The SECAS Third Thursday Web Forum

How do we conduct more prescribed fire, keep our air clean, and meet strengthened national ambient air quality standards?

7-18-2024

Agenda

- Introduction
- Monthly topic
- Q&A and discussion
- Preview of next webinar
- Staff updates

How do we conduct more prescribed fire, keep our air clean, and meet strengthened national ambient air quality standards?

Shan Cammack, Georgia Dept. of Natural Resources
Jennifer Fawcett, NC State University

7-18-2024

How Do We Conduct More Prescribed Fire, Keep Our Air Clean, and Meet Strengthened NAAQS for PM 2.5?

SECAS
July 18, 2024

Jennifer Fawcett

Extension Specialist & SERPPAS Prescribed Fire Working Group Coordinator, NC State University

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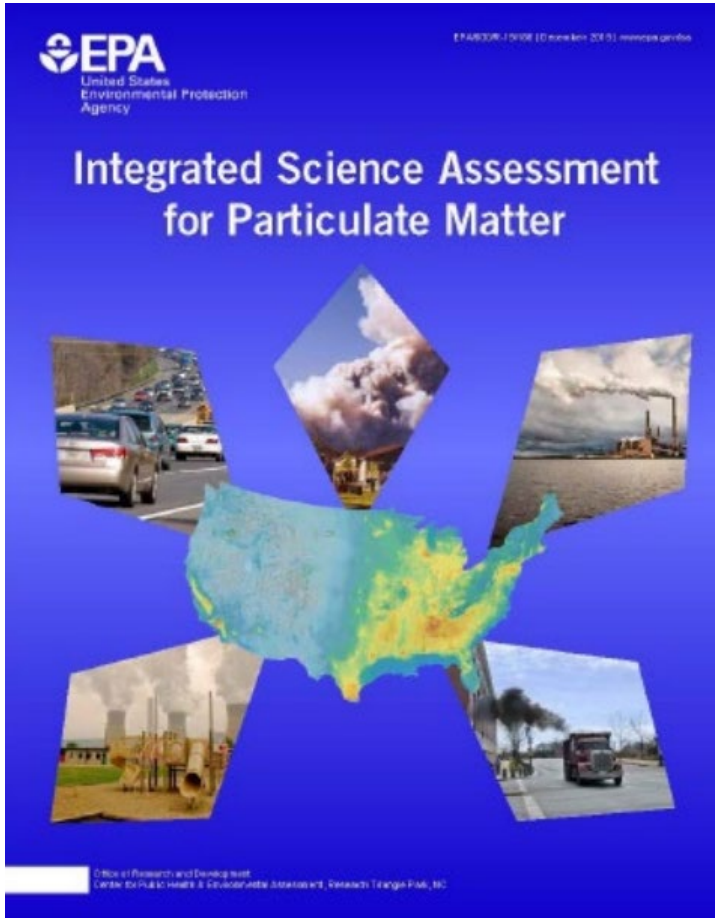
WHAT IS PM AND WHERE DOES IT COME FROM?

- PM is a term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.
- These particles come in many sizes and shapes and can be made up of hundreds of different chemicals.
  - Some are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires.
  - Most particles form in the atmosphere as a result of complex reactions of chemicals such as sulfur dioxide and nitrogen oxides, which are pollutants emitted from power plants, industries and automobiles.

Size comparisons for PM particles

WHY IS PM A PUBLIC HEALTH CONCERN?



Source: https://www.epa.gov/isa/integrated-science-assessment-isa-particulate-matter

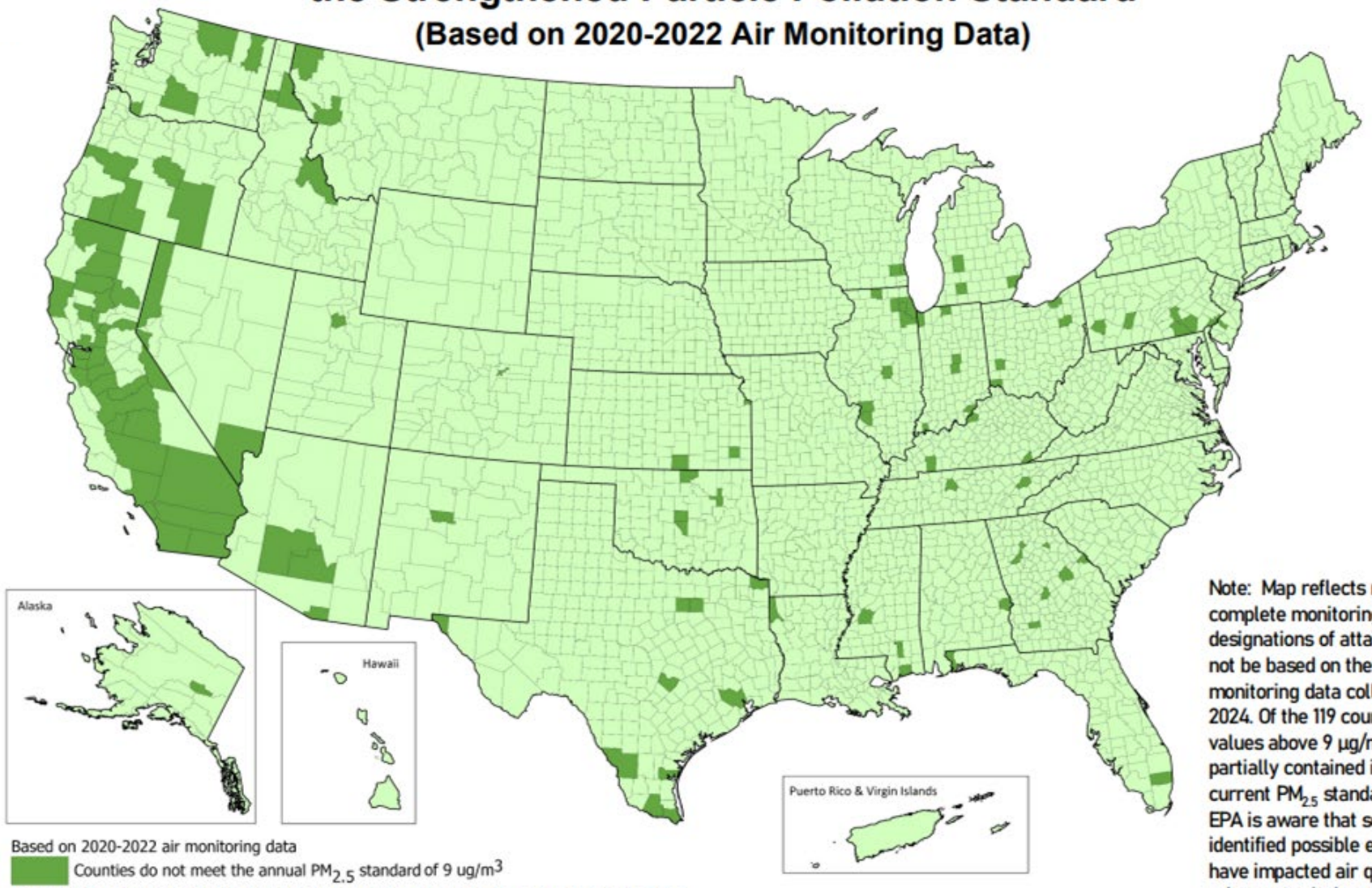
- Fine particles (PM2.5) are of greatest health concern
  - PM2.5 can enter the respiratory tract and make its way into the lower parts of the lungs
  - Some particles can move out of the respiratory system and affect other organ systems
- EPA's 2019 Integrated Science Assessment (ISA) and ISA Supplement links exposure to PM2.5 to adverse health effects, including:
  - Premature death, Cardiovascular effects like irregular heartbeat and heart attacks, Respiratory effects like aggravated asthma, decreased lung function, coughing and difficulty breathing, Cancer, Nervous system effects
- At-risk populations include children, older adults, people with preexisting respiratory or cardiovascular disease, minority populations, and low socioeconomic status (SES) populations

PM NAAQS FINAL RULE

On February 7, 2024, EPA revised the primary PM NAAQS by lowering the level from 12 µg/m3 to **9 µg/m3**.

Most Counties with Monitors Already Meet the Strengthened Particle Pollution Standard

(Based on 2020-2022 Air Monitoring Data)



Based on 2020-2022 air monitoring data

Counties do not meet the annual $PM_{2.5}$ standard of 9 ug/m^3

This information is provided for illustrative purposes only and is not intended to predict the outcome of any forthcoming designations process.

Note: Map reflects monitored counties with complete monitoring data. Future final designations of attainment/nonattainment will not be based on these data, but likely on monitoring data collected between 2022 and 2024. Of the 119 counties with 2020-2022 design values above 9 µg/m^3, 59 counties are totally or partially contained in nonattainment areas for current $PM_{2.5}$ standards. In years 2021 and 2022, EPA is aware that some states have already identified possible exceptional events that may have impacted air quality in the US and may be relevant to designations decisions.

EXCEPTIONAL EVENTS

- Exceptional events are unusual or natural occurrences that can affect air quality but are not reasonably controllable or preventable using techniques state, local, or tribal air agencies may implement to attain and maintain the national ambient air quality standards (NAAQS).
- Exceptional events affect air quality and impact ambient air monitoring data measured at ambient air monitoring sites for criteria pollutants. Data at these monitoring sites are collected by all state air agencies; some tribal and local air agencies also collect these data.
- States must submit formal requests to trigger this process and for EPA to consider for approval.
- Wildland and prescribed fire contribute to approximately 44% of PM emissions in the US. EE demonstrations cover such events; however, it is a substantial lift for air agencies.

How Do We Conduct Prescribed Fire, Keep Our Air Clean, and Meet Strengthened NAAQS?

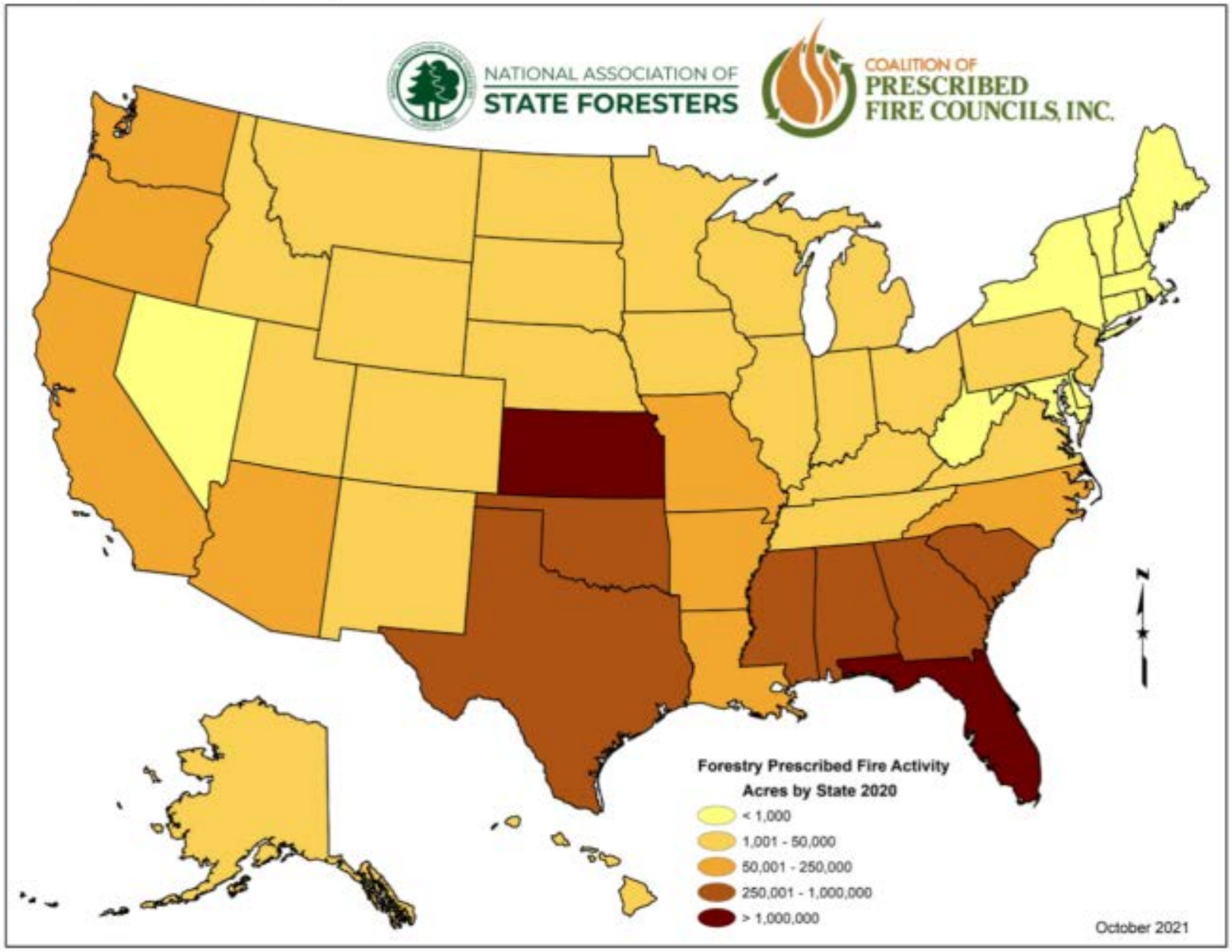
SHAN CAMMACK

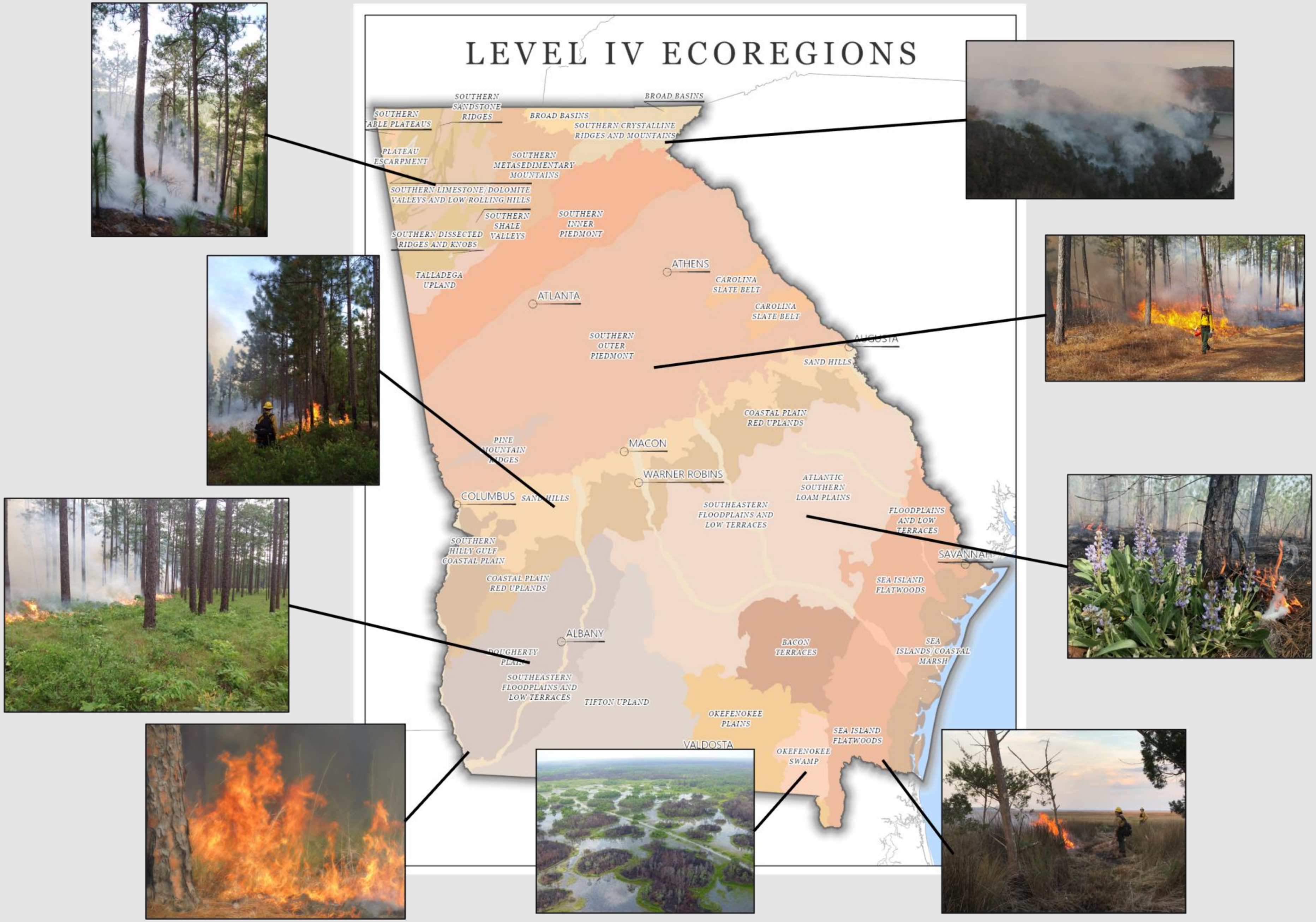
FMO, GA DNR WILDLIFE RESOURCES


GEORGIA
4X4


Prescribed fire is a safe way to apply
a natural process, ensure ecosystem health,
and reduce wildfire risk.
To manage wildlife, create resilient ecosystems, and promote cleaner air

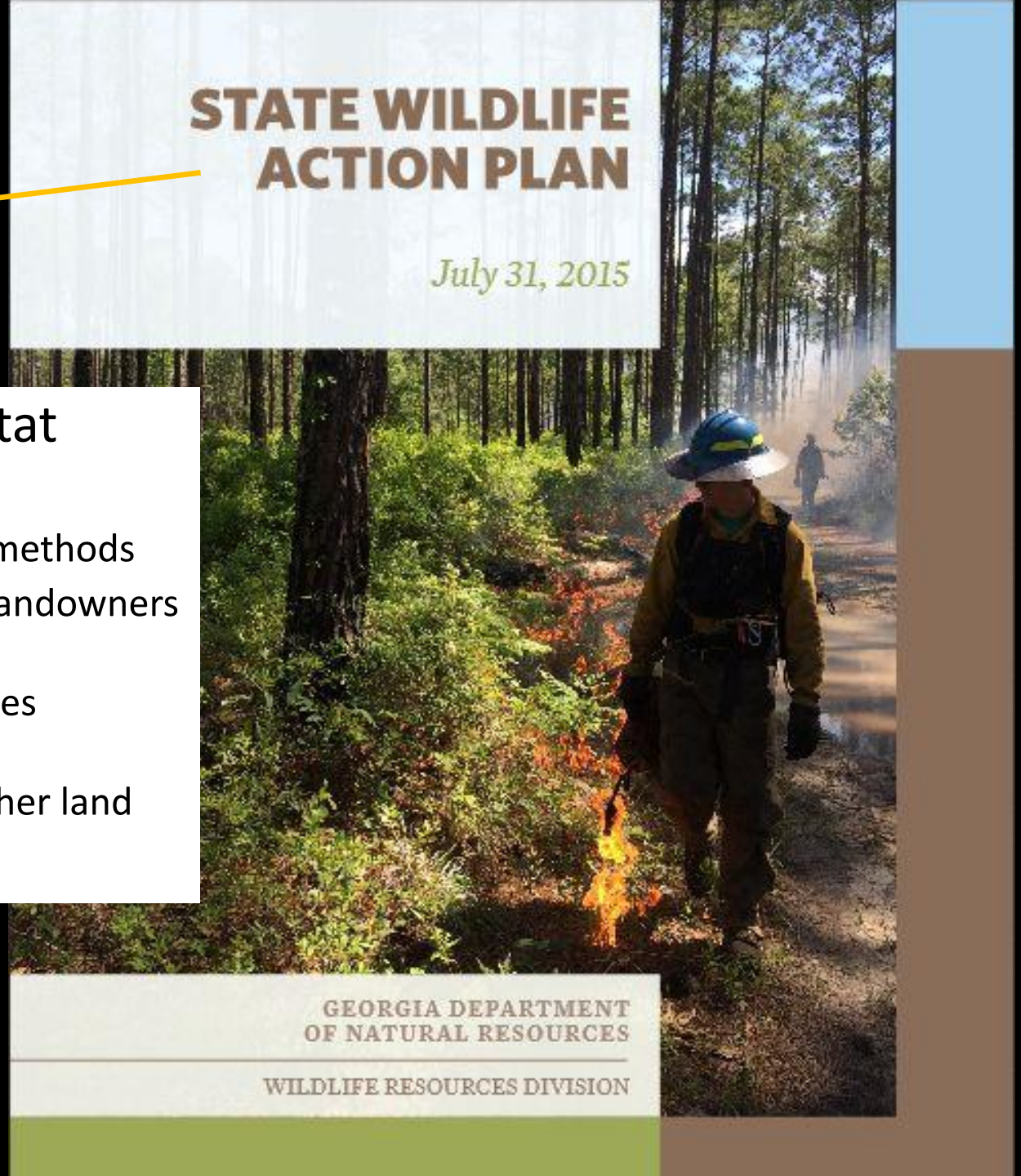
Prescribed Fire Activity




LEVEL IV ECOREGIONS
SOUTHERN TABLE PLATEAUS
SOUTHERN SANDSTONE RIDGES
BROAD BASINS
BROAD BASINS
SOUTHERN CRYSTALLINE RIDGES AND MOUNTAINS
PLATEAU ESCARPMENT
SOUTHERN METASEDIMENTARY MOUNTAINS
SOUTHERN LIMESTONE/DOLOMITE VALLEYS AND LOW ROLLING HILLS
SOUTHERN SHALE VALLEYS
SOUTHERN INNER PIEDMONT
SOUTHERN DISSECTED RIDGES AND KNOBS
TALLADEGA UPLAND
ATHENS
CAROLINA SLATE BELT
ATLANTA
CAROLINA SLATE BELT
AUGUSTA
SOUTHERN OUTER PIEDMONT
SAND HILLS
COASTAL PLAIN RED UPLANDS
PINE MOUNTAIN RIDGES
MACON
WARNER ROBINS
ATLANTIC SOUTHERN LOAM PLAINS
COLUMBUS
SAND HILLS
SOUTHEASTERN FLOODPLAINS AND LOW TERRACES
FLOODPLAINS AND LOW TERRACES
SAVANNAH
SOUTHERN HILLY GULF COASTAL PLAIN
SEA ISLAND FLATWOODS
COASTAL PLAIN RED UPLANDS
ALBANY
BACON TERRACES
SEA ISLANDS/COASTAL MARSH
DOUGHERTY PLAIN
SOUTHEASTERN FLOODPLAINS AND LOW TERRACES
TIFTON UPLAND
OKEFENOKEE PLAINS
SEA ISLAND FLATWOODS
VALDOSTA
OKEFENOKEE SWAMP

SWAP!

- Increase use of prescribed fire for habitat restoration
- Improve wetland protection and mitigation banking methods
- Provide technical and financial assistance to private landowners to conserve wildlife
- Develop a statewide strategy for invasive exotic species assessment and control
- Facilitate Georgia Land Conservation Program and other land protection efforts



Interagency Burn Team (IBT)

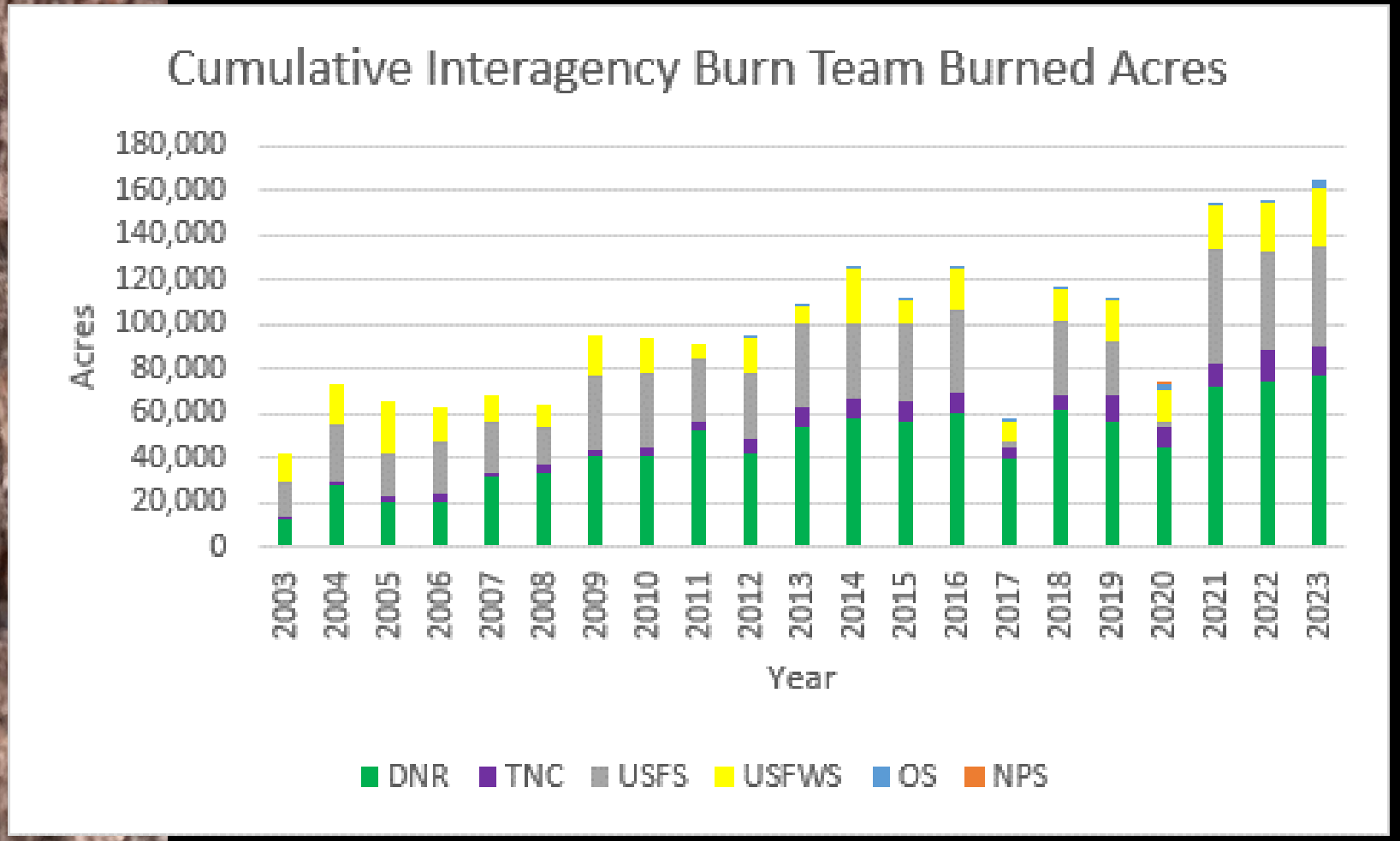
Mission of IBT is
" . . . to provide the
Cooperators an opportunity
to share equipment and personnel to
achieve each Cooperators' burn objectives. The goal
of this Understanding is to ensure that fire is effectively applied
to fire dependent habitats and to facilitate the Cooperators' use of
prescribed fire to maintain or restore wildlife habitats and
fire-dependent ecosystems and habitats beneficial to
endangered or threatened species. Through this
Understanding, prescribed fire will be an
effective management tool that can
be applied to the landscape using
the highest safety standard in the
industry, National Wildfire
Coordinating Group
(NWCG)."

