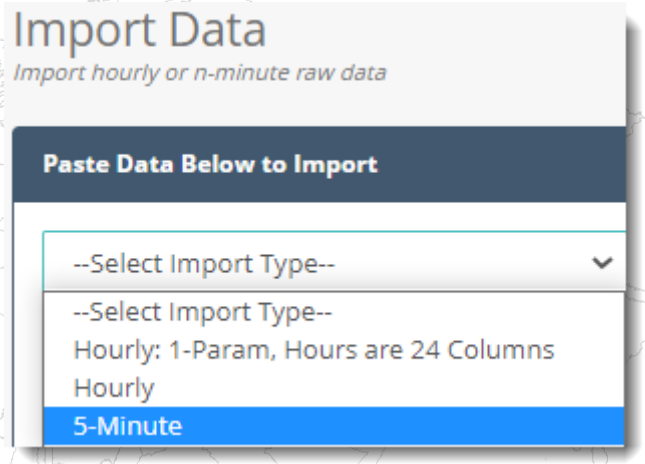
How do you access your data?

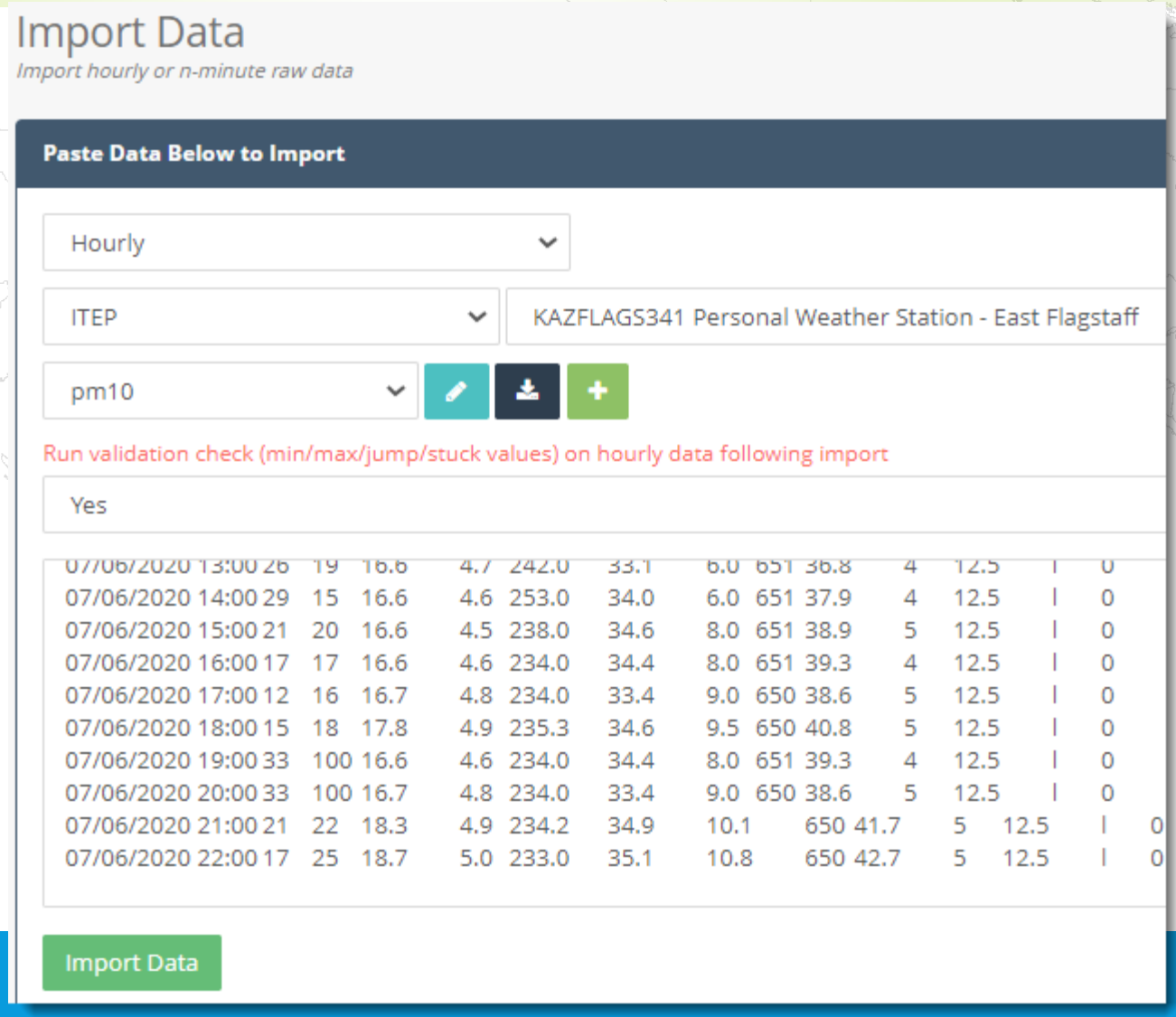
1. Remote access via site telemetry
2. Site visit and manual download from analyzer

