



SE FIREMAP

An improved system for mapping fires across the Southeastern U.S.

Updated November 2024

BACKGROUND:

More effective spatial tracking of wildland fire and understanding fire patterns across both public and private lands in the Southeast are critical needs identified by a consortium of conservation partners, including members of the Southeast Regional Partnership for Planning and Sustainability (SERPPAS) and America's Longleaf Restoration Initiative (ALRI). In 2020, the USDA Natural Resources Conservation Service (NRCS) provided funds through an agreement with the U.S. Endowment for Forestry and Communities (Endowment) to support a new "SE FireMap" product. The accuracy of the SE FireMap will promote better decision-making to prioritize funding for staff, projects, training, and equipment and allow fire partners to work smarter. Fire is key to healthy native landscapes in the Southeast to keep "working lands" working, restore the longleaf pine ecosystem, support the Department of Defense's military and training missions, conserve listed and at-risk species, manage for wildfire risk, and minimize the need to conserve species through regulation. The importance of improving and expanding prescribed burn management cannot be overstated - it is imperative that we have a reliable method to select priority geographies to manage natural resources and wildfire risk.

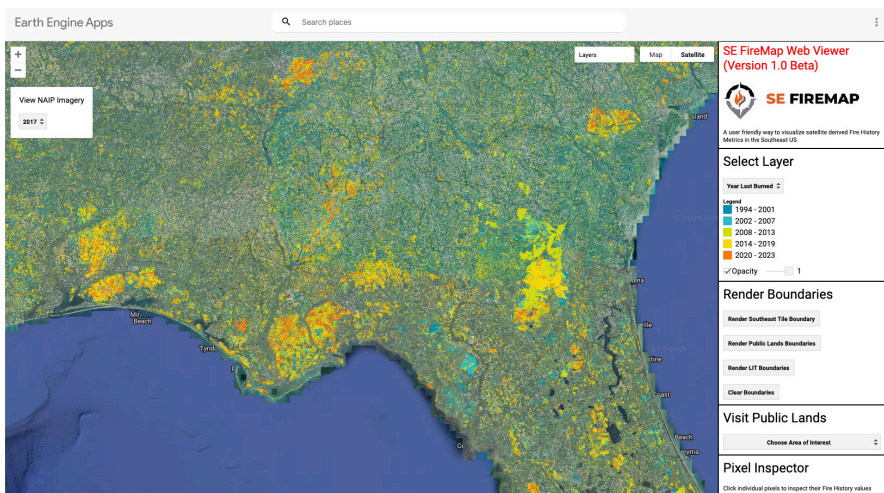


Key Objectives:

- Develop a cohesive system using remote sensing to track both prescribed fires and wildfires across the Southeast, providing significantly improved resolution over other regional and national systems currently in use;
- Identify priority databases already in use by partners to test mapping accuracy and help train the SE FireMap toward reducing error rates;
- Provide comprehensive coverage of both public and private lands;
- Seek to achieve a mapping scale that balances the desire to support site-specific management decisions with the ability to ensure accuracy;
- Coordinate continuously with fire mapping experts within the U.S. to facilitate future expansion of this project to include other regions, especially the Western U.S.;
- Deliver the SE FireMap online for public use as a decision support tool "dashboard" with standard query options, as well as spatial data and PDF informational downloads, to promote the efficiency and effectiveness of fire management toward conservation, economic and public safety goals.

PROCESS:

The Endowment and NRCS are leading a regional consortium of partners to conduct the work and partnered with The Longleaf Alliance (TLA) to coordinate the project and a technical oversight team (TOT) of subject matter experts nominated by ALRI and SERPPAS partners. The TOT consists of ten members who are guiding the project through all phases of development. This project has been separated into a “Scoping Phase” and “Development Phase” with a target completion date in 2026.



A screenshot of the Phase I prototype SE FireMap tool.

Phase I: Scoping and Development 1.0

To ensure product quality, a Request for Proposals (RFP) was released in 2019 for a national assessment of existing spatial information, models, remote sensing, other tools and approaches relevant to developing an improved fire mapping system. Tall Timbers Research, Inc. (TTR) received this award and completed the scoping effort in 2021. In the scoping effort, TTR evaluated a number of remotely sensed burned area products and specifically recommended use of the USGS Landsat Burned Area (BA) products in the Phase II SE FireMap implementation as those products have the longest running record (1984 – 2023), finest spatial resolution (30 m), and have been thoroughly described, evaluated, and validated in a number of studies (Hawbaker et. al., 2017; Vanderhoof et. al., 2017a, Vanderhoof et. al., 2017b; Hawbaker et. al., 2020; and Vanderhoof et. al., 2021). Another recent publication (Teske et. al. 2021) demonstrated how fire history metrics could be generated from the Landsat BA products and their value for fire and conservation management decision making. The Landsat BA products and fire history metrics were integrated in the SE FireMap 1.0 beta viewer and released on the Landscape Partnership Portal in April of 2021 (<https://landscapepartnership.org/key-issues/wildland-fire/fire-mapping/regional-fire-mapping/se-firemap>). The beta viewer demonstrated the potential to fill critical information gaps, tracking the current and historic fire regime characteristics on both public and private lands in the Southeast.

