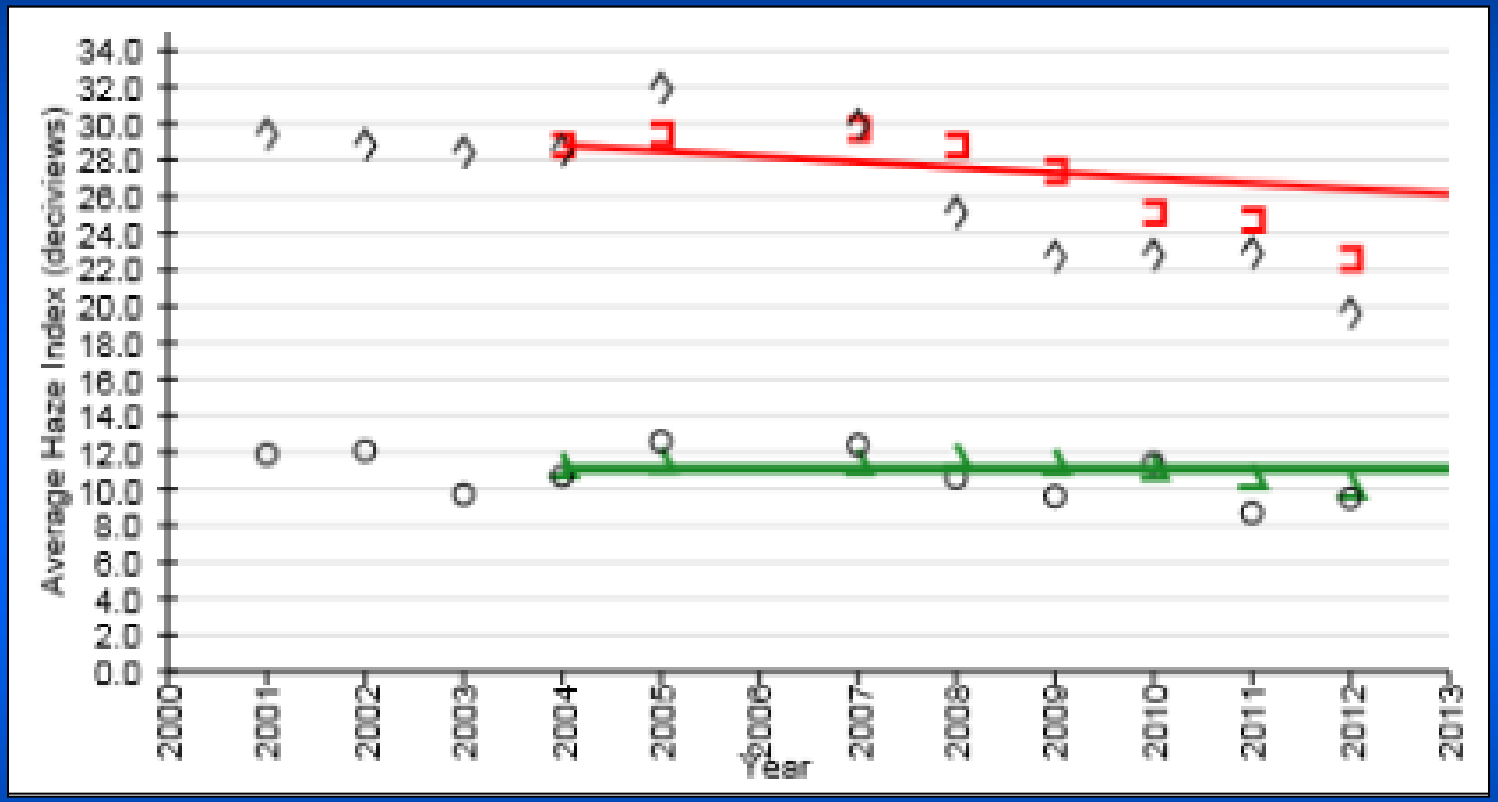
Air Quality in North Carolina and Smoke Management Tools

