

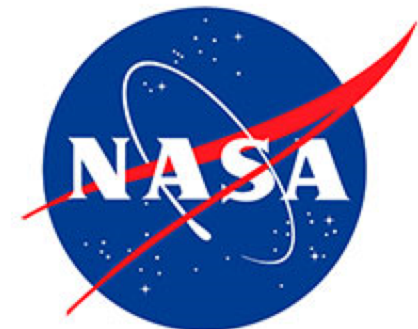
~~Predicting the Impacts of Appalachian Fires~~ Dynamic Air Quality Management: Applications of Forecasting Fire Impacts

Armistead (Ted) Russell, Yongtao Hu and Talat Odman



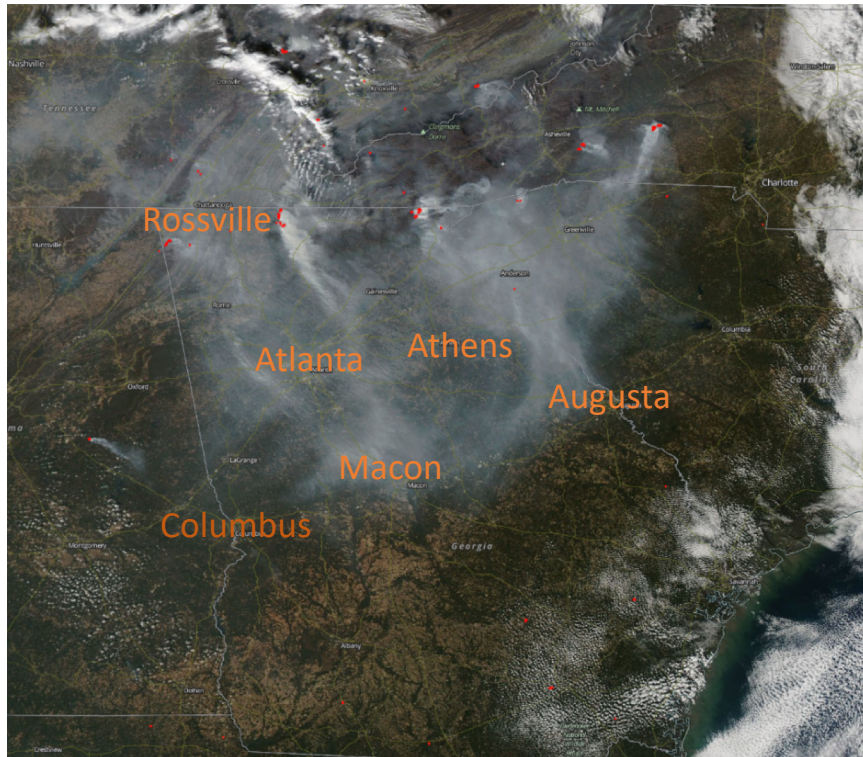
NASA Health and Air Quality Applied Sciences Team
(HAQAST)

