



AQI and AirNow 101: How AirNow Works



...and what happens when it DOESN'T

**In the
beginning,
there is air**

**...and there's
always NOW**

What are we really trying to do?

- **Inform**
- **Educate**
- **Motivate**
- **Involve**

AirNow's Basic Building Blocks

- **Air quality measurements**
- **Air quality forecasts**
- **Air Quality Index**
- **You!**

Very basic view of how it works

- Agencies deliver hourly data and forecasts
- STI's DMC collects, QAs, and creates products
- Products go all over

Concepts we created along the way...

- **Reporting Areas**
- **Zip Code associations**
- **QA/QC criteria**
- **Surrogates, e.g. NowCast**

Reporting Areas

Data and Forecasts courtesy of:
Texas Commission on Environmental Quality (TCEQ)

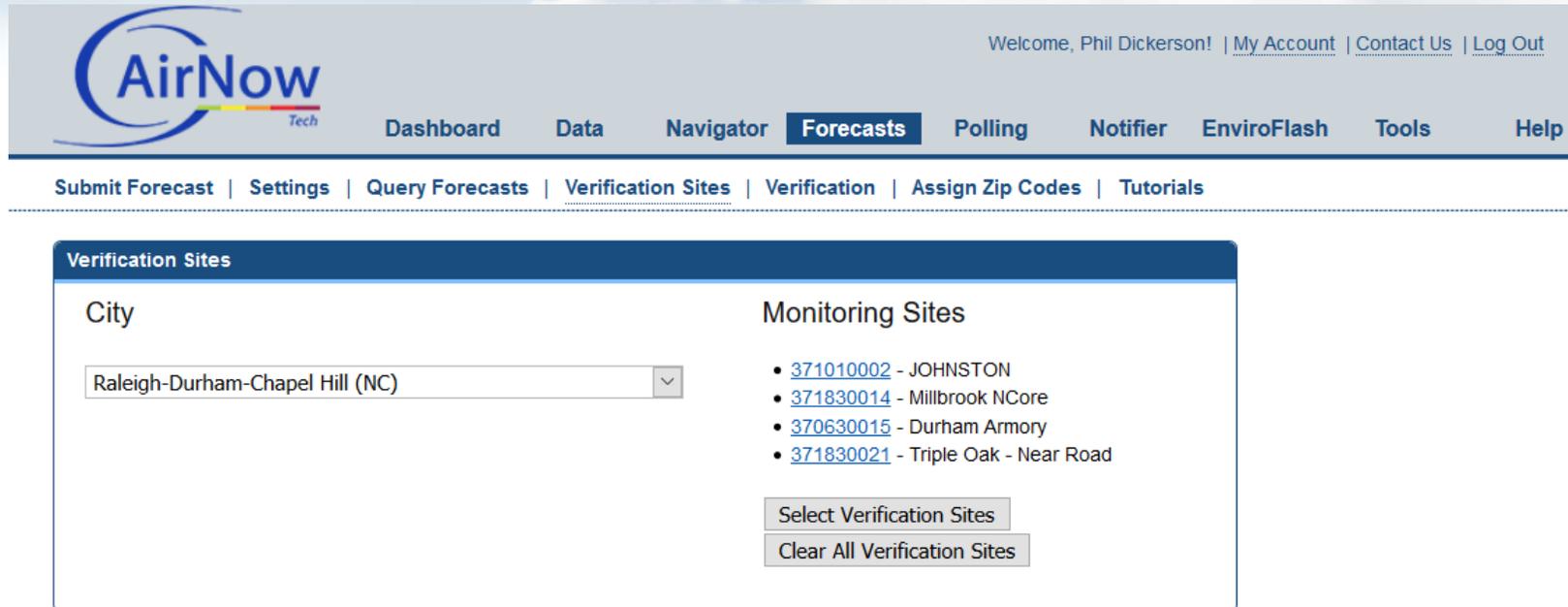
Click on the city name for more detailed information.
[printable summary](#)

	FORECAST		CURRENT AQI
	Wed Jan 17	Thu Jan 18	
Austin	Good	Good	39
Beaumont-Port Arthur	Good	Good	52
Brownsville-McAllen	Good	Good	26
Corpus Christi	Good	Good	24
Dallas-Fort Worth	Good	Good	31
El Paso	Mod	Mod	62
Houston-Galveston-Brazoria	Good	Good	41
Laredo	Good	Good	22
Lubbock	Good	Good	n/a
Midland-Odessa	Good	Good	7
San Antonio	Good	Good	28