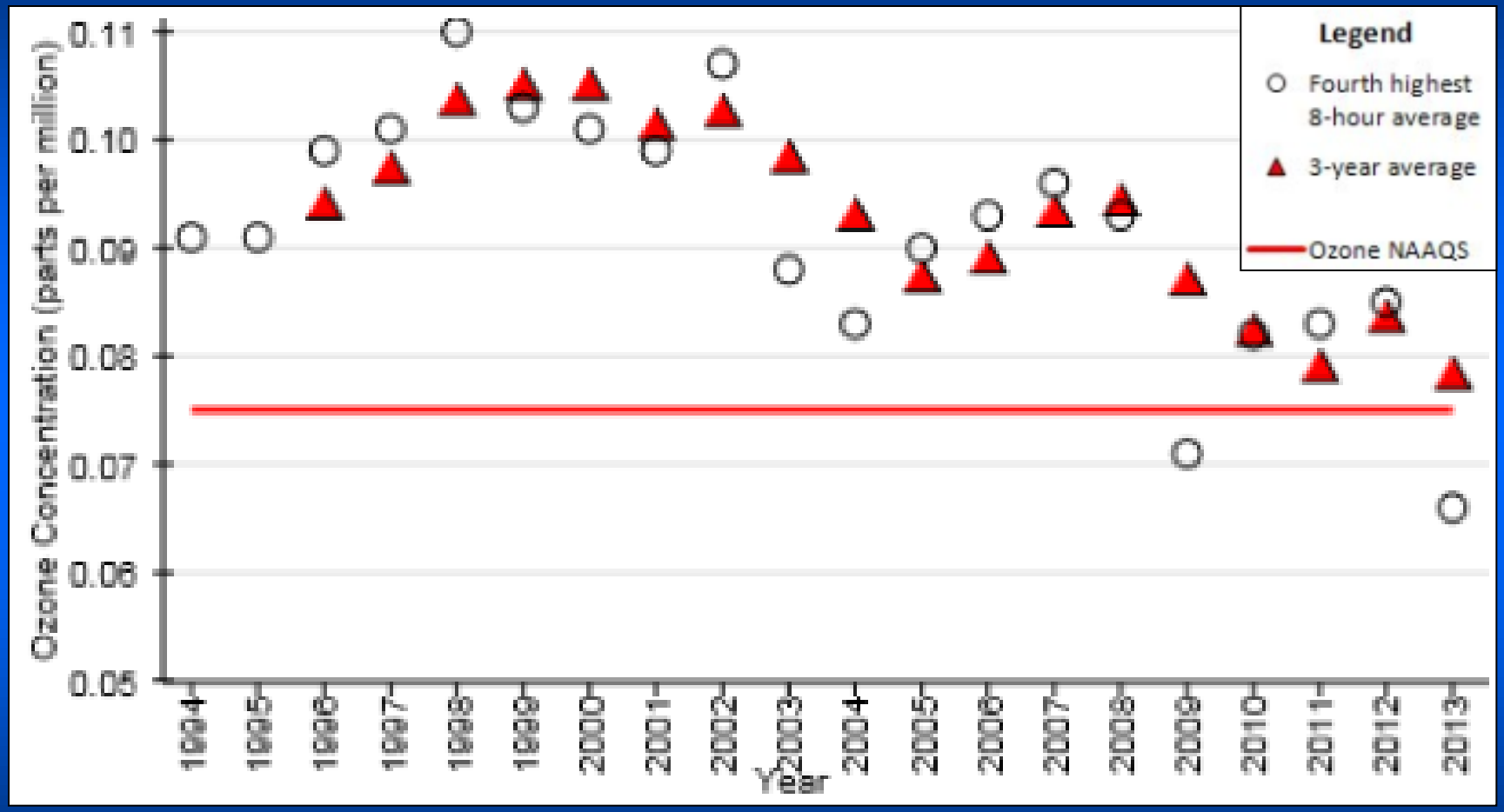
Bill Jackson
Air Resource Management Specialist
Asheville, North Carolina

Air Quality Trends – Fine Particles



Ambient monitoring results from Avery County

Air Quality Trends - Ozone



Ambient monitoring results from Mecklenburg County

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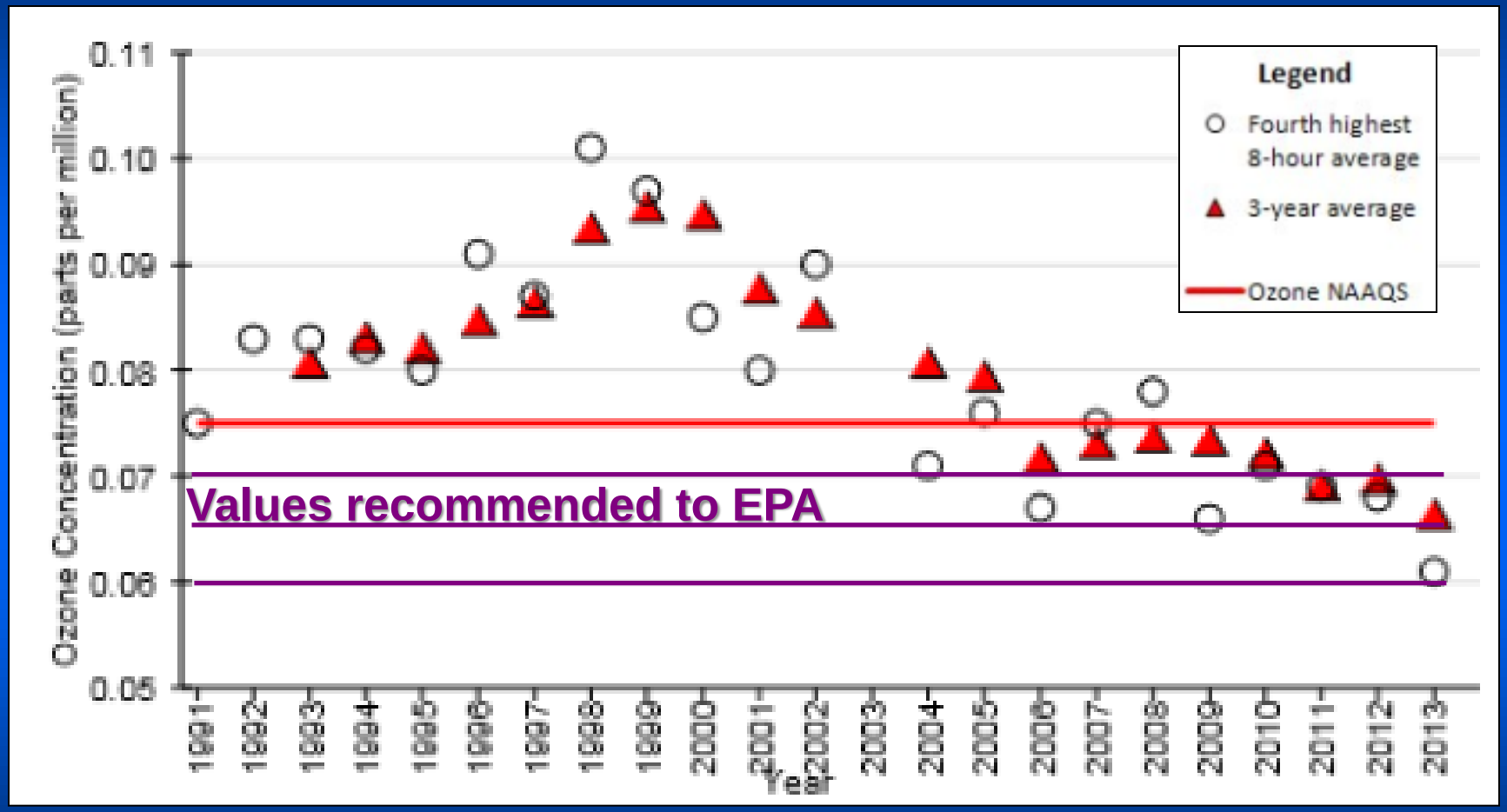
Air Quality Trends - Ozone