Health and Air Quality Stakeholders Meeting

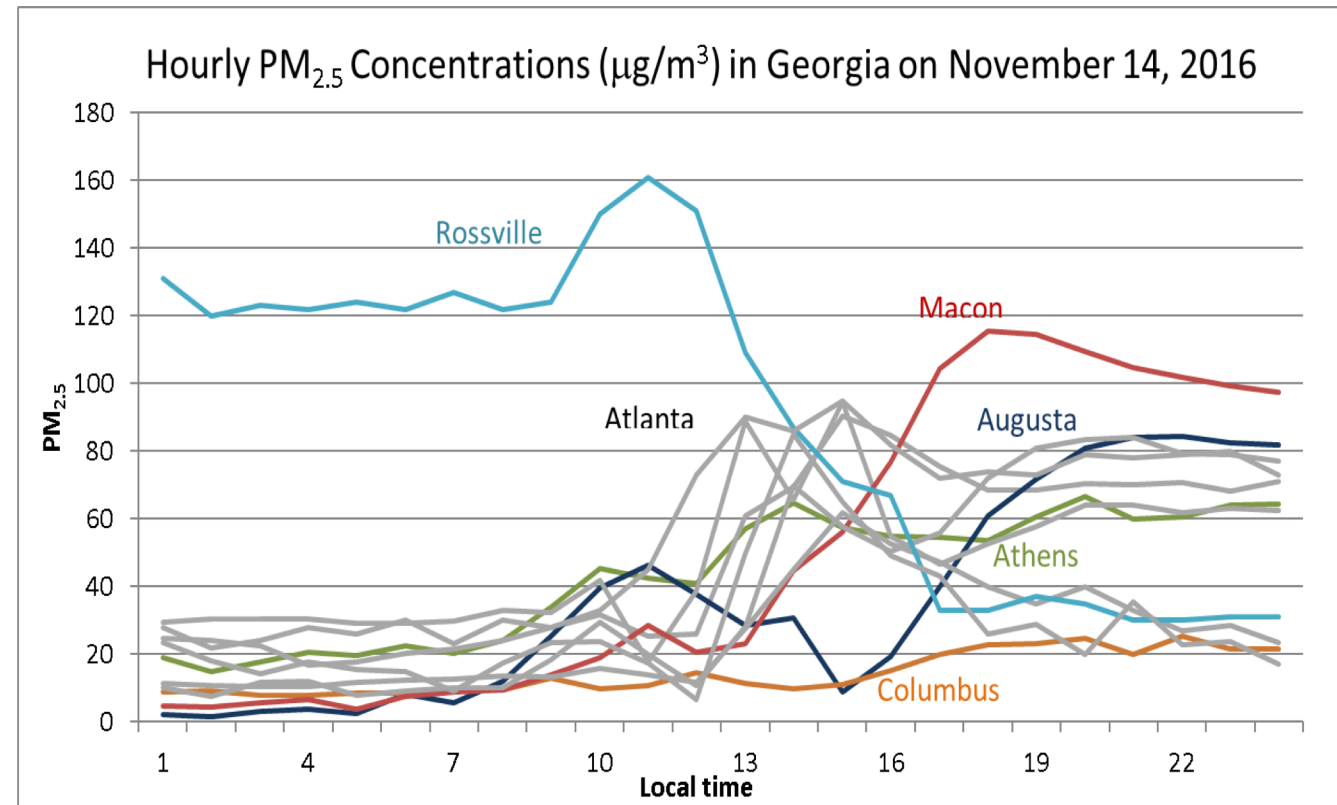


November 2016 Fires in Southern Appalachian Mountains

- Fires erupted in drought stricken Southern Appalachian Mountains in November 2016
- 24-hour average $\text{PM}_{2.5}$ standard ($35 \mu\text{g}/\text{m}^3$) exceeded in populated areas of the Southeast



