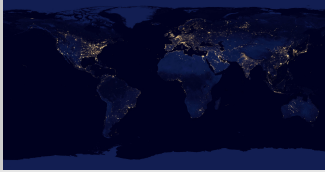
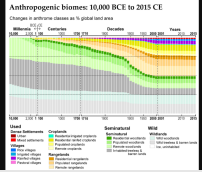
Far Flung Forest Landscapes in the Anthropocene

1. Thanks to Dave Smith and anyone else who's helped to organize this seminar, it's a pleasure for me to speak about my recent work
2. Forests $\sim$ 80% terrestrial biodiversity (WWF)
3. Soil stabilization
4. Forests carry out important processes: clean air and water
5. Forests store carbon



1. Anthropocene = proposed geological epoch distinguished by human impacts



1. Land-use changes = conversion
2. One proposal is it started about 1950 with acceleration
3. Biodiversity changes = species introductions and extinctions

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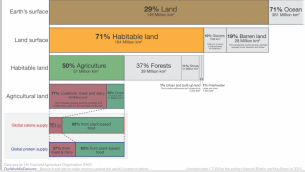
Context



1. 90% biomass on Earth is humans and livestock

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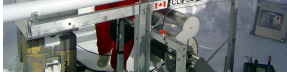
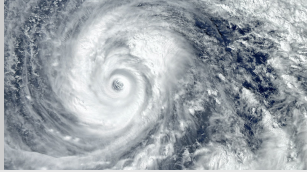


1. Atmospheric changes = climate change, fire



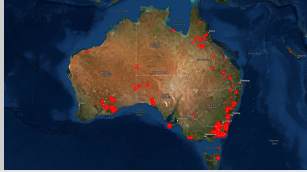
1. Climate change is causing hurricanes that make landfall to take more time to weaken, reports a study published 11th November 2020 in the journal Nature.

1. Tornado damaged Southbridge, MA forest in 2011

1. Droughts

1. CAL FIRE MAP Tue 17 Nov 2020 12:10:52 PM EST

1. CA Cranston Riverside 2018



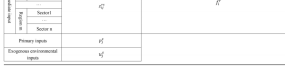
1. Fires in Australia 2020

Today's Talk

1. Intro/Context
2. Global forest loss and gain and change
3. Global greening = India(Agriculture) + China(Forests)
4. Economics*Ecology = Landscape Extended Models
5. Network Analysis of China's Greening
6. Global Scale
7. Local Scale
8. Landscape = Tian 2019, Chen 2019
9. Resilience Analysis of China's Forest LE-MRIO
10. Conclusions and Future Work
11. Acknowledgements

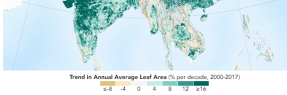
When we think about environmental impacts of humans, we usually think about direct impacts

1. For the rest of the talk, I'll usually refer to landscape networks, which means the proportion of landscape ultimately used to produce a product considering all of the indirect production pathways (aka. supply chains)



1. This is why they're called input-output tables
2. Each region has a set of sectors/industries
3. They can receive inputs from within a region
4. They can also receive input from another region (aka. imports)
5. Final use = Consumption not used to produce another product

1. 5% increase in greening globally since 2000



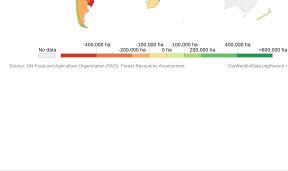
1. 25% from China
2. 42% from forest landscapes in China

1. China exceeds India by over 4% of global green area
2. Increased plant, especially forest area is good, a positive outcome of human activities

1. Considering trade in forest land, illustrates the importance of considering indirect effects in the Anthropocence

1. China's imports have been increasing over time
2. Mostly from Russia and USA, lesser Canada and New Zealand

3. Cumulatively, southeast Asian countries rival Russia ($43,621$)



1. Given China's importance in global forest dynamics, shocks to domestic consumption are important global as they can alter imports

1. Funding from the CAS PIFI program
2. Institutional support and compute resources from Harvard University and Harvard Forest
3. Thanks to all of the folks in the LSP Lab for providing help with aquiring data for the project and conceptul development
4. Particularly Dr Yu Liang who heads the lab for hosting me during my stay and travels in China

1. Questions, comments?
2. I'll provide my slides with notes

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Structural analysis of China's embodied forest network

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