Ambient monitoring results from Montgomery County

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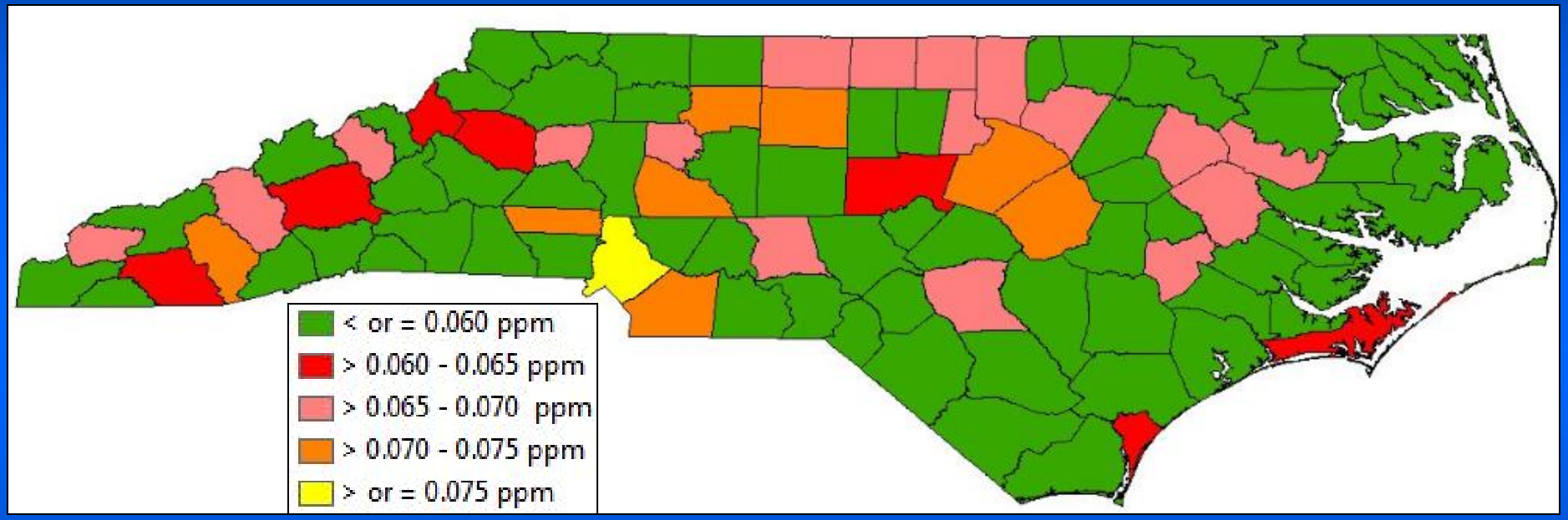
Possible Ozone Non-attainment Areas



Smoke Management Tools Simple → Advanced

Simple:

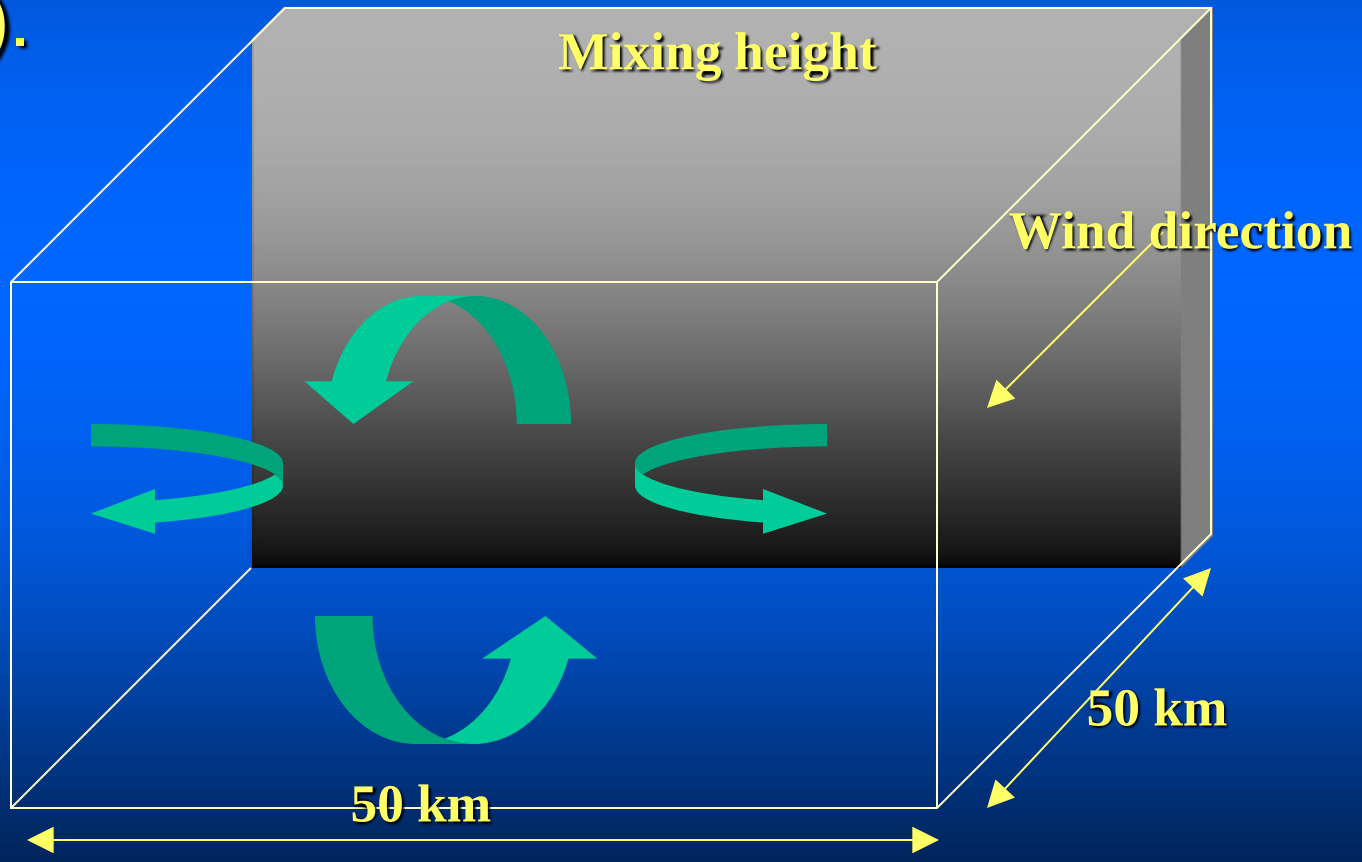
- North Carolina Smoke Management Guidelines (Category Day)

Advanced:

- Planning: VSMOKE and VSMOKE-GIS
- Operational: PC HYSPLIT

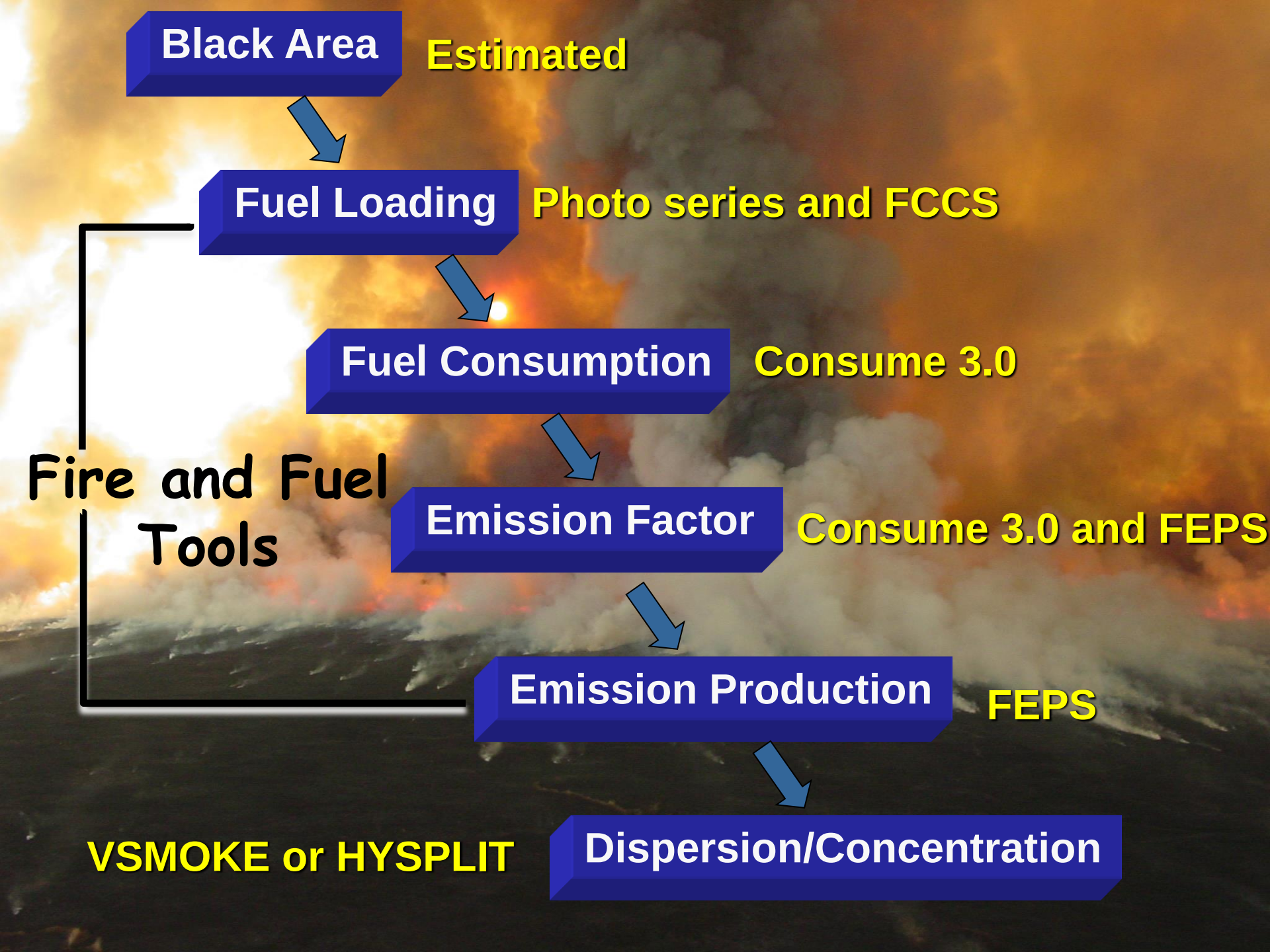
Simple Method To Estimate Smoke Impact

Lavdas Dispersion index: An estimate of the capacity of the atmosphere to disperse smoke (DI >=30).



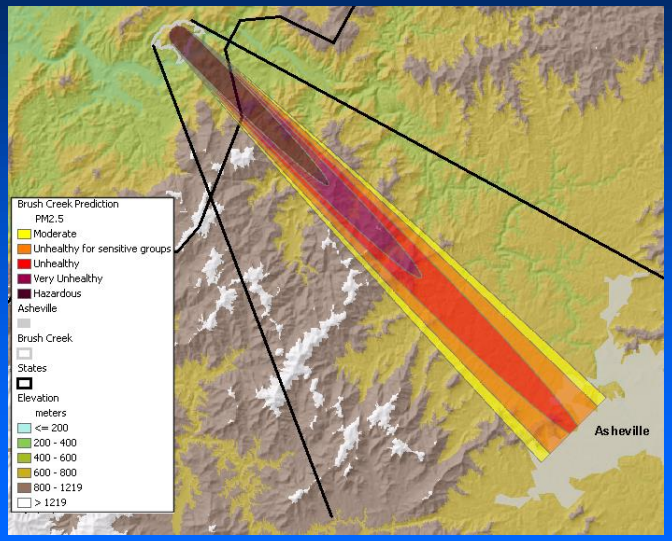
Low Visibility Occurrence Risk Index

A risk index of low visibility on highways due to smoke and/or fog. Input values include dispersion index and relative humidity. (LVORI <= 4)


Black Area
Estimated
Fuel Loading
Photo series and FCCS
Fuel Consumption
Consume 3.0
Fire and Fuel Tools
Emission Factor
Consume 3.0 and FEPS
Emission Production
FEPS
VSMOKE or HYSPLIT
Dispersion/Concentration

Planning - VSMOKE

- A simple screening model to show predicted downwind concentrations of particulate matter.
- For use in flat to gently rolling terrain, and steady wind conditions.
- Use with caution in complex terrain.
- Results are tabular and GIS.
- Draft report prepared.



VSmoke Results

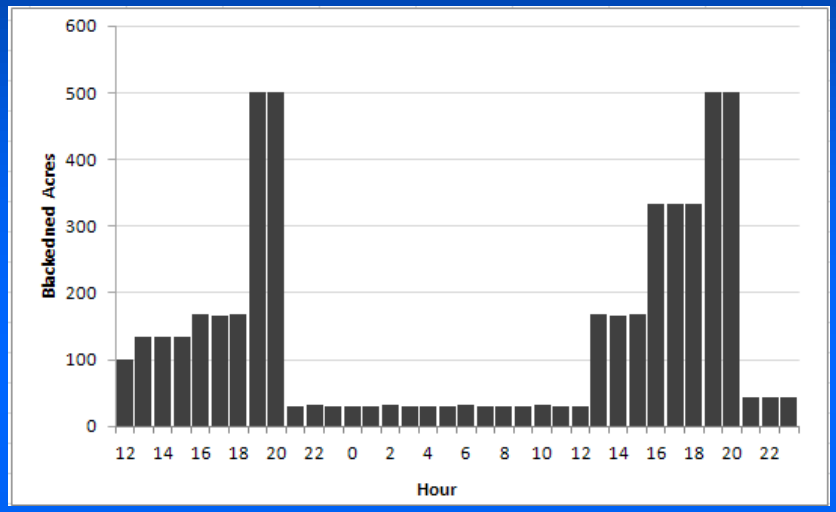
Concentrations | Visibility | Plume | Stability, DI, and LVORI