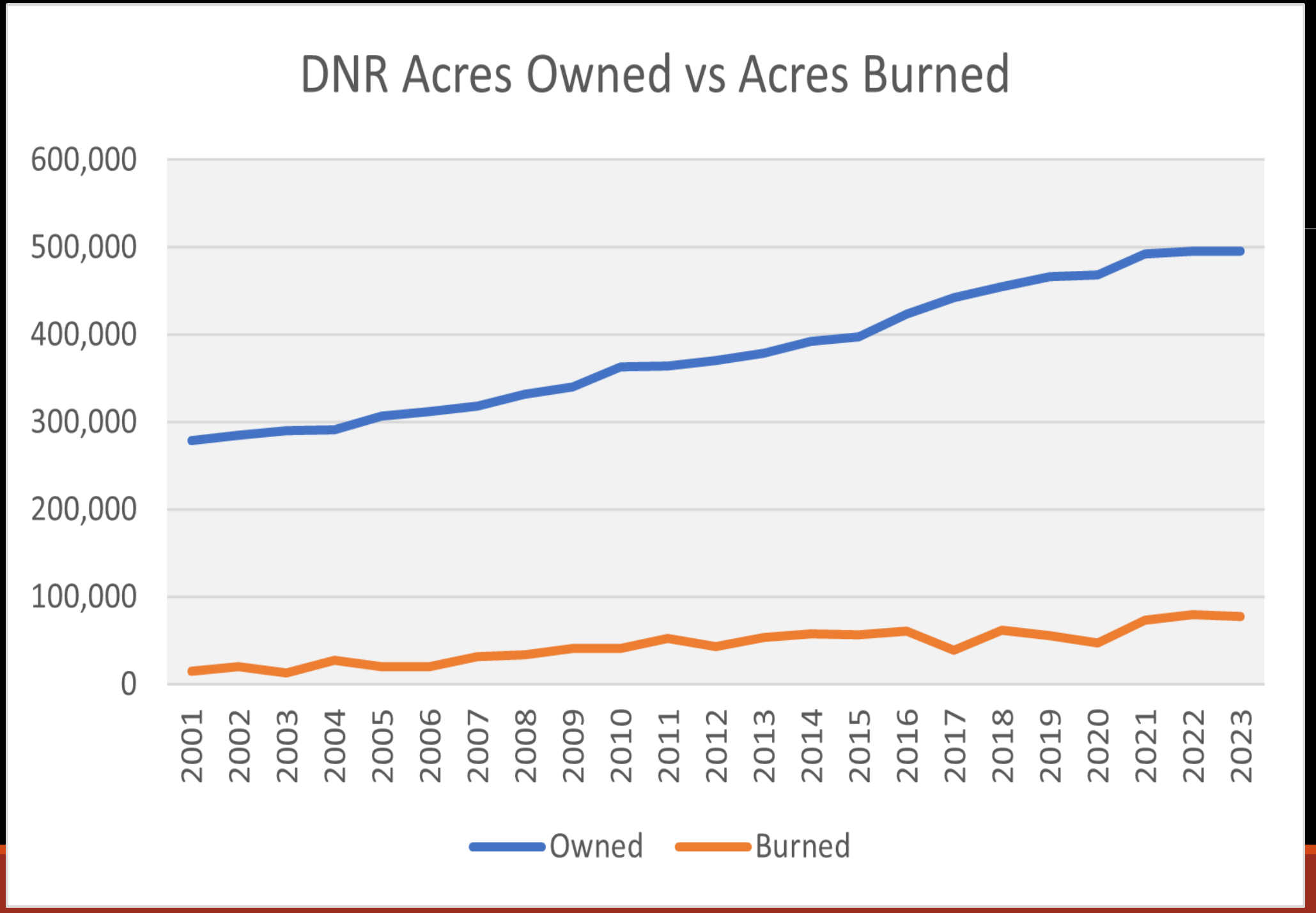
TALL TIMBERS

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

GEORGIA
FORESTRY
COMMISSION

RX Fire With the IBT
A Conservation Action Success!





2004

~300,000 acres owned

~28k acres burned

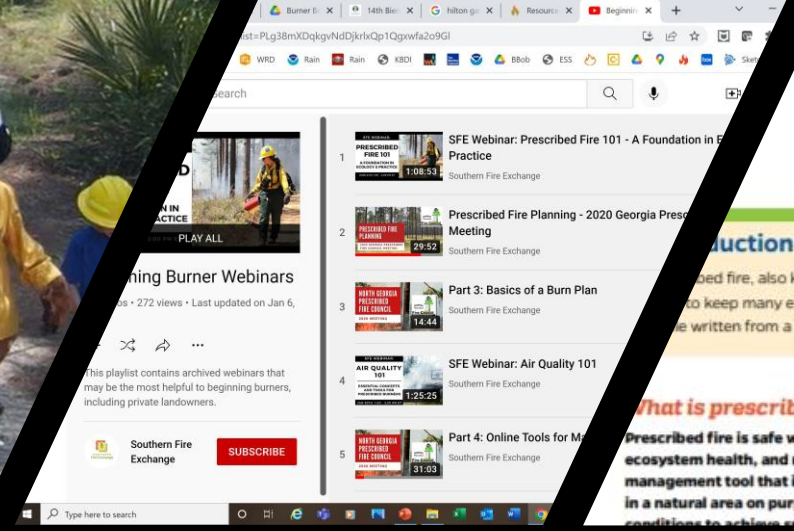
= ~9%

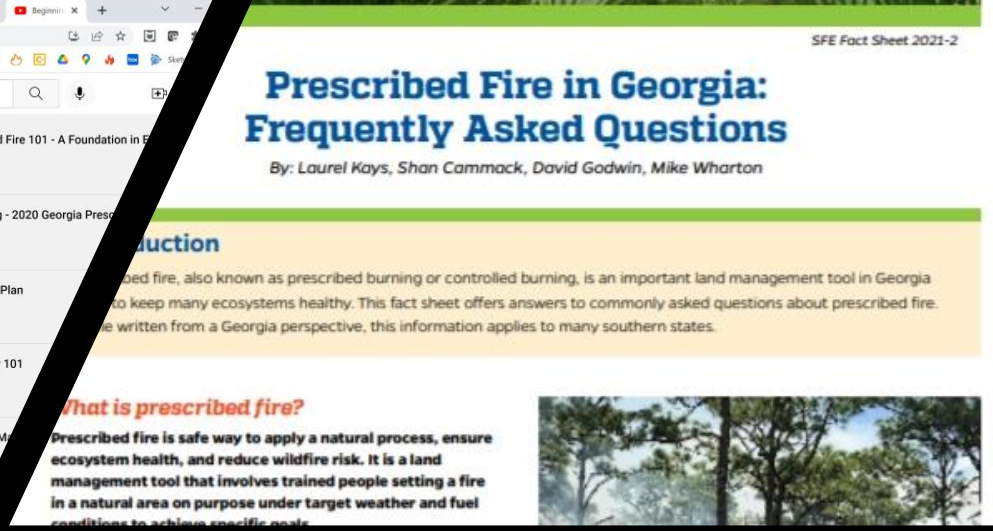
2023

~500,000 acres owned. (Not all acres are burnable acres)

~78,000 acres burned

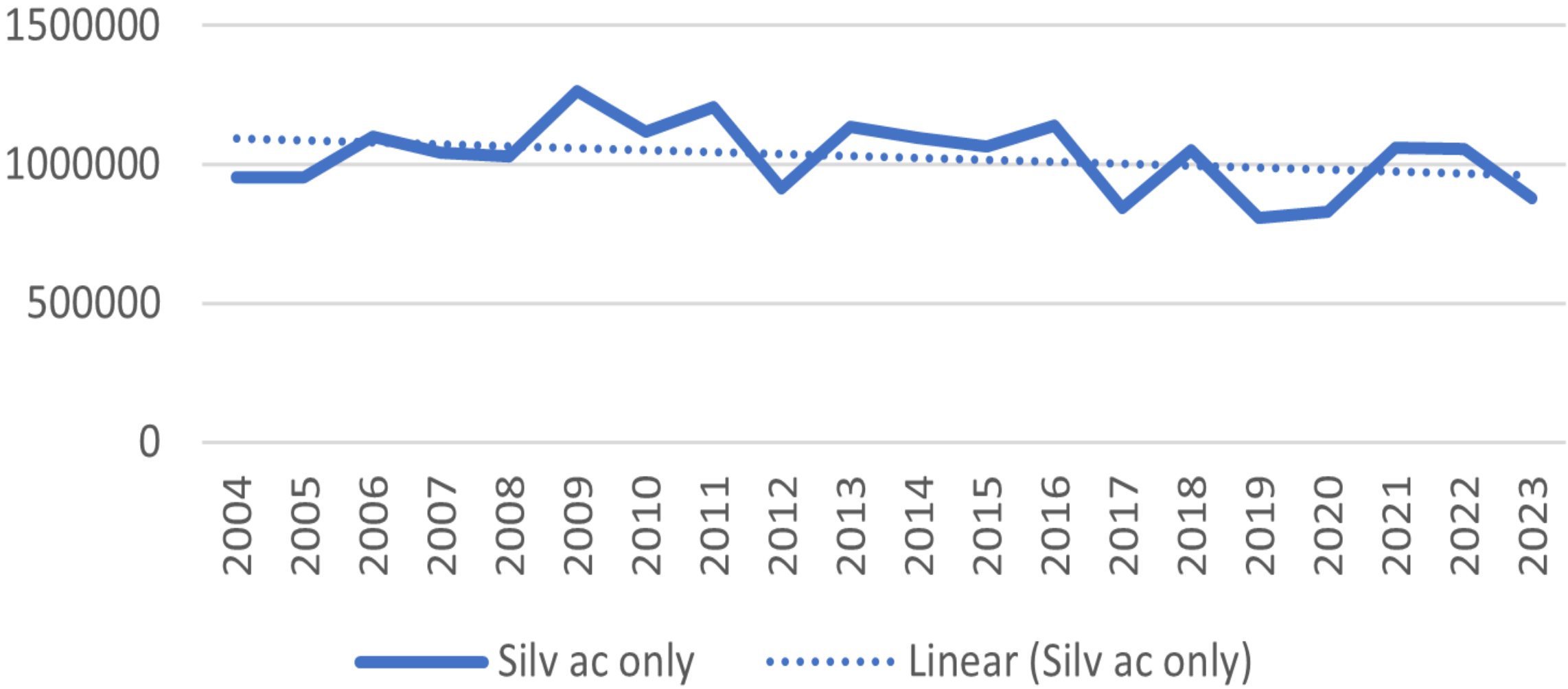
= ~16%





Conservation Action: Encourage use of prescribed fire as a habitat management tool on private lands. Provide information ad technical assistance to landowners.

Silviculture Burn Acreage Only FY 2004 - 2023

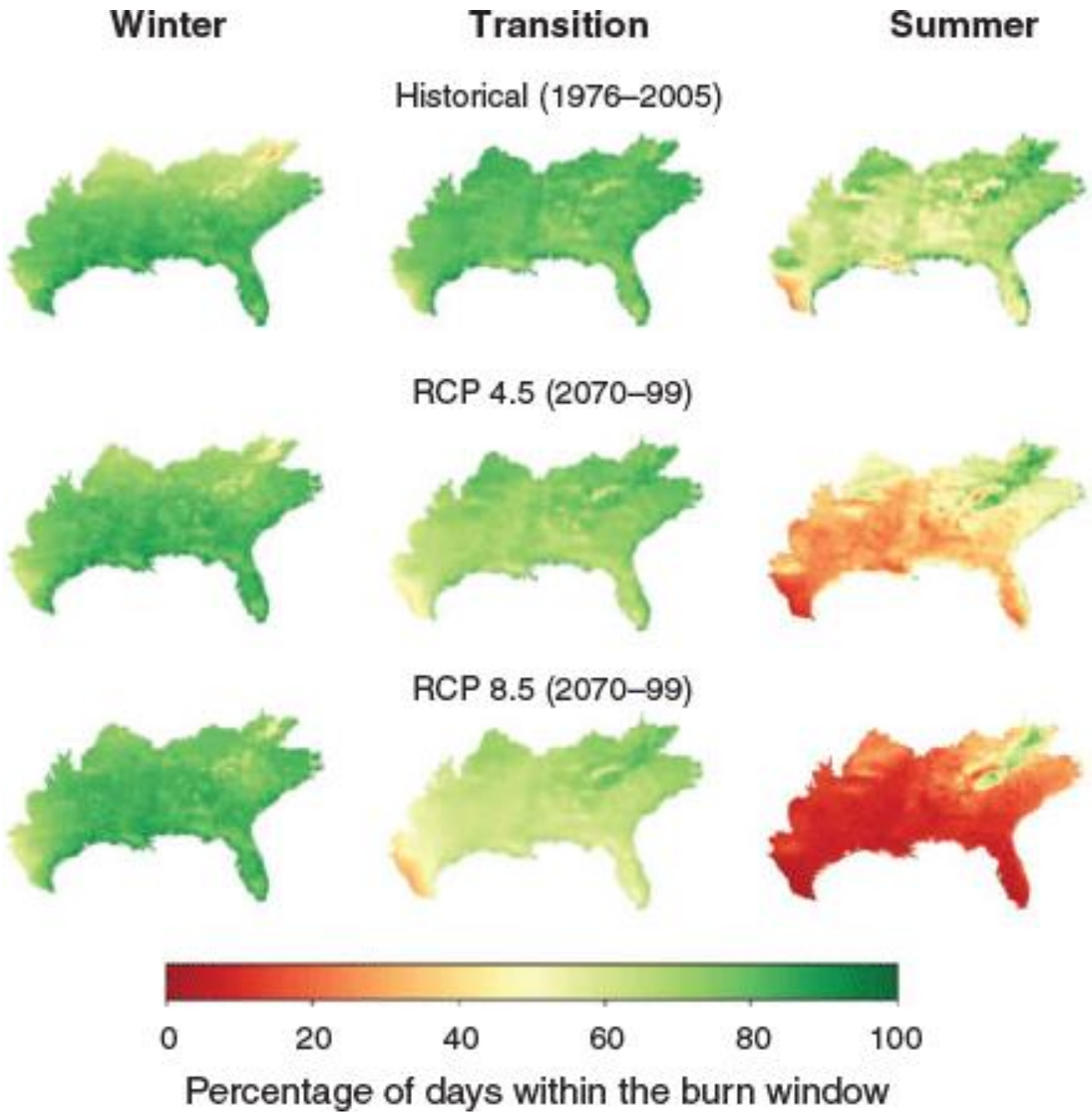


2025
Top Conservation Action:
Increase Number of Acres Burned
Private Lands

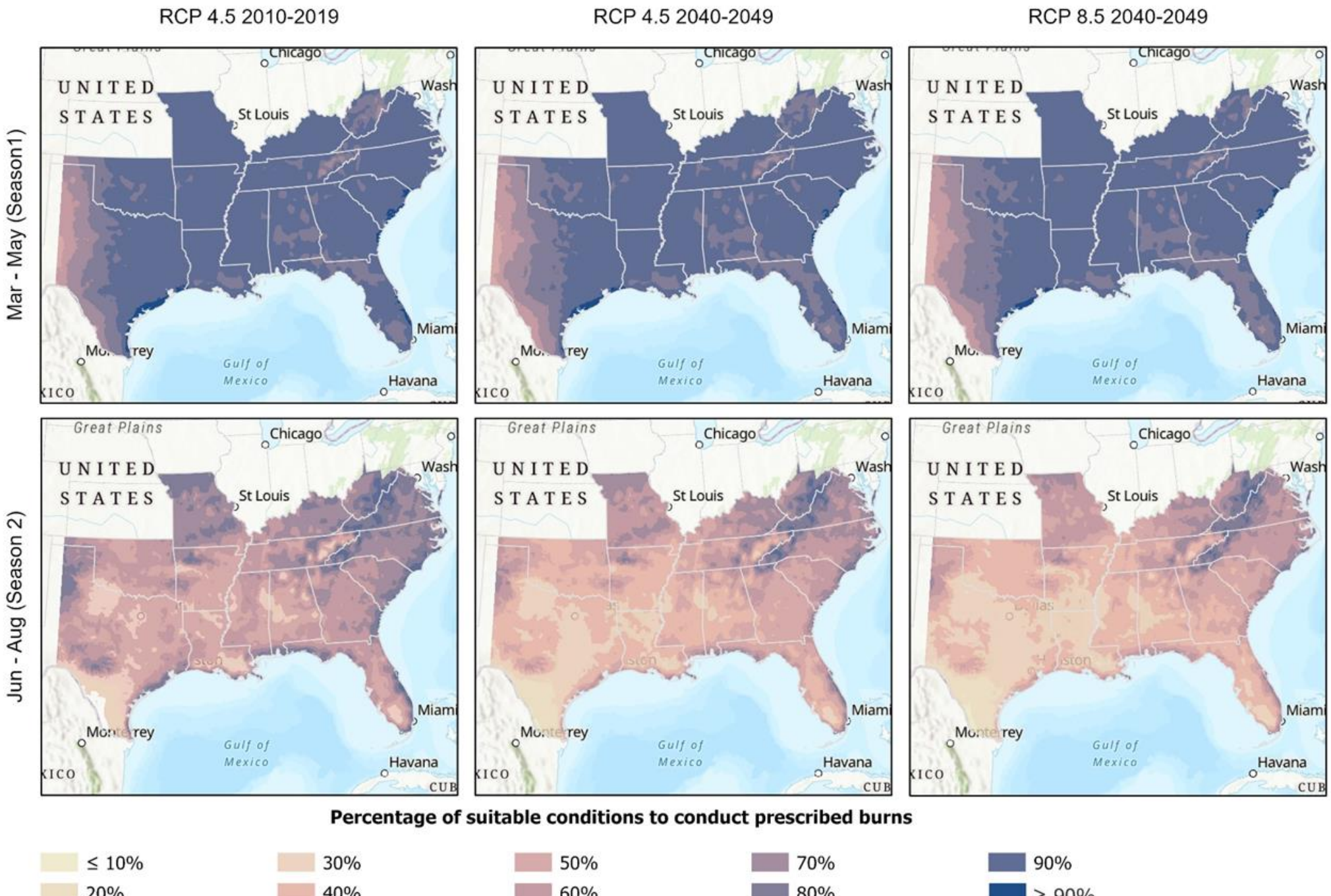
What are the Barriers
for Ms. Heather??

Climate Change is Making Prescribed Fire More Difficult

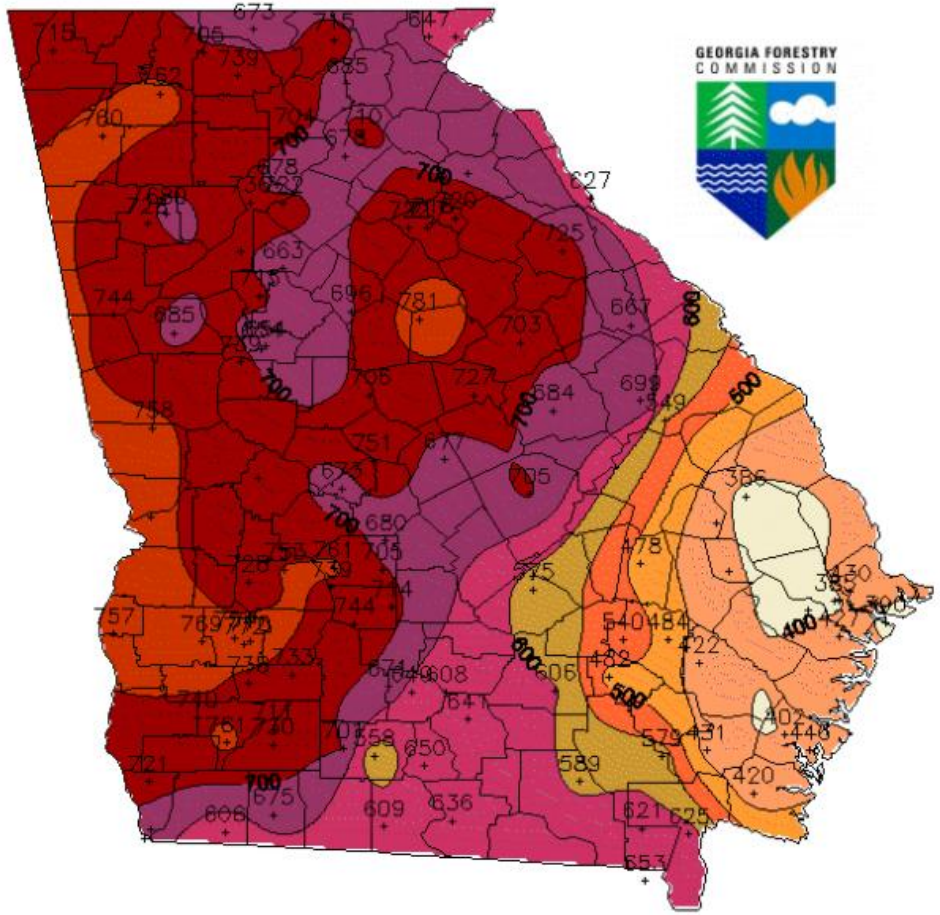
Flash Droughts, More Intense Hurricanes, Changing Weather Patterns
Fewer burn days available and
As conditions change, RX fire is even more important.

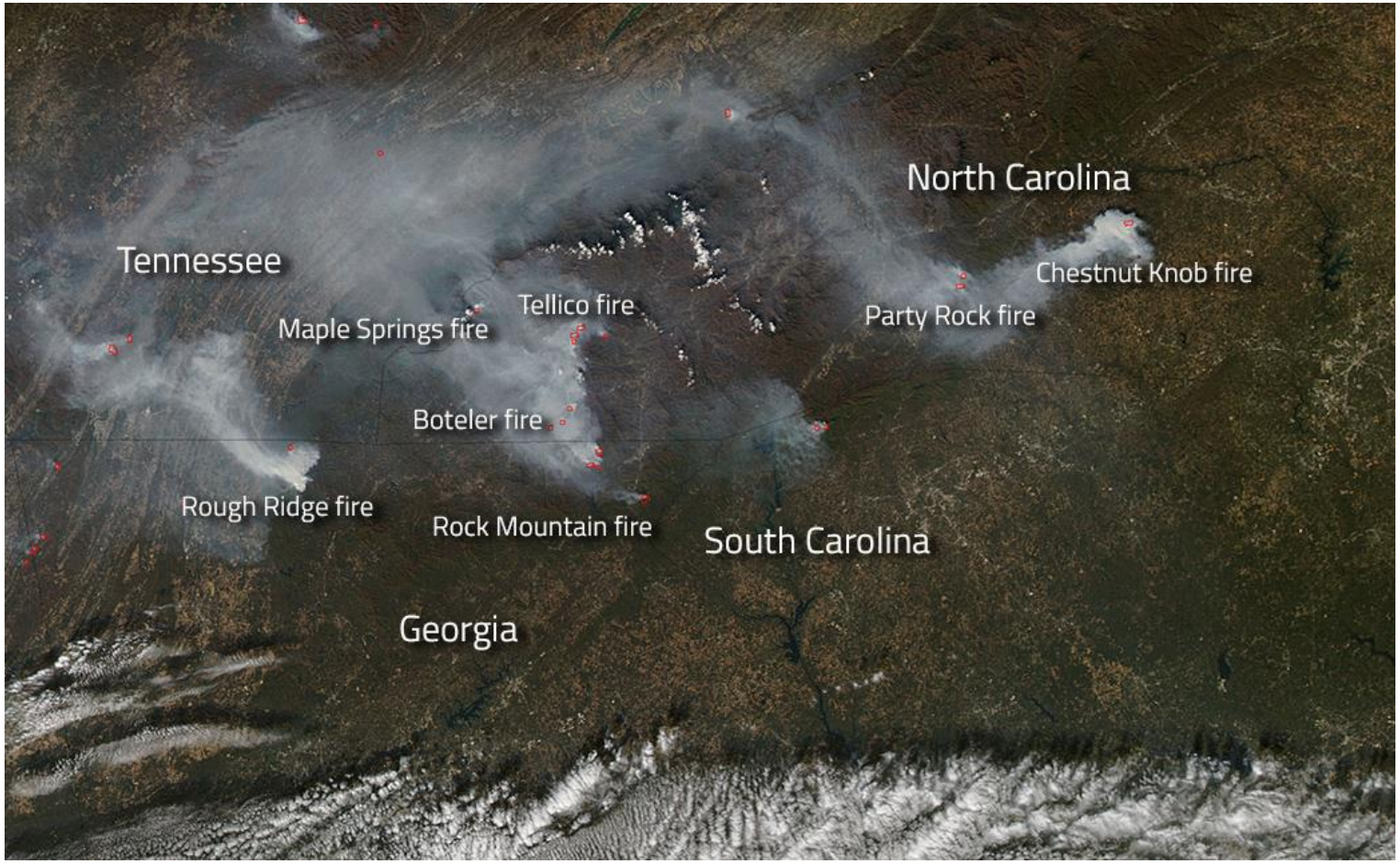


Kupfer John A., Terando Adam J., Gao Peng, Teske Casey, Hiers J. Kevin (2020) Climate change projected to reduce prescribed burning opportunities in the south-eastern United States. *International Journal of Wildland Fire* 29, 764-778.