5-minute data pollable and importable:

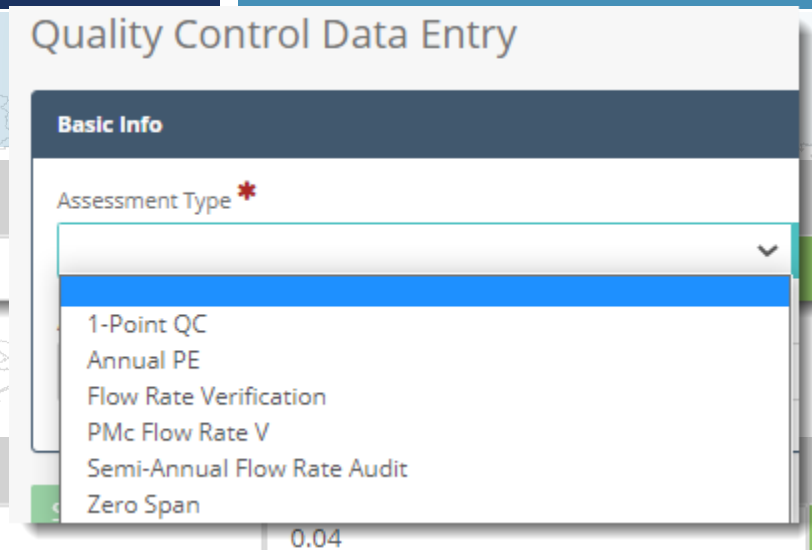


One year of data can be imported at a time, and easy as staying in your yoga pants all day:





- QC Data Management:



Assessment (known or true) Value		% Difference	Concentration Range
0.065		1.54	In valid concentration range (0.005-0.08)

Assessment (known or true) Value		Difference	% Difference	Concentration Range
0.04	0.04	0.00	0.00	Concentration range: 0.04 to 0.069
0.06	0.061	0.001	1.67	Concentration range: 0.04 to 0.069
0.07	0.071	0.001	1.43	Concentration range: 0.07 to 0.089
0.03	0.031	0.001	3.33	Concentration range: 0.02 to 0.039
0.025	0.023	0.002	8.00	Concentration range: 0.02 to 0.039
				Covers 3 distinct Audit Levels

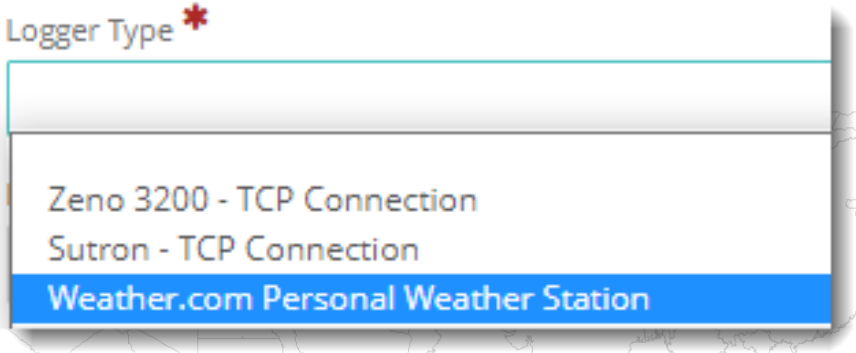
Send to AQS

Poll Question 3

Do you use a datalogger? y/n
If yes, what kind of datalogger?