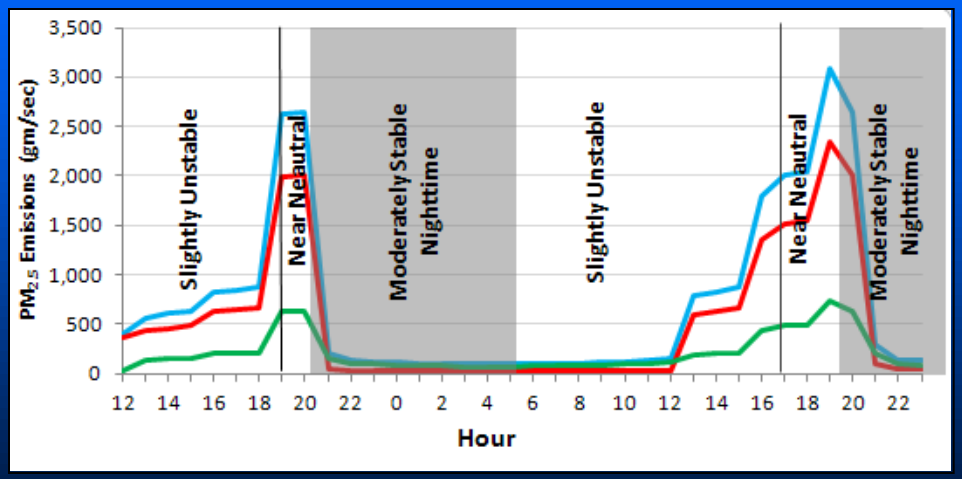
Ground level estimates

Distance from fire	PM2.5 (ug/m3)	CO (ppb)	Distance from fire	PM2.5 (ug/m3)	CO (ppb)
317 ft	2,972	1	2.47 mi	413	1
422 ft	2,634	1	3.11 mi	380	1
528 ft	2,316	1	3.92 mi	347	1
634 ft	2,024	1	4.94 mi	314	1
845 ft	1,760	1	6.21 mi	281	1
1056 ft	1,525	1	7.82 mi	247	1
0.25 mi	1,321	1	9.85 mi	213	1
0.31 mi	1,144	1	12.40 mi	182	1
0.39 mi	994	1	15.61 mi	154	1
0.49 mi	867	1	19.65 mi	129	1
0.62 mi	761	1	24.74 mi	109	1
0.78 mi	673	1	31.14 mi	91	1
0.98 mi	599	1	39.21 mi	77	1
1.24 mi	539	1	49.36 mi	65	1
1.56 mi	489	1	62.14 mi	55	1
1.96 mi	448	1			