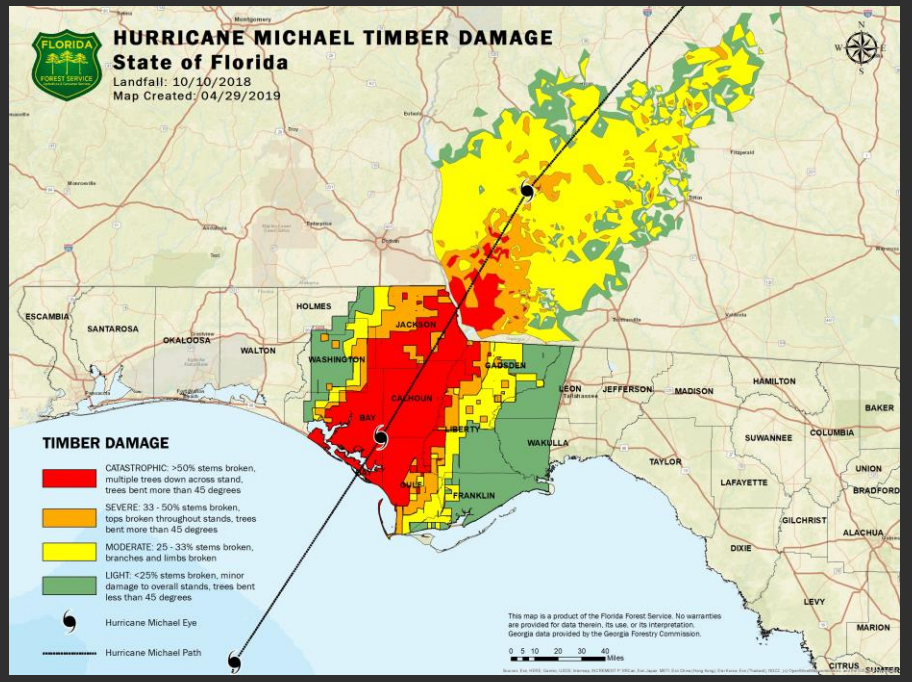

RCP 4.5 2010-2019
RCP 4.5 2040-2049
RCP 8.5 2040-2049
Mar - May (Season1)
Jun - Aug (Season 2)
UNITED STATES
Great Plains
Chicago
St Louis
Miami
Havana
Gulf of Mexico
Percentage of suitable conditions to conduct prescribed burns
≤ 10%
20%
30%
40%
50%
60%
70%
80%
90%
≥ 90%

Map of KBDI
at November 28, 2016 1300 EST





utomated Environmental Monitoring Network provided 75% of the stations in the map.



SOUTHERN
Fire Exchange
Uniting Fire Science and Natural Resource Management

FIRE LINES

A Bimonthly Newsletter of the Southern Fire Exchange

September-October 2018
Volume 8- Issue 5

IN THIS ISSUE

Fire After Hurricanes: What Does the Research Say?

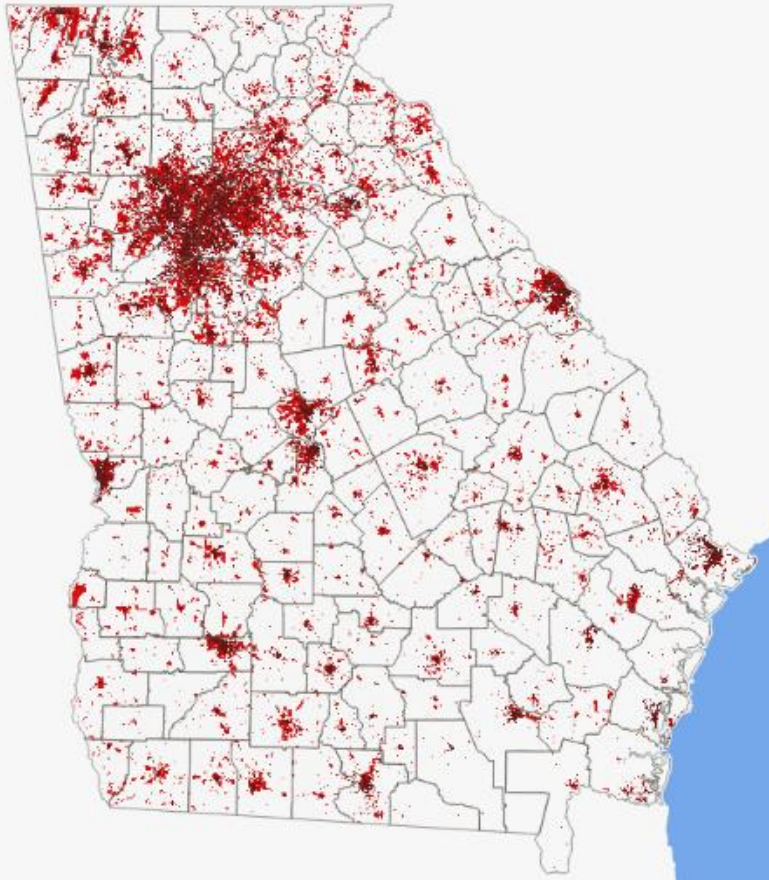
The fall 2018 hurricane season has had an incredible impact on the forest fuels in many areas of the South due to hurricanes Michael and Florence. In the areas affected, managers are likely anticipating the impacts of these events on future wildland fires. To assist in this effort, we are working to gather and share the existing fire science information related to storm impacts on wildland fire. Some research suggests that hurricane events "promote the fires that are of higher than normal intensity" (Myers and Lear, 1998) while other research suggests that the relationship between wind events and fire can be much more complex with impacts differing by spatial and temporal scale (Canon et al. 2017). You may find the following publications and resources valuable for making decisions regarding the impacts of hurricanes and extreme wind events on Southern forests and wildland fire.

Research and Reviews:

- Hurricane-fire interactions in coastal forests of the south: a review and hypothesis (Myers and Lear, 1998)
- A review and classification of interactions between forest disturbance from wind and fire (Canon et al. 2017)
- Fire management ramifications of Hurricane Hugo (Saveland and Wade, 1991)
- The influence of experimental wind disturbance on forest fuels and fire characteristics

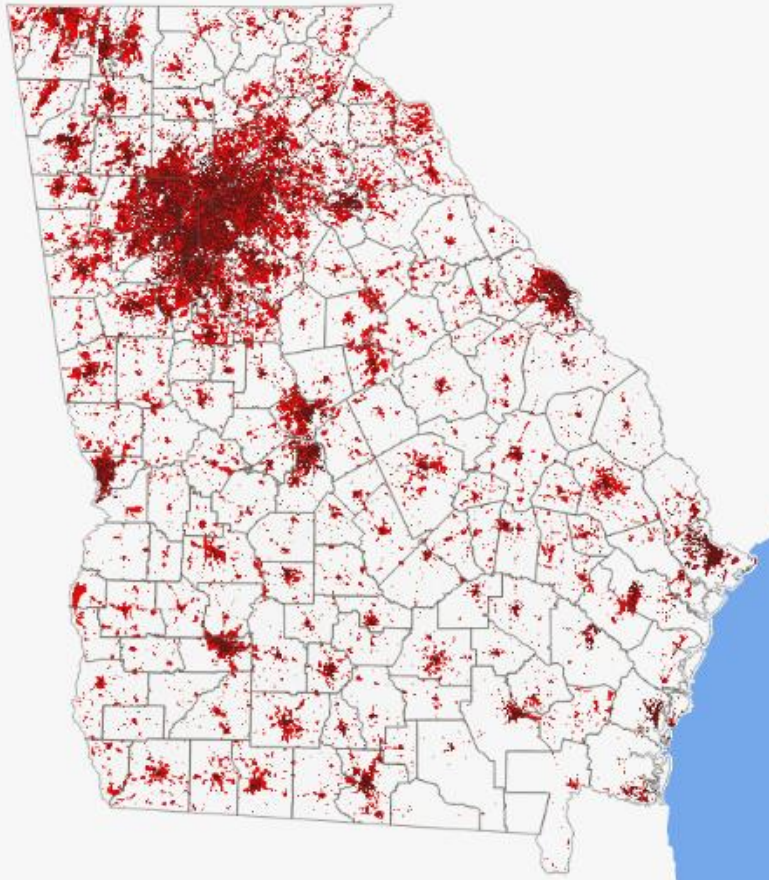
Hurricane Michael Damage near Panama City, FL Photo by Glenn Fawcett, U.S. Customs and Border Protection

2001



Freedgood, J., M. Hunter, J. Dempsey, A. Sorensen. 2020. Farms Under Threat: The State of the States. Washington, DC: American Farmland Trust - https://farmlandinfo.org/publications/farms-under-threat-the-state-of-the-states/

2016



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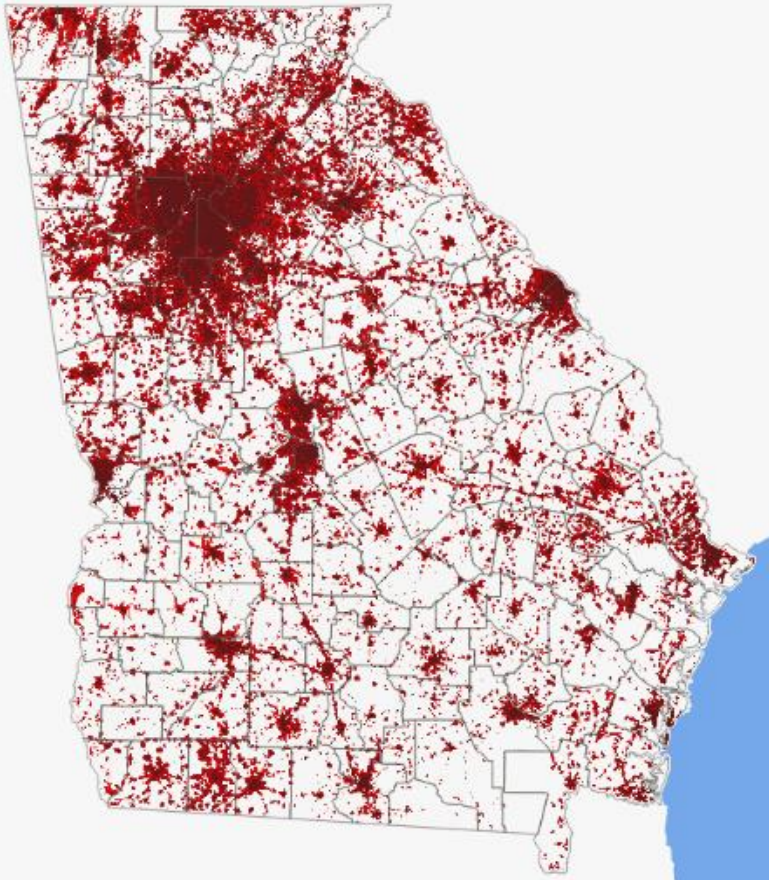
2050



Belyea, Curtis M., and Adam J. Terando. "Urban growth modeling for the SAMBI designing sustainable landscapes project." Biodiversity and Spatial Information Center, NC State University, Raleigh, NC (2017).

2025 Conservation Actions: Increase Number of Acres Burned on Public Lands

Continue to increase prescribed burning on DNR lands:

- **To keep up with new habitat being protected**
- **Replicate the seasonal fire crew model where appropriate**
- **Improve retention of employees to build expertise and leadership**
- **Increase the number of trucks to get the job done**

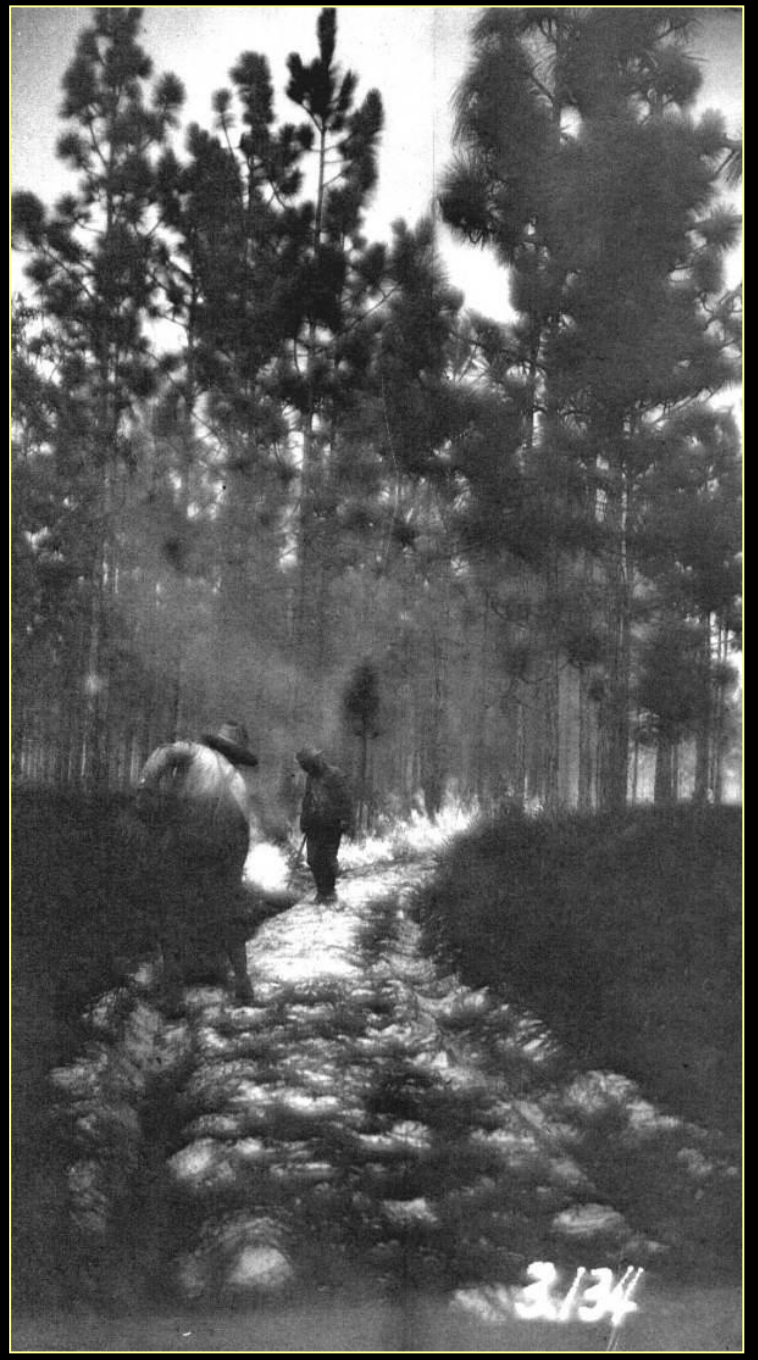
Continue to encourage pyrodiversity and proper timing of burns

- **Increase collaboration on USFS lands in the mountains to improve wildlife habitat**
- **Widen burn windows through the year and encourage more growing season burning**
- **In restored managed areas, diversify fire-return intervals, seasonality, and intensity based more on habitat response and less on individual rare species needs.**

2025 Conservation Action: Increase Number of Acres Burned on Private Lands

To increase number of acres burned on private lands, we must address:

- **Shortage of consultants willing to burn**
- **Liability/Insurance issues/concerns for consultants and landowners**
- **The age of landowners compared to 20 years ago**
- **New landowners are often unfamiliar with or uninterested in fire**
- **More WUI within an increasingly fragmented landscape**



Conservation Action: Communication
Target Training and Education to Different Audiences

- **Create outreach for elementary to higher education students that support awareness, spark interest, and promote participation in natural areas stewardship**
- **Support higher education applied field ecology programs to train the next generation of wildlife management professionals in the best techniques for wildlife and natural area monitoring, management, and restoration**
- **Develop targeting field training and products for agency personnel, forestry consultants, and landowners in ecoburning, forestry for wildlife management, rare species and natural community management, etc.**

2025 Conservation Action Increase Resiliency in Native Ecosystems

Protect Prescribed Burning in Face of New Strengthened Air Quality Standards

How Do We Conduct More Prescribed Fire, Overcome these Barriers, and Meet Revised NAAQS?

NAAQS 101

EPA Sets the Standard For Clean Air

Monitors Gather Air Quality Data

If an Area is in Violation,

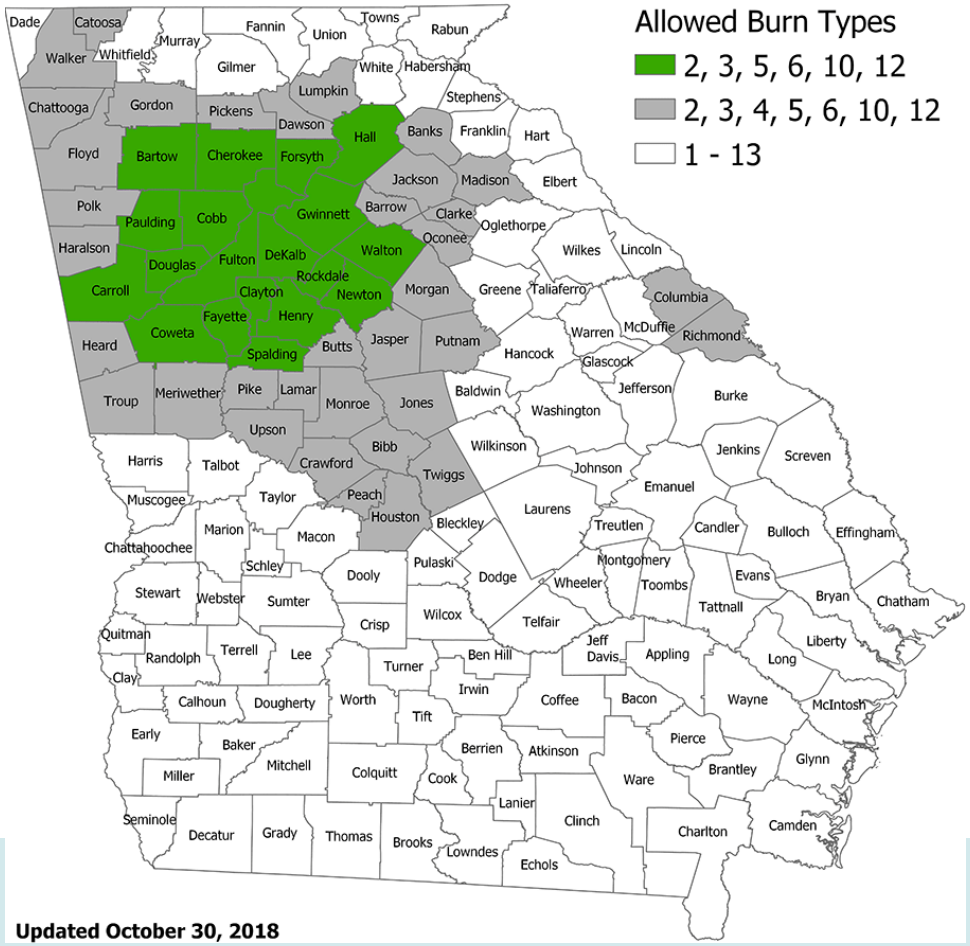
State Air Quality Agency Sets the Course for Attainment

This Usually Signals New Emission Control Requirements

OZONE NON-ATTAINMENT

SUMMER OPEN BURN BAN FOR SILVICULTURE IN GREEN

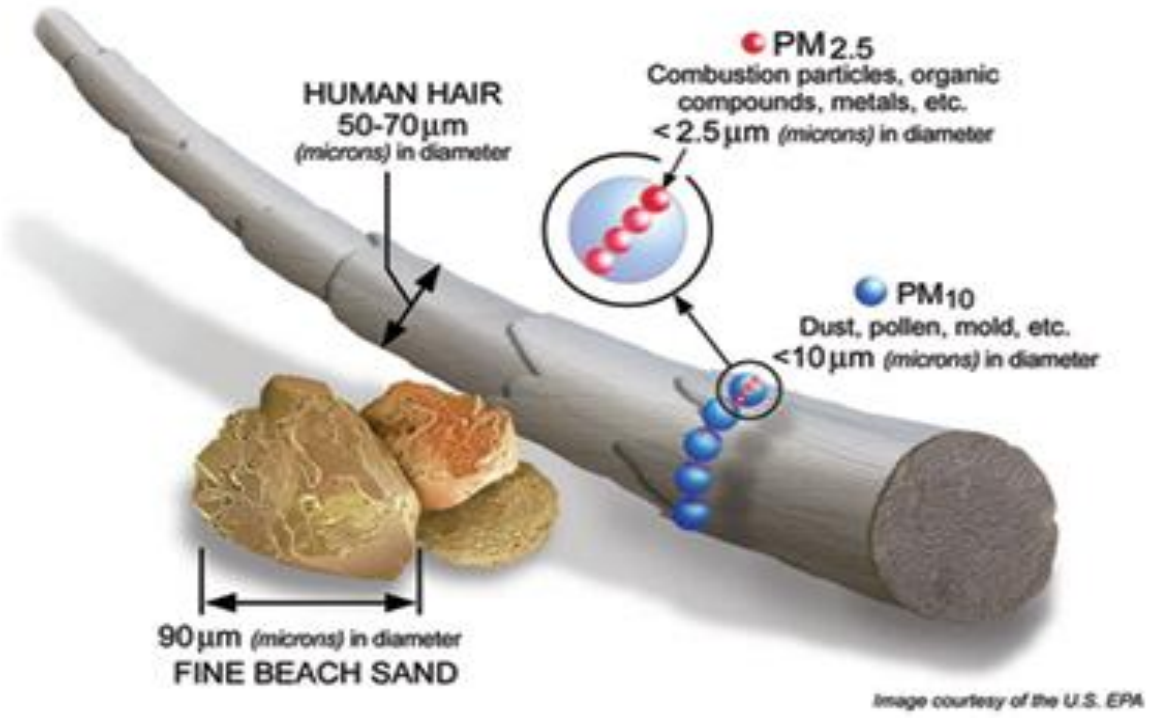
MAY 1 – SEPTEMBER 30

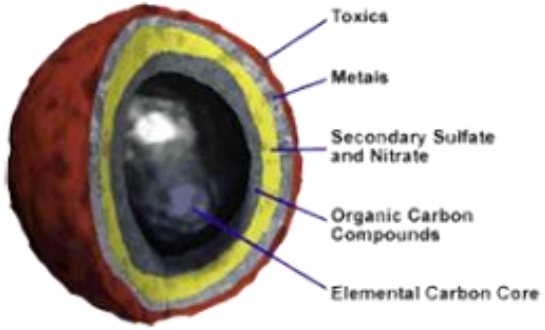


GA EPD LEGAL BURN TYPES

Burn Types
1 - Reduction of Leaves on Premises of Origin
2 - Agricultural Procedures for Production or Harvesting of Crops (if land tract is 5 acres or less)
3 - Burning vegetative material for agricultural operations (if land tract is greater than 5 acres)
4 - Prescribed Burning
5 - Recreational Purposes and Cooking
6 - Fire-fighting Training
7 - Acquired Structure Burns
8 - Vegetative Debris from Storms
9 - Weed Abatement, Disease and Pest Prevention
10 - Open-flame Devices
11 - Land Clearing, Construction, and Right-of-Way Maintenance
12 - Packaging Materials for Explosives
13 - Land Clearing – Burning With Air Curtain Destructor

