The background of the slide is a 3D rendering of the Earth's globe. The globe is colored with a gradient from dark blue at the poles to light green at the equator, representing a map of society and ecology. Overlaid on the globe are white outlines of political boundaries and a grid of latitude and longitude lines. The text 'maps society and ecology' is overlaid on the globe.

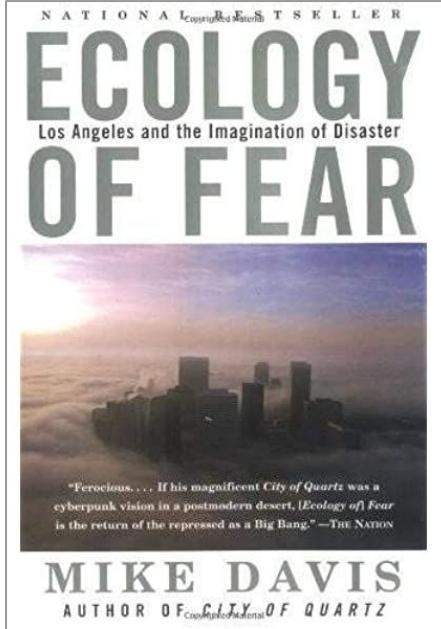
maps society and ecology

lecture 8

Summary: Cartography can obscure and reveal social / ecological relationships; example of MS river levee building and agriculture; insurance; warfare and ecological invasion (mosquitos); Thinking geographically helps us understand events as patterns. Expanding range of actors to include non-human.

outline

- how do human activity and ecology shape each other?
- how do maps conceal and reveal these relationships?
- insurance enabling / incentivizing us to build against ecology
- Fire insurance
- Flood insurance
- technology, growth, and disease
- mosquitos and war
- MS river levee system
- MS Delta land lease system, land takeover, and lack of conservation practice



"...renters and modest homeowners...displaced...by wealthy pyrophiles encouraged by **artificially cheap fire insurance, socialized disaster relief**, and an expansive public commitment to 'defend Malibu'."
p 119

"Although probably not more than one in eight blazes is caused by arson, Anglo-Californians have always criminalized the problem of mountain wildfire. The majority have never accepted the natural role or inevitability of chaparral fire cycle. (**Conversely, there has been a persistent tendency to naturalize the strictly human causality of tenement fire.**)" p 132

"Local fire stations, undermanned and overwhelmed by emergency calls, began to neglect regular fire inspection. Slumlords, in turn, routinely disregarded citations for fire code violations. When investigators did have time to pursue noncompliance cases, they typically found ownership not only unresponsive but often undiscoverable..." p 120

"As in the wake of past fires, declarations of 'victimhood' preempted any serious debate about the social costs of sustaining luxury lifestyles along the fire coast....the 'flatland' majority – including the poor taxpayers of the Westlake district, most of whom have never seen a Malibu sunset – will continue to subsidize the ever increasing expense of maintaining and, when necessary, rebuilding sloping suburbia" p 135-41

what are Sanborn maps?

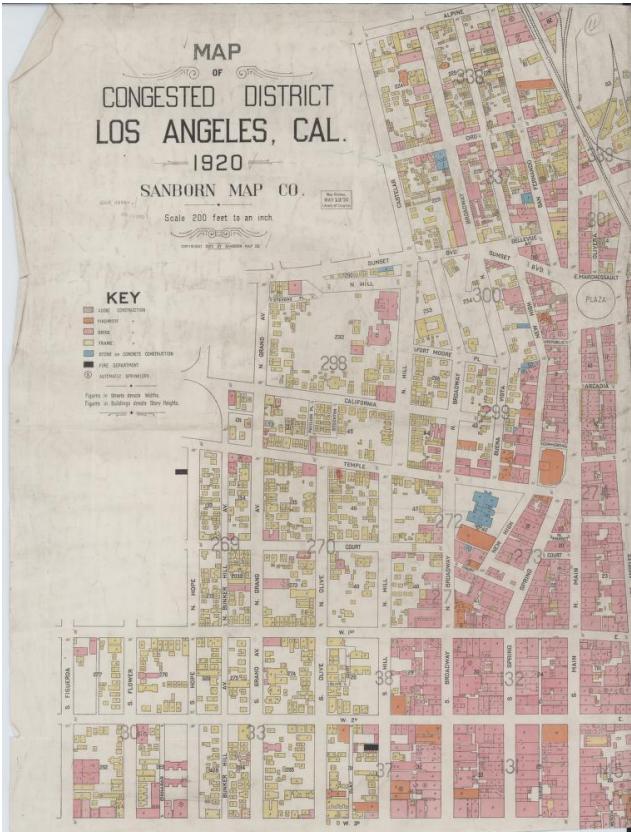
"The maps were designed to **assist fire insurance agents in determining the degree of hazard associated with a particular property** and therefore show the size, shape, and construction of dwellings, commercial buildings, and factories as well as fire walls, locations of windows and doors, sprinkler systems, and types of roofs.

