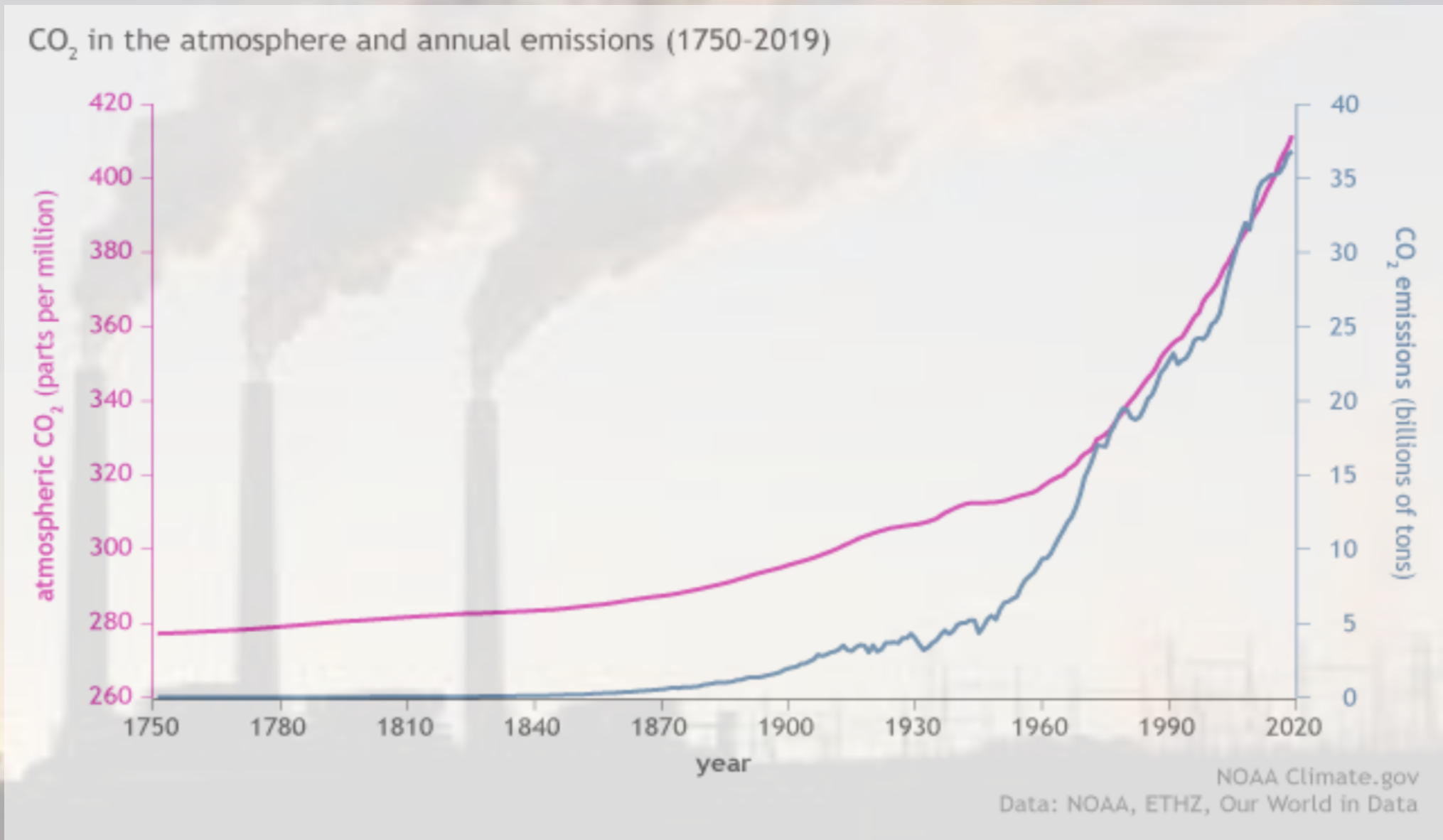


Correlation vs Causation in Climate Change



POLITICS

Global Warming's Terrifying New Math

Three simple numbers that add up to global catastrophe - and that make clear who the real enemy is