NAAQS CHANGE IN $PM_{2.5}$ PARTICULATE MATTER





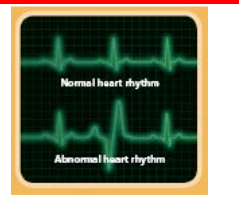
Directly Emitted

- OCM, EC, Crustal

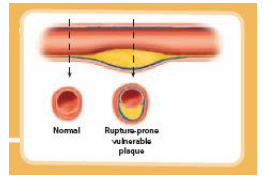
Secondary Formation

- SO_2 ➔ Sulfate
- NOx ➔ Nitrate
- NH_3 ➔ Ammonium
- VOC ➔ OCM

CARDIO-VASCULAR EFFECTS

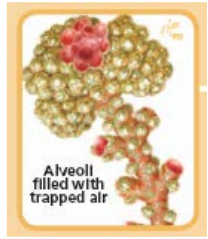


Effects on Cardiovascular Function

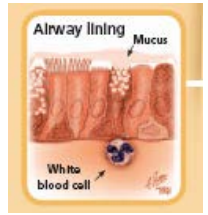


Vascular Inflammation

RESPIRATORY EFFECTS

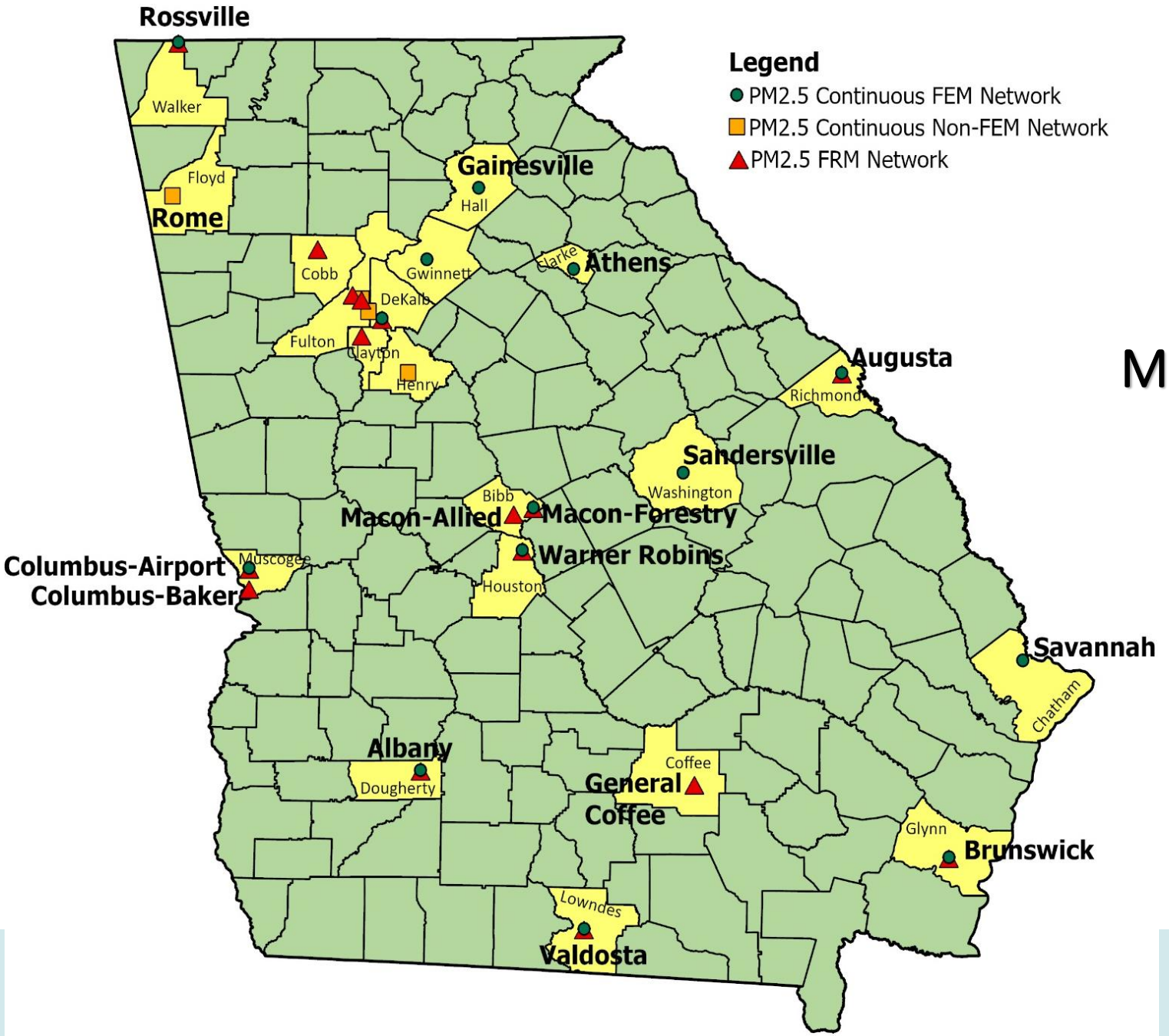


Effects on Lung Function



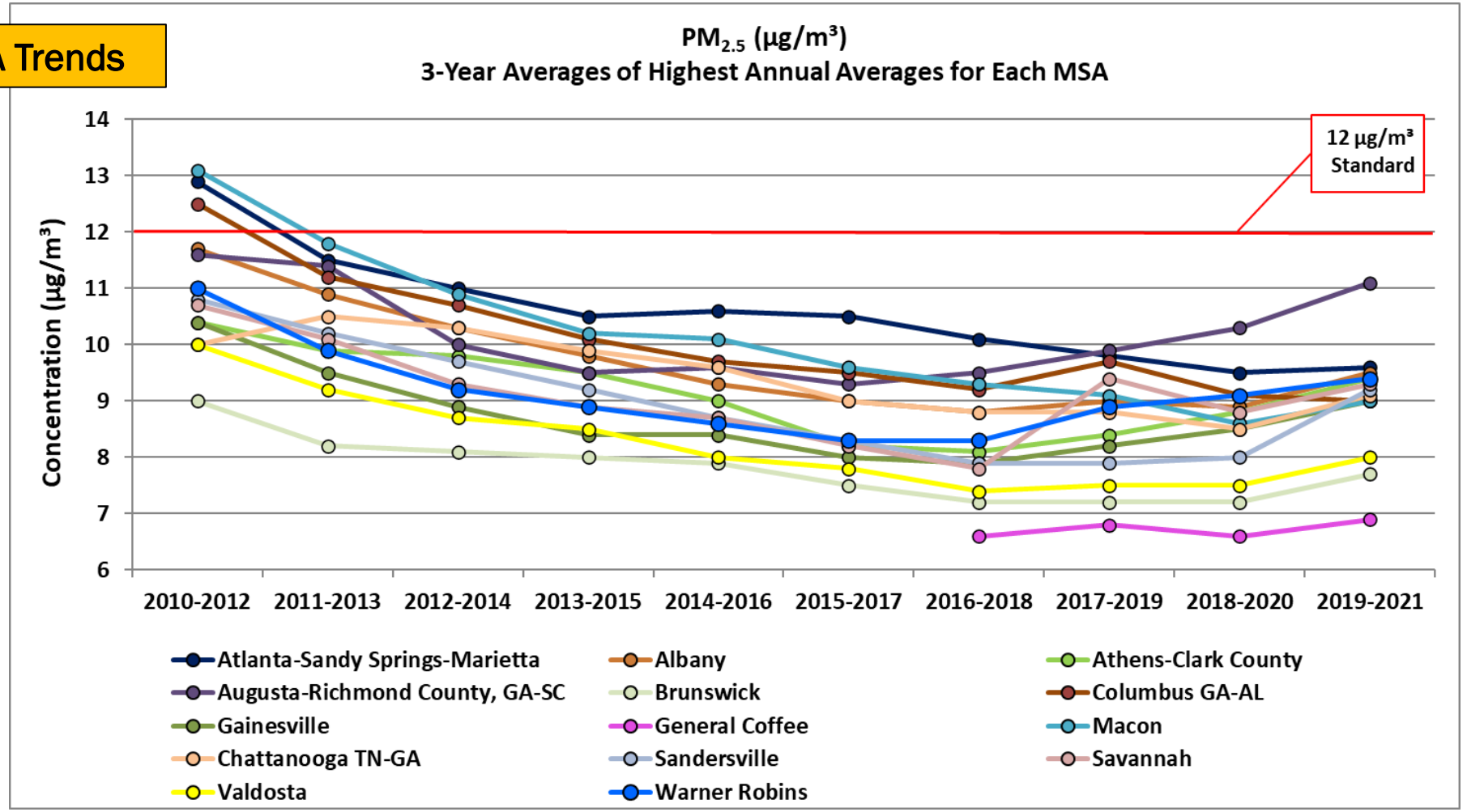
Airway Inflammation

GA $PM_{2.5}$ MONITOR LOCATIONS

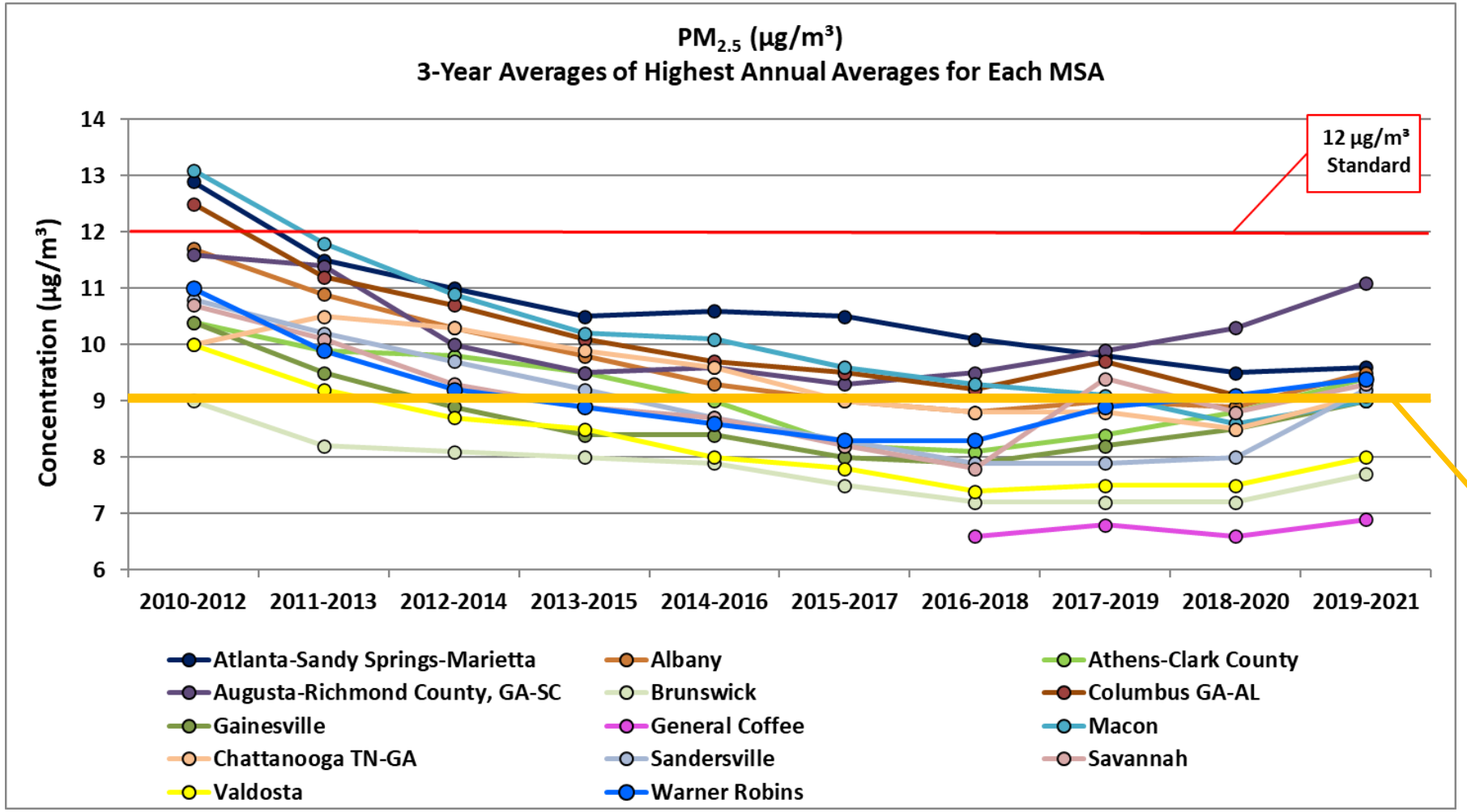


ANNUAL $PM_{2.5}$ DESIGN VALUE TRENDS

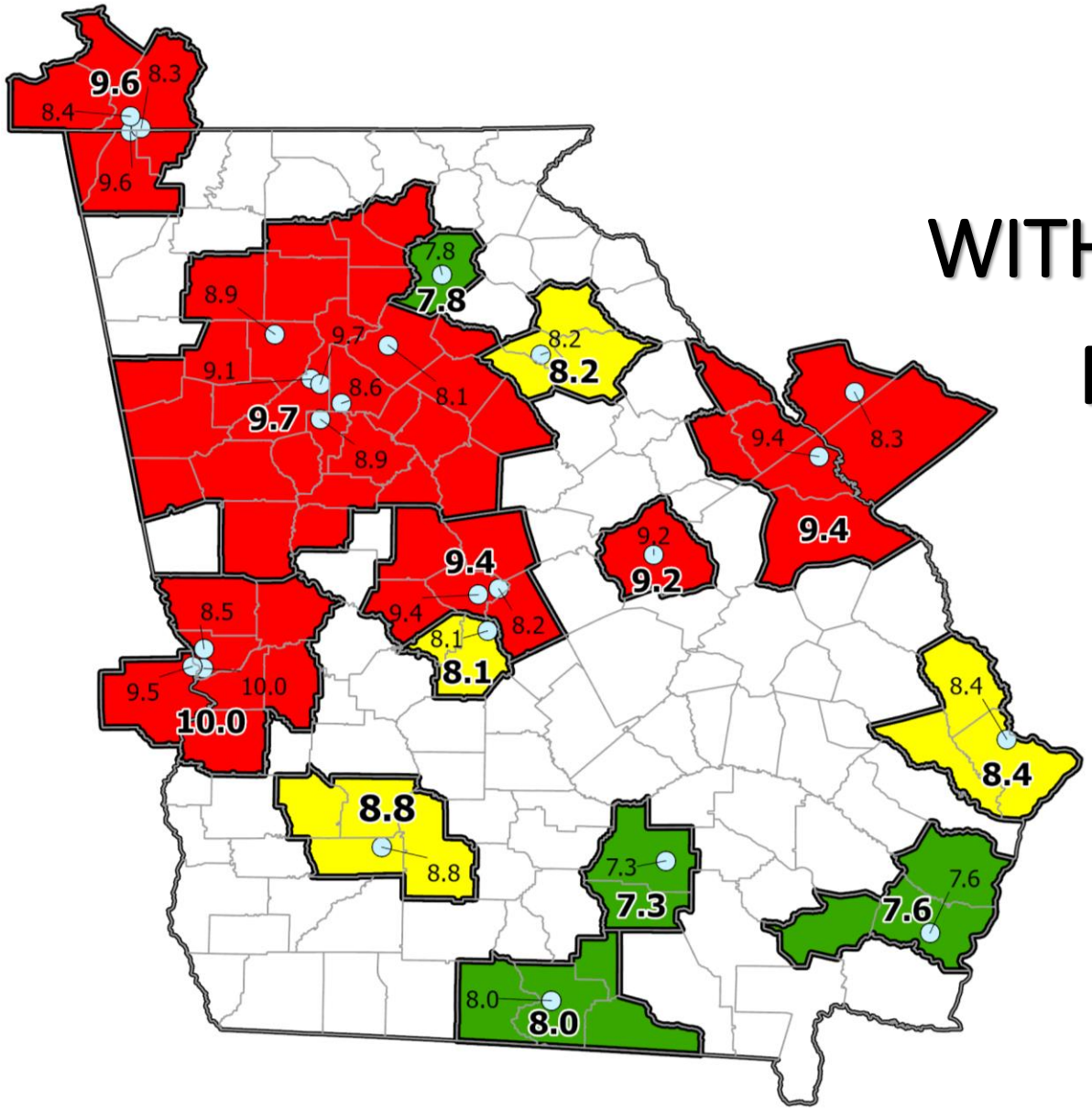
Current GA Trends



ANNUAL $PM_{2.5}$ DESIGN VALUE TRENDS



PM2.5 MONITORS WITH POTENTIAL VIOLATIONS FOR NEW STANDARD



Adjusted
2021 – 2023
Design Values

Note: The design values in the map are <u>preliminary</u> and the final 2023 design values may change.

Georgia Prescribed Fire Tabletop Exercise

January 16-18, 2024, at the Jones Center @ Ichuaway in SW GA

Federal, State, & Local land managers met with air quality regulators and other Rx fire stakeholders

Facilitate understanding and dialog concerning how to maintain/increase use of prescribed fire, while protecting public health and minimizing impacts on air quality

Outcome: Georgia Prescribed Fire and Air Quality Task Force

5 Workgroups formed to focus on specific issues

1. *Area and State Planning Workgroup*
2. Rx Fire/Air Quality Best Practices Workgroup
3. *Exceptional Events Workgroup*
4. Public Communication and Burner Outreach Workgroup
5. National Rx Fire Conversation Workgroup

Exceptional Events is a Path

Overview of Exceptional Events

The Exceptional Events Rule implements CAA Section 319(b), *Air Quality Monitoring Data Influenced by Exceptional Events*.

Exceptional events are defined in the CAA as events that

- Affect air quality;
- Are not reasonably controllable and not reasonably preventable; and
- Are either natural events or caused by human activity unlikely to recur.

Typically single events like the large wildfires, high wind dust storms

Air agencies that operate regulatory monitors can request exclusion of data influenced by exceptional events from use in regulatory decisions.

- A state can delegate the authority to submit an Exceptional Events demonstration to federal land managers.

CONTENT IS FOR INFORMATIONAL PURPOSES ONLY.

Exceptional Events and Fire

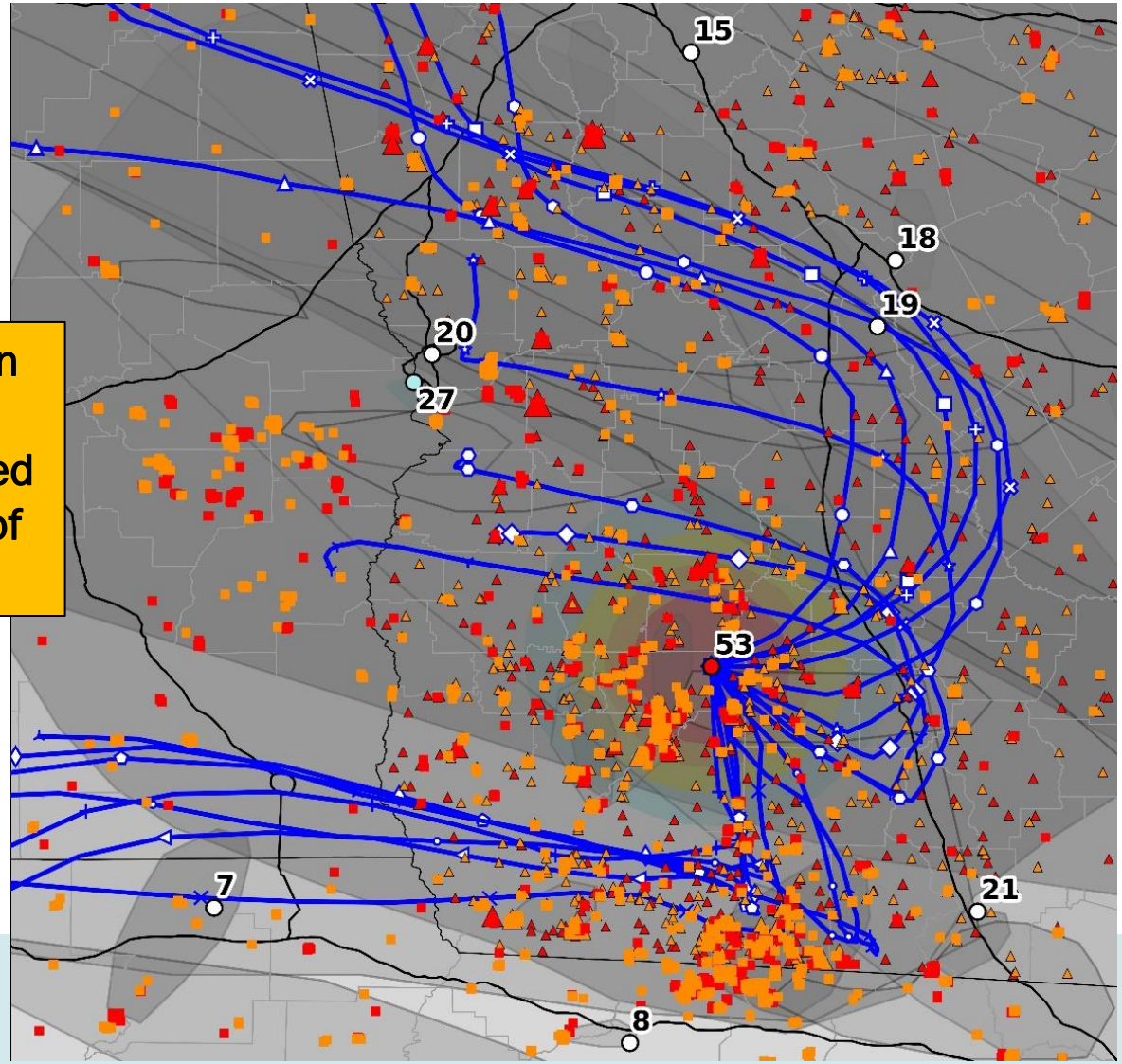
The Exceptional Events defines fire-related terms at 40 CFR 50.1:

- Wildfires
  - The Exceptional Events Rule defines a wildfire as “any fire started by an unplanned ignition caused by lightning; volcanoes; other acts of nature; unauthorized activity; or accidental, human-caused actions, or a prescribed fire that has developed into a wildfire.”
  - Under the Exceptional Events Rule a wildfire that predominantly occurs on wildland is a natural event.
  - Wildland means an area in which human activity and development are essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.
- **Prescribed Fires on Wildland**
  - The Exceptional Events Rule defines prescribed fires as “any fire intentionally ignited by management actions in accordance with applicable laws, policies, and regulations to meet specific land or resource management objectives.”
  - Under the Exceptional Events Rule prescribed fires are “human activities.”

CONTENT IS FOR INFORMATIONAL PURPOSES ONLY.

WHAT DOES AN EXCEEDANCE FOR RX FIRE LOOK LIKE IN GA?

Single Type of Emission but Multiple Sources
An EE Demo Would Need to Include Data on All of These



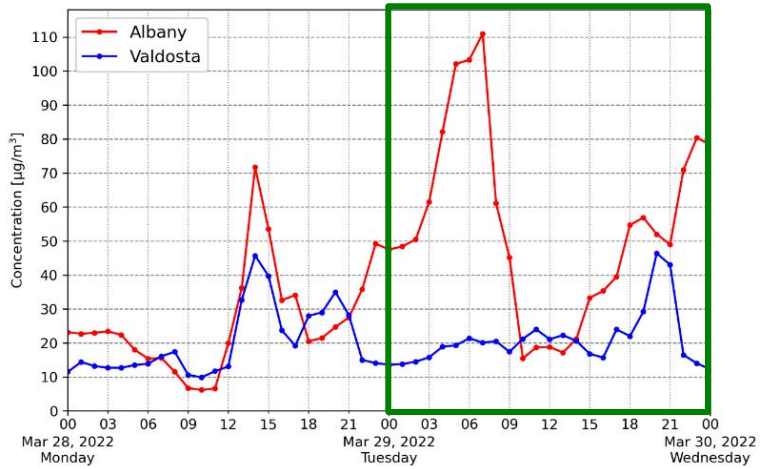
24-Hour $PM_{2.5}$ (µg/m³)
- ≥ 41
- 36 - 40
- 31 - 35
- 26 - 30
- ≤ 25

Burns Reported to GFC (acres)

On 03/29	On 03/28
≤ 100	≤ 100
101 - 200	101 - 200
201 - 500	201 - 500
501 - 1000	501 - 1000
≥ 1001	≥ 1001