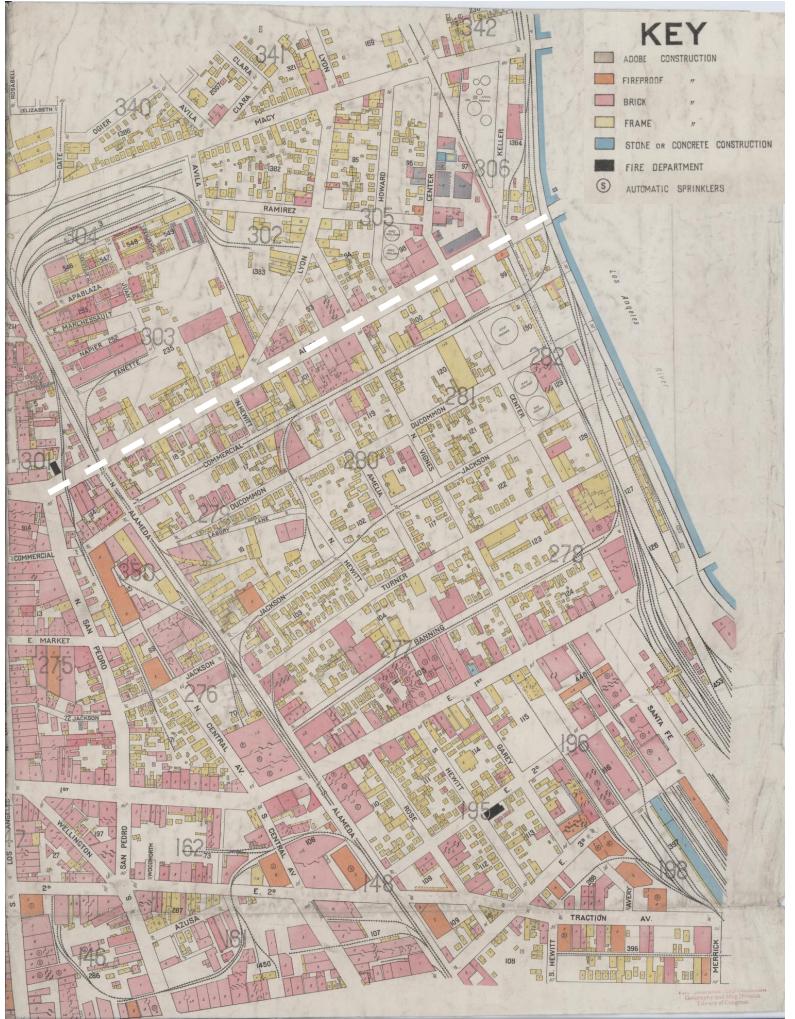
"More specific reasons for the decline in use of Sanborn maps were supplied by a librarian for the Insurance Company of North America. 'As the nation grew in all areas,' she wrote, 'keeping the maps up to date became cumbersome, time-consuming, and expensive.... There is no need to maintain wealth of detail about the small risk to forestall the possibility of catastrophe from fire. **Inspection services maintained by fire insurance rating organizations and our own inspection services have proved adequate in the light of modern building construction, better fire codes, and improved fire protection methods.**'"

- "Introduction to the Collection", Sanborn Map Collection, Library of Congress, <https://www.loc.gov/collections/sanborn-map-s/articles-and-essays/introduction-to-the-collection/>

"Sanborn held a monopoly over fire insurance maps for the majority of the 20th century, but the business declined as US insurance companies stopped using maps for underwriting in the 1960s.... As insurance companies increased their service areas, it was no longer practical to send people to every insurable property to assess the risk. The Sanborn maps allowed them to underwrite properties from the office, pooling the cost with other insurance companies that also subscribed to the maps. It was said that at one time, insurance companies and their agents 'relied upon them with almost blind faith'."

- https://en.wikipedia.org/wiki/Sanborn_maps







KEY

Adobe Construction	
Fireproof	"
Brick	P
Frame	Y
Stone or Concrete Construction	B
Fire Department	
(S)	AUTOMATIC SPRINKLERS



impact of Canadian wildfires in northeastern US, June 07 2023



map of active wildfires, FIRMS (Fire Information for Resource Management System), <https://firms.modaps.eosdis.nasa.gov/>

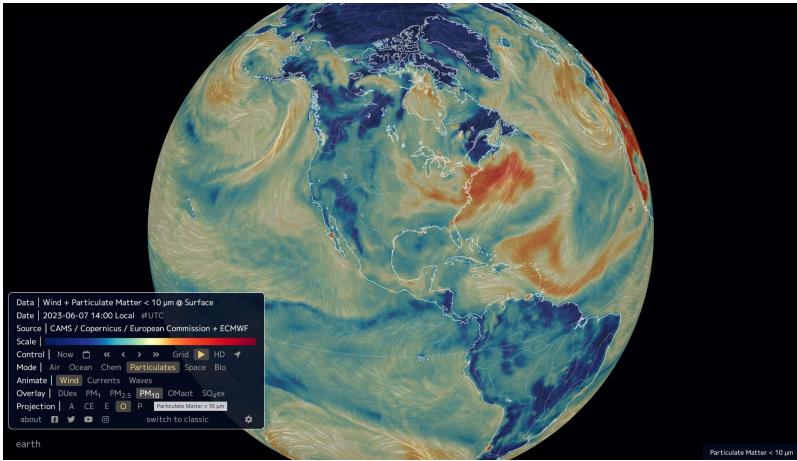
A haze is blanketing major swaths of the East Coast because of the Canadian wildfires

June 7, 2023 - 1:42 PM ET

By Joe Hernandez



Wildfire smoke casts a haze over the National Mall on Wednesday in Washington, D.C.
Chip Somodevilla/Getty Images