Phase II: Scoping and Development 2.0

Based on the findings presented by TTR during SE FireMap Phase I, the NRCS, Endowment, and TOT made several recommendations to transition SE FireMap from the Phase I prototype into the Phase II operational decision-support system to provide up-to-date information to resource managers. These recommendations included: A) continue generation of products incorporated in SE FireMap Phase I and (B) new work to support and improve products for use in SE FireMap Phase II, as well as (C) additional research to demonstrate the value of SE FireMap and its products for land management and conservation planning. NRCS and the Endowment have partnered with TTR and USGS for Phase II Development. TTR and USGS are working collaboratively to address the objectives outlined in the development phase to support SE FireMap and align it with future national mapping and conservation efforts.

Objectives for Phase II Development include:

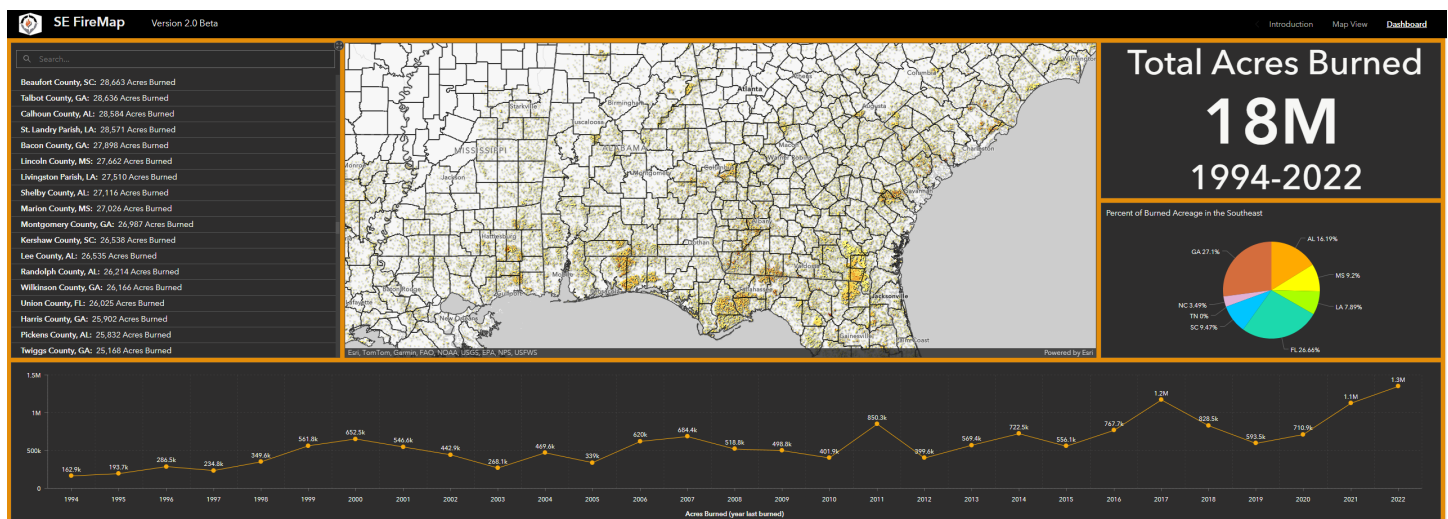
1. Soliciting input from decision-support tool users,
2. Implementing decision-support tools and build end user interface,
3. Training and documentation for the decision-support-tool,
4. Continuing production of the Landsat BA products and fire history metrics,
5. Reducing latency for the Landsat BA annual products and fire history metrics,
6. Incorporating harmonized Landsat Sentinel-2 data into BA product generation,
7. Advancing remote sensing data and methods to improve fire detection and burned area products,
8. Predicting uncertainties in the burned area products,
9. Assessing regional patterns and impacts of burning, and
10. Coordinating all with SE FireMap technical oversight team.



SE FireMap team members implementing a prescribed burn at Tall Timbers.

Since the start of the Development Phase, TTR and USGS solicited input from decision-support tool users through workshops held at TTR, NRCS offices in Atlanta, GA, and at the 2024 Longleaf Alliance Meeting. That input guides the development of the

information and summaries available in the decision support tool. TTR and USGS have streamlined their process to generate Landsat Burned Area products to incorporate the Burned Area products for the previous year and updated fire history metrics into the decision support tool by the end of March each year. Research so far has focused on developing burn severity data layers to accompany the Landsat Burned Area products, improving burned area mapping using Harmonized Landsat Sentinel-2 imagery, and analyzing burning trends across the Southeast.



A screenshot of the Phase II SE FireMap beta tool.

References

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For additional information about this project, go to <https://www.landscapepartnership.org/key-issues/wildland-fire> and quickly REGISTER.

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