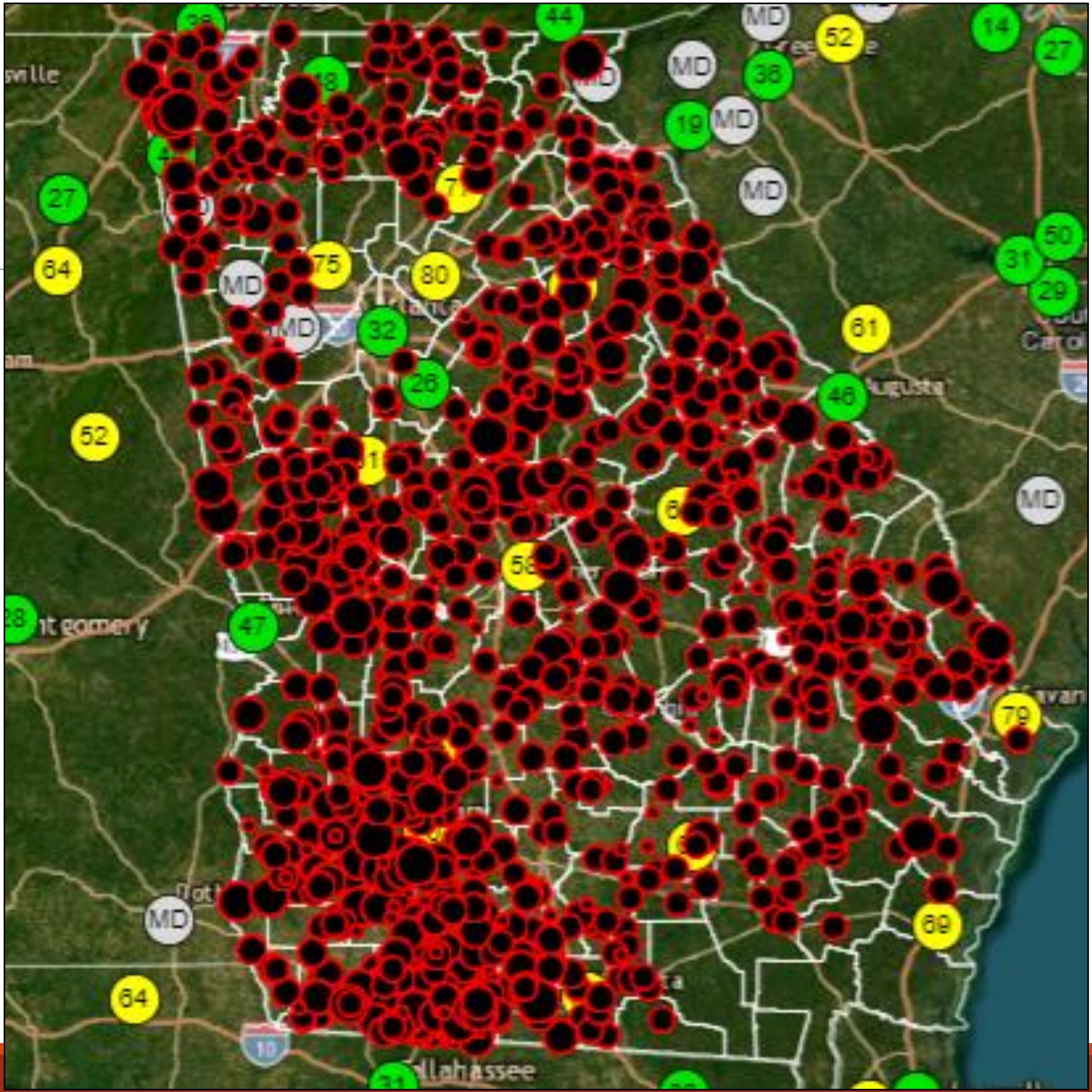
HYSPLIT trajectories
- 100m

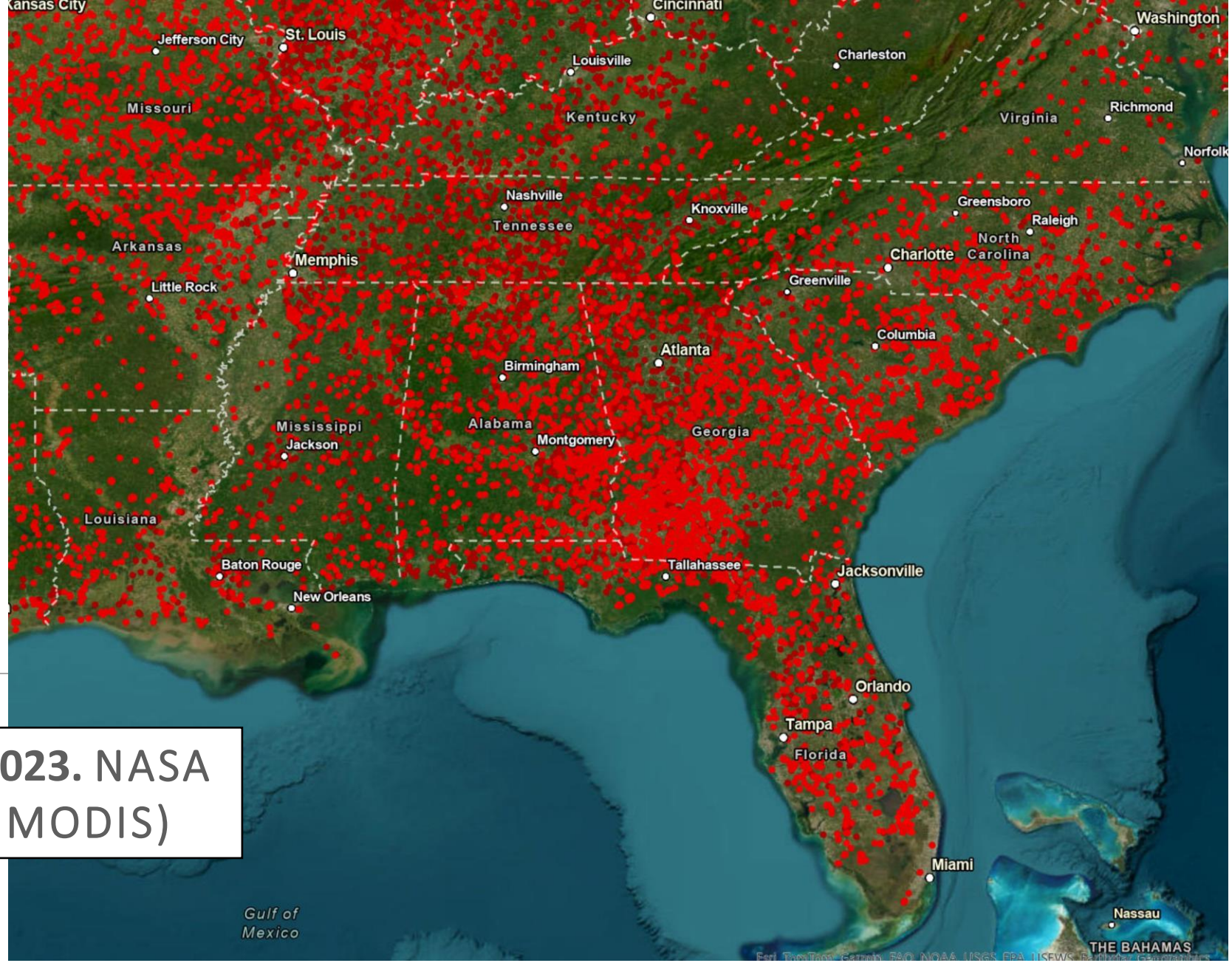
HMS
- Satellite detected fires on 03/29
- Satellite detected fires on 03/28
- Satellite detected smoke on 03/29
- Satellite detected smoke on 03/28



Albany (53 µg/m³)
March 29 , 2022

Burn Permits
03/21/24
967 permits
37,562 acres





Two weeks of fire in March 2023. NASA FIRMS (LANDSAT, VIIRS, MODIS)

Exceptional Events Demonstrations

An exceptional events demonstration must include the following elements:

1. A **narrative conceptual model** that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);
2. A demonstration that the event affected air quality in such a way that there exists a **clear causal relationship** between the specific event and the monitored exceedance or violation;
3. Analyses **comparing the claimed event-influenced concentration(s)** to concentrations at the same monitoring site at other times;
4. A demonstration that the event was both **not reasonably controllable** and **not reasonably preventable**;
5. A demonstration that the event was caused by **human activity that is unlikely to recur** at a particular location or was a **natural event**; and
6. Documentation that the submitting air agency followed the **public comment process**

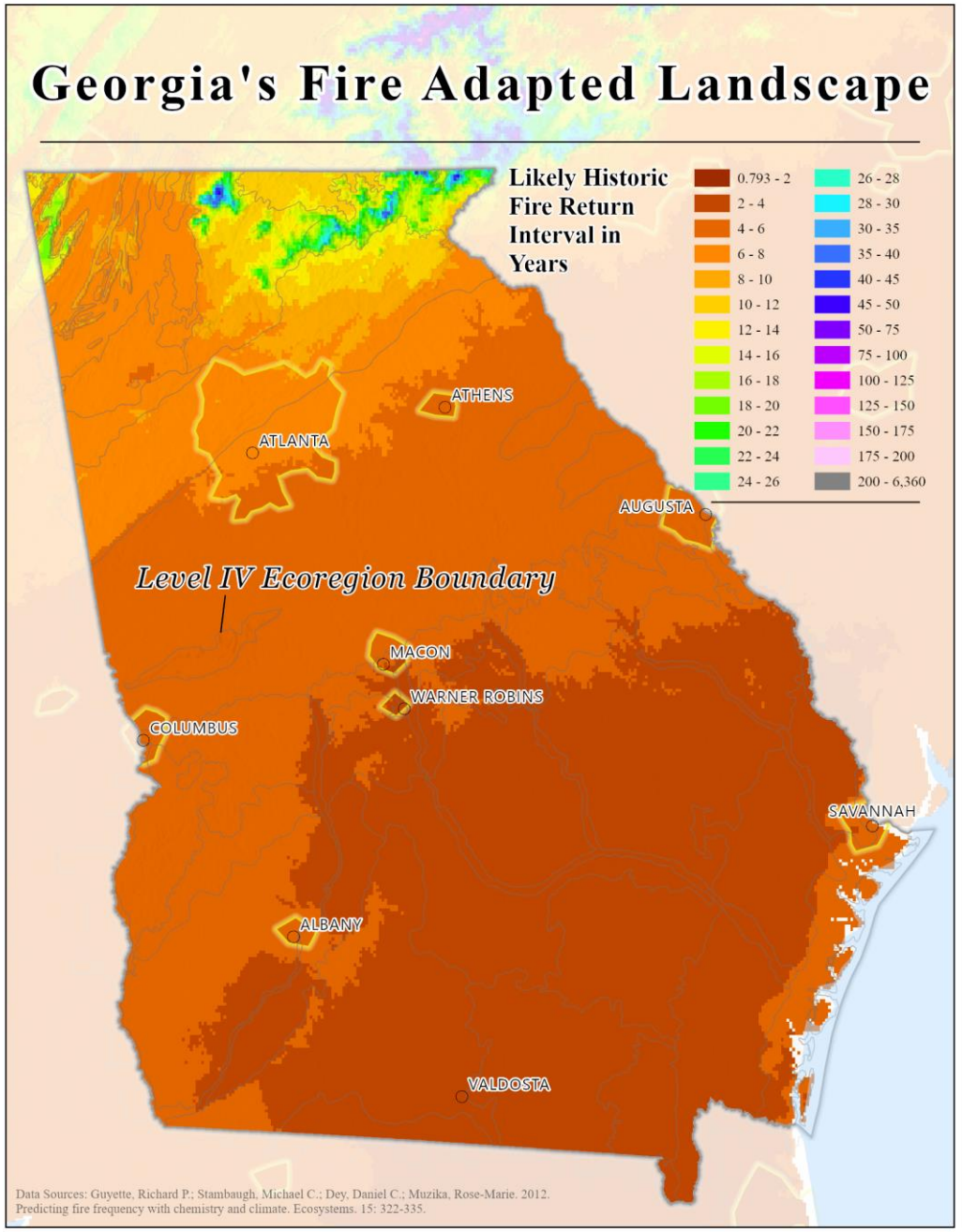
List burn objectives in SWAP and tie these to the Burn Permit

Describe foregone benefits: resiliency, forest health, mitigation for wildfire, etc.

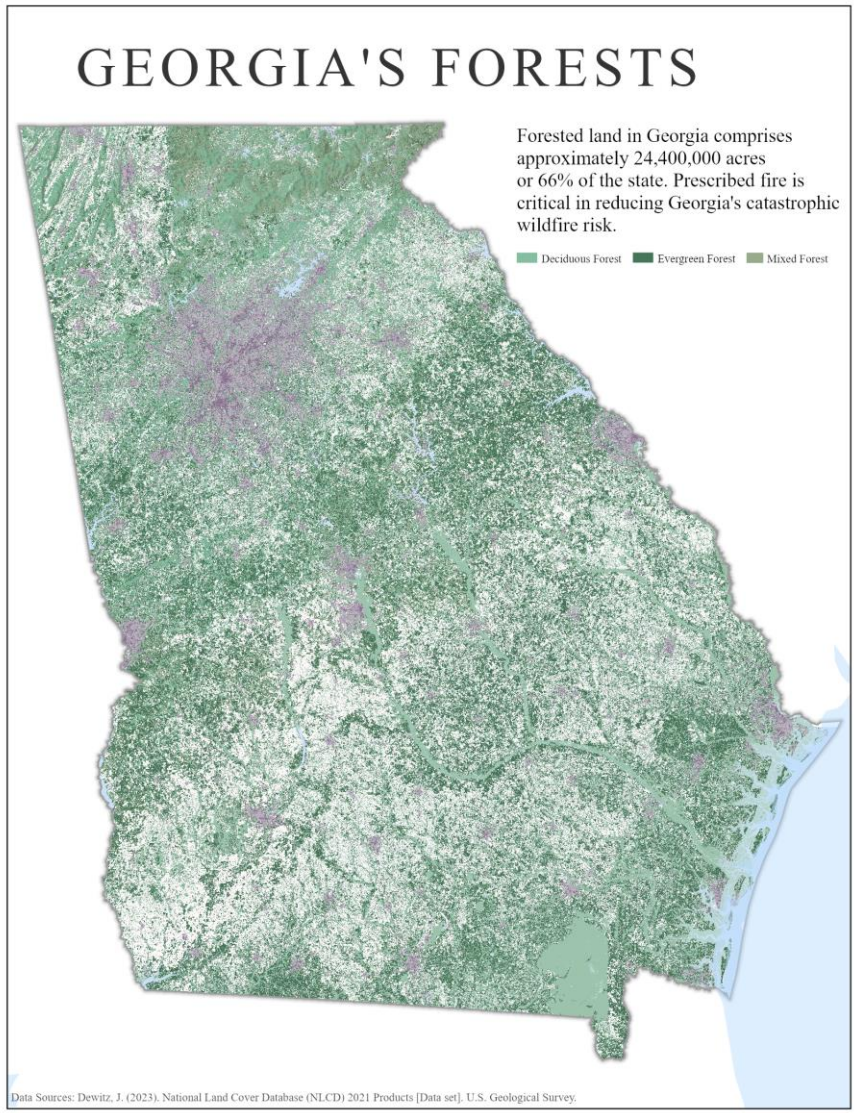
Fire Return Interval Maps. Include more flexible language for restoration burns

Map for Natural Fire Return Interval

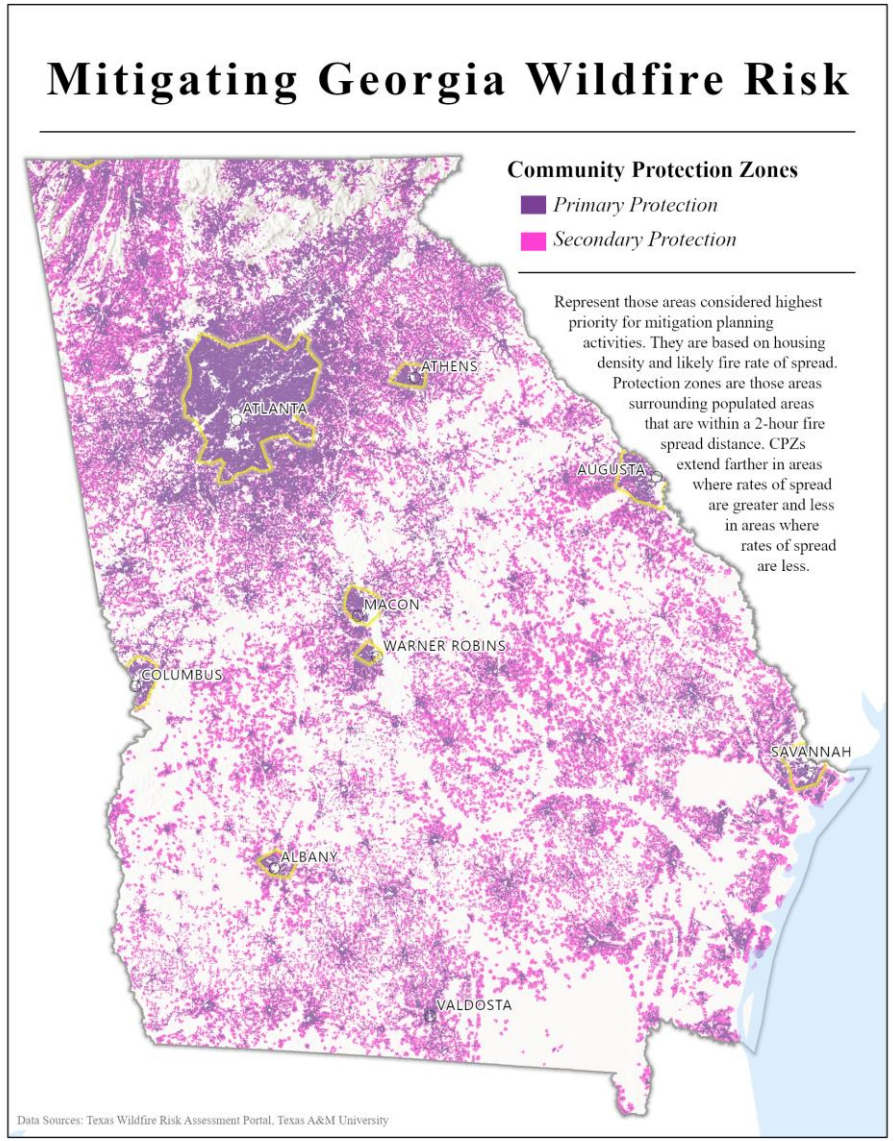
Vectors layered with Burn Permits/ Tracking System



Maps for Wildfire Risk Mitigation



This addresses foregone benefits.

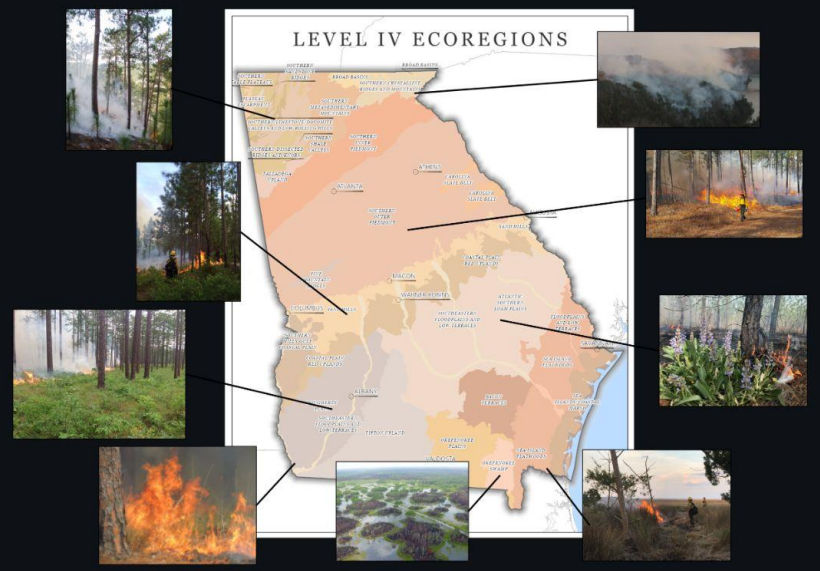


Wildland Fire and Species of Greatest Conservation Need

Georgia Department of Natural Resources, Wildlife Resources Division
March 4, 2024

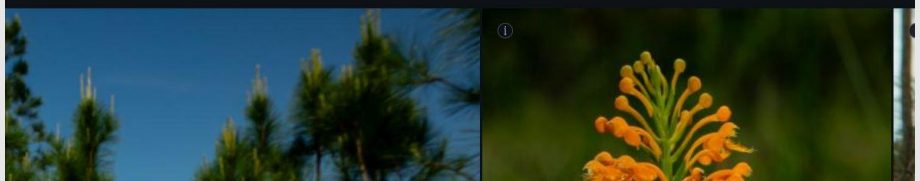
Wildland Fire and Rare Species

Fire is one of the most *essential ecological processes* that has helped **shape the natural communities of Georgia**. In fact, **pyric habitats exist in each ecoregion across the state**, from Coastal Plain longleaf savannas, to grassy oak woodlands in the Piedmont, to high-elevation balds in the mountains.

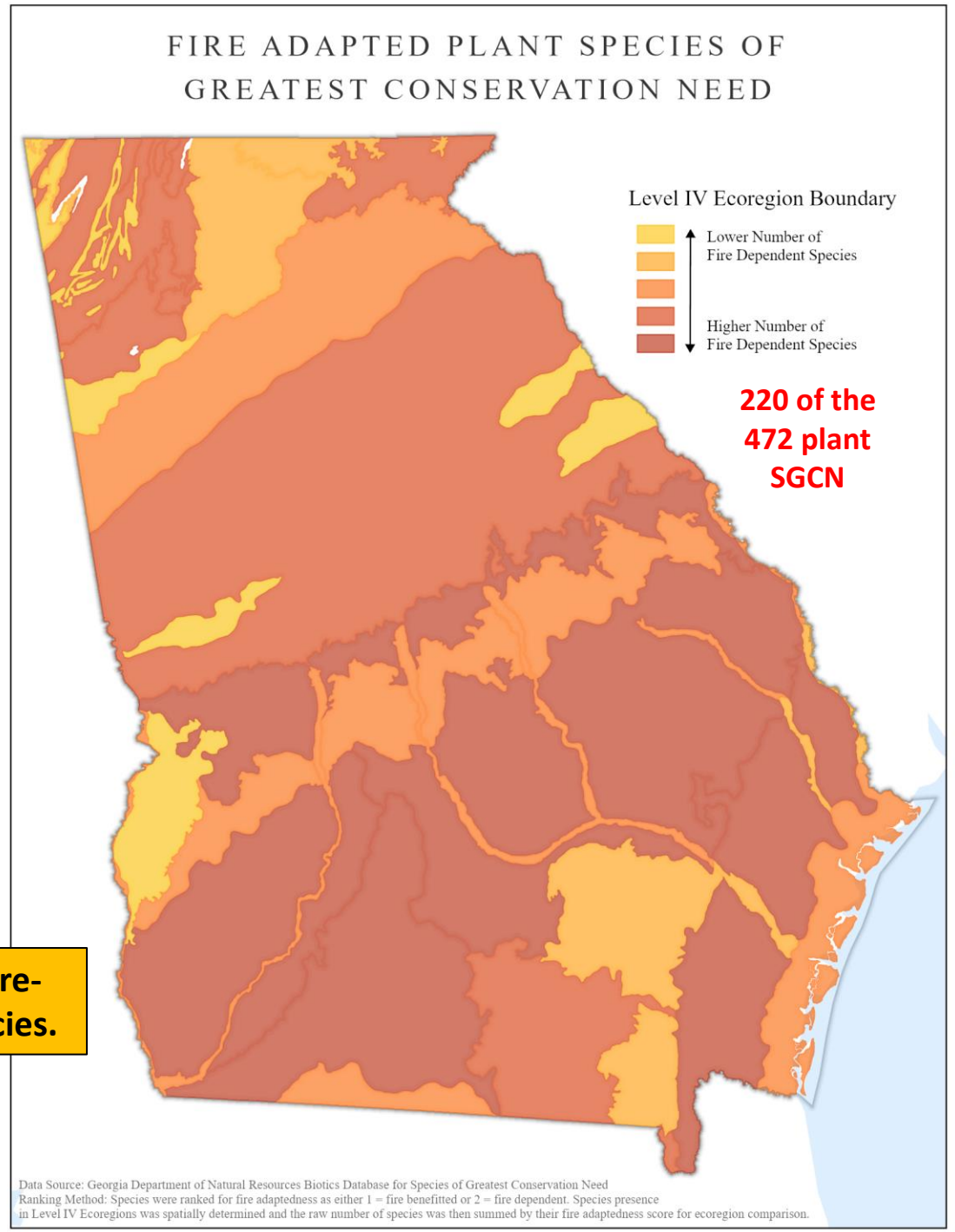


Species of Greatest Conservation Need (SGCN)

A **number of SGCN would disappear** if their **habitats *were not* maintained by fire**. These include *red-cockaded woodpeckers, indigo snakes, bog turtles*, a variety of *pitcher plants, purple coneflower, and many more*. Even popular game species, like *wild turkey and bobwhite quail*, need regular fire in their habitat to stimulate herbaceous growth and maintain low woody cover for foraging and refuge.



This addresses fire-adapted rare species.



Basic Smoke Management Practices

If an agency does not have a certified SMP or does not want to rely on one, they can instead show that appropriate BSMP were applied by the burn manager.

Recommended BSMPs include:

- *Evaluating Smoke Dispersion Conditions*
- *Monitoring Effects on Air Quality*
- *Record-Keeping/Maintain a Smoke/Burn Journal*
- *Communication/Public Notification*
- *Considering Emission Reduction Techniques*
- *Sharing the Airshed and Coordinating on the Area Burning*

GFC has a certified SMP and getting a permit covers most of these

This needs work by all partners.

For demonstrations relying on BSMP, there must be periodic collaboration between air agencies, FLMs, and other entities as appropriate, regarding protection of public health and management of air quality impacts during prescribed fires.

Mitigation Requirements

A state requesting to exclude air quality data due to exceptional events must take “appropriate and reasonable actions to protect public health from exceedances or violations of the national ambient air quality standards.”

To satisfy the mitigation actions, a state must:

- provide prompt public notification whenever air quality concentrations exceed or are expected to exceed an applicable ambient air quality standard;
- provide for public education concerning actions that individuals may take to reduce exposures to unhealthy levels of air quality during and following an exceptional event; and
- provide for the implementation of appropriate measures to protect public health from exceedances or violations of ambient air quality standards caused by exceptional events.

CONTENT IS FOR INFORMATIONAL PURPOSES ONLY.

Communication With Public re Health and Mitigation (info is good but think targeted)

SOUTHERN Fire Exchange
Uniting Fire Science and Natural Resource Management

Webinar Summary 2021-1

View the webinar recording

Potential Impacts of Prescribed Fire Smoke on Air Quality, Public Health, and Socially Vulnerable Populations in the Southeastern US

Webinar originally presented August 2021 by Dr. Sadia Afrin & Dr. Fernando Garcia Menendez, NC State University

Summary prepared by Laurel Kays, NC State University

$PM_{2.5}$ produced by prescribed fires is a potentially serious and understudied public health issue in the Southeast

- $PM_{2.5}$ emissions have serious pu
  coming from prescribed fire[1].
- Approximately 70% of prescribe
  total $PM_{2.5}$ emissions in Southea
- Limited research has been done
  communities impacted by presc
  impacts of wildfires.

