HiRes-X: Scientific and Geographic Extension of an Operational, High Resolution, Prognostic Air Quality System Providing Smoke Impacts Forecasts for Health Protection, Ecosystem Management and Economic Development Using Earth Observations

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HAQAST

NASA Health and Air Quality Applied Sciences Team (HAQAST)

Health and Air Quality Stakeholders Meeting

NASA

Our Collaborators

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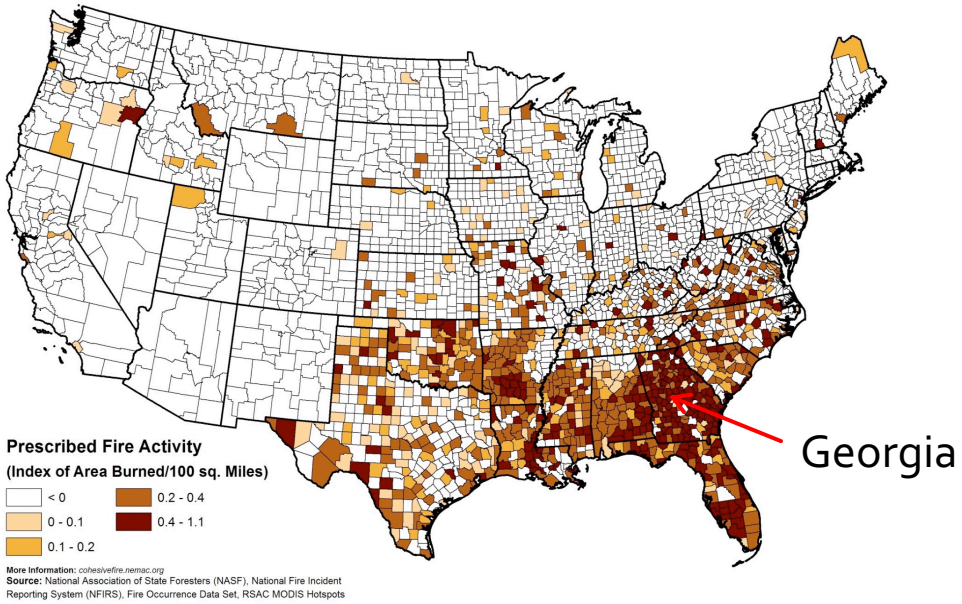
Prescribed burning, the preferred land management tool in the Southeast, is a large source of PM.

- Prescribed burning (**PB**) is practiced to improve native vegetation and wildlife habitat, control insects and disease, and reduce wildfire risk.

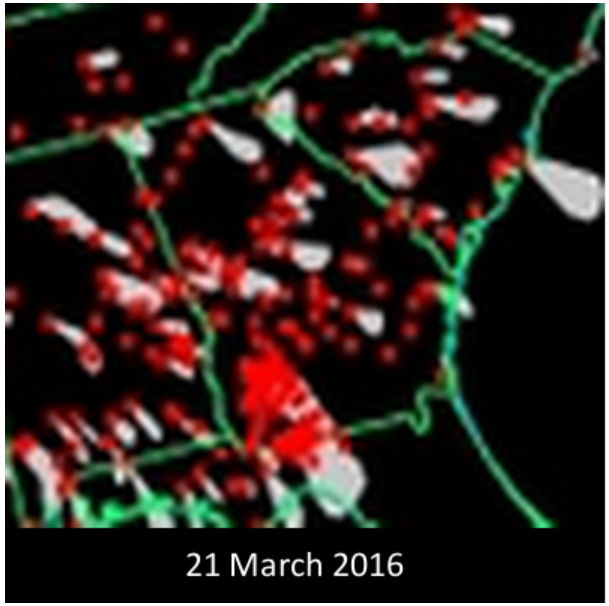


- According to 2011 National Emission Inventory, 15% of PM2.5 emissions in the US (820 Gg) are from PB, second largest source after wildfires (18% or 995 Gg)
- In the Southeast, PB is the largest source of PM2.5 emissions (20% or 210 Gg)

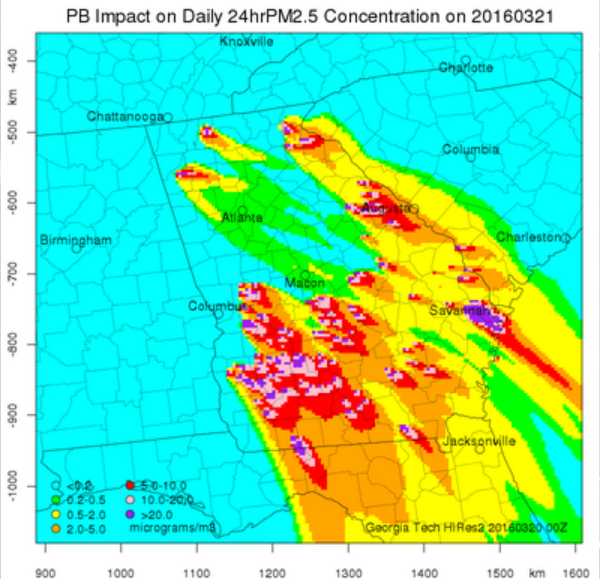
Hi-Res Air Quality and Burn Impact Forecasting System (https://forecast.ce.gatech.edu)

- Forecasting burn activity, burn emissions and burn impacts on air quality
- Forecasts compared qualitatively to NOAA's Hazard Mapping System Fire and Smoke Analysis and quantitatively to NOAA's Biomass Burning Emission Product blended from GOES-E, GOES-W, MODIS, and AVHRR as well as Georgia Forestry Commission's burn permit database