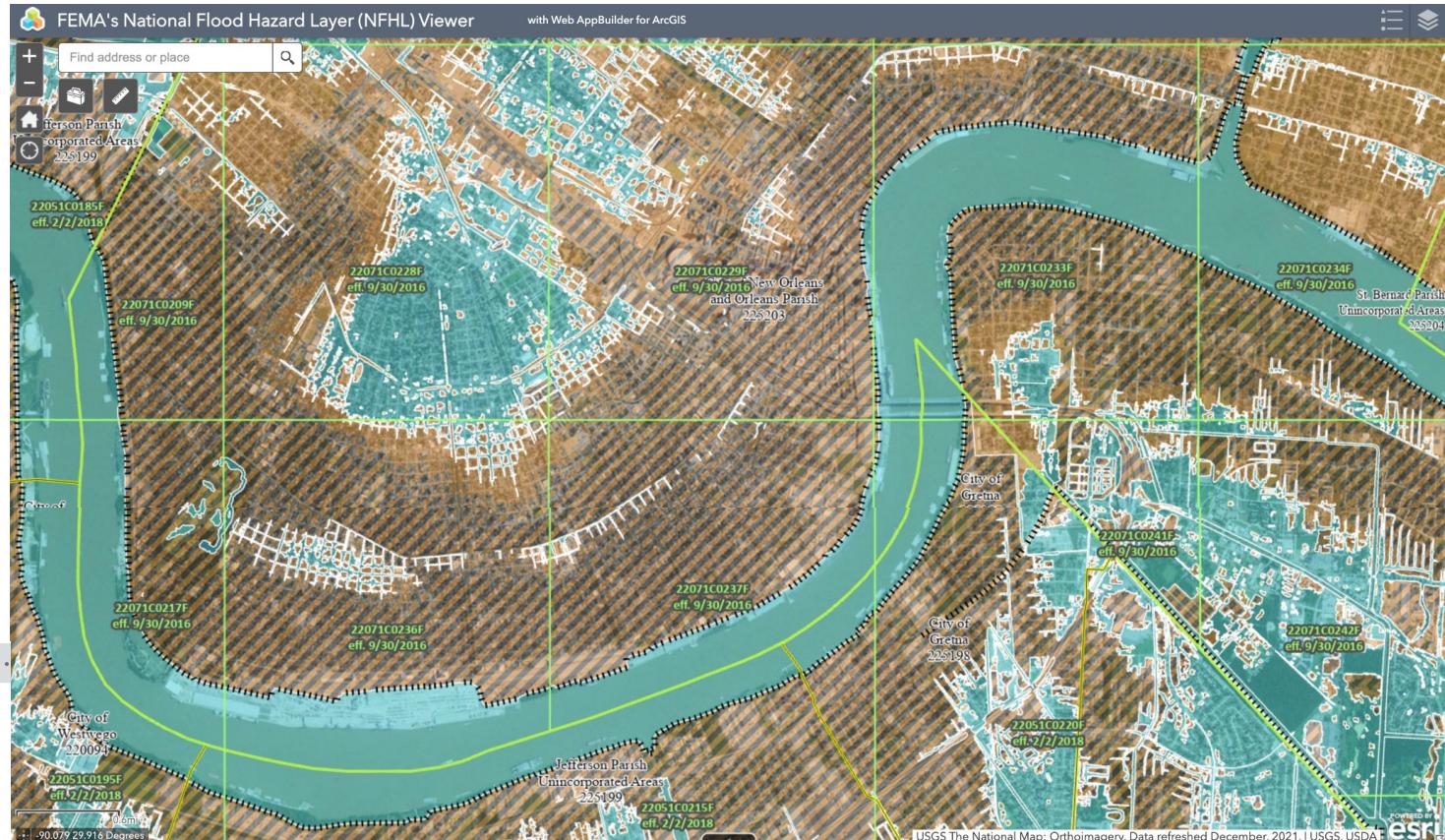
current view of large particulates in atmosphere from wildfires in Canada, <https://earth.nullschool.net/>



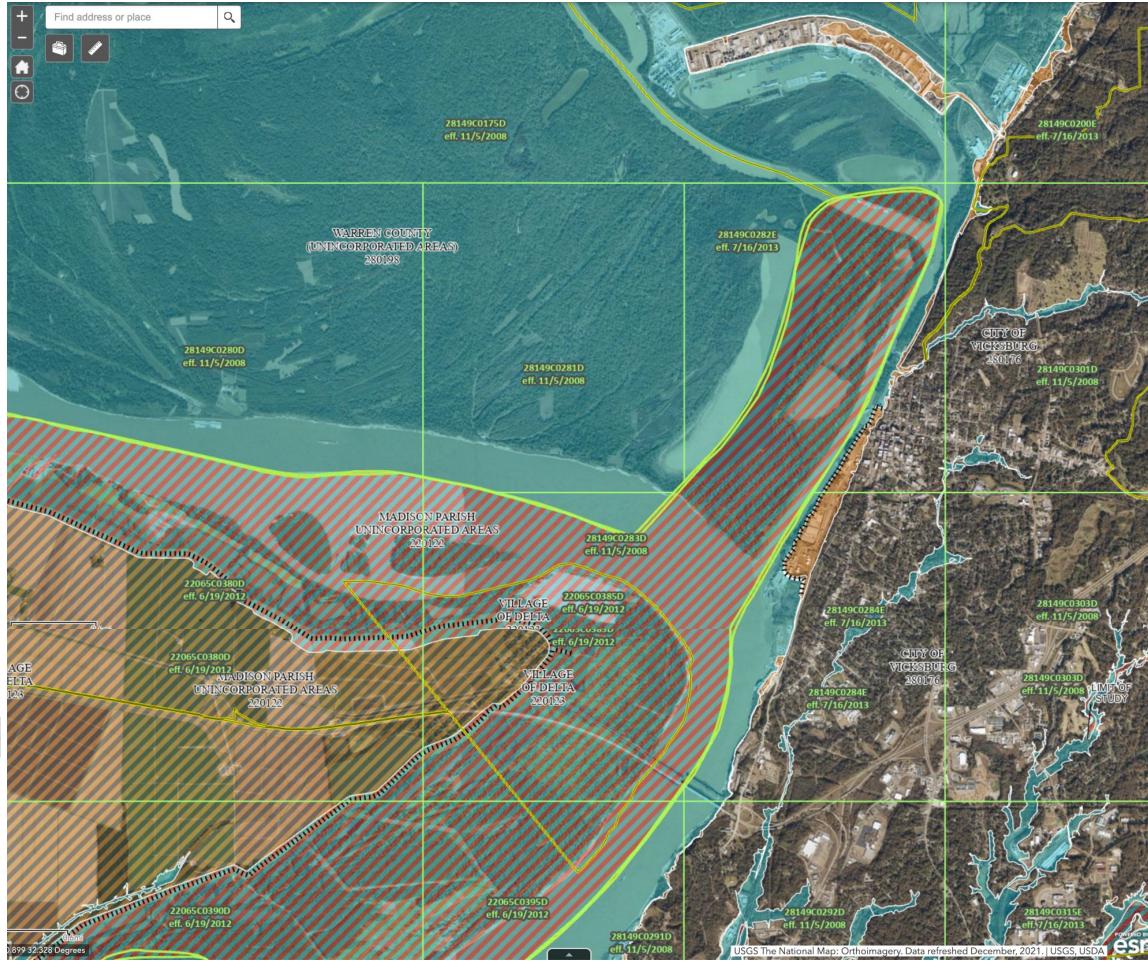
Jose Trevino of the New York Yankees walks out onto the field during a hazy game against the Chicago White Sox at Yankee Stadium on Tuesday.
Sarah Stier/Getty Images North America

bottom: images from
<https://www.npr.org/2023/06/07/1180757460/canadian-wildfires-east-coast-air-quality>