**Prescribed fire smoke may
vulnerability**

- Socioeconomic variables are im
  strong associations with increas
  those populations.
- This project found that prescribe
  higher percentage of elderly or c

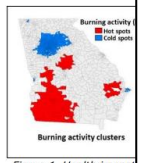


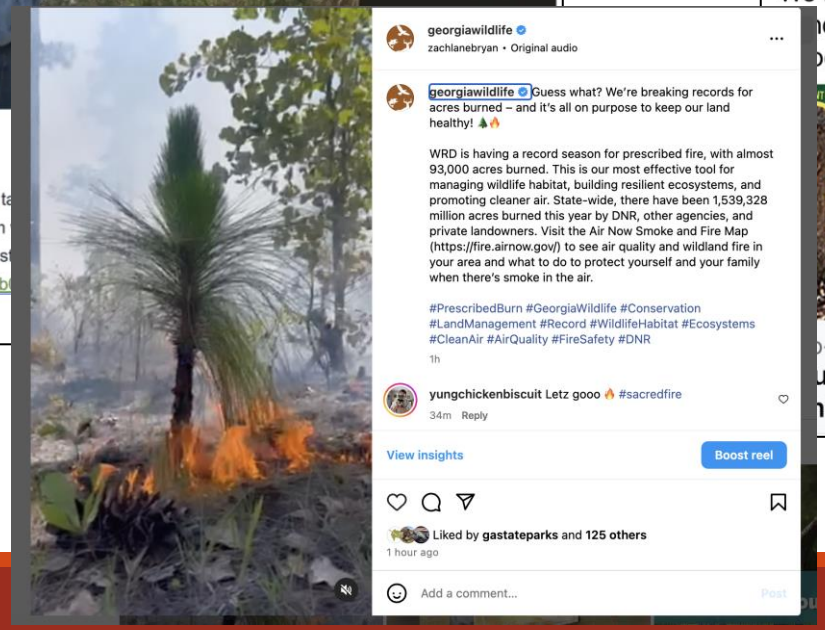
Figure 1. Health impact

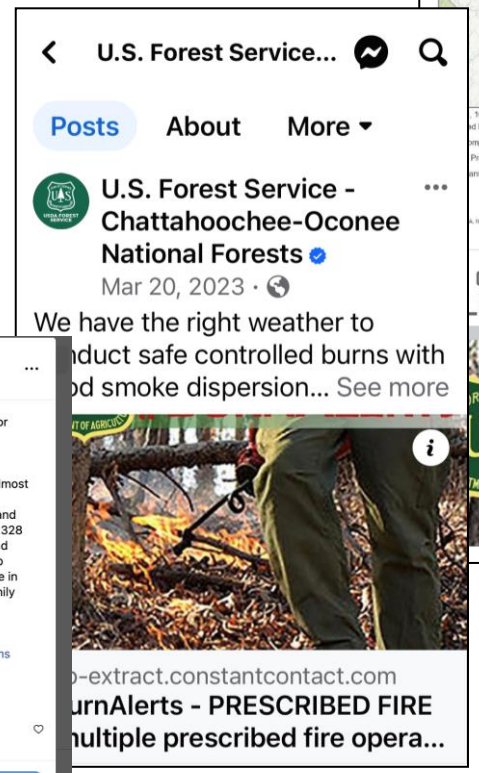
UF IFAS UNIVERSITY of FLORIDA

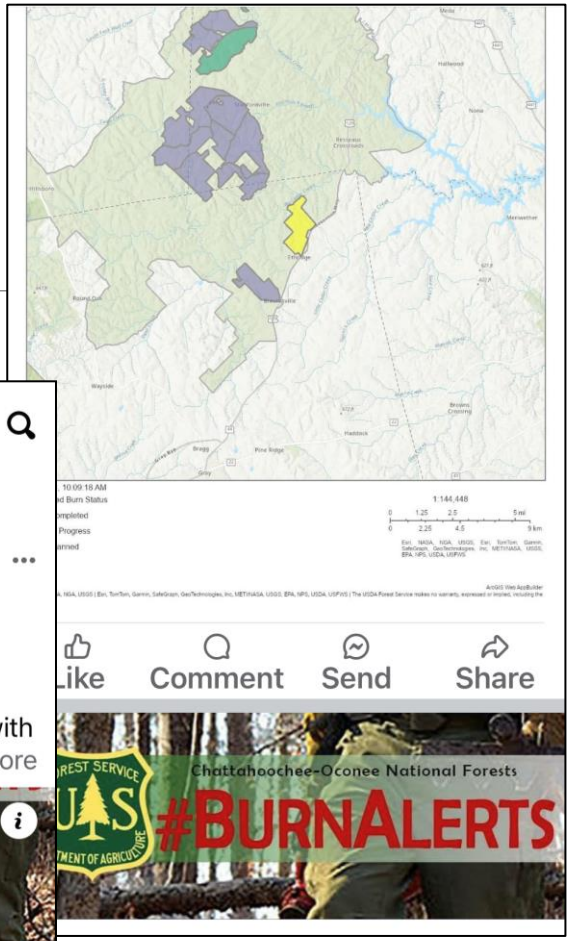
PARTNER WEBINAR: EPA WILDFIRE AND PRESCRIBED FIRE SMOKE

MAY 1, 2023 @ 12:00 PM - 1:00 PM

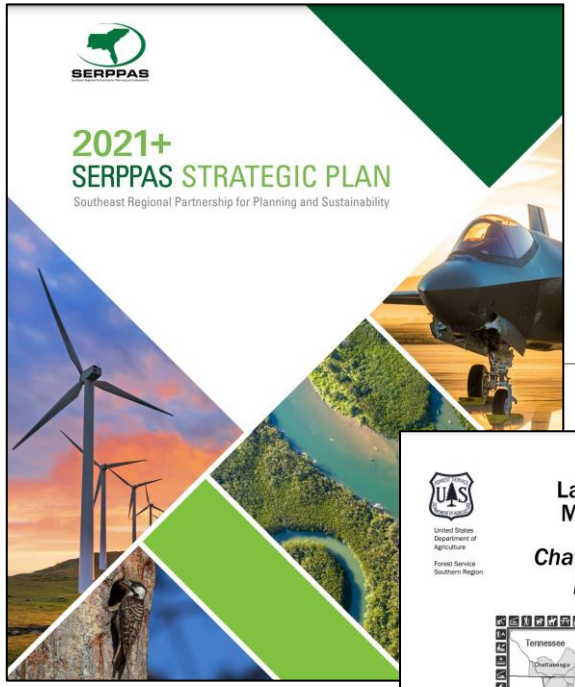
Date / Time: Monday, May 1, 2023 12:00 – 1:00 PM ET
Speaker: Rick Gillam, Environmental Engineer, US EPA
Webinar Description: In this webinar, speaker Rick Gillam will ta
also discuss what you can do to protect yourself and family from
is used to support ecosystem health and reduce the risk of catas
Register Here: https://events.gcc.teams.microsoft.com/event/8b
76aacbeca6a7

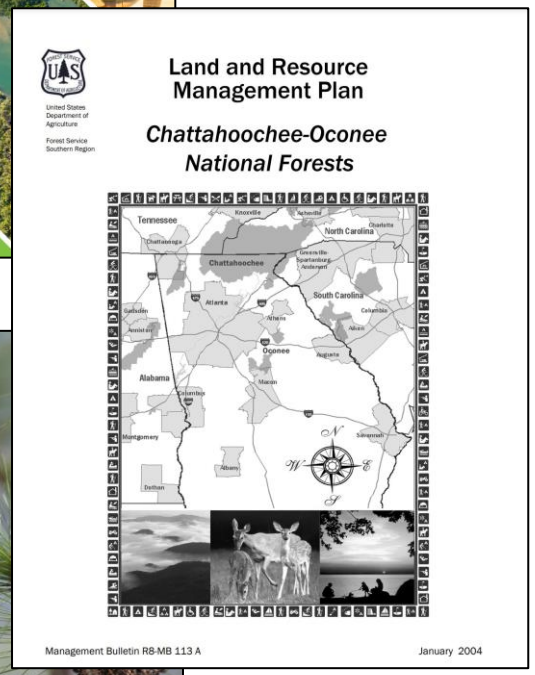


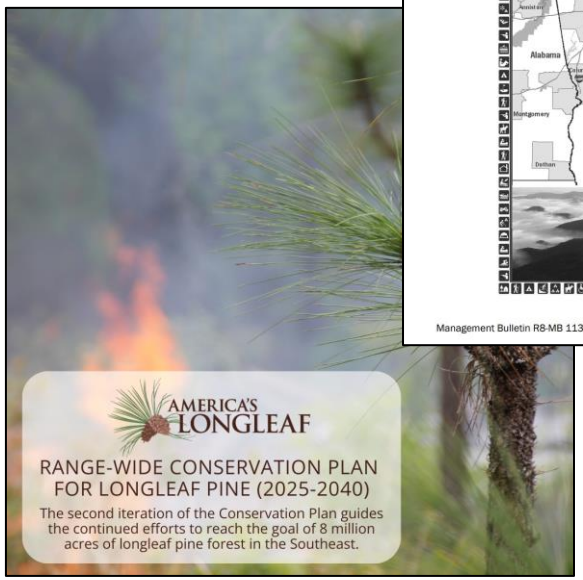


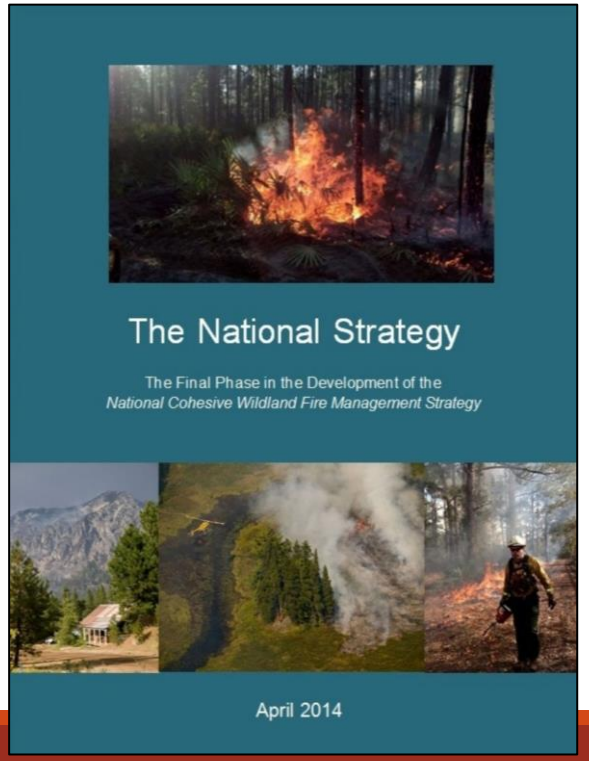


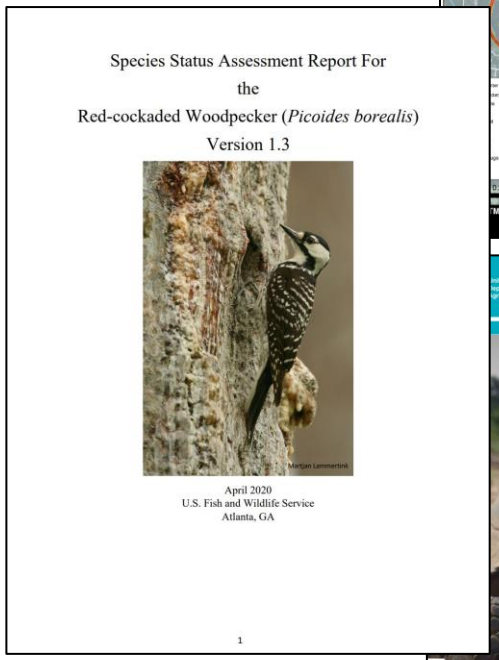
Here's Your Mission Should You Choose to Take It!

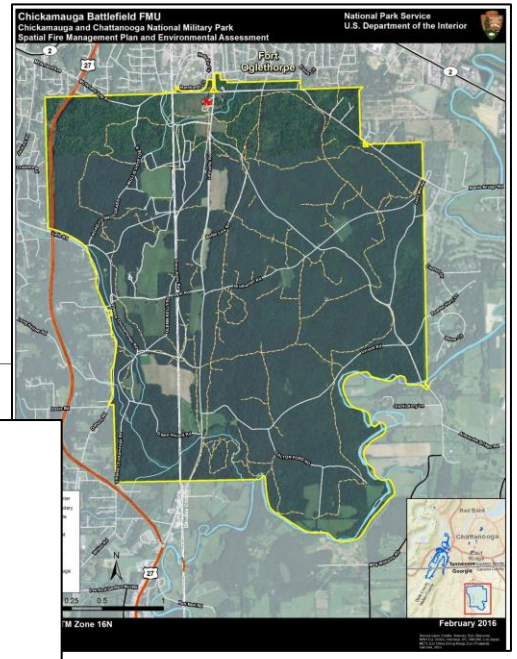


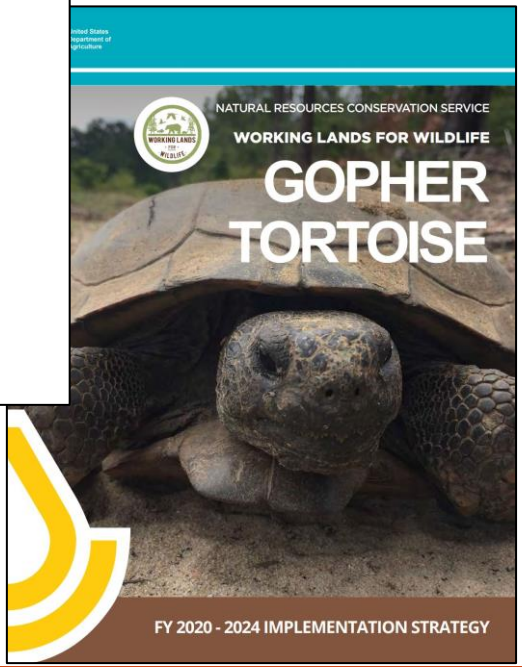








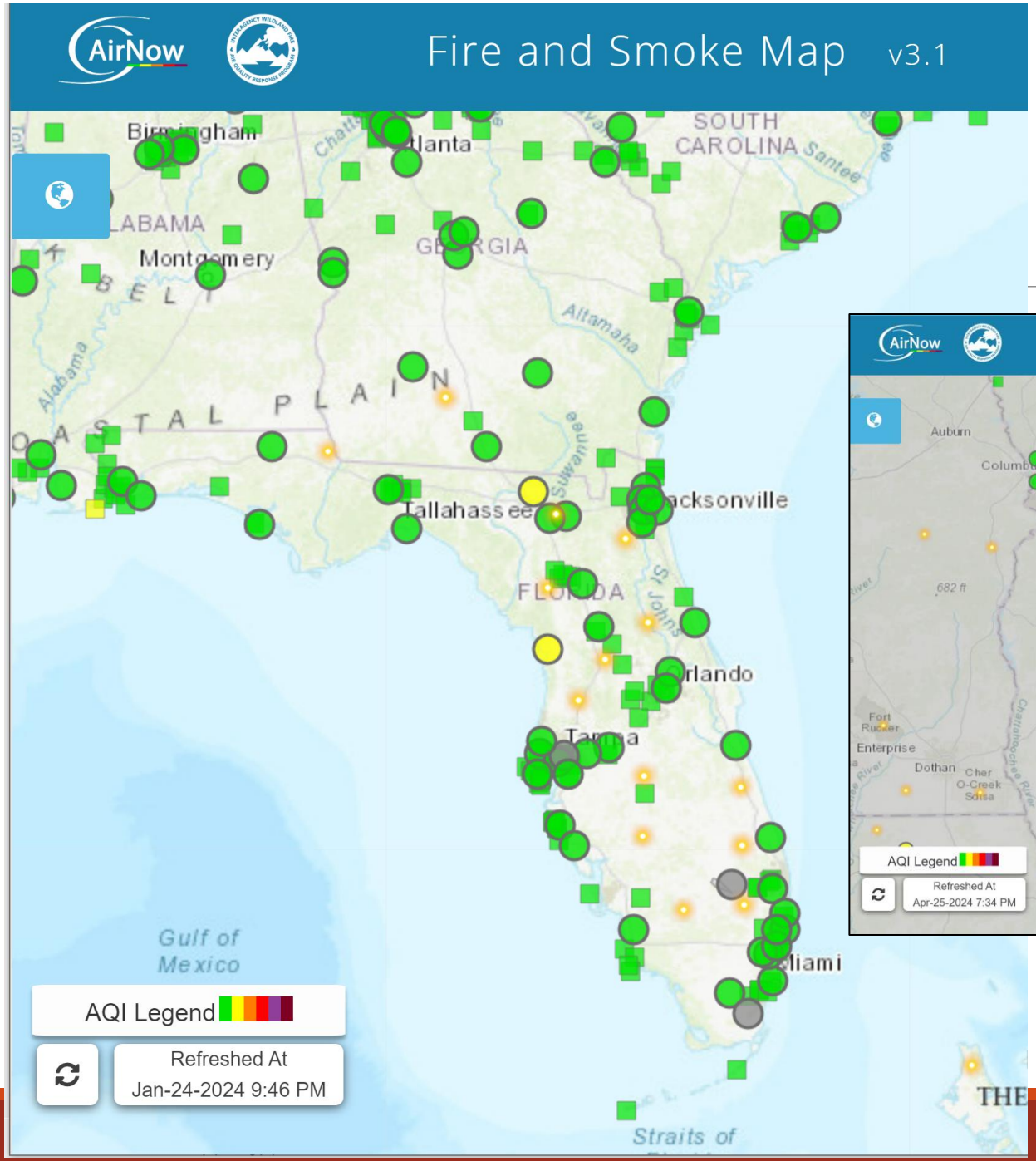


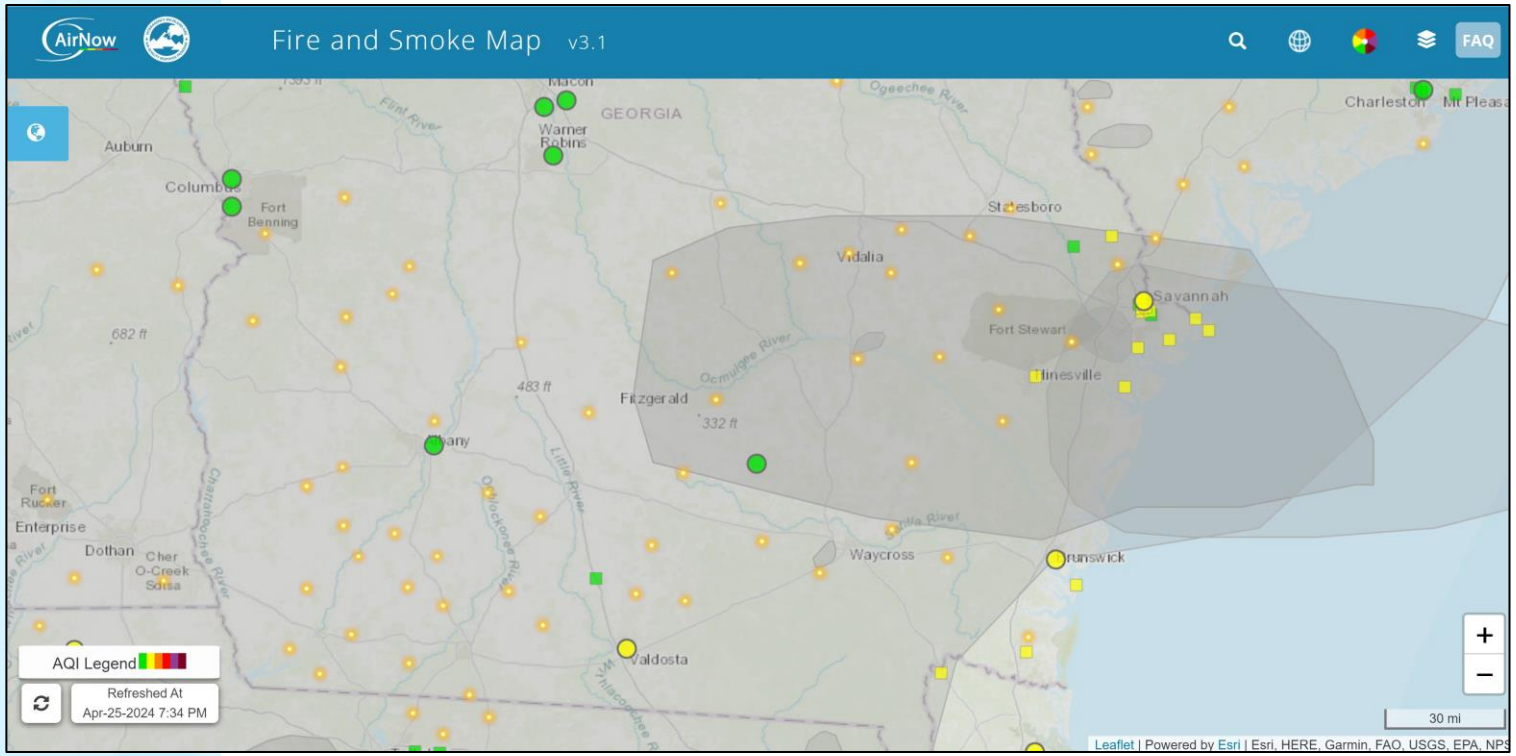


Prescribed fire is a safe way to apply a natural process, ensure ecosystem health, and reduce wildfire risk.

When there's smoke in the air, here's what you can do to protect yourself and your family.

Promote Air Now App and Website to Check on Air Quality

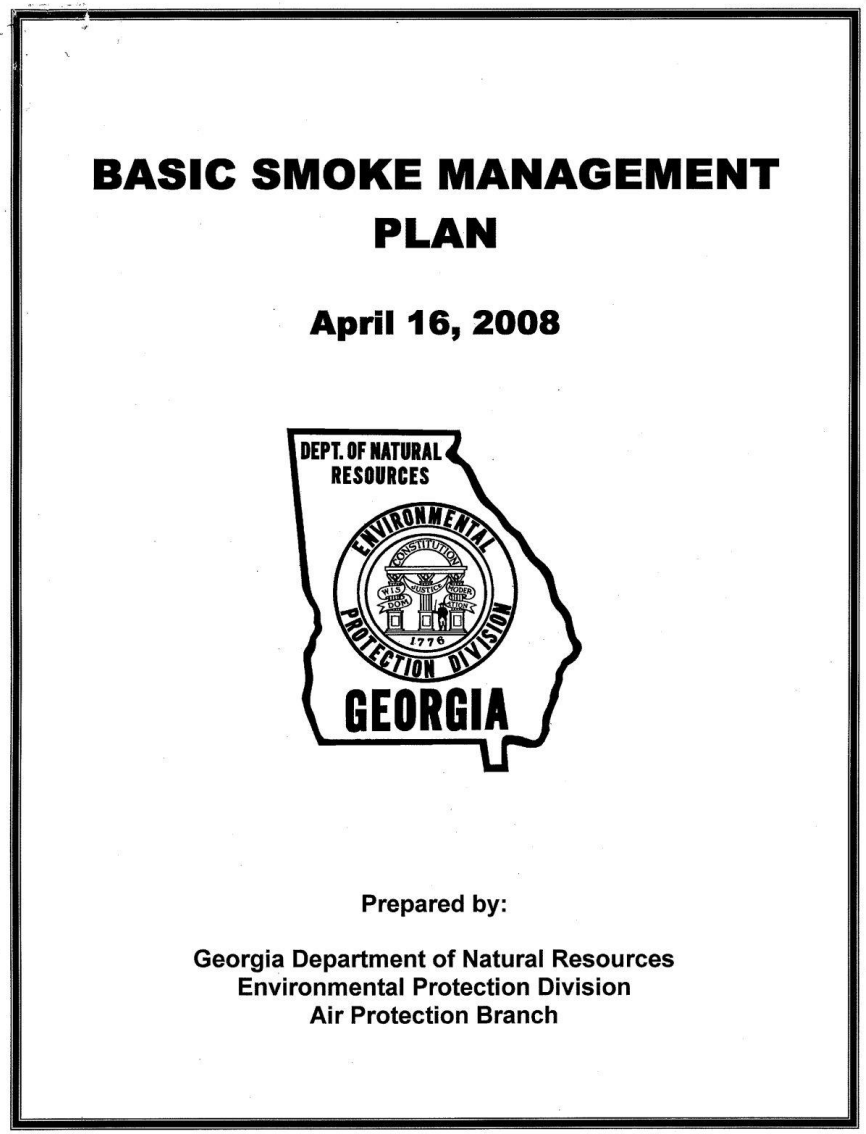




Agencies share a unified message

Use Health Departments to reach impacted folks

Help Your State Adopt a Certified Smoke Management Plan



BASIC SMOKE MANAGEMENT PLAN

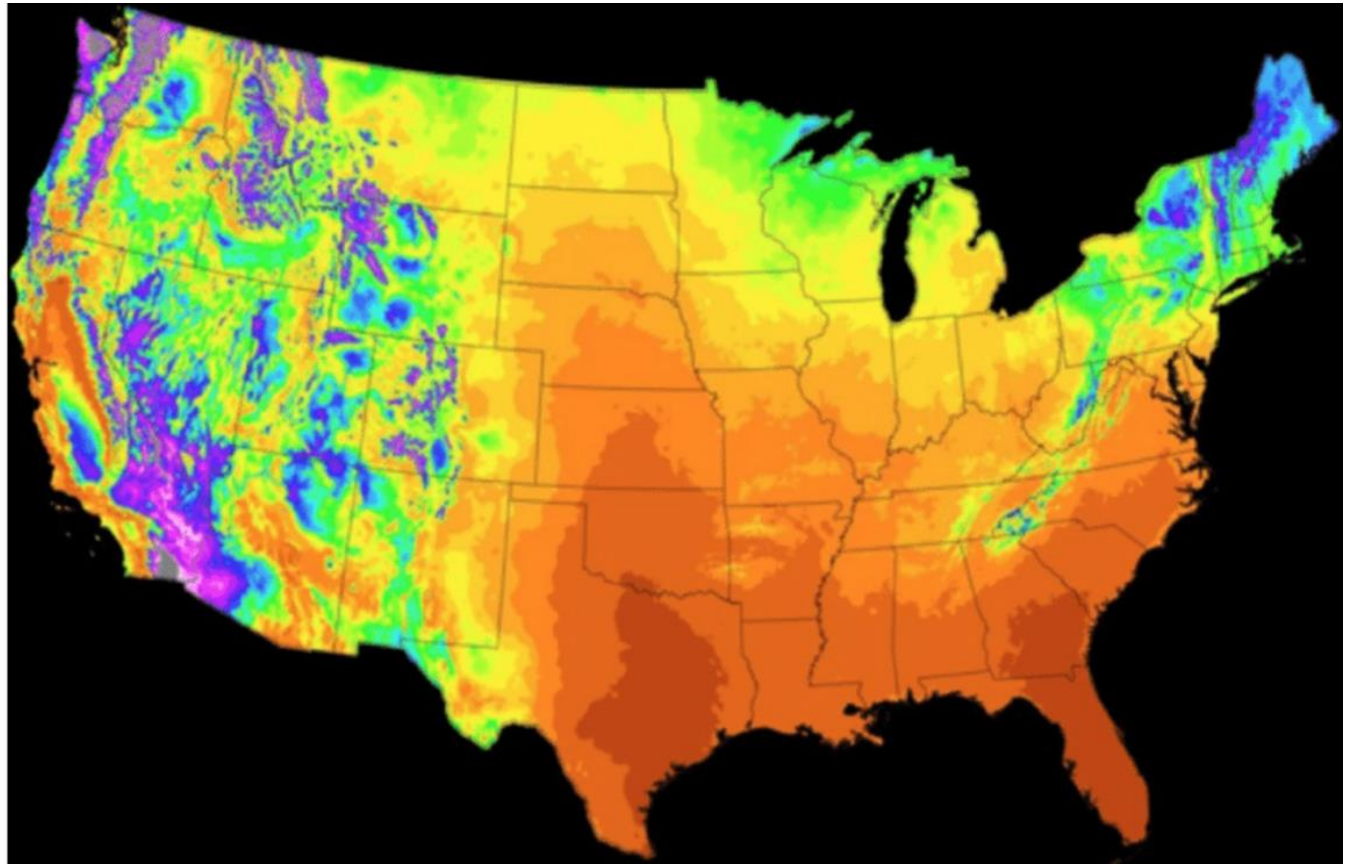
April 16, 2008

DEPT. OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION
GEORGIA

Prepared by:

Georgia Department of Natural Resources
Environmental Protection Division
Air Protection Branch

Engage with SWAP/FAP Coordinators



Guyette et al., 2012

Help Satisfy EE Demonstration Requirements Goals for the Georgia SWAP

MAPS

- **Fire Return Interval Map**
- **Wildfire Mitigation Maps: Forests and WUI**

TEXT

- **List Intended Objectives, Purpose of Burn**
- **Describe Ecosystem Services $ Resiliency**
- **Discuss RX Fire Mitigating Fuels and Smoke and Foregone Benefits**
- **Fire Frequency/Maintenance/Restoration**
- **Smoke Management Tools/Techniques**

Other States Involved With

Alabama, Tennessee, South Carolina, Nebraska

Fire and Air Surveys

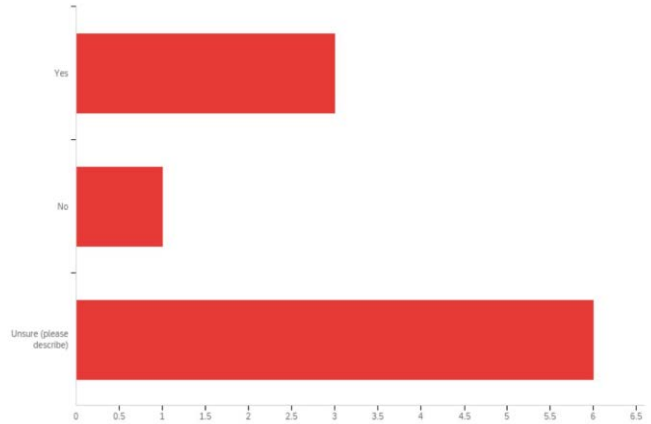
Are you in contact with your State Wildlife Action Plan (SWAP) and Forest Action Plan (FAP) coordinators with regard to Exceptional Event demonstrations? *A number of criteria in the EE demo can be met with SWAP and/or FAP such as fire return interval, foregone benefits of not burning, purpose of burn, etc. (Select all that apply)*

- ☐ Yes - SWAP (please specify the type of information included)
- ☐ YES - FAP (please specify the type of information included)
- ☐ No

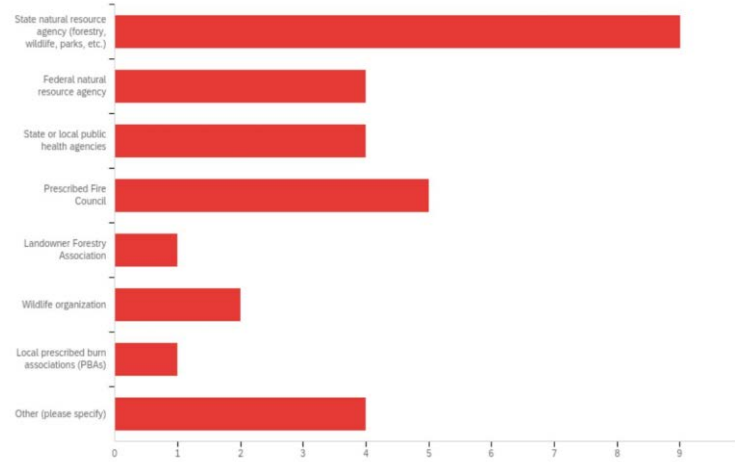
The Recommendations from this survey could help many states.

How many EE Demos will potentially need to be submitted annually based on the current data (using the EPA correction factor)?

Q22 - Do you anticipate the need to pursue at least one EE Demo for prescribed fire beyond 2025?

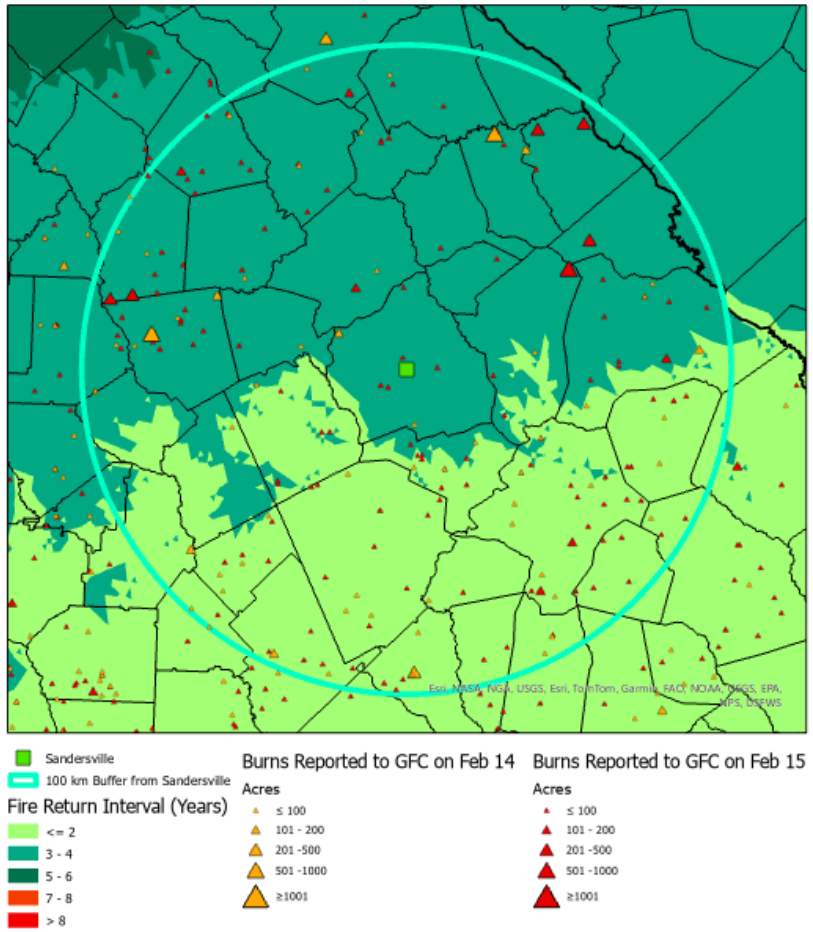


Q27 - Which of the following groups are you in communication with about smoke and PM2.5 in your state? (select all that apply)



Link Your SWAP/FAP with Your Burn Permits

Make EE Demos As Automated as Possible



GA EPD Template
Fire Return Interval Map Overlaid with Burn Permits

Prescribed Fire Management Objectives	
Enhance Habitat for SGCN	Diversify Forest Structure
Reduce Hazardous Fuels	Control Insects and Disease
Remove Litter and Debris	Increase Herbaceous Diversity
Reduce Competition for Overstory	Promote Native Groundcover
Suppress Woody Vegetation	Enhance Wildlife Habitat
Recycle Nutrients	Promote Fire-Adapted Species
Increase Forage	Control Exotic Species

This addresses purpose of burn.

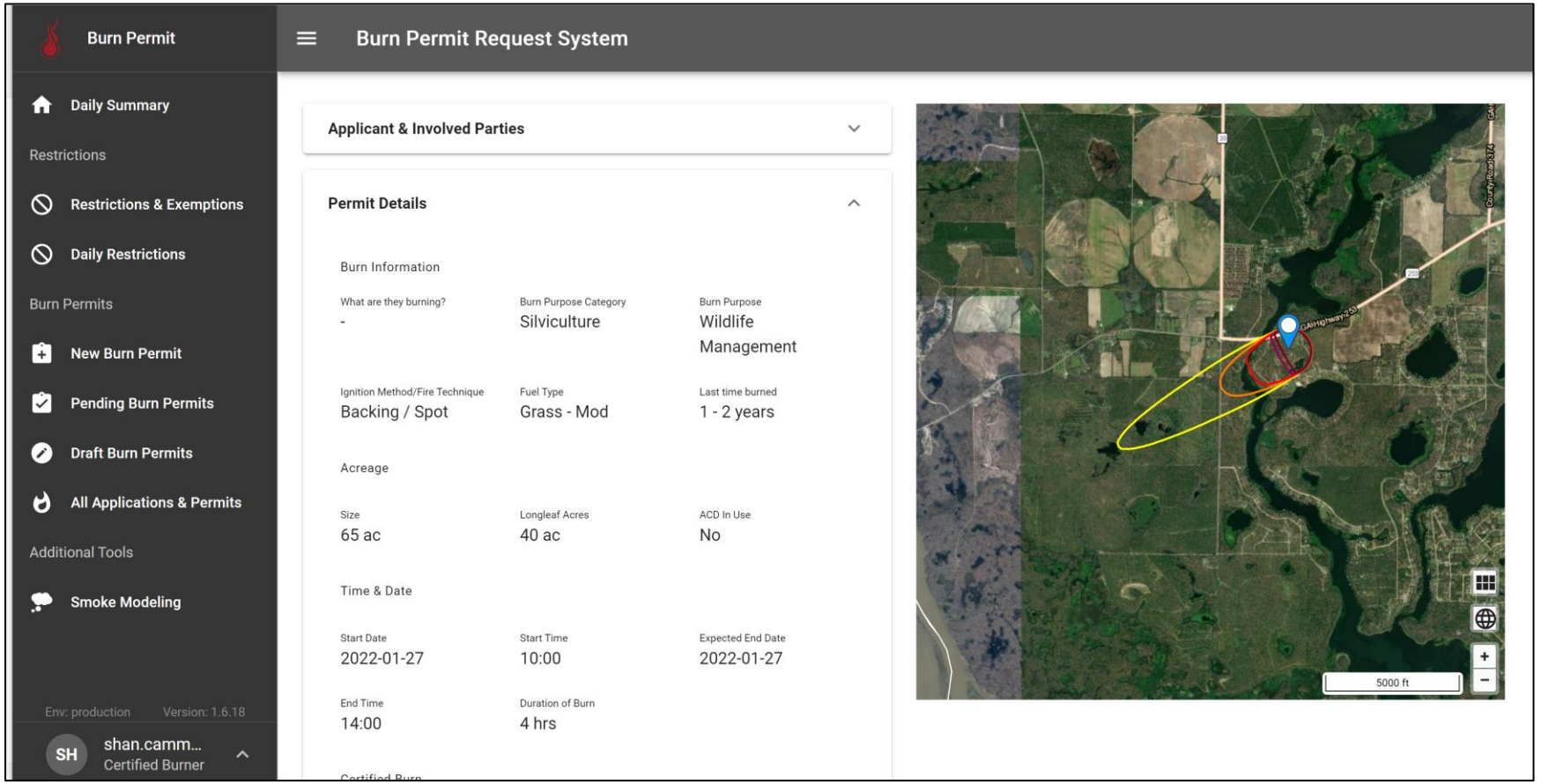
Burn Objectives
Listed in SWAP/FAP
Match Burn Permits

Encourage Your State to Have a Robust Tracking System

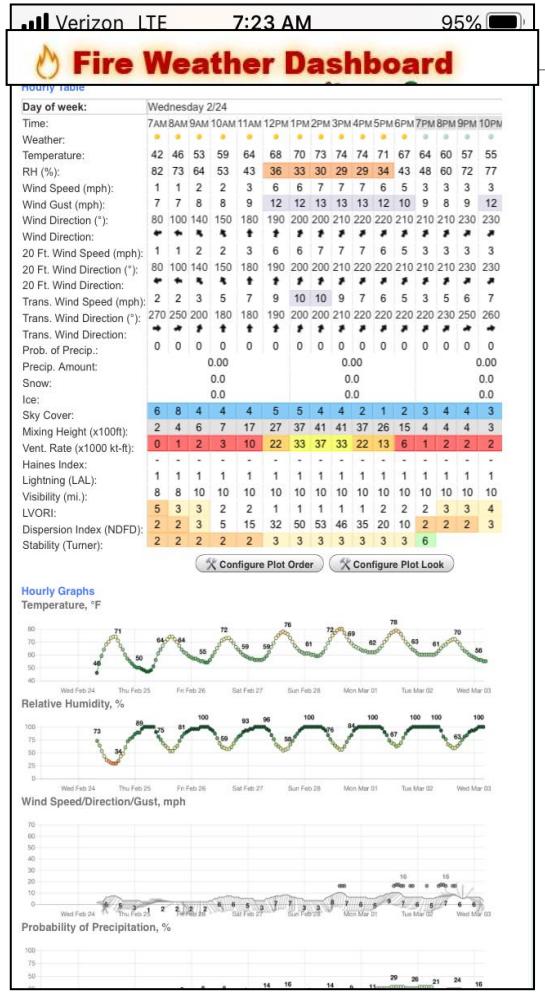
Robust Means:

- **Centralized System**
- **Lat/Long**
- **Smoke Mgt Planning**

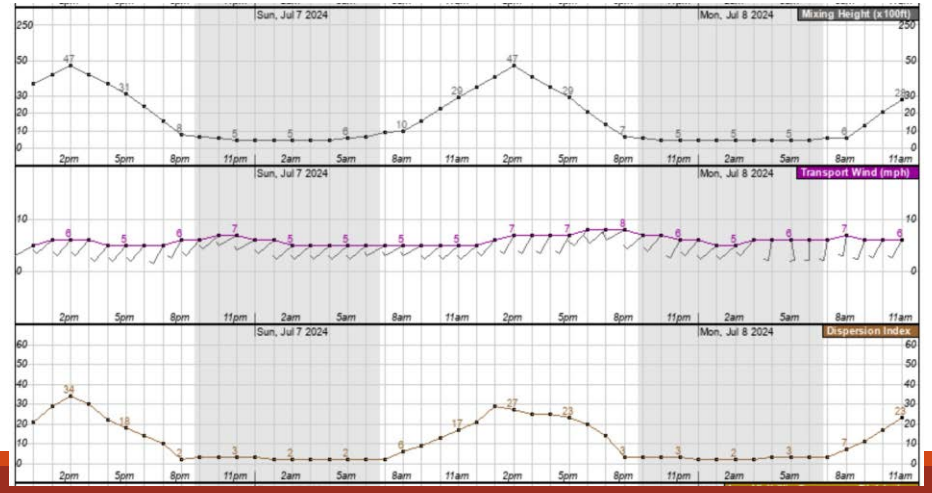
It's important to show clear causal relationship. This satisfies best smoke management practices.



RX Firelighters Pick the Right Day Manage Your Smoke

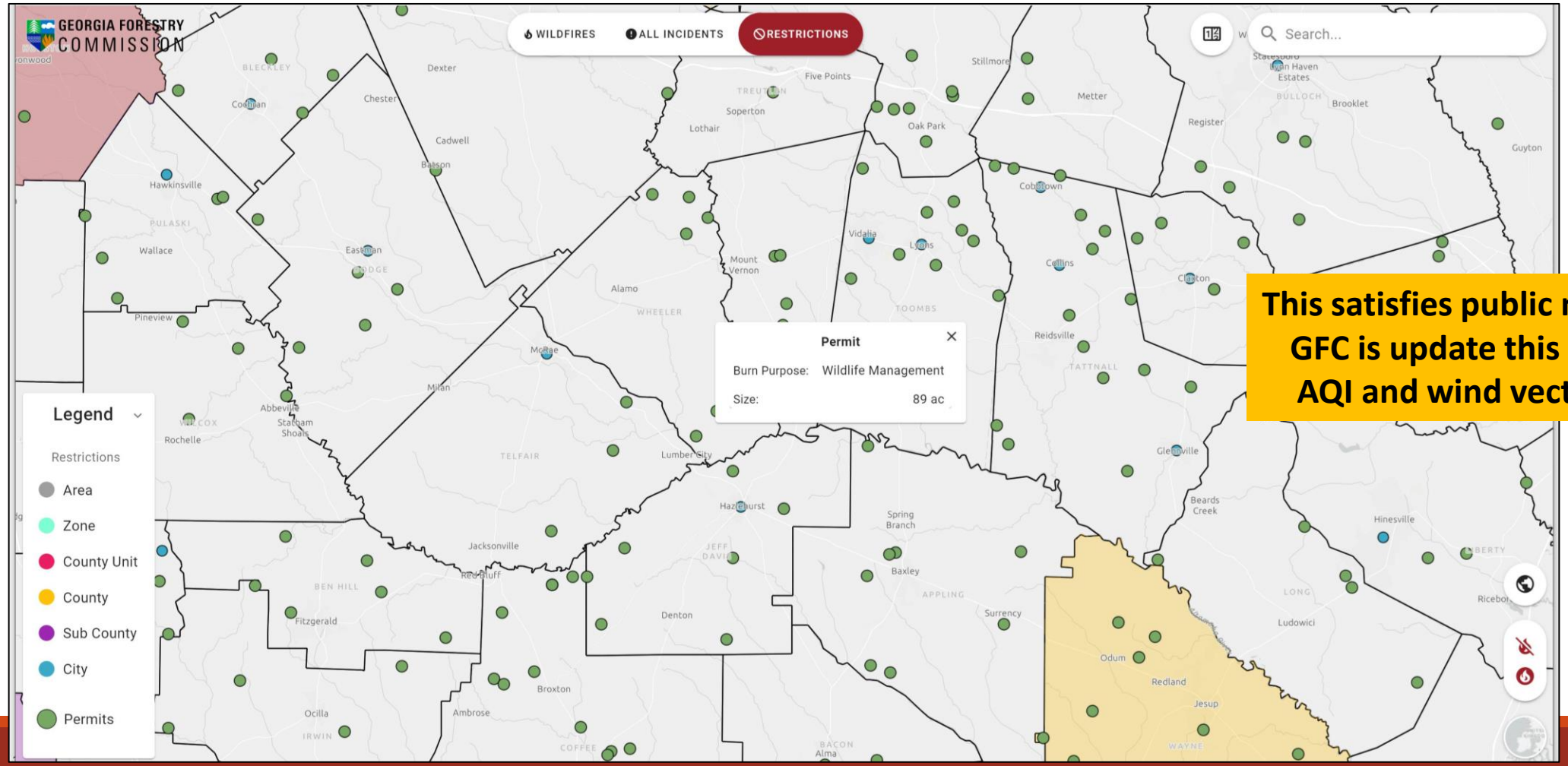


Be Smoke Savvy
THE JONES CENTER AT ICHAUWAY



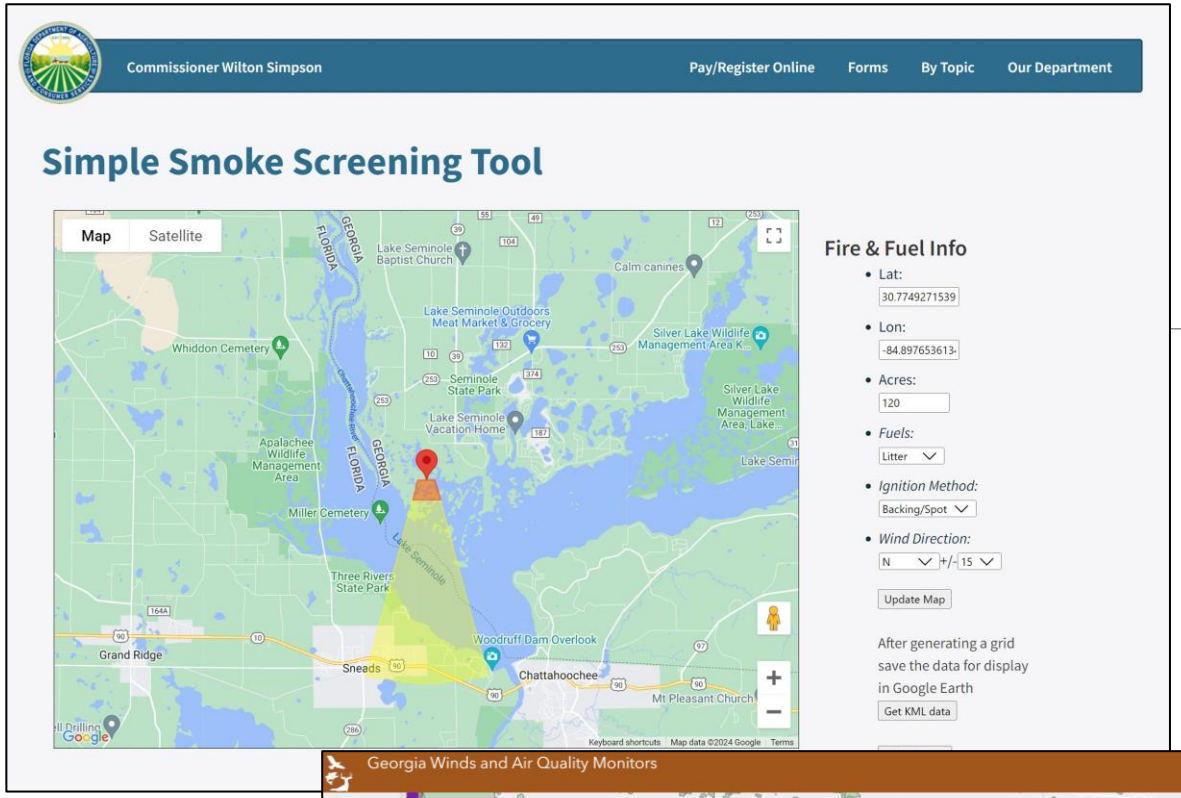
Manage for Smoke Sensitive Targets
Think About the Concept of Airshed

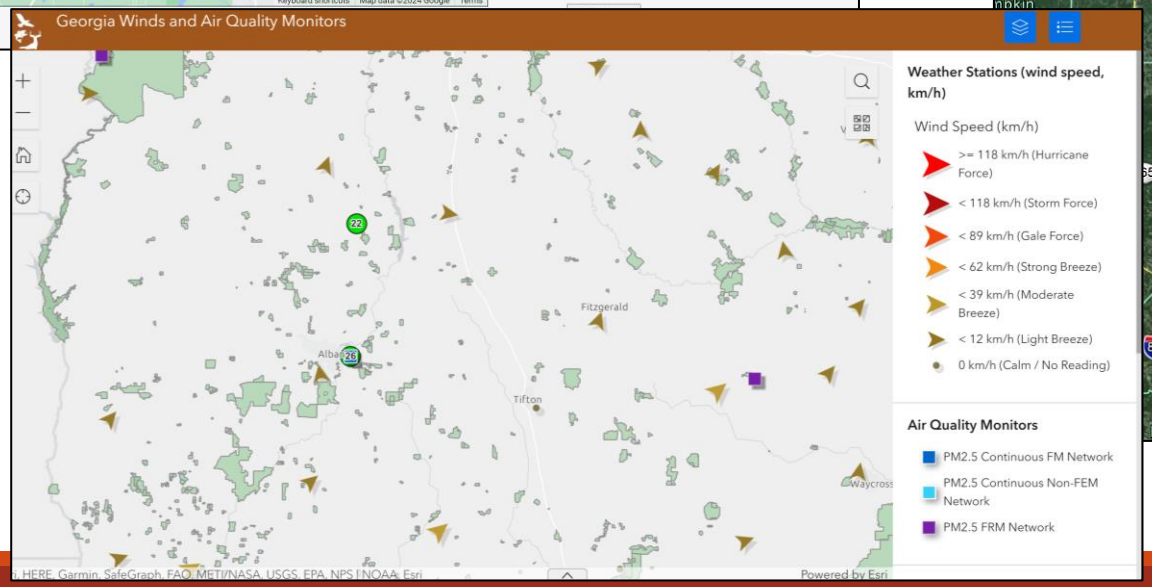
Encourage Use the Wildfire Public Viewer Airshed: See Where Other People are Burning

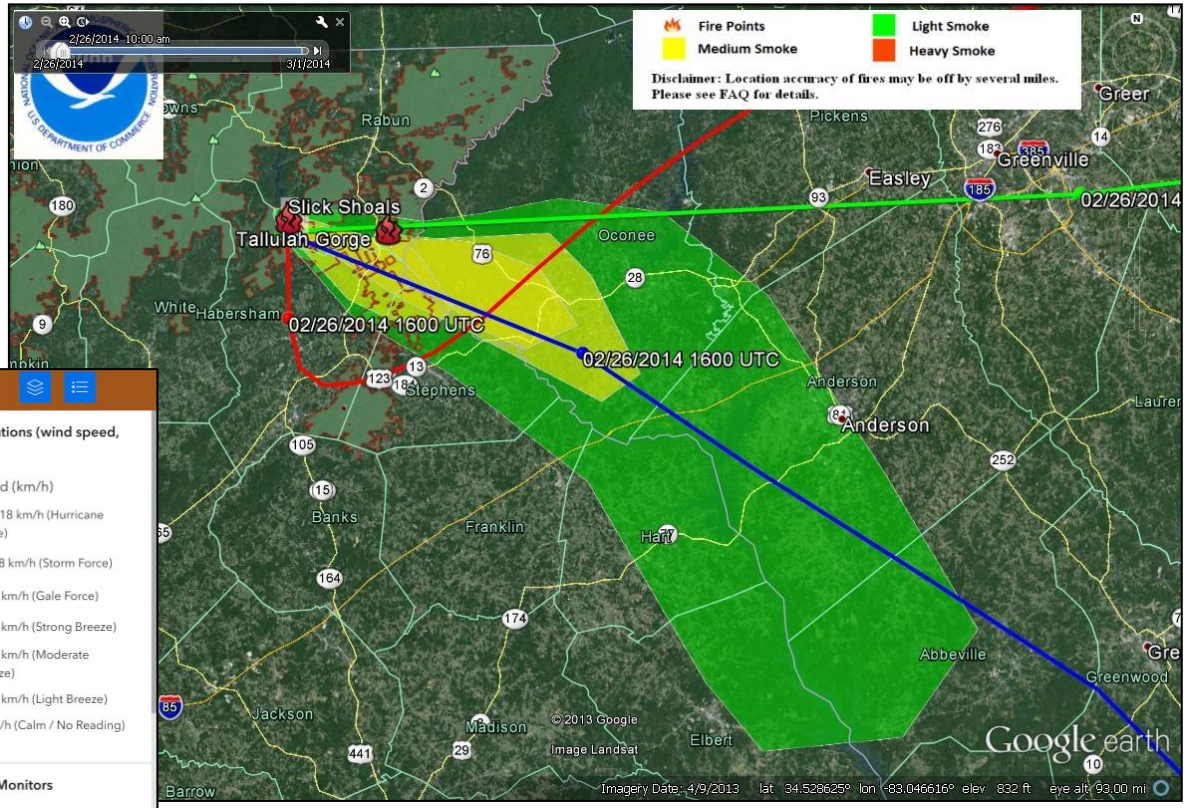


This satisfies public notice. GFC is update this with AQI and wind vectors.

