

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

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Wildland Fires

Wildfires

US: 2.8 million ha yr⁻¹

Prescribed fires

US: 3.7 million ha yr⁻¹

Forgotten:

Less research funding

*1/3 of publications in
fire journals*



Contributions to GHG Emissions

CO_2

CH_4

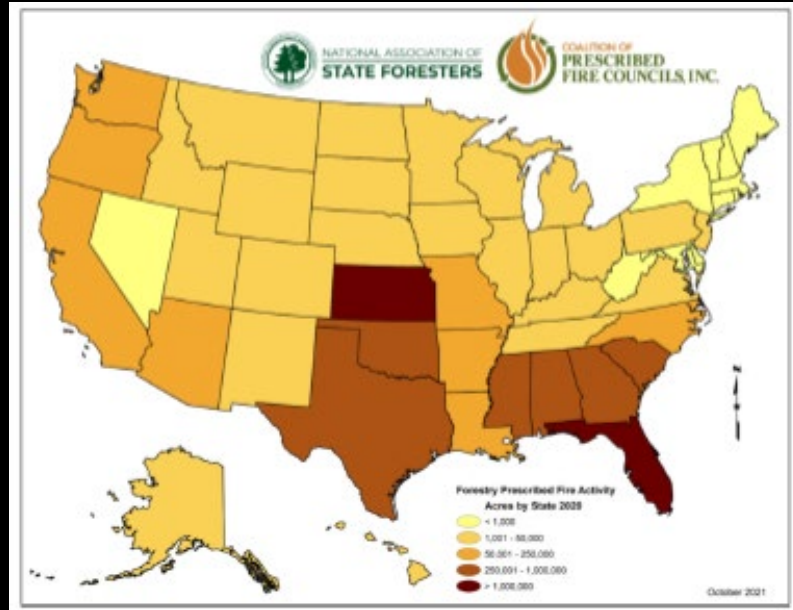
N_2O

They are difficult to characterize

- Spatially patchy
 - Temporally patchy
 - Local fuels are dynamic in space and time
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- **Big 3: fuels, fire behavior, fuel consumption**

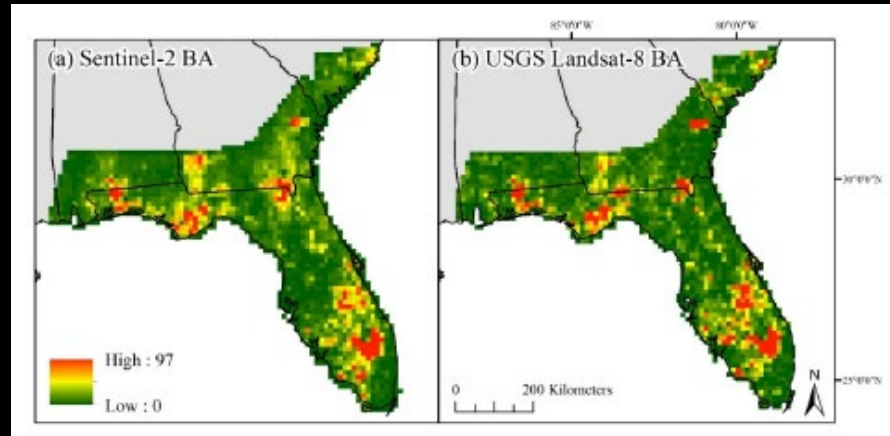
How many ha burn annually? where? when?