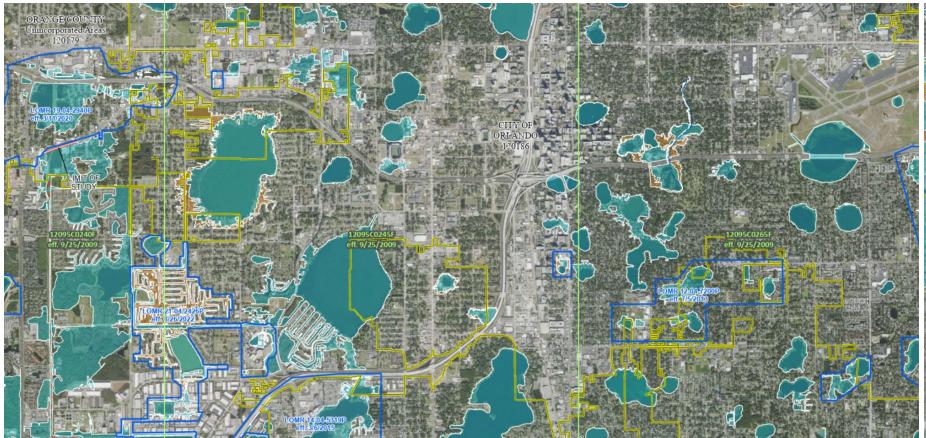
New Orleans



Vicksburg, MS

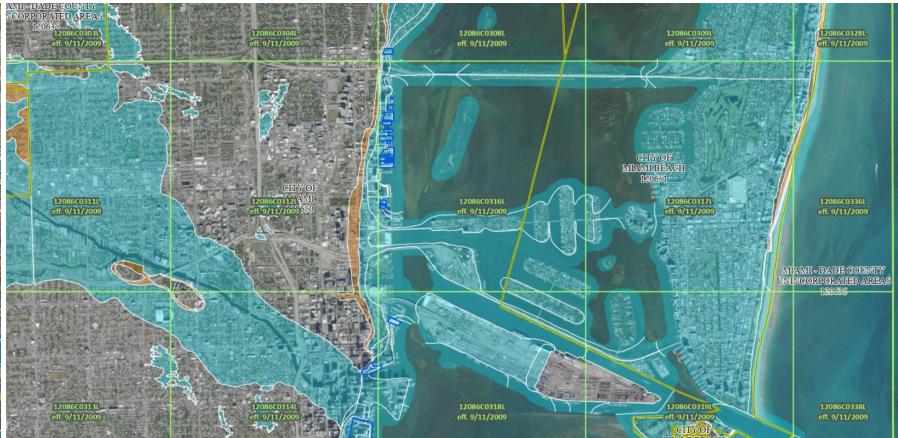


Orlando and Miami

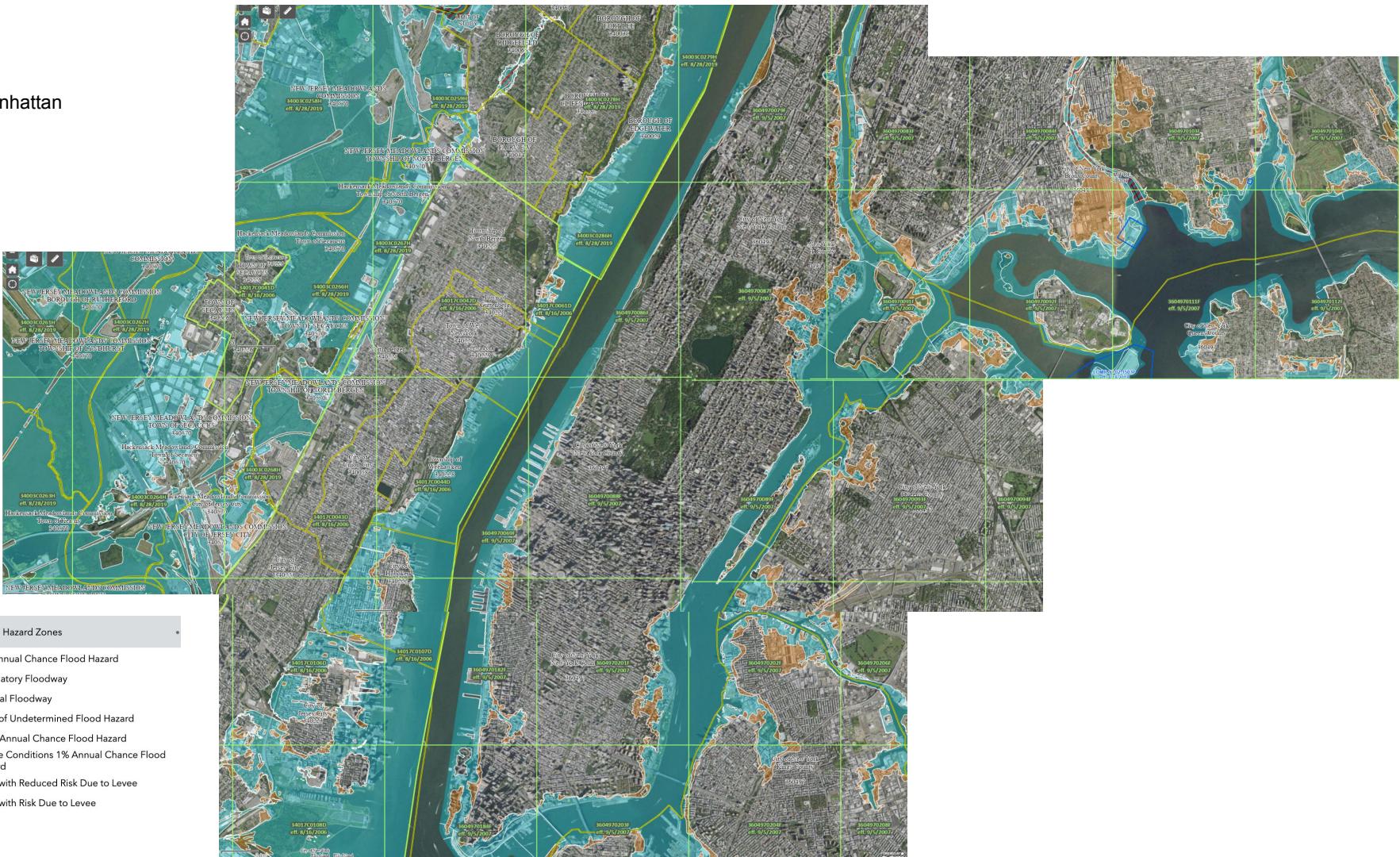


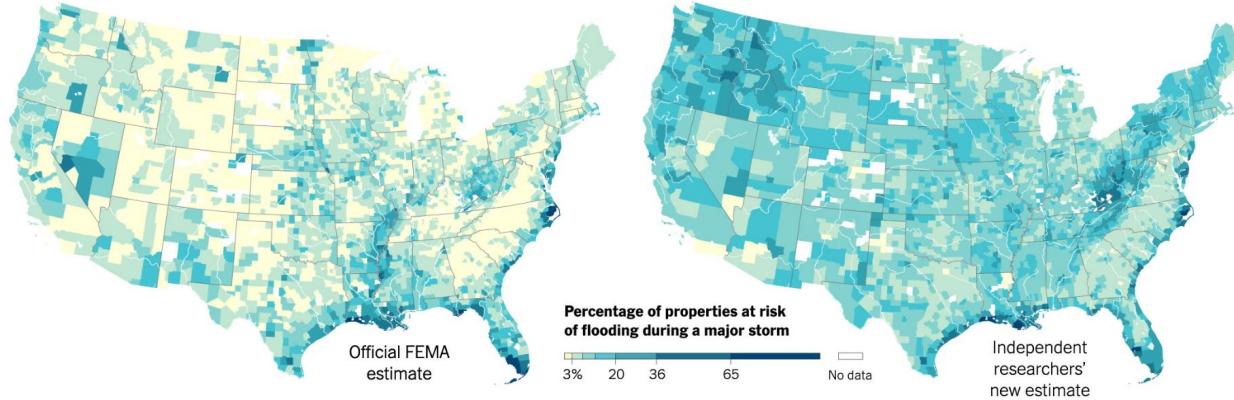
Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area with Risk Due to Levee



Manhattan





New Data Reveals Hidden Flood Risk Across America

By [Christopher Flavelle](#), [Denise Lu](#), [Veronica Penney](#), [Nadja Popovich](#) and [John Schwartz](#) June 29, 2020

Nearly twice as many properties may be susceptible to flood damage than previously thought, according to a new effort to map the danger.

"Federal flood maps, managed by the Federal Emergency Management Agency, have long drawn concerns that they underestimate flood risk. Part of the problem