Use All the Tools in Your Smoke Management Toolbox







Explore Resources on Best Smoke Management Southern Fire Exchange


SOUTHERN Fire Exchange
Uniting Fire Science and Natural Resource Management

SFE Fact Sheet 2014-1

Basic Smoke Management Practices for Prescribed Burning

David Godwin, Alan Long, & Pete Lahm

INTRODUCTION

Smoke management has become one of the leading challenges facing prescribed fire practitioners in the Southeast and the continued use of prescribed fire in the region may depend on effective smoke and emission mitigation practices. While not a comprehensive list of smoke management strategies, the 2011 USFS-NRCS guide to Basic Smoke Management Practices (BSMPs) (https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046311.pdf) describes six basic practices that are good starting points for prescribed fire planning and operations. Elements of the six BSMPs may not apply to all burns due to variations in burn size, fuels, and potential impacts on air quality. Nonetheless, each practice should be evaluated for application on every burn even if there is a local smoke management program. This fact sheet briefly summarizes many of the key elements in the USFS-NRCS guide, but readers are encouraged to dig into the full publication to better understand how to implement each practice.

Fuel type, fuel load, weather conditions and ignition techniqu
can all influence smoke production and dispersion. Photo by D
Godwin.

#1 EVALUATE SMOKE DISPERSION CONDITIONS TO MINIMIZE IMPACTS

Before Burning: Develop a smoke management plan for your burn, using protocols such as those described in the Introduction to Prescribed Fire in Southern Ecosystems and online models such as the VSmoke-web. Evaluate weather conditions that will be most appropriate for meeting your smoke management objectives. Analyze predicted weather conditions with regards to smoke movement and potential impacts on smoke sensitive areas (SSAs).

During Burning: Actively monitor weather conditions and forecasts and compare them to the predicted and observed on-site weather conditions and smoke dispersion.

After Burning: Continue to track weather conditions and forecasts to understand possible effects of lingering smoke from smoldering fuels.

#2 MONITOR EFFECTS OF FIRE ON AIR QUALITY

Before Burning: Assess regional air quality conditions and forecasts using online resources such as the National Weather Service, local air quality monitoring sites and EPA AirNow. If air quality is poor, consider postpor
a burn until air quality conditions improve and realiz
that your state forestry, fire or air quality agency ma
already conduct this assessment as part of their burn
authorization process.

During / After Burning: Monitor smoke impacts on air
quality, particularly near SSAs, towns, highways an
schools using resources such as field reconnaissance
and monitoring reports. Larger burns may access sat
lites, radar, and aircraft for additional information to
track smoke movement and air quality impacts.

#3 RECORD BASIC SMOKE MANAGEMENT PRACTICES, FIRE ACTIVITY AND EFFECTS

Before Burning: Track and document observed weather
air quality conditions as well as current forecasts.

During Burning: Record BSMPs used on the burn, ignit
patterns, on-site weather, fire behavior, smoke
dispersion and impacts, size of area burned, fuels
burned, and time / date. These records can often be r
orded on, or attached to, your prescribed burn plan.

After Burning: Retain records, observations and burn pl
for five years after the fire in case of an inquiry or ar
adverse air quality impact.


A Member of the JFSP Fire Science Exchange Network

SOUTHERN Fire Exchange
Uniting Fire Science and Natural Resource Management

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BASIC SMOKE MANAGEMENT PRACTICES (BSMPS) AND TOOLS

INTRODUCTION

Basic Smoke Management Practices (BSMPs) are important for prescribed burners to consider when planning and implementing prescribed fires and following BSMPs may help the land management community to maintain prescribed fire as a socially-accepted practice. On this page, we have assembled a collection of resources that explain BSMPs and may be helpful for prescribed burners in implementing BSMPs on their lands. Do you have resources that we should include on this page? If so, please let us know (contactus@southernfireexchange.org).

BSMPs are intended to be *supplemental practices* for minimizing the impacts of prescribed fire smoke on communities and regional air quality. It is important to understand that following BSMPs does not supersede local, regional, or state air quality rules or regulations. Prescribed burners should use basic smoke management practices for several important reasons, including:

1. Health and Safety: Managing smoke reduces the potential health risks associated with poor air quality. Smoke from prescribed burns contains particulate matter and other pollutants that may exacerbate respiratory issues and cause discomfort for nearby communities. By implementing basic smoke management practices, burners can minimize these risks and protect public health.
2. Minimize Negative Impacts: Smoke can have adverse effects on visibility, transportation, and outdoor activities in nearby areas. Basic smoke management practices help minimize these negative impacts by dispersing smoke more effectively and reducing its duration and intensity.
3. Preserve Public Acceptance: Prescribed burning is an essential tool for land management and ecosystem health. However, negative experiences with smoke can lead to public opposition and reluctance to support future prescribed burning efforts. By managing smoke effectively, burners can maintain positive relationships with local communities and stakeholders, fostering understanding and support for prescribed burning activities.
4. Enhance Effectiveness: Proper smoke management can improve the overall effectiveness of prescribed burns. By controlling smoke dispersion, burners can achieve their desired burn objectives more efficiently, whether it's reducing fuel loads, promoting ecosystem health, and improving wildlife habitat.

By implementing these basic smoke management practices, prescribed fire practitioners can minimize the impact of smoke on air quality and public health while still achieving land management objectives. For more information about the health effects of smoke and tools for helping communities prepare for wildland smoke, check out AirNow.gov/wildfires.

BSMP FUNDAMENTALS

NRCS BASIC SMOKE MANAGEMENT PRACTICES FOR PRESCRIBED BURNING FACT SHEET

This is the USDA Forest Service and NRCS document that started it all. The NRCS Basic Smoke Management Practices fact sheet introduces the six BSMPs, and explains why and how prescribed burners should use BSMPs. Direct Link (pdf). We also have a recorded webinar presentation that dives into each of the BSMPs.

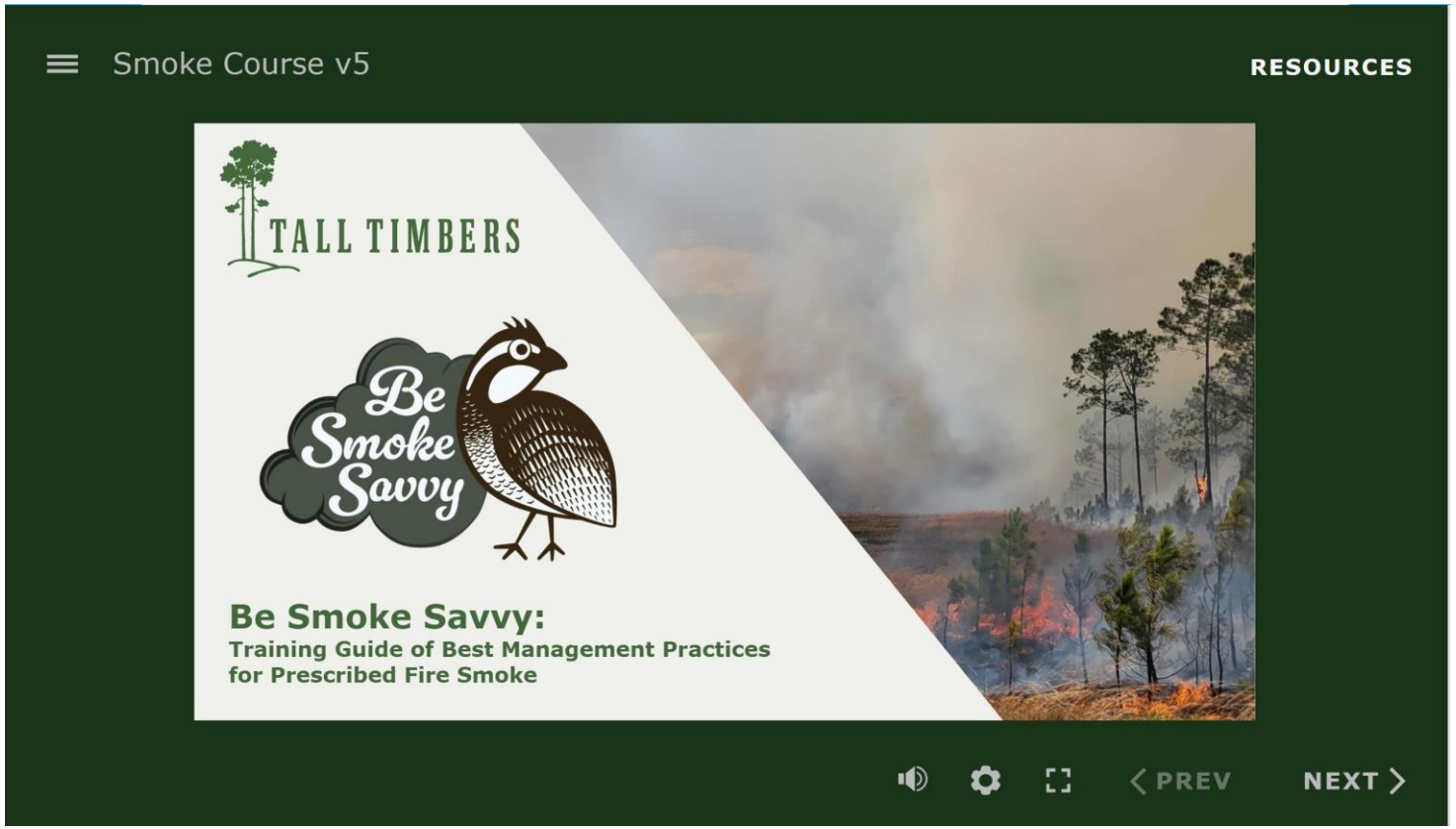
NRCS
Basic Smoke Management Practices
October 2011

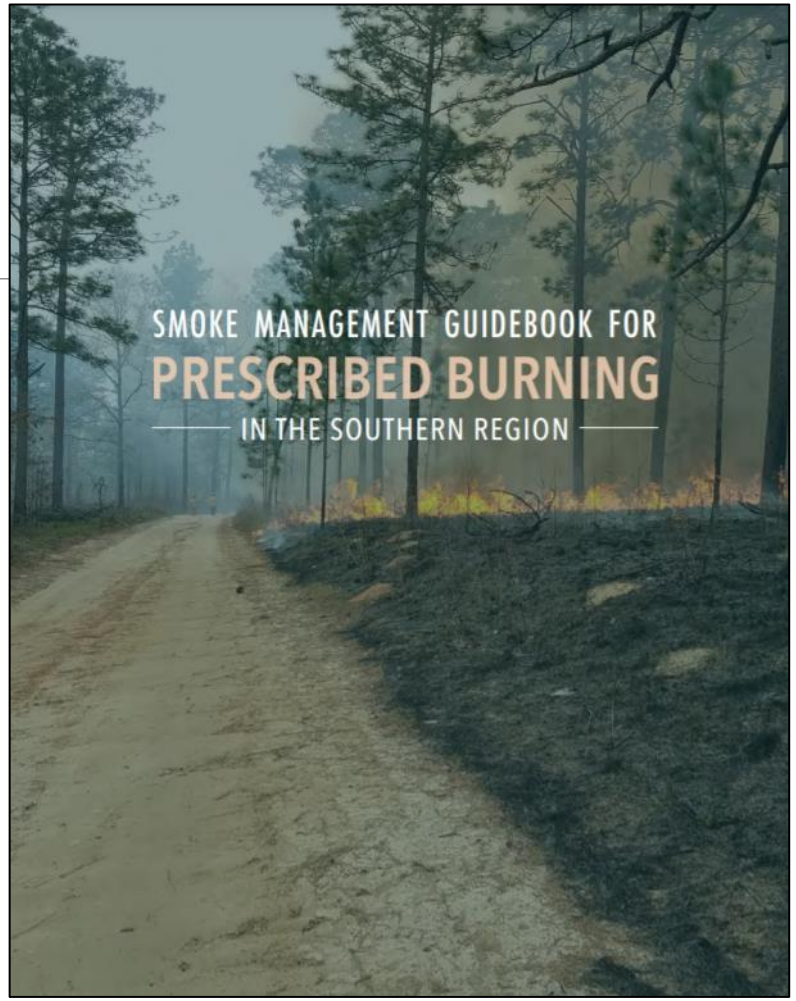
SFE BASIC SMOKE MANAGEMENT PRACTICES FOR PRESCRIBED BURNING FACT SHEET

The SFE team developed this two-page document to supplement the information contained within the NRCS fact sheet mentioned above. The SFE fact sheet includes links to weather and smoke modeling tools that can support smoke management planning. Direct Link (pdf)

Basic Smoke Management Practices for Prescribed Burning

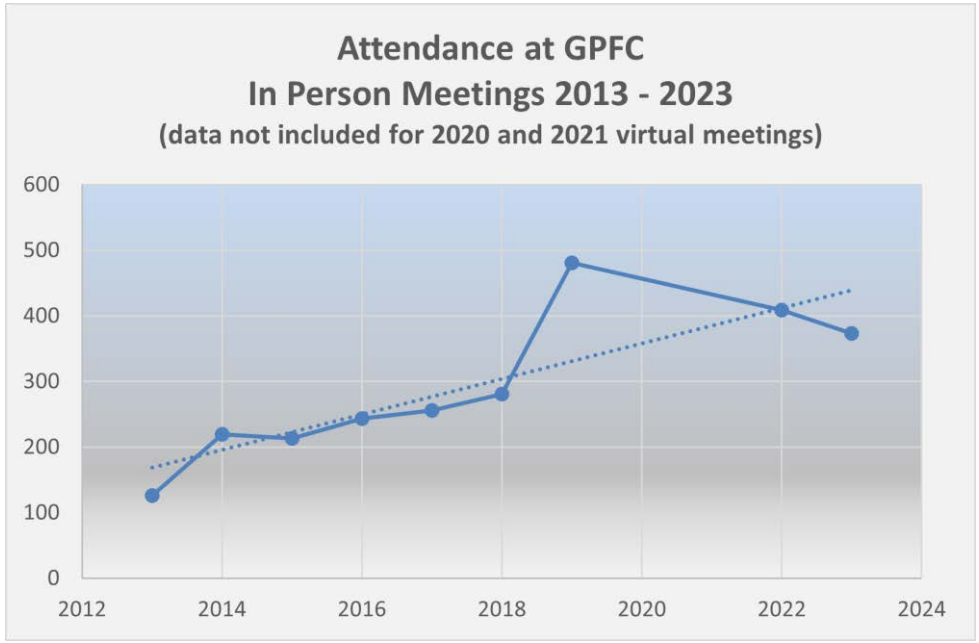
Share Smoke Management Practice Resources Tall Timbers and Extension



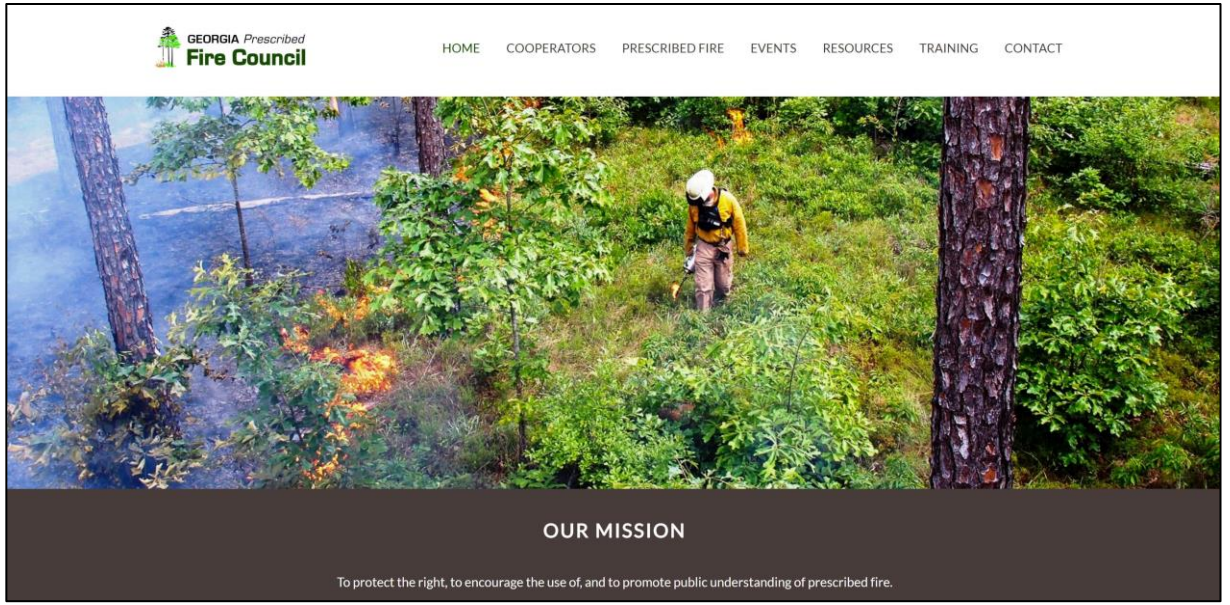


Participate in Prescribed Fire Councils

Keep Up on the Latest Research and Strategies, Share Lessons Learned



COALITION OF PRESCRIBED FIRE COUNCILS, INC.



Engage With Prescribed Burn Associations (PBAs)

Get Free Help, Great Info, and Gain Valuable Experience

Be Creative in Finding New Tools and Ignition Strategies

Lift Smoke Quickly

Be Creative in Expanding Burn Windows

Spread Smoke Out Over the Year

Let's Work Together to Advocate for Prescribed Fire to Manage Wildlife Diversity, Build Resilient Ecosystems, and Promote Cleaner Air

Shan Cammack
Shan.Cammack@dnr.ga.gov

From uncertainty to action: A structured approach to filling knowledge gaps in rare species conservation

Next Third Thursday Web Forum

8-15-2024

10:00 am ET

Jonah Evans

Nongame & Rare Species Program Leader

Texas Parks and Wildlife Department

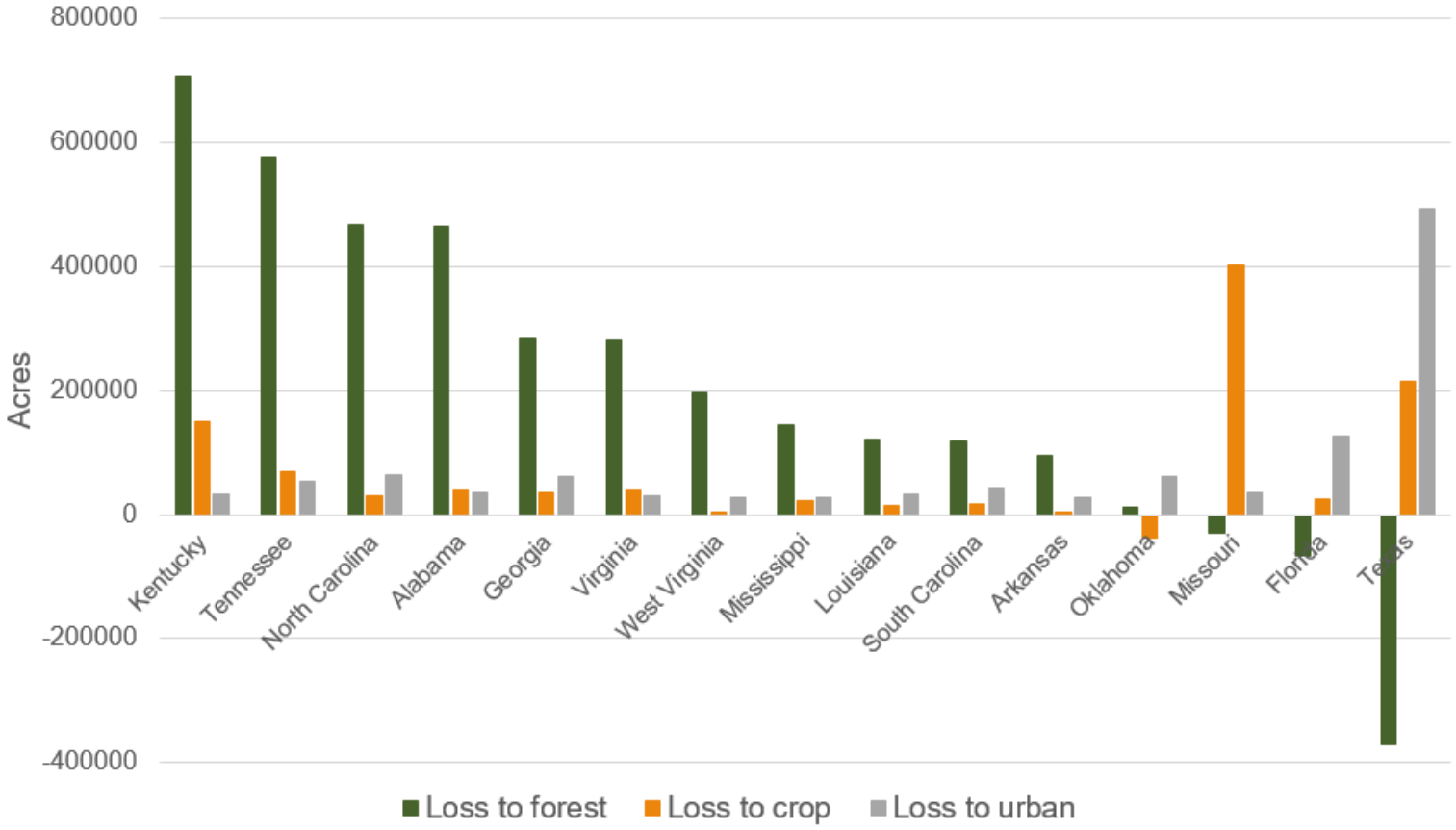
secassoutheast.org

Staff updates

- Review trends in grassland and savanna ecosystems

Review trends in grassland and savanna ecosystems

- Two calls to provide feedback on methods, results, and approach:
  - Tuesday, July 23, 2024 @ 2 pm ET/1 pm CT
  - Wednesday, July 31, 2024 @ 11 am ET/10 am CT



How to get involved in SECAS

- Sign up for the SECAS newsletter

  secassoutheast.org

- Connect with SECAS staff or partners

  secassoutheast.org/staff

  secassoutheast.org/partners

- Explore the Southeast Conservation Blueprint

  secassoutheast.org/blueprint

Southeast Conservation Adaptation Strategy


Questions?