BY BILL MCKIBBEN

JULY 19, 2012

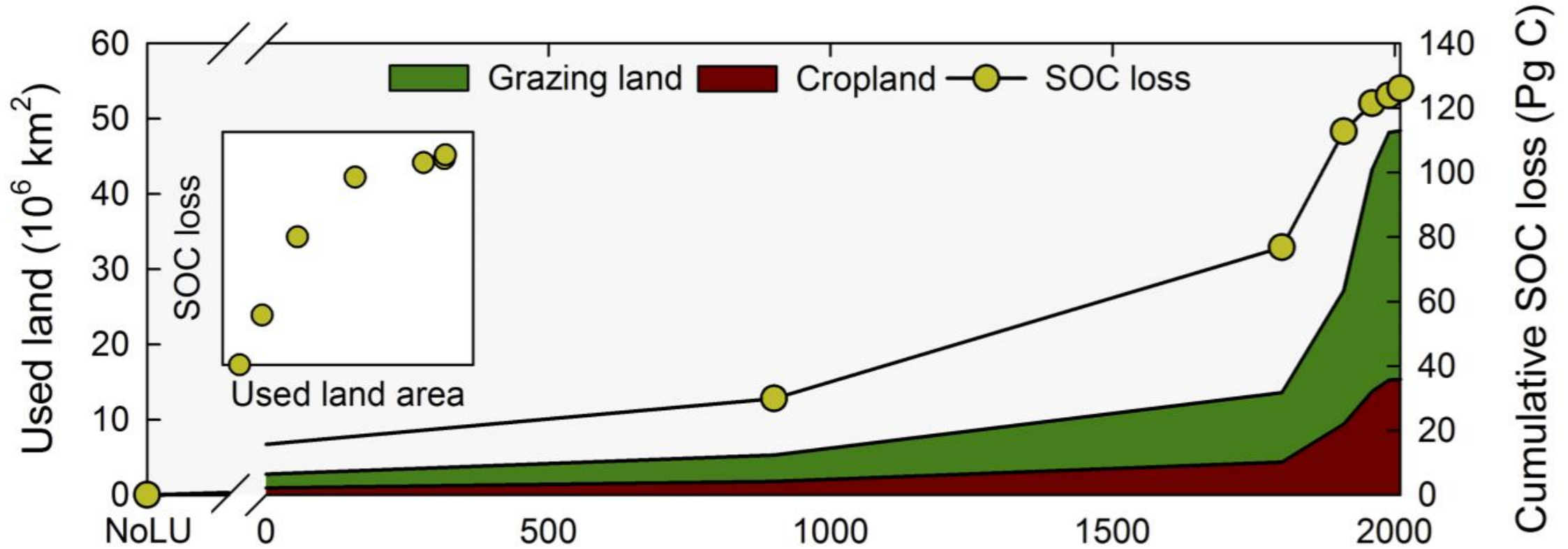


Soil carbon debt of 12,000 years of human land use

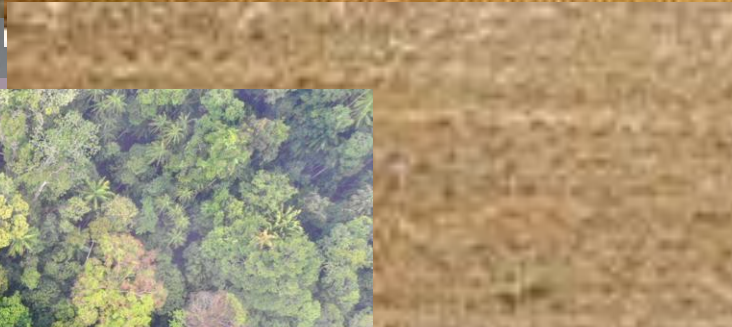
Jonathan Sanderman, Tomislav Hengl, and Gregory J. Fiske

[+ See all authors and affiliations](#)

Net Loss of 133 Gigatons of Soil Carbon over the last 12,000 years---~1/3 of all excess CO₂ in atmosphere



