



SFE Publication 2025-5

SFE Smoke & Weather Resources

Fact Sheets



Basic Smoke Management Practices for Prescribed Burning

This fact sheet introduces the six BSMPs and provides a list of important resources for managing smoke.



Predicting Smoke Movement: An Introduction to Smoke Models

This fact sheet introduces four common models that are used in planning smoke management for prescribed fires in the South. The models range from basic to advanced in their inputs and outputs.



Online Tools for Weather Information

This fact sheet provides a description and comparison of three online tools for accessing weather information that can be critical for wildland fire decision-making.



Predicting Smoke Movement: An Introduction to Smoke Models
By Dakota Higgins, David Coakley, & Christian Fernandez

Predicting Smoke Movement: An Overview
Smoke management is a critical component of prescribed burn planning. In many cases, it is the final consideration in the planning process. With the help of the prescripted burn model, smoke management is a process that involves predicting smoke movement, assessing burn conditions, and adjusting smoke management and dispersal. To account for these variables, a range of models have been developed to provide and compare a range of outputs. This fact sheet introduces four of those models and their uses in the types of reports, outputs, and forecasts for each.

Smoke Models
Simple Smoke Screening Tool
This Simple Smoke Screening Tool, available for free through the Florida Department of Agriculture, is a user-friendly graphic model designed for use by those with a 300-acre burn during the daytime. This tool provides a basic forecast of smoke movement in miles and the time it takes for smoke to reach a receptor. It also provides a basic forecast of smoke concentration, which is based on factors such as fuel conditions, wind direction, and quantity of smoke production.




Basic Smoke Management Practices for Prescribed Burning
By Dakota Higgins, David Coakley, & Christian Fernandez

National Ambient Air Quality Standards and PM2.5
This graphic illustrates the National Ambient Air Quality Standards (NAAQS) for particulate matter (PM) and ozone. It shows the standards for PM2.5, which is the fine particulate matter that is most harmful to human health. The standards are based on the annual average concentration of PM2.5 in the air, measured in micrograms per cubic meter (µg/m³). The standards are 12 µg/m³ for the annual average and 35 µg/m³ for the 24-hour average. The graphic also shows the standards for ozone, which is measured in parts per billion (ppb). The standards are 0.08 ppm for the annual average and 0.12 ppm for the 1-hour average.



Online Tools for Weather Information
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Fire Weather Dashboard
The Fire Weather Dashboard is a useful resource for providing a real-time overview of weather conditions and forecasted data for the current day and the following day. It includes information on wind speed, humidity, temperature, and precipitation, as well as the Fire Weather Index (FWI) and the Fire Weather Potential (FWP). The dashboard is available for use on a desktop computer, tablet, or smartphone. It also includes a map of the United States showing the location of the burn site and the weather data for that location.



From left to right: “Predicting Smoke Movement: An Introduction to Smoke Models”, “Basic Smoke Management Practices for Prescribed Burning”, and “Online Tools for Weather Information”.





Superfog: State of the Science

This fact sheet summarizes presentations from the 2013 International Association of Wildland Fire Smoke Symposium to familiarize managers with the tools and information they can use to prepare for and determine the likelihood of superfog events.



Situational Awareness: Nighttime Smoke & Fog on Prescribed Burns

Many of the factors that impact smoke decisions are summarized in this fact sheet on nighttime smoke and fog.



PB Piedmont: Predict Overnight Smoke Conditions in Complex Terrain

This fact sheet provides an overview of Planned Burn (PB)-Piedmont--an online computer model that predicts the patterns of air movement during the nighttime to forecast the occurrence and accumulation of smoke and fog.

Recordings



Webinar: Air Quality 101

This webinar features speakers from regional air quality programs that introduce the fundamental concepts and tools for understanding the who, what, why and how for managing prescribed fire smoke in the Southeast.



Playlist: Smoke Management Information & Tools

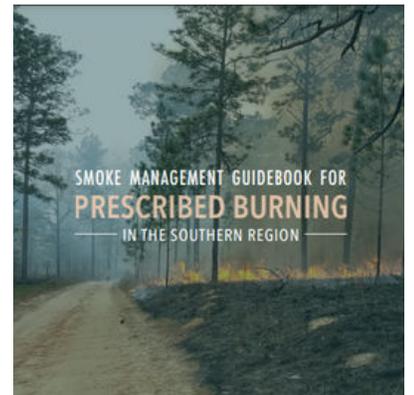
This Youtube playlist features a variety of recordings from SFE archived webinars and Prescribed Fire Council meetings.



Guidebooks

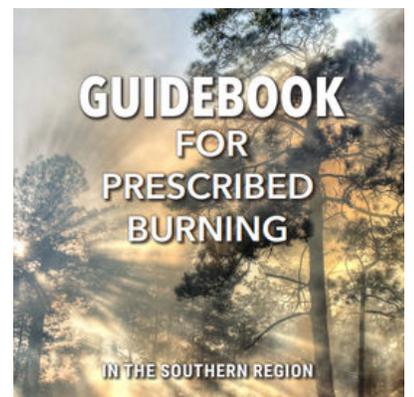
Smoke Management Guidebook for Prescribed Burning in the Southern Region

This publication was developed through a collaboration among the EPA, NC State University, Southern Fire Exchange, Southern Regional Extension Forestry, and the University of Georgia. A full-color guidebook, it includes a wide range of information about smoke production, composition, and planning.



Guidebook for Prescribed Burning in the Southern Region

Learn how to plan, conduct and evaluate prescribed burns with this guidebook designed for burners of all skill levels. This book takes you step-by-step through the prescribed burning process in addition to providing more in-depth chapters on many of the concepts.



Additional Resources:

- **Fact Sheet: Potential Impacts of Prescribed Fire Smoke on Air Quality, Public Health, and Socially Vulnerable Populations in the Southeastern US** <https://southernfireexchange.org/wp-content/uploads/Air-Impacts-One-Page-8-2021.pdf>
- **NRCS CPS 338 Prescribed Burning: Basic Smoke Management Practices** https://efotg.sc.egov.usda.gov/references/public/CA/TN_AQ07_CPS338-BasicSmokeManagement_11-16.pdf
- **Georgia DNR Winds & Air Quality Map** <https://experience.arcgis.com/experience/9492facb22c8464788186589decfd736>
- **Tall Timbers Smoke Conditions in the Southeast Map** <https://experience.arcgis.com/experience/ec2f18b29c0545c68b3447d13878564a>
- **Kansas Flint Hills Smoke Management Tools** <https://ksfire.sonomatechdata.com/view/summary/>
- **NWCG Smoke Community Emissions & Smoke Portal** <https://www.frames.gov/smoke/home>
- **NWCG Smoke Management Guide for Prescribed Fire** <https://www.nwcg.gov/publications/pms420-3>

Learn more about our partners, products, and activities at southernfireexchange.org.
Learn more about the Joint Fire Science Program and the Fire Science Exchange Network at firescience.gov.