is keeping the maps up to date, which is not only costly and labor intensive, but further complicated as climate change has worsened the dangers."

<https://www.nytimes.com/interactive/2020/06/29/climate/hidden-flood-risk-maps.html>

< interlude; check out Earth.nullschool.net and insurance video >

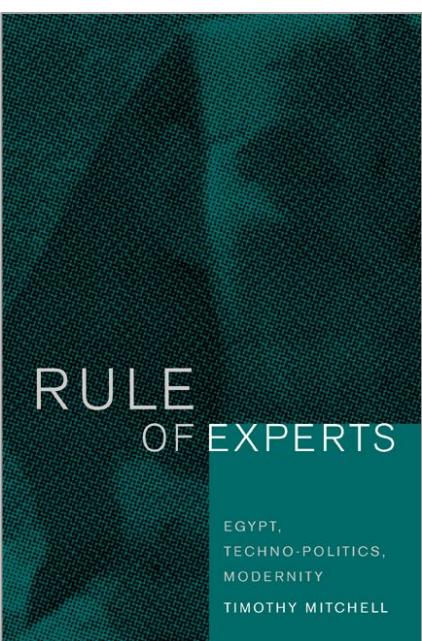
case for letting Malibu burn

can the mosquito speak

causes

effects

1. dam / artificial irrigation > artificial fertilizer > *war* > famine
2. war > expansion of sugar fields > famine
3. war > migration of malaria-carrying mosquito > *expansion of sugar fields* > more mosquito habitat
4. dam / artificial irrigation > more mosquito habitat > malaria deaths
5. expansion of sugar industry > malnutrition > increased vulnerability to malaria