Operational – PC HYSPLIT Hone Quarry

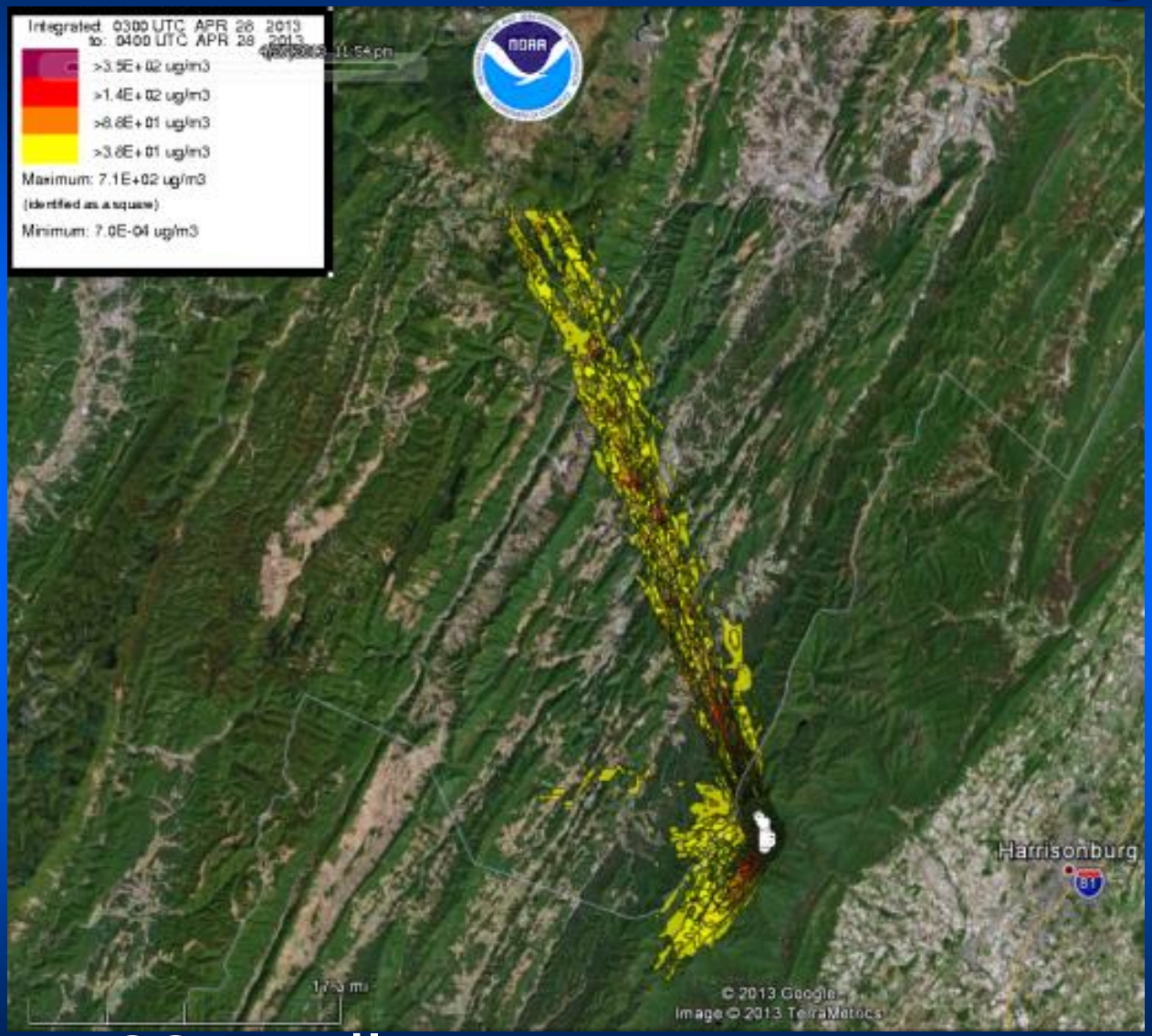
- Decided to burn the unit over two days on April 26 and 27, 2013.





PC HYSPLIT – Hone Quarry

- 1st Day



AQI Orange: 28.7 miles

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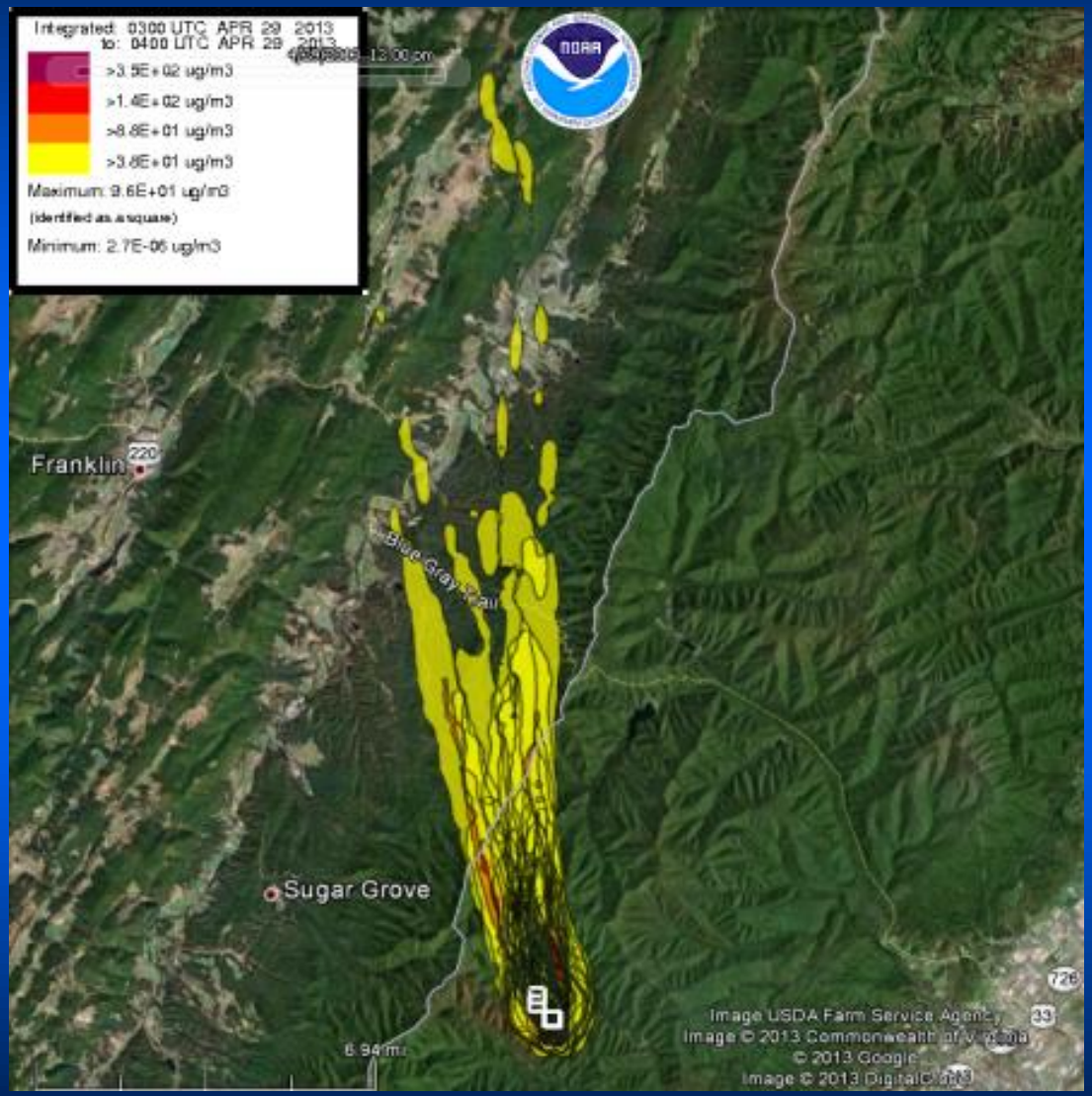
PC HYSPLIT – Hone Quarry