1. Sutron
2. Campbell Scientific
3. Zeno
4. ESC/Agilaire
5. Other

Now polling Sutron and Zeno dataloggers, and 1 weather station



Column Mapping

	Col	Sum	Prec	Par / Method
Edit	10	AAVG	0	61104 - Wind Direction - Resultant Method: 020 POC: 1
Edit	10	ADEV	0	61106 - Std Dev Hz Wind Direction Method: 020 POC: 1
Edit	16	AVG	1	61101 - Wind Speed - Scalar Method: 050 POC: 1
Edit	19	MAX	1	61105 - Peak Wind Gust Method: 020 POC: 1
Edit	22	AVG	1	62101 - Outdoor Temperature Method: 040 POC: 1
Edit	25	AVG	1	62103 - Dew Point Method: 020 POC: 1

Monitor Ping Results

Ping Results

Ping Only Retrieve Data

Last X Records: 5

Submit

Last X records

```
1026,21/01/26,04:35:00,0,1,K,7.40,2,K,319.20,3,K,11.00,4,K,7.50,5,K,11.70,6,K,24.90,7,K,20.60,8,K,0.00,9,K,862.10,10,K,0.0000,24,K,34.20,35,K,4.40,38,K,88,50,K,0.0000,51,K,99000,
1026,21/01/26,04:40:00,0,1,K,7.40,2,K,329.90,3,K,10.20,4,K,7.50,5,K,10.00,6,K,25.00,7,K,20.20,8,K,0.00,9,K,862.11,10,K,0.0000,24,K,34.10,35,K,4.40,38,K,87,50,K,0.0000,51,K,99000,
1026,21/01/26,04:45:00,0,1,K,6.10,2,K,322.70,3,K,10.60,4,K,6.20,5,K,8.50,6,K,25.00,7,K,20.00,8,K,0.00,9,K,862.16,10,K,0.0000,24,K,34.00,35,K,4.39,38,K,86,50,K,0.0000,51,K,99000,
1026,21/01/26,04:50:00,0,1,K,4.60,2,K,313.00,3,K,10.70,4,K,4.70,5,K,6.80,6,K,24.90,7,K,19.40,8,K,0.00,9,K,862.19,10,K,0.0000,24,K,34.00,35,K,4.40,38,K,85,50,K,0.0000,51,K,99000,
1026,21/01/26,04:55:00,0,1,K,4.70,2,K,307.10,3,K,10.40,4,K,4.70,5,K,6.60,6,K,24.90,7,K,19.10,8,K,0.00,9,K,862.26,10,K,0.0000,24,K,33.90,35,K,6.01,38,K,84,50,K,0.0000,51,K,99000,68
```

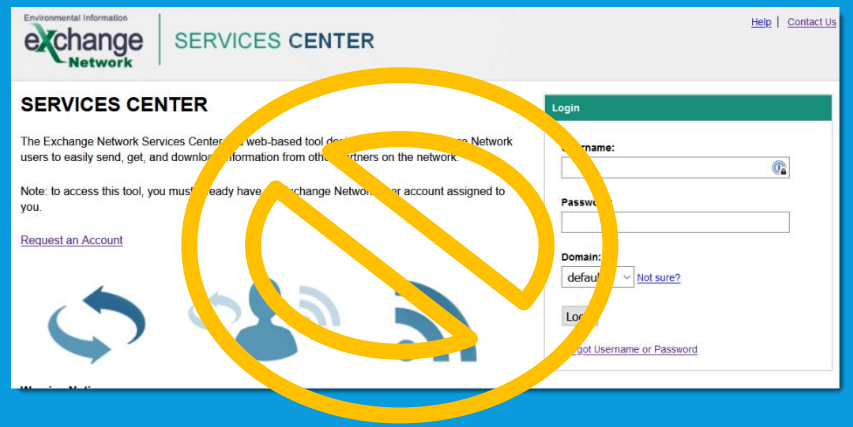
Poll Question 4:

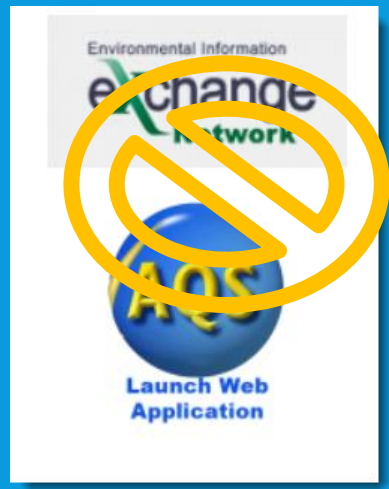
- How do you format your data for upload to EPA's AQS?
  1. MS Excel template
  2. EPA's Transaction Generator
  3. Contractor
  4. my datalogger outputs in AQS format and I manually send data through the Exchange Network Services Center and from there into AQ
  5. I do not send data to AQS