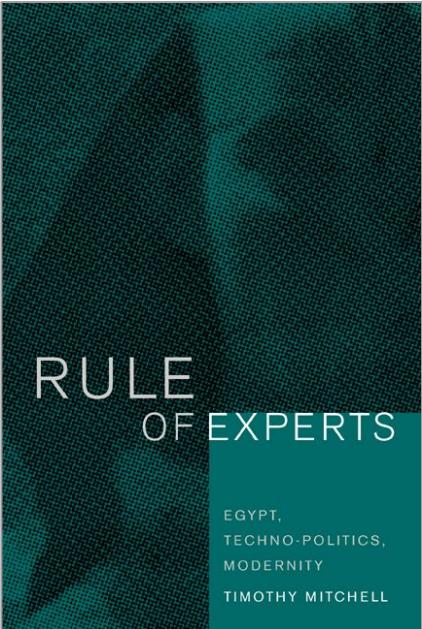


"The elements combining to cause the disaster of 1942–44 represented some of the most powerful transformations of the twentieth century. First, there was the **damming of the river**....Second, there were the synthetic chemicals. The manufacture of **artificial nitrates** introduced a transformation even greater than the building of dams.....Third, there was malaria, which took advantage of **irrigation schemes**, population movements, and changes in agriculture to become the **world's most deadly infectious disease**....Finally, there was the war." p21

"The linking together of the river control projects enabled the mosquito to jump barriers from one region to the next. The accompanying cultivation based on perennial irrigation created many breeding places among a **thicker population of human hosts that often lived much closer to the water now that flooding no longer occurred in many areas.**" p23

"The chain of events in Egypt seems to create a triangle, formed by the interconnection of war, disease, and agriculture. War in the Mediterranean diverted attention and resources from an epidemic arriving from the south, brought by mosquitoes that took advantage of wartime traffic. The insect also moved with the aid of the prewar irrigation projects and the ecological transformations those brought about. The irrigation works made water available for industrial crops but left agriculture dependent upon artificial fertilizers. The ammonium nitrate used on the soil was the main ingredient in the manufacture of explosives and was diverted for the needs of war. Deprived of fertilizer the fields produced less food, so the parasite carried by the mosquito found its human hosts malnourished and killed them at the rate of hundreds a day.

"...**The chain is in fact more than a triangle.** The connections between a war, an epidemic, and a famine depended upon connections between rivers, dams, fertilizers, food webs, and, as we will see, several additional links and interactions. **What seems remarkable is the way the properties of these various elements interacted.** They were not just separate historical events affecting one another at the social level. The linkages among them were hydraulic, chemical, military, political, etiological, and mechanical." p27



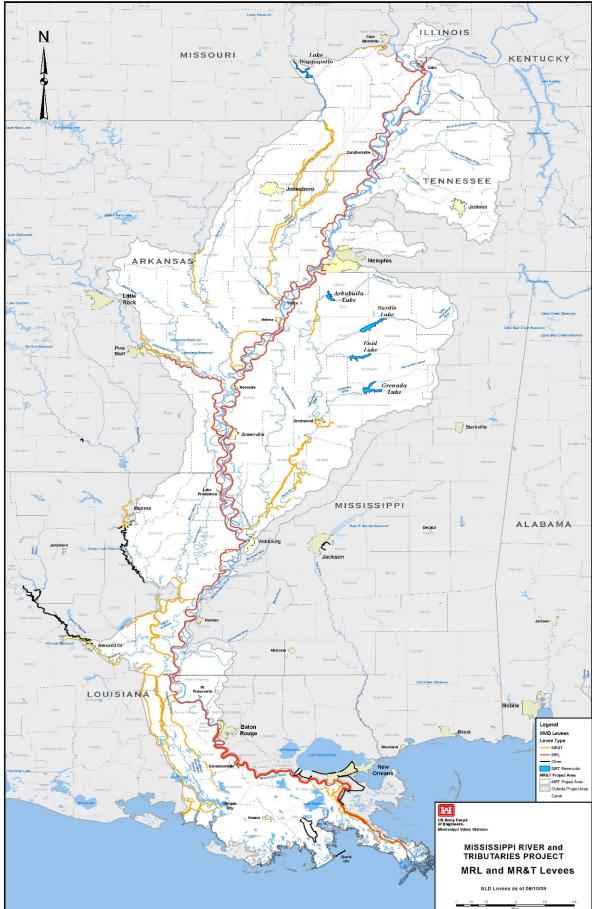
"Instead of developing the kinds of analysis that might address these interactions, responding to the techno-scientific transformations of the twentieth century, social theory is still largely trapped in the methods and divisions of labor of the nineteenth century." p28

"Human beings are the agents around whose actions and intentions the story is written. This is necessarily the case, for it is the intentionality or rationality of human agents that gives the explanation its logic and enables particular cases to fit as instances of something general. **The general or universal aspect of events that social theory attempts to identify occurs precisely as the spread of this human reason, technical knowledge, or collective consciousness....** If the web of events in wartime Egypt offers a certain resistance to explanation, part of the reason may be that it includes a variety of agencies that are not exclusively human...They shape a variety of social processes, sometimes according to human plans, but just as often not, or at least not quite."

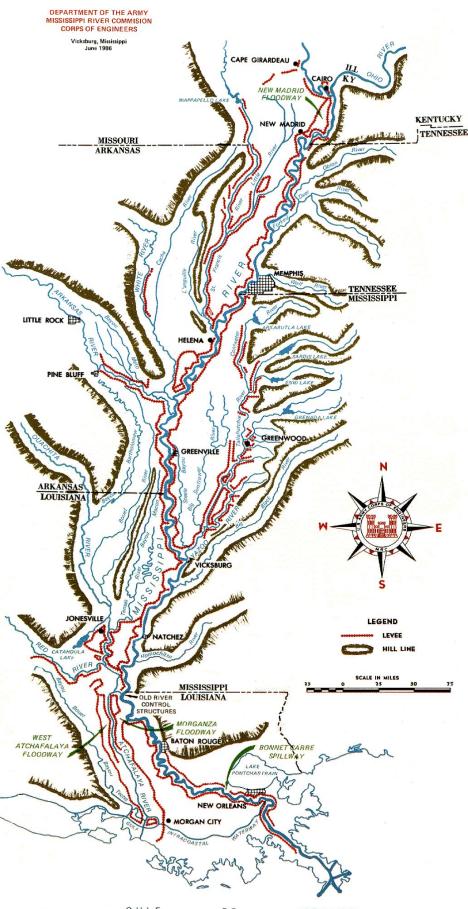
p29-30

"Long before the Aswan Dam, before all the irrigation work of the nineteenth century, the river was already as much a technical and social phenomenon as a natural one. Its waters were channeled, stored, raised, distributed, and drained by the interaction of mechanical, human, animal, and hydraulic power....The old methods had manufactured a geography that was no more natural than it was human, and no less. Rather, it was always both." p34