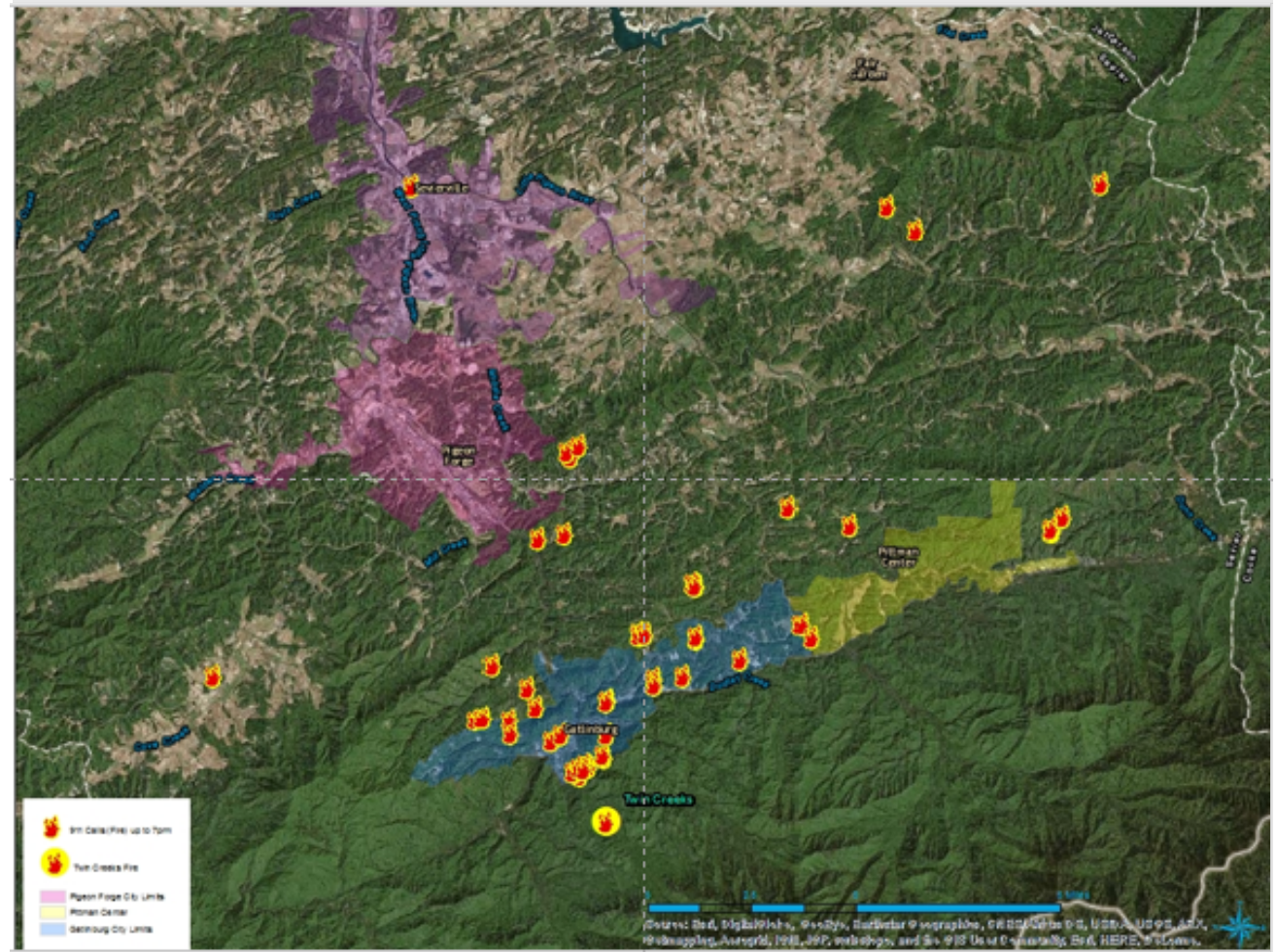
November 14, 2016: fire and smoke observations by MODIS