Melvin 2022



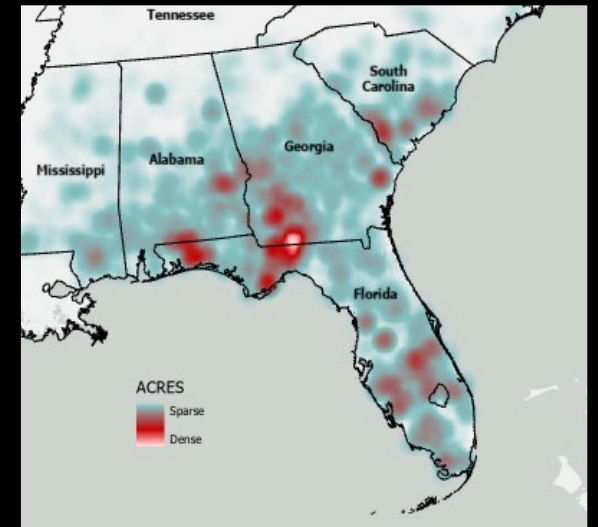
Annual, State

Vanderhoof et al. 2021



Satellite pass*, 20-30 m

Cummins et al. *In review*

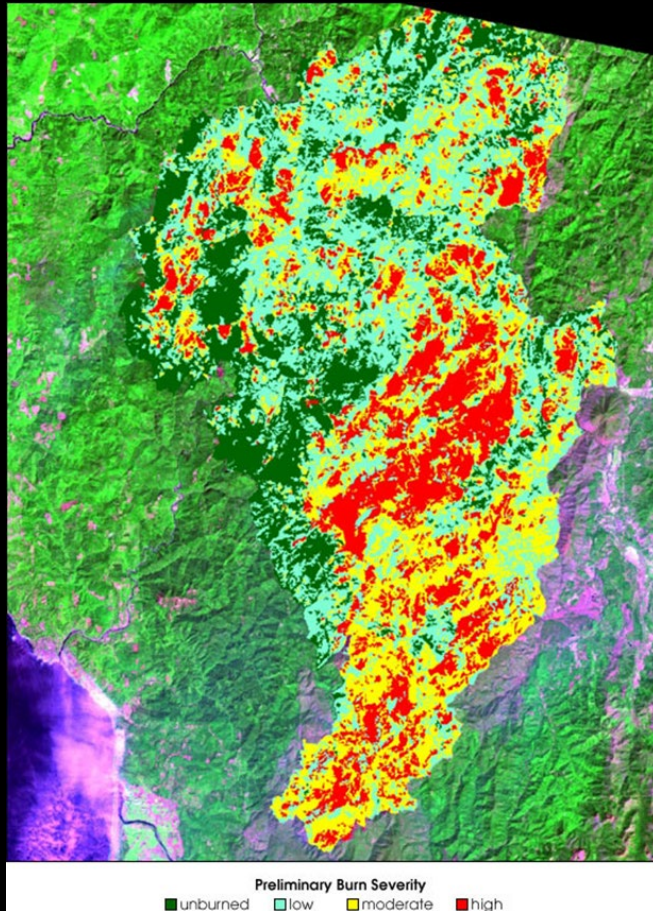


Daily*, scale*

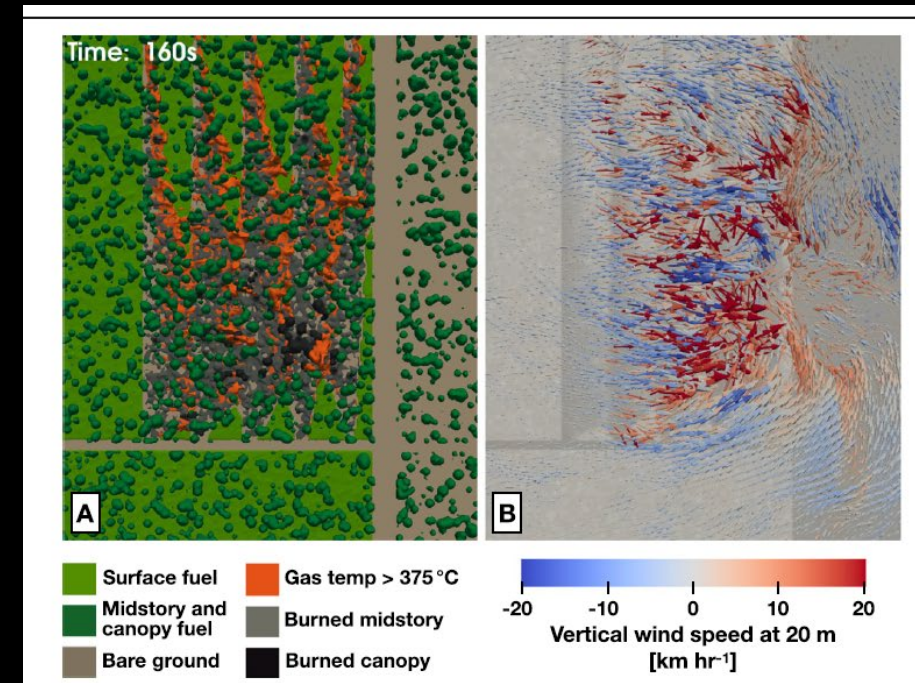
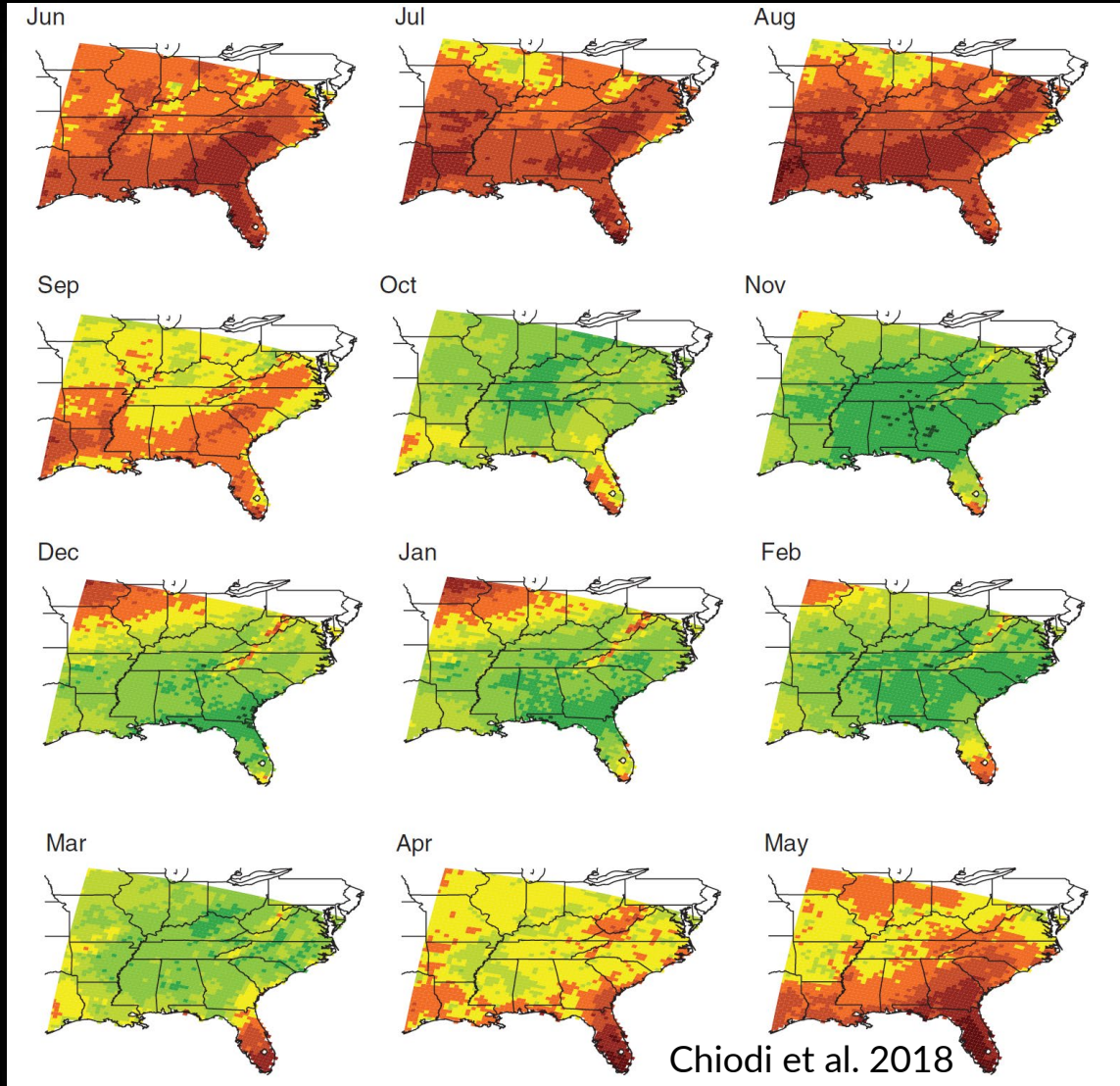
Fuels, fire behavior, and emissions are diverse in space and time



Scale matters



Uncertainties: Complex, not insurmountable



Hiers et al. 2020

Needs: In a perfect world...

- **Better fuels characterization-** physical, chemical, and H₂O 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