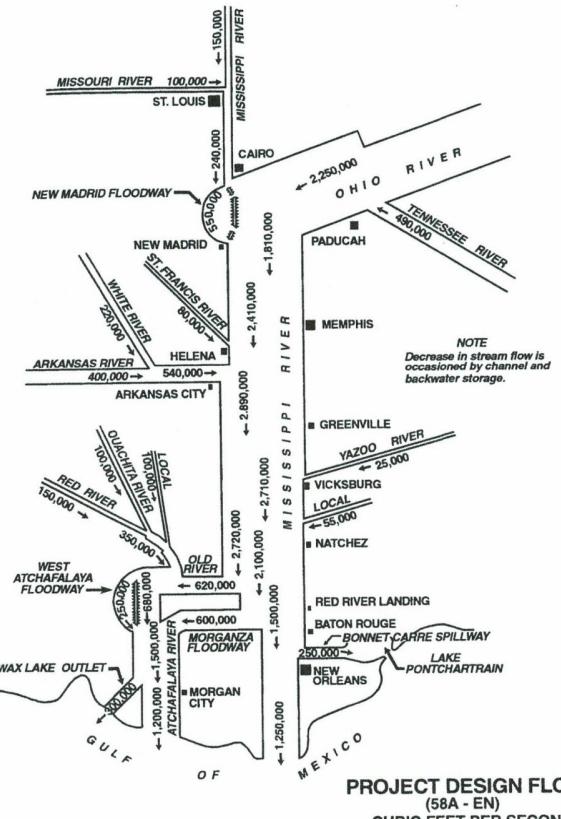
"Engineering the dam was a messy, uncertain, conflict-ridden, and haphazard project....science one by one solved the problems it encountered. Many of them were overcome, it is true, but then one would have to acknowledge that science did not direct the engineer's work as a preformed intelligence. The projects themselves formed the science. **Solutions were worked out on the ground.** ...The expertise was hybrid, not an exterior intelligence applied to the world, but another artifactual body. If one adds to this Willcock's view that the older system of basin irrigation was more sophisticated than the barrage and reservoir that replaced it, the conclusion that follows is that in some ways, rather than applying knowledge to the world, **the engineering work took it away.** British engineers were taught things by the dam and carried this knowledge into scientific journals and irrigation manuals, but **the farmers and local irrigation experts who had managed and maintained the earlier hydraulic system had much of their knowledge taken from them.**" p. 37-8



maps of Army Corps of Engineers levee system from the Mississippi River Levees Project (MRL) report
<https://www.mvk.usace.army.mil/Missions/Programs-and-Project-Management/Project-Management/Mississippi-River-Levees-Project/>



PROJECT DESIGN FLOOD (58A-EN) FLOWS (CUBIC FEET PER SECOND)



Levees Make Mississippi River Floods Worse, But We Keep Building Them

May 21, 2018 · 11:15 AM ET

Heard on All Things Considered

 Rebecca Hersher

4-Minute Listen

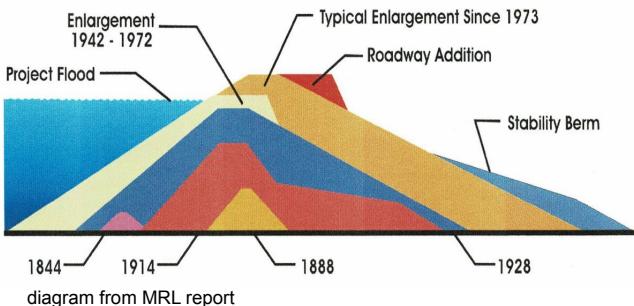
+ PLAYLIST




Mike Stone, left, and Andy Sherman in the pumping station for Hannibal, Mo., during a flood in 1993. The city is protected by a flood wall, and flood managers have built up levees to protect against flooding. But scientists warn those structures are making flooding worse.

Cliff Schiappa/AP

<https://www.npr.org/2018/05/21/610945127/levees-make-mississippi-river-floods-worse-but-we-keep-building-them>



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The Problem with Levees

They can be very valuable tools for managing flood risk—but we learned a century ago that relying on them exclusively won't work

By Nicholas Pinter on August 1, 2019



Credit: Getty Images

<https://blogs.scientificamerican.com/observations/the-problem-with-levees/>

"A series of analyses have helped confirm what engineers have posited for more than a century: that earthen levees built along the river are increasing flood risk for everyone, and especially hurting those who live across from them."

- "Levees Make MS River Floods Worse",
Rebecca Hersher, NPR (2018)

"Many plans have been suggested for the prevention of floods on the Lower Mississippi—Outlets, Reservoirs, Cut-offs, Diversion of Tributaries, and Levees. All of these plans have been investigated thoroughly by the engineers corps of the Army and all have been discarded as inapplicable with the exception of the levee system, which has been recommended as the proper method." From Floods and levees of the Mississippi River, by B. G. Humphreys. The Mississippi River Levee Association: Washington, D.C., 1914

"Levees remain a primary tool for protecting communities and floodplain agriculture nationwide. Levee protection is supplemented by dams and bypasses as well as nonstructural measures, such as under the National Flood Insurance Program to limit and mitigate development on flood-prone land....But ... each time that skies cloud over and rivers rise, what floodplain residents and their political representatives clamor for is more and bigger levees.