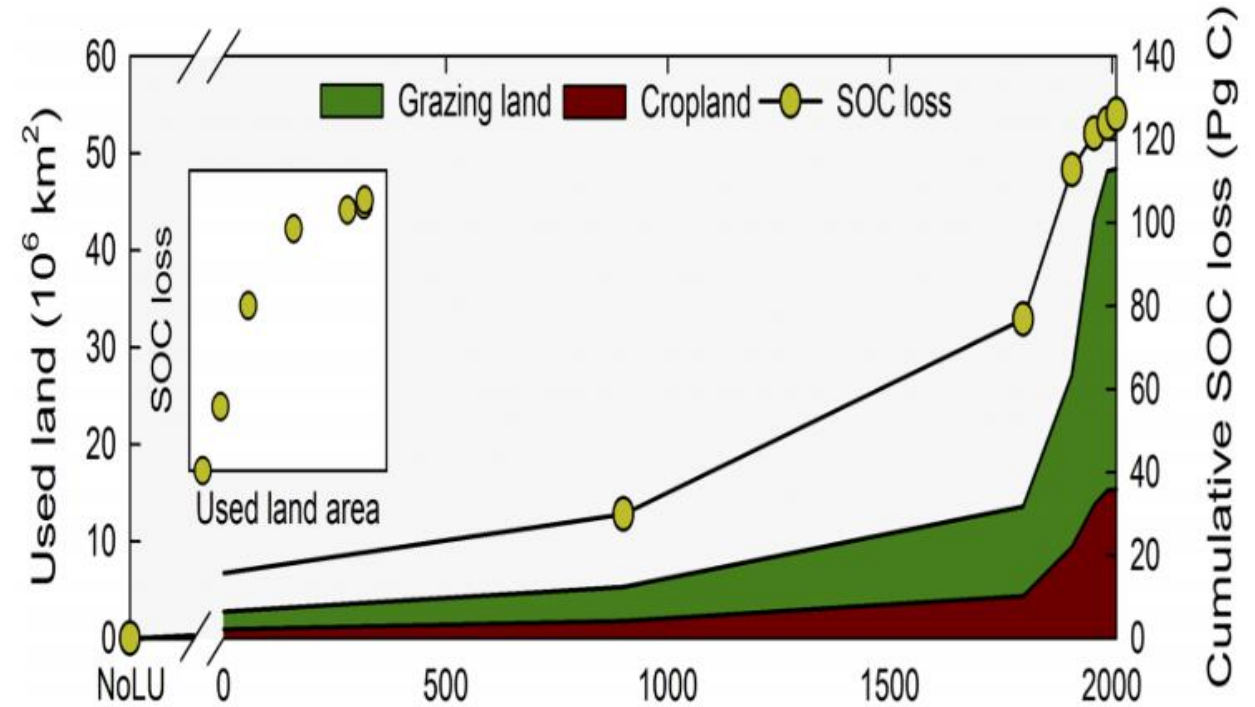
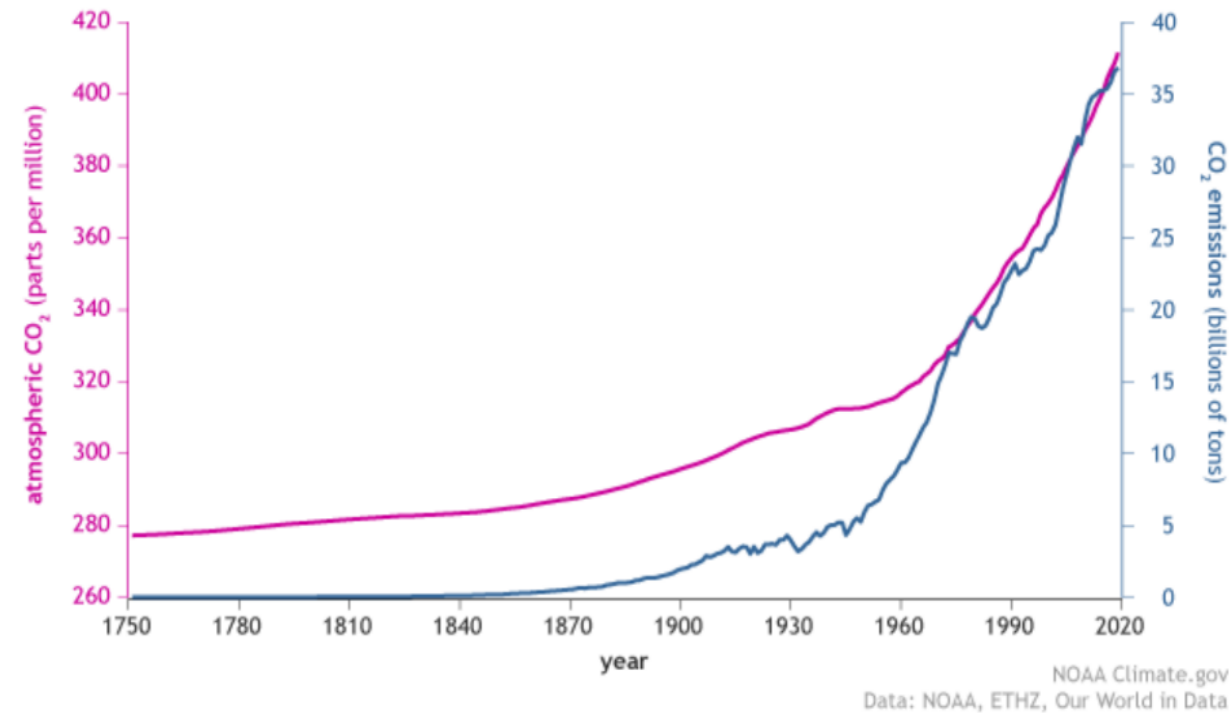