nge	Submitted By	Comments	Download	Status
0:00 AM - 1/1/0001	melinda ronca-battista		AQS_QA_20111206.txt Header File	Processing Get Status
00:00 AM - 00:00 AM	Melinda Ronca-Battista		AQS_20201201_20201201.txt Header File	File Created Submit to EPA
0:00 AM - 2/1/2020	Melinda Ronca-Battista	looks like there is on record still as ppb so must fix that in the data then regenerate the file	AQS_20200201_20200201.txt Header File	Completed
0:00 PM - 4/1/2020	Melinda Ronca-Battista		AQS_20200401_20200401.txt Header File	Completed

```
QA|I|Flow Rate Verification||04|005|9001|81102|1|20111206|0079|073|16.7|16.67
```

```
RD|I|04|005|9001|44201|1|1|007|047|20200201|00:00|0.028
RD|I|04|005|9001|44201|1|1|008|047|20200201|01:00|0.027
RD|I|04|005|9001|44201|1|1|007|047|20200201|02:00|0.021
```





Prepare AQS Submission

Select Data to Submit

Site: KAZFLAGS341 Personal Weather Station - East Flagstaff

Parameters:
- (Toggle All)
- Par: (43776) Radon | Method: 001 | POC: 1
- Par: (61101) Wind Speed - Scalar | Method: 020 | POC: 1
- Par: (61104) Wind Direction - Resultant | Method: 130 | POC: 1
- Par: (62101) Outdoor Temperature | Method: 044 | POC: 1
- Par: (62201) Relative Humidity | Method: 059 | POC: 1
- Par: (63301) Solar radiation | Method: 014 | POC: 1
- Par: (64101) Barometric pressure | Method: 014 | POC: 1
- Par: (65102) Rain/melt precipitation | Method: 060 | POC: 1
- Par: (81102) PM10 Total 0-10um STP | Method: 079 | POC: 1
- Par: (Q00003) AAnewParameter | Method: 001 | POC: 1
- Par: (Q00007) TestInstrumentFlag2 | Method: 001 | POC: 1

Date Range: 12/01/2020 00:00 - 12/31/2020 23:00

Action Code: Insert

Data Format: Flat File

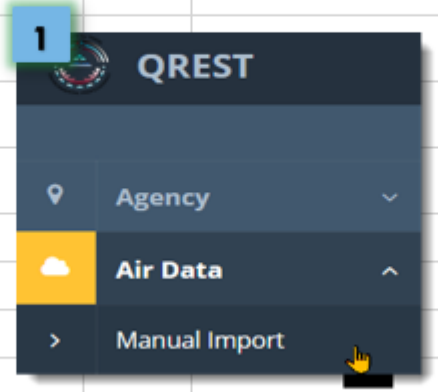
Back | Review Data

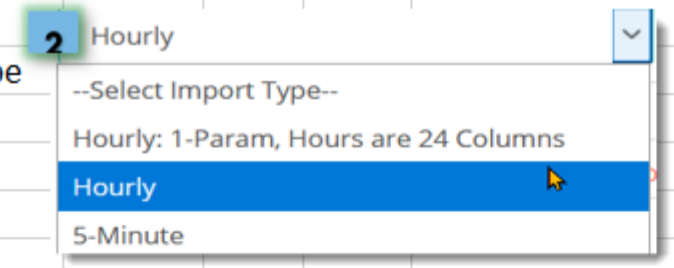
Poll Question 5

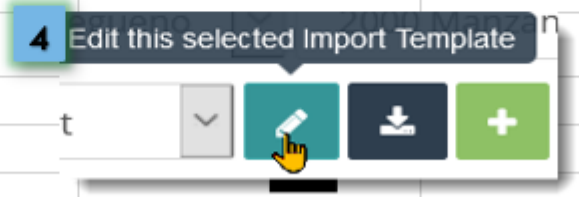
What is your biggest frustration about air data management?