"Levees are a seemingly instinctive response after flooding. Residents and politicians imagine impenetrable barriers that will solve flood risk "once and for all." FEMA currently draws U.S. flood maps exactly that way—with land behind levees accredited to at least the 100-year flood level removed from the floodplain, as if by a magic wand.... both local jurisdictions and U.S. society as a whole need to recognize the "residual risk" of living behind levees and steer new development to alternative and flood-safe locations."

- "The Problem with Levees", Nicholas Pinter, Scientific American (2019)

< interlude; dam video >



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Zora J. Murff



BUSINESS

THE GREAT LAND ROBBERY

The shameful story of how 1 million black families have been ripped from their farms

By Vann R. Newkirk II

<https://www.theatlantic.com/magazine/archive/2019/09/this-land-was-our-land/594742/>

"The farms and plantations are much larger—industrial operations with bioengineered plants, laser-guided tractors, and crop-dusting drones. Fewer and fewer farms are still owned by actual farmers. Investors in boardrooms throughout the country have bought hundreds of thousands of acres of premium Delta land. If you're one of the millions of people who have a retirement account with the Teachers Insurance and Annuity Association, for instance, you might even own a little bit yourself.

"A war waged by deed of title has dispossessed 98 percent of black agricultural landowners in America. They have lost 12 million acres over the past century. ...In fact, the losses mostly occurred within living memory, from the 1950s onward.

"In 1984 and 1985, at the height of the farm crisis, the USDA lent a total of \$1.3 billion to nearly 16,000 farmers to help them maintain their land. Only 209 of those farmers were black."

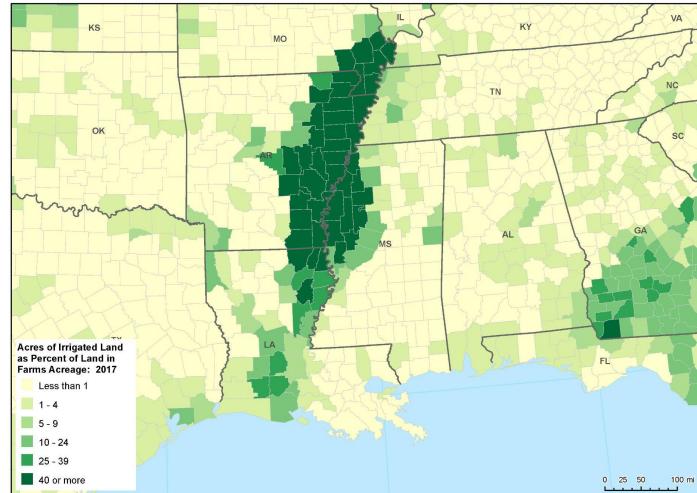
US Department of Agriculture (USDA) 2017 farm census data

The census covers subjects like land ownership, crop yield, farm income, use of irrigation and chemicals, farm expenses, and farm products.

Looking at information for the Mississippi Delta region, I noticed that the farmers tend to rent, rather than own, their farms; they rely heavily on chemical fertilizers and artificial irrigation; and their income is heavily subsidized.

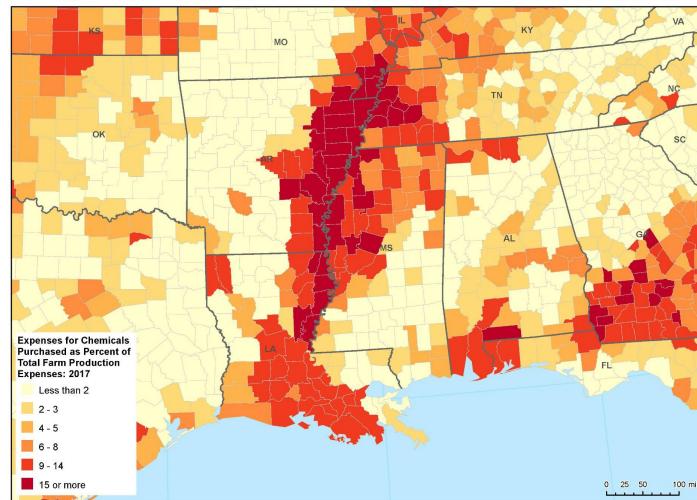
These patterns are a direct legacy of sharecropping, a peonage system that developed after the Civil War to effectively re-enslave black farmers. Sharecropping was especially prevalent in the Southern agricultural states, where we still see some of the lowest rates of land ownership and most ecologically harmful agricultural practices.

Top: Percent of farmland that relies on irrigation. Ironically, one of world's most fertile river deltas now relies on **artificial irrigation**.



Similarly, the lower image – chemical expenditures as a percent of total farm expenses – shows that these Delta farms also rely on **chemical fertilizer and insecticides**.

image source: [USDA census map](#)

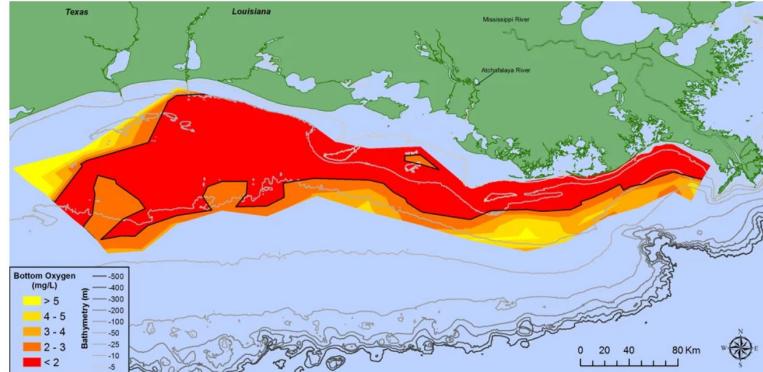


Gulf of Mexico Dead Zone



The teal blue area along the Louisiana coastline represents a "dead zone" of oxygen-depleted water. Resulting from nitrogen and phosphorus pollution in the Mississippi River, it can potentially hurt fisheries.

NASA/Getty Images