The Other Climate Change
Cause: ***Land/Living
Systems Degradation***

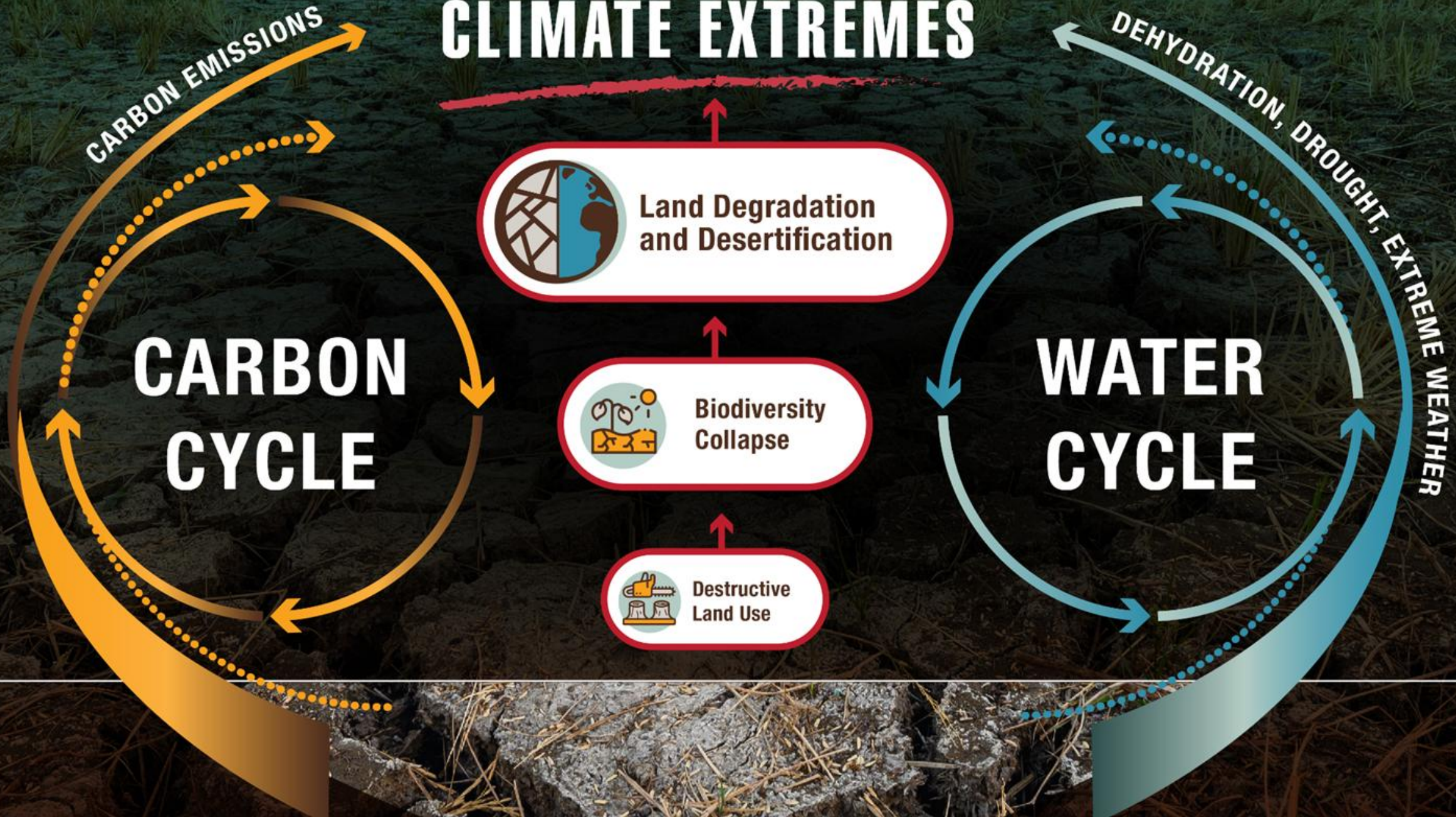
A More Complex Causation

CO₂ in the atmosphere and annual emissions (1750-2019)



We have lost 50-70% of our soil carbons worldwide


CLIMATE EXTREMES



UN Report Says Humanity Has Altered 70 Percent of the Earth's Land, Putting the Planet on a 'Crisis Footing'

Agriculture is the biggest degrader of land, the authors say. Transforming farming practices could restore billions of acres by 2050 for less than is spent on developed-world farm subsidies.



By Georgina Gustin 
April 27, 2022



We are living on a planet with ~50% of its productive capability



One Earth






Volume 8, Issue 8, 15 August 2025, 101393

Article

Breaching planetary boundaries: Over half of global land area suffers critical losses in functional biosphere integrity

Fabian Stenzel^{1,2,8}  , Liad Ben Uri³, Johanna Braun¹, Jannes Breier¹, Karlheinz Erb⁴, Dieter Gerten^{1,5,6}, Helmut Haberl⁴, Sarah Matej⁴, Ron Milo³, Sebastian Ostberg¹, Johan Rockström^{1,2,7}, Nicolas Roux⁴, Sibyll Schaphoff¹, Wolfgang Lucht^{1,5,6}

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<https://doi.org/10.1016/j.oneear.2025.101393>

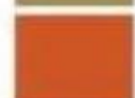
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Dust storm damage, 1930 - 1940



Dust Bowl states