Gatlinburg Fires

- 14 deaths
- 191 injured
- 2,460 structures damaged or destroyed

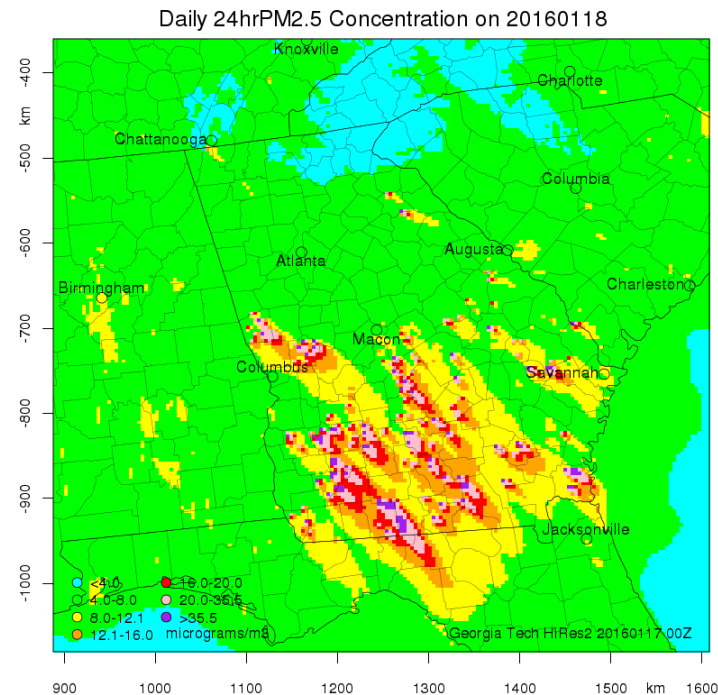
- The storm: 80 miles per hour winds



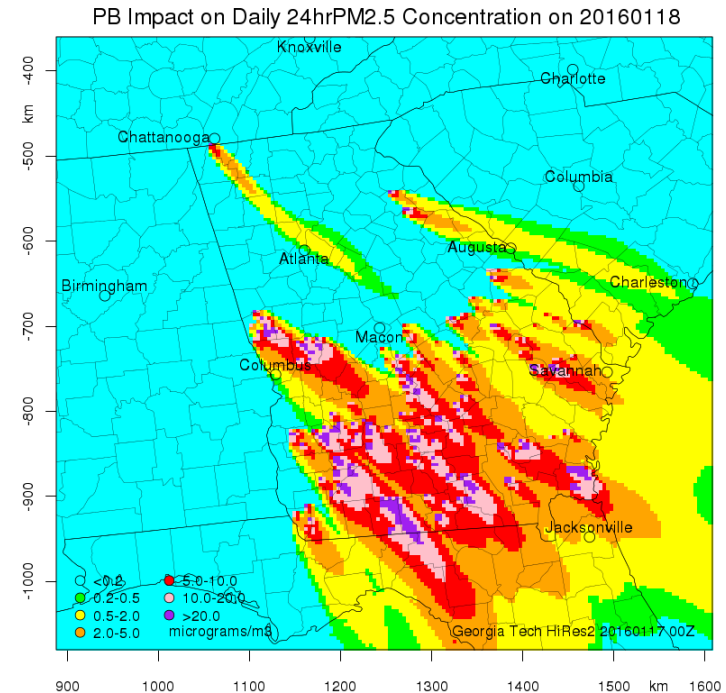
Prescribed fire to reduce wildfire risk and dynamic management of air quality

- Attended the Southern Group of State Foresters Fire Chiefs' Meeting
- More prescribed (Rx) fire ahead of a severe wildfire season is a proposed strategy
- Air quality can be managed dynamically: More Rx fires with smaller air quality impacts
- Currently being conducted in Georgia: <https://forecast.ce.gatech.edu>

