



# Prescribed Fire: *Uncertainty and Challenges for “Forgotten Fires”*

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**Forgotten:**

*Less research funding*

*1/3 of publications in  
fire journals*

A photograph of a wildfire, showing intense orange and yellow flames at the bottom transitioning to thick, billowing smoke and ash rising into the air. The background is a hazy, orange-tinted sky.

# Contributions to GHG Emissions

$\text{CO}_2$

$\text{CH}_4$

$\text{N}_2\text{O}$

They are difficult to characterize

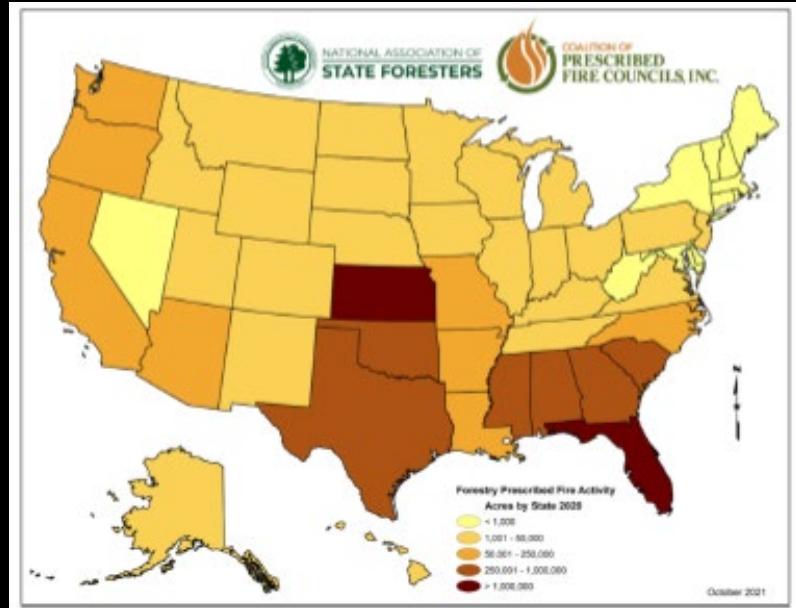
- Spatially patchy
- Temporally patchy
- Local fuels are dynamic in space and time

- **Big 3: fuels, fire behavior, fuel consumption**

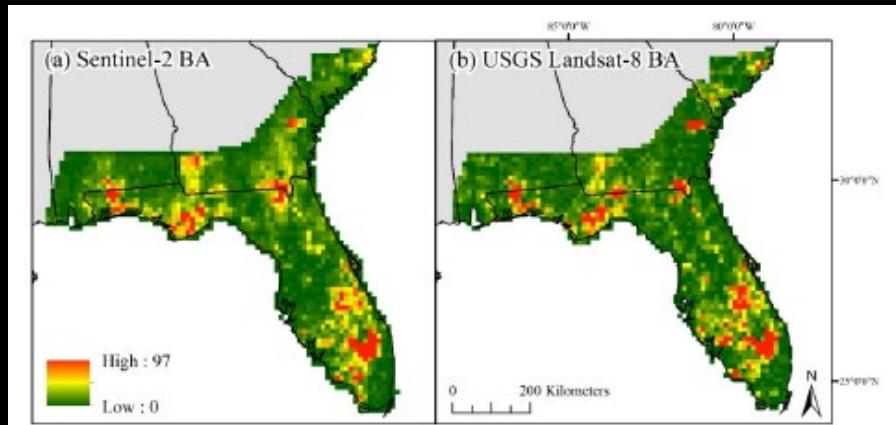
# How many ha burn annually? where? when?