Area with most severe dust storm damage



Other areas damaged by dust storms

Civilian Conservation Corps—US, 1933-1943

- Over 3,000,000 employed by the CCC to work on restoration efforts
- Planted 2.3 Billion trees
- Revegetated 1 trillion sq yds of gullies
- Restored 600,000 acres of degraded farmlands
- Installed 300,000 check dams
- Built more than 150,000 miles of contour furrows



Example of Successful Landscape-Scale

Restoration

(1995—2015)

Loess Plateau—China





**Mastering Water Cycle
Principles: Using
Regenerative Agriculture
to Enhance Soil Moisture
and Improve Local
Weather**

Dr Elizabeth Heilman

Wichita State University
Rengerativewisdom.com



<https://vimeo.com/user121276623/review/1043978858/e7286194e>


Global priority areas for ecosystem restoration

<https://doi.org/10.1038/s41586-020-2784-9>

Received: 14 August 2019

Accepted: 8 September 2020

Published online: 14 October 2020

 Check for updates

Bernardo B. N. Strassburg^{1,2,3,4}✉, Alvaro Iribarrem^{1,2}, Hawthorne L. Beyer⁵, Carlos Leandro Cordeiro^{1,2}, Renato Crouzeilles^{1,2,3}, Catarina C. Jakovac^{1,2,6}, André Braga Junqueira^{1,2,7}, Eduardo Lacerda^{1,2,8}, Agnieszka E. Latawiec^{1,2,9,10}, Andrew Balmford¹¹, Thomas M. Brooks^{12,13,14}, Pedro Brancalion²⁰, Graciela M. Torres¹⁵, Valerie Kapos²⁴, David R. Cahill¹⁶, Carlos Alberto de M. S.