- 1. Time consuming
- 2. No qualified people are available to conduct an independent data review
- 3. Getting data into AQS
- 4. Managing monitoring equipment (maintenance, repair, calibrations)
- No frustrations—data management and reporting is super fun ☺
-

SOP:	Manual Importing	version:	1.0	date:	01/12/2021	responsibility:	Site Operator
						required:	electronic data file to be imported (up to one year of hourly data for 1 parameter)
Step:							
1	Go to Air Data->Manual Import					prereq:	The appropriate Import Config has been established in QREST for this datafile's format
2	Select datafile type						
3	Select Agency, Site, and the Import Template that is appropriate for the datafile format.						
4	If the Import Template needs to be edited for this datafile's format, edit and save with a new name, as appropriate (see SOP for Setting Import Config).						







QREST Help

Getting Started

- Users Guide
- FAQ
- Tutorial Videos
- Creating an Account
- Retrieving Lost Password
- Dashboard

Site Management

- Tribe Management
- Site Management
- Monitor Management
- Polling Configuration

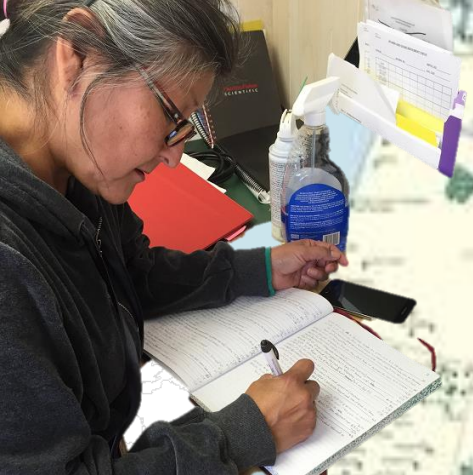
Air Data

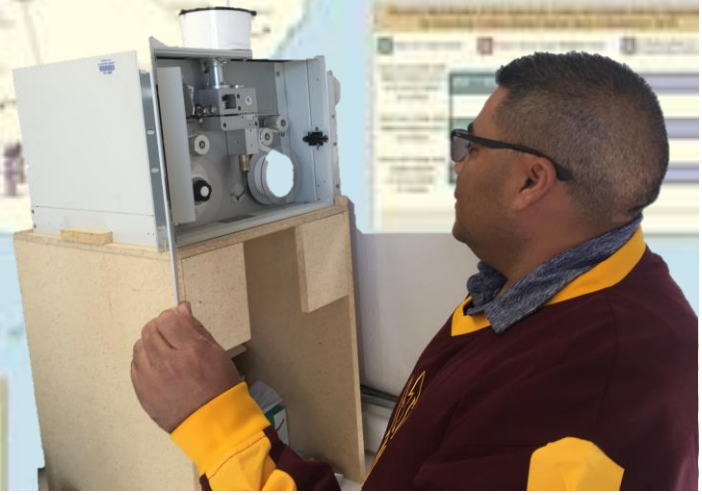
- QREST Data Logger Retrieval Workflow
- Manual Import
- Raw Data
- Data Review
- Quality Control

For each row, enter in th
validation checks.

Validation Checks:

- Annual Perform
  - Distinct C
  - Percentag
    - Sulf
  - Concentra
    - Sulf
- 1-Point QC:
  - Concentra
    - Sulf
    - Ozo
  - Percentag
    - Sulf
    - Ozo
  - Concentra
    - Sulf
    - Ozo
- Flow Rate Verifi
  - Percentag
    - PM
    - PM





E SYSTEM FOR TRIBES

Presenters

Melinda Ronca-Battista,
Tribal Air Monitoring Support Center

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Resources

Tribal Air Monitoring Support Center Resources:

- TAMS Guidance on Developing Tribal Air Quality Programs
- Professional Assistance
- QREST Help Files with embedded SOPs and videos
- One on one assistance available, especially for connecting dataloggers

Useful Links & Contacts

- **QREST production site:** https://qrest.net/
- QREST-test site, with demonstration data and available for your exploration: https://qrest-test.azurewebsites.net/
- QREST SOPs: http://bit.ly/QREST-SOPs
- Videos on QREST, including QA Features: http://bit.ly/QREST_training_videos
- https://opensource.com/open-source-way
- TAMS Center Director: Christopher Lee, Christopher.lee@nau.edu
- QREST technician: melinda.ronca-battista@nau.edu
- QREST Open Source Developer: Doug Timms, doug.timms@open-environment.org

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Tribal Air Monitoring Support Center

Thank you for joining todays webinar!