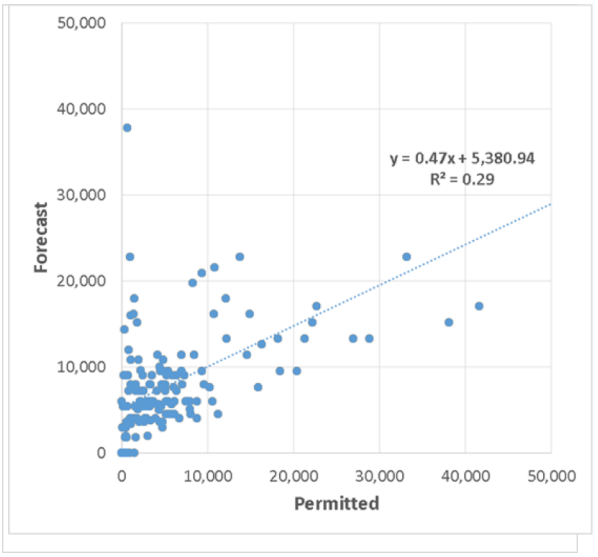
Fire & Smoke from Satellite



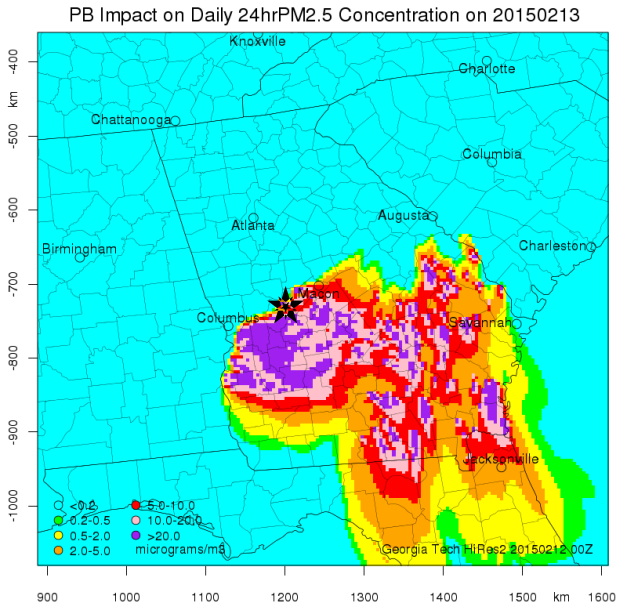
Our Burn Impact Forecast

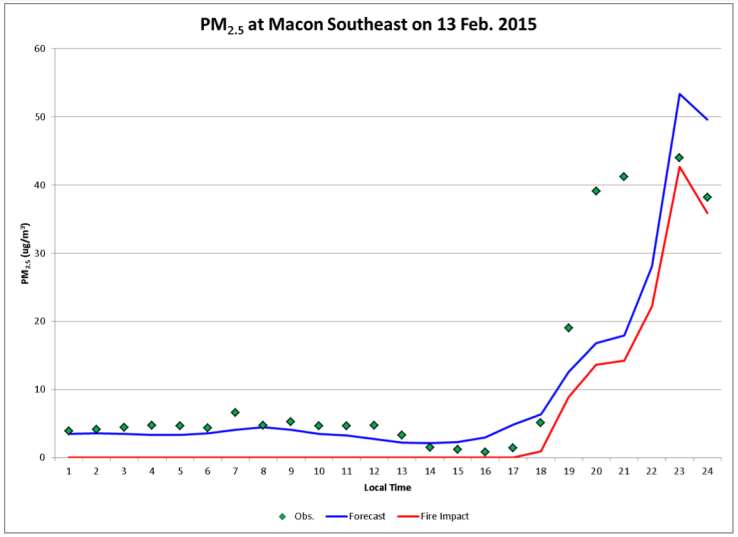


Forecast vs. Permitted Burn Areas



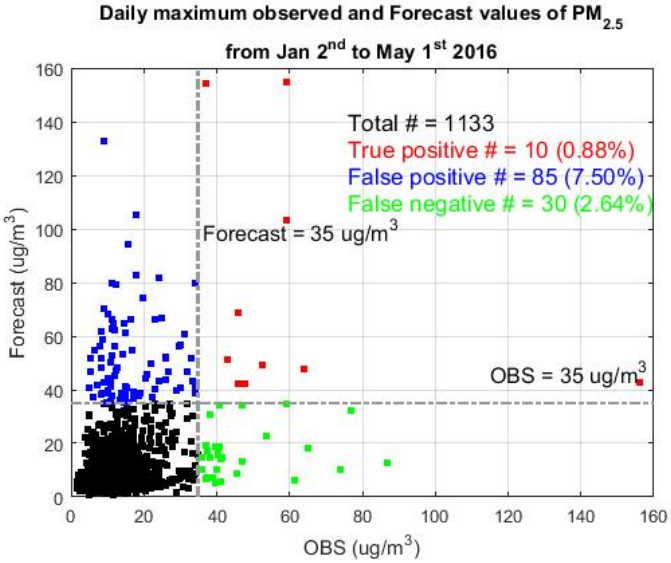
Ground-level $PM_{2.5}$ observations used for evaluating the impact forecasts are sparse.





A perfect hit (true positive)

Only a few cases of PB impacts are observed at the ground monitoring sites and a small fraction of those cases is forecast.



We will use inexpensive sensor packs to detect burn impacts in unmonitored areas.