- 2nd Day



AQI Orange: 7.8 miles

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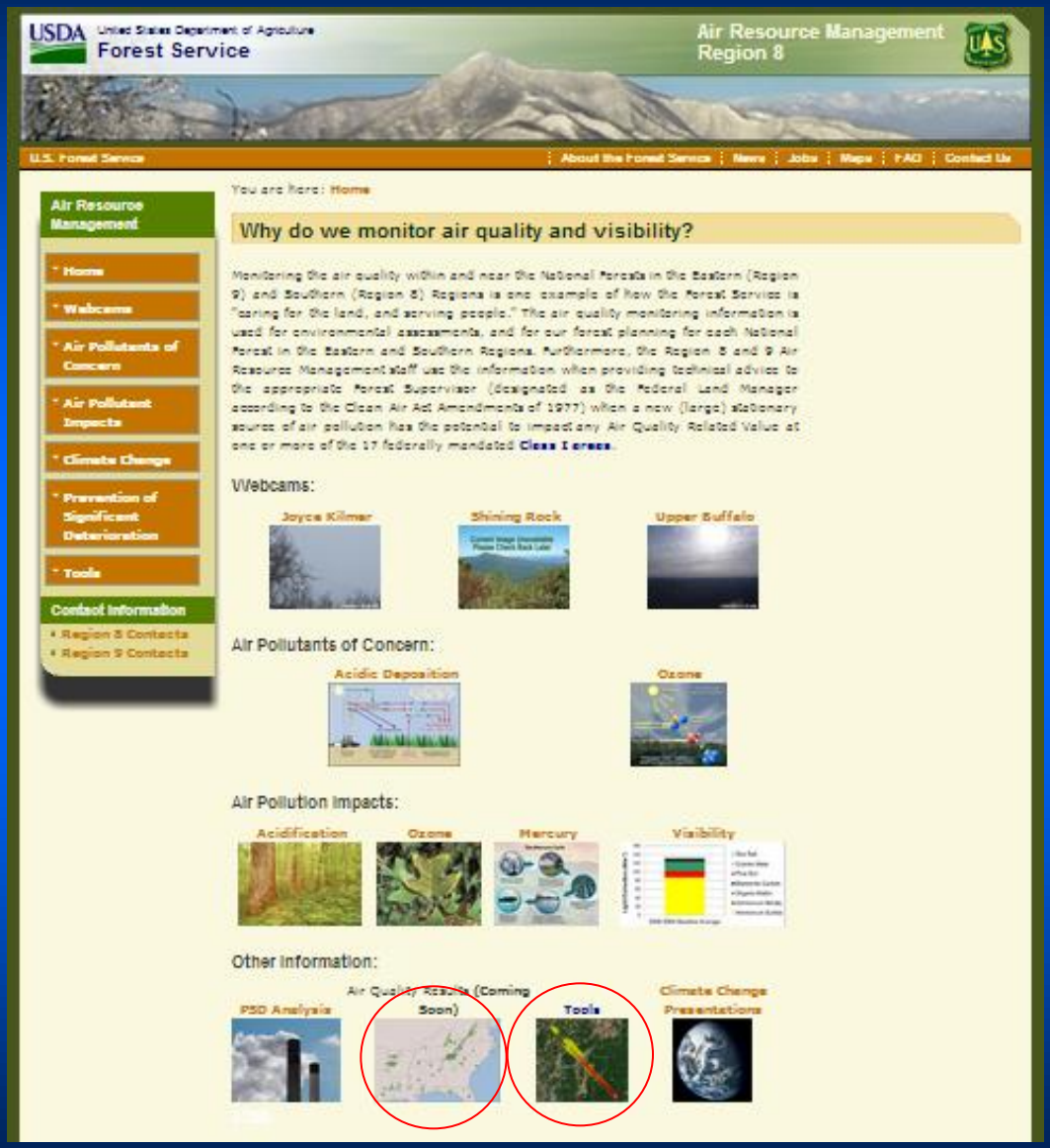
http:webcam.srs.fs.fed.us



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