- Conceptually similar to metro areas
 - Defined by a group of air quality monitors
 - Only those monitors go into the AQI!
 - Submitting agency chooses
 - Can also be defined for a forecast
 - Possible to have a forecast reporting area without corresponding AQI reporting area, and vice versa
- What doesn't work
 - Especially during fires, we've seen monitors that were not attached to reporting areas and were reading high



Reporting Areas - homework



The screenshot shows the AirNow Tech website interface. At the top left is the AirNow Tech logo. To the right, it says "Welcome, Phil Dickerson!" with links for "My Account", "Contact Us", and "Log Out". Below this is a navigation menu with "Dashboard", "Data", "Navigator", "Forecasts" (highlighted), "Polling", "Notifier", "EnviroFlash", "Tools", and "Help". A secondary menu includes "Submit Forecast", "Settings", "Query Forecasts", "Verification Sites" (highlighted), "Verification", "Assign Zip Codes", and "Tutorials". The main content area is titled "Verification Sites" and contains a "City" dropdown menu set to "Raleigh-Durham-Chapel Hill (NC)". To the right, under "Monitoring Sites", there is a list of four sites: [371010002](#) - JOHNSTON, [371830014](#) - Millbrook NCore, [370630015](#) - Durham Armory, and [371830021](#) - Triple Oak - Near Road. Below the list are two buttons: "Select Verification Sites" and "Clear All Verification Sites".

- Log into AirNow Tech
- Make sure your monitors are assigned to reporting areas as verification sites
- If they are not, they will not be part of AQI calculations and may misrepresent air quality in your area
- Think about new reporting areas

Zip Code Associations

- **AirNow.gov allows the public to type in a zip code**
- **There is a master file of zip code to reporting area associations**
- **A zip code may currently be associated with only ONE reporting area**
- **New zip codes must be processed by the DMC staff at STI**
- **What doesn't work: if a zip code is not associated with a reporting area, the user gets nothing. This was a very common issue during the CA fires**

Zip Code Associations - Homework

- Let airnowdmc@sonomatech.com know if there are any ZIP codes that:
 - Are not associated with ANY reporting area
 - Are connected to the WRONG reporting area
 - Are brand new and should be associated with a reporting area

QA/QC Criteria

- **AirNow is famous for its robust realtime QA/QC routine**
- **Data is automatically checked against criteria such as rate of change, min, max, and values may be set for each hour**
- **There are two ranges – suspect and severe**
- **Suspect data is flagged, but used. Severe data is flagged for human follow-up and is not used.**
- **What doesn't work: If a site has no QA/QC criteria at all, any data will be accepted. A site in Northern VA was reporting an AQI of over 64,000!**

QA/QC Criteria - Homework

Parameter:

Quality Control Criteria [QC Descriptions](#)

Hour (LST)	Max Suspect	Max Severe	Rate of Change	# of Sticking Hours	Sticking Value	Minimum Drift
0000	110.00000	189.00000	60.00000	5	40.00000	-4.90000
0100	110.00000	189.00000	60.00000	5	40.00000	-4.90000
0200	110.00000	189.00000	60.00000	5	40.00000	-4.90000
0300	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0400	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0500	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0600	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0700	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0800	100.00000	168.00000	60.00000	5	40.00000	-4.90000
0900	100.00000	168.00000	60.00000	5	40.00000	-4.90000
1000	100.00000	168.00000	60.00000	5	40.00000	-4.90000
1100	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1200	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1300	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1400	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1500	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1600	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1700	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1800	140.00000	210.00000	60.00000	5	40.00000	-4.90000
1900	130.00000	189.00000	60.00000	5	40.00000	-4.90000
2000	130.00000	189.00000	60.00000	5	40.00000	-4.90000
2100	130.00000	189.00000	60.00000	5	40.00000	-4.90000
2200	130.00000	189.00000	60.00000	5	40.00000	-4.90000
2300	130.00000	189.00000	60.00000	5	40.00000	-4.90000

- Check your QA/QC criteria!

- Select buddy sites

**Any
Questions?**