Melvin 2022



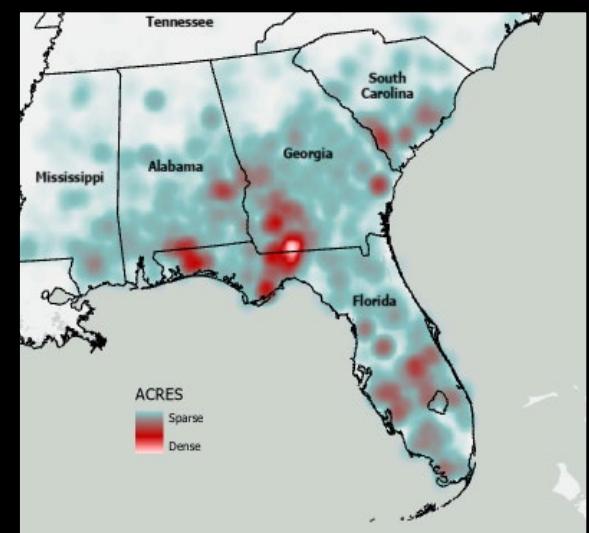
Annual, State

Vanderhoof et al. 2021



Satellite pass\*, 20-30 m

Cummins et al. *In review*

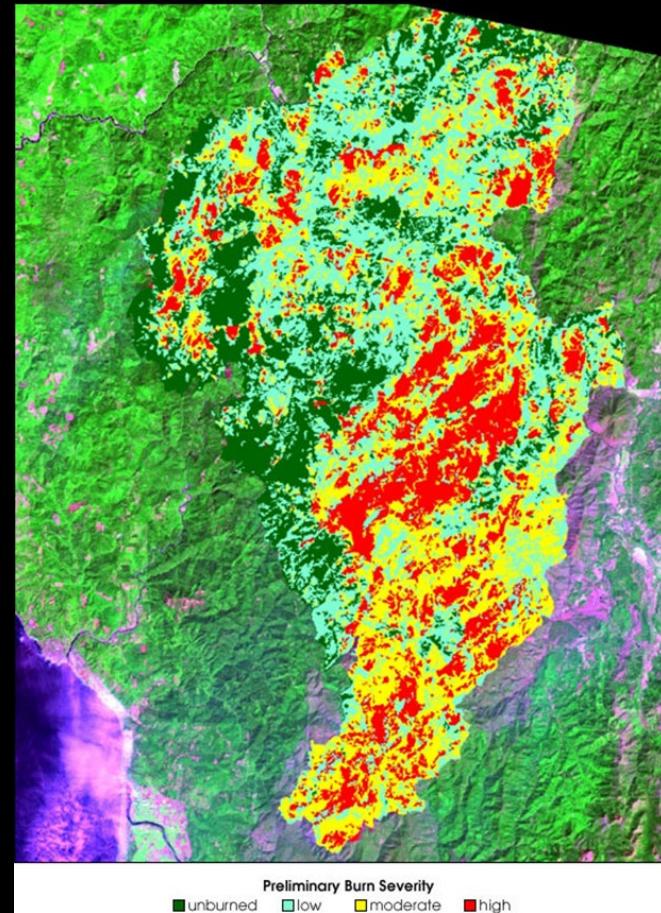


Daily\*, scale\*

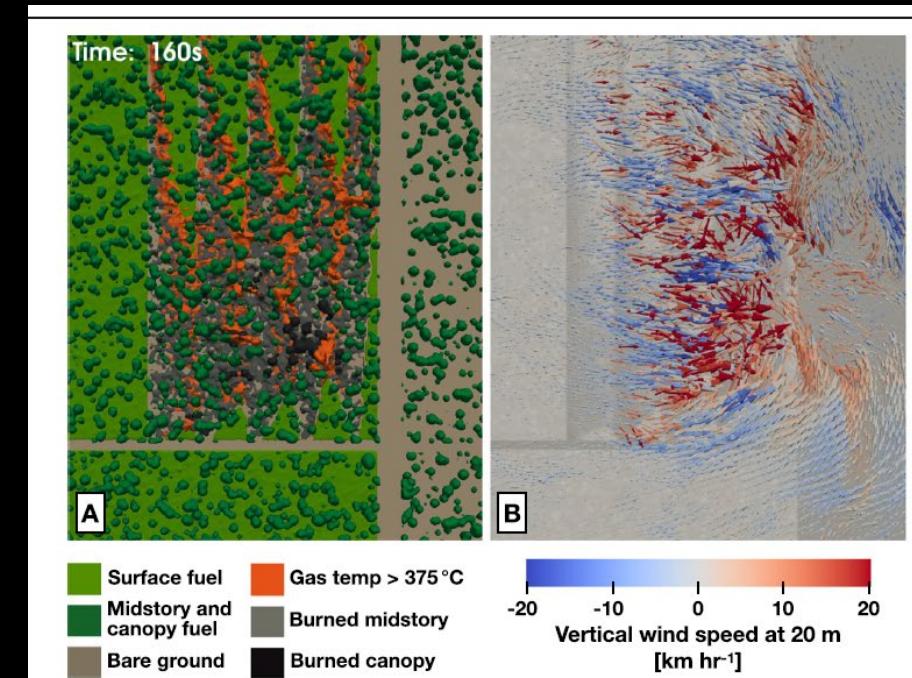
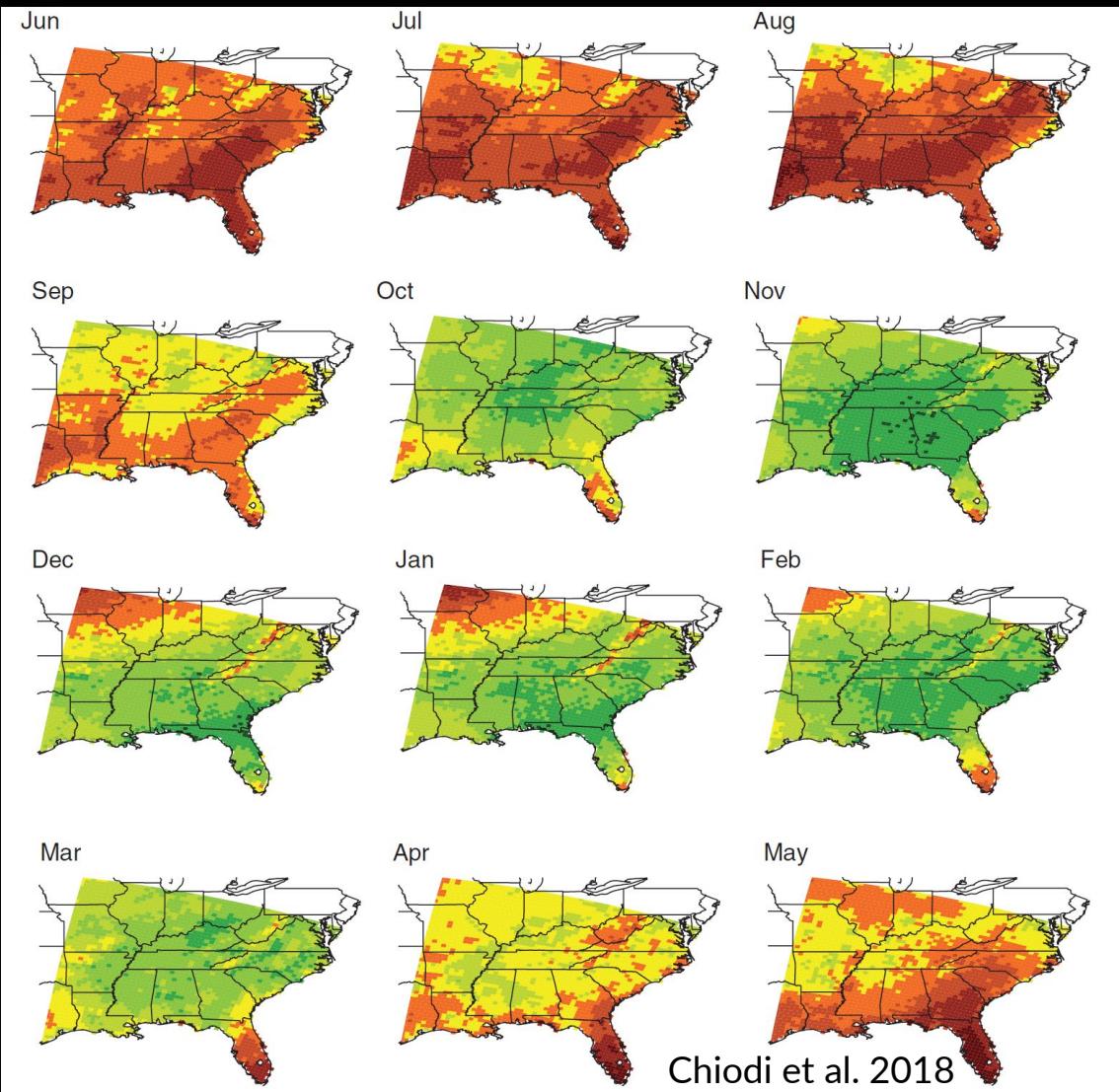
Fuels, fire behavior, and emissions are diverse in space and time



# Scale matters



# Uncertainties: Complex, not insurmountable



Hiers et al. 2020

# Needs: In a perfect world...

- **Better fuels characterization- physical, chemical, and H<sub>2</sub>O dynamics**
- **Better characterization of fire behavior**
- **Better characterization of spatial variation of fuel consumption**
- A major hurdle to overcome these issues has been our limited ability to observe and measure