A global restoration initiative on 1/3 of the converted lands **could recapture almost half of all of the carbon released since the industrial revolution and reverse much of the planet's biodiversity loss.**

NbS and related actions conducted across six key areas could grow the capability of generating over **\$3.5T in annual business opportunities and over 190M (190,000,000) jobs by 2030.**



Four Critical Steps for Establishing a Regenerative Economy

1. Prepare and Plan

Lead Sectors: Academic/research, NGO, Private Sector

2. Prove through Piloting

Lead Sectors: Local Government, Soil Conservation Districts, CBO, NGO, Private Sector, Funders

3. Partner to Propagate

Lead Sectors—Networks, Alliances, Public/Private Partnerships, Multi-stakeholder collaborations

4. Politics—Educate, Activate, Grow Affinity over Identity

Lead Sectors—Local government/Precinct Political systems, Multi-interest alliances,





Nature-based Solutions: ***Biodiversity as Community Development***



Three Action Areas



Connected Canopies



Pollinator Pathways



Absorbent Landscapes

www.coolboulder.org





Our community is investing in healthier, more resilient green spaces—and we’re inviting community members to help shape that future. A new program, Community Land Stewards, places stewards directly in neighborhoods located in different parts of the city—at schools and shared public spaces—to care for trees, native plants, and ecologically designed landscapes. The goal is to nurture thriving outdoor environments while building local expertise and creating meaningful opportunities for community members to get involved.

Welcome to the Neighborhood Nature Lab!

**Plant Native. Observe Nature.
Make a Difference.**

About the Project



Help Build a More Resilient City

Cities are full of life—but we often don't have the data to understand how biodiversity is changing. The Neighborhood Nature lab brings together researchers and community members to monitor plants, insects, and birds across a network of reference sites. Community scientists help collect real scientific data that supports conservation, climate resilience, and urban planning.

Whether you're a seasoned naturalist or new to ecology, you can make a meaningful contribution.

You Can Help Track the Nature of Our City

Join us and discover the hidden biodiversity in your neighborhood, contribute to real scientific research, support climate resilience and conservation, meet nature-loving neighbors, and make a difference in your own community.

Plants. Insects. Birds. People. Our city is alive — and you can help us understand how it's changing.

Over the coming months, we'll announce training workshops, online learning modules, and onsite demonstrations. You can track the life in your yard, neighborhood, school or nearby park.



Cool Boulder— 45+ Community Partnership (and growing!)

Initial partners include:

- [Bee Chicas](#)
- [Boulder JCC](#)
- [Boulder Housing Partners](#)
- [Boulder Valley Rotary](#)
- [Butterfly Pavillion](#)
- [Classrooms 4 Climate Action](#)
- [Community Fruit Rescue](#)
- [CSU Extension](#)
- [CU Masters of the Environment](#)
- [Davey Resource Group](#)
- [Drylands Agroecology Research](#)
- [Eco-Cycle](#)
- [BVSD Eco-Warriors](#)

- [Endangered Species Coalition](#)
- [Goss Grove Neighborhood Association](#)
- [Growing Gardens](#)
- [Harlequin's Gardens](#)
- [Left Hand Watershed Center](#)
- [National Oceanic & Atmospheric Administration](#)
- [People & Pollinators Action Network](#)
- [PLAY Boulder Foundation's Tree Trust](#)
- [Resource Central](#)
- [University of Colorado's Earth Lab](#)
- [We Love Trees, Inc.](#)
- [Wildlands Restoration Volunteers](#)
- [Xerces Society](#)
- [Your Neighborhood Christmas Tree Farm](#)