PM_{2.5} Forecast

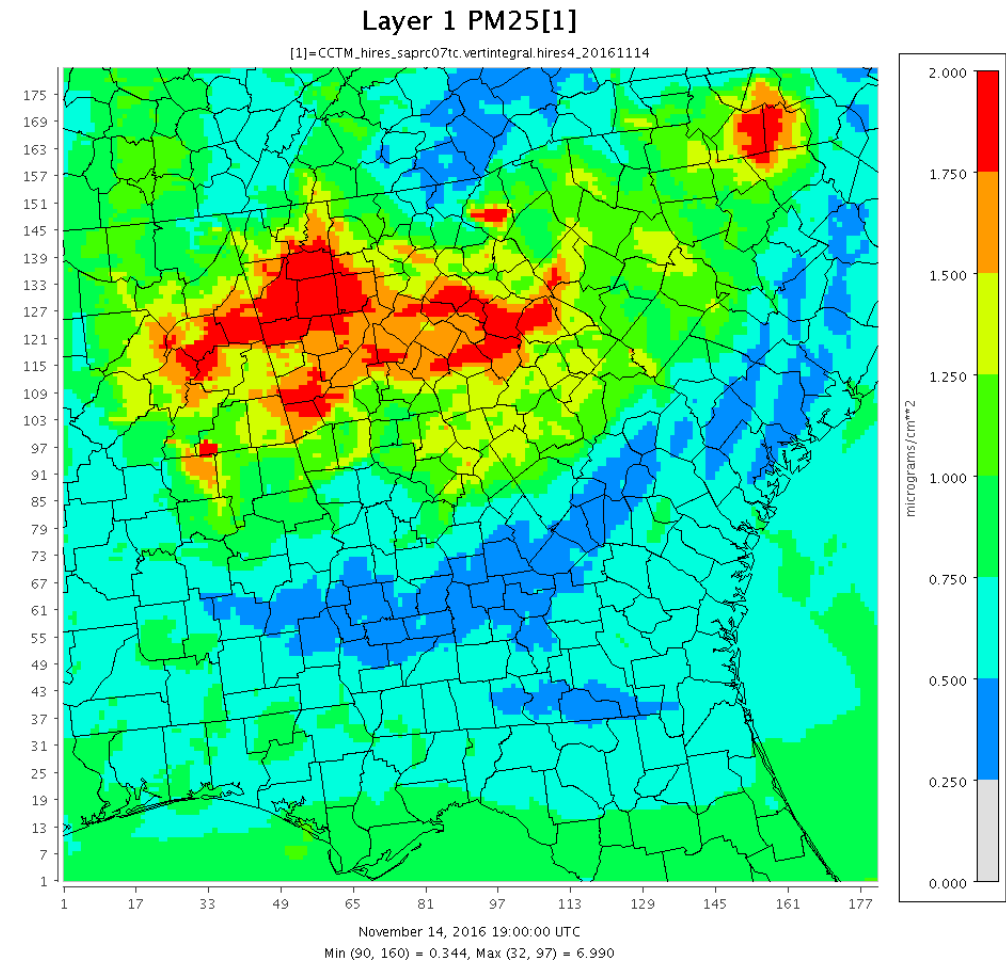
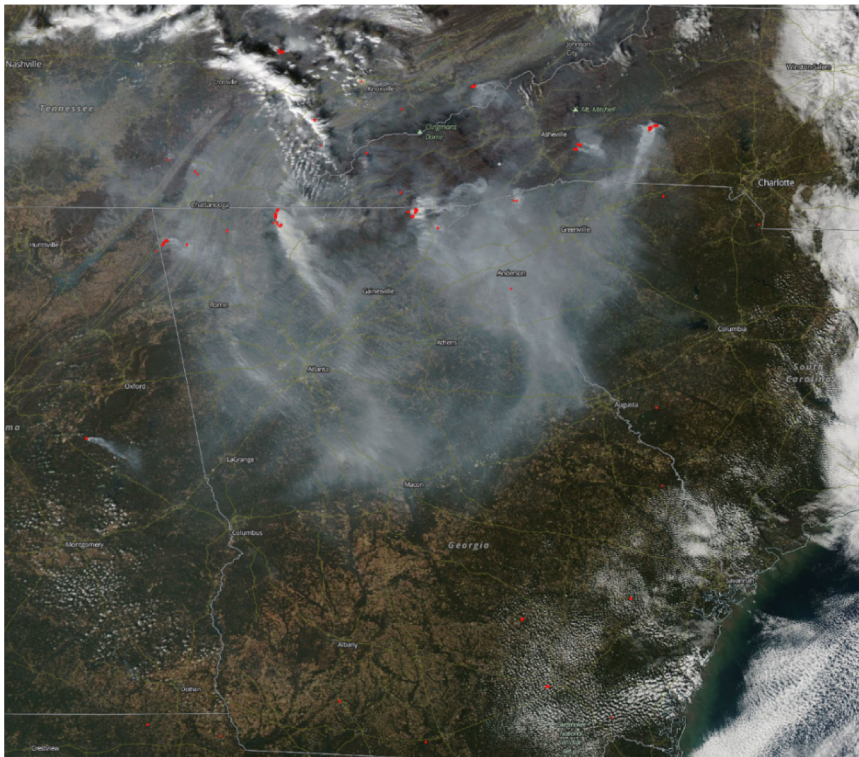


PB Impact Forecast



Simulations of Appalachian Fires

- Exposure assessments: Wildfire versus Rx fire
- Challenges of complex terrain



Incorporating NASA Science

- Fuel loads
- Fire emissions
- Plume heights
- Smoke dispersion
- Model evaluation
- Fire detection
- Fire season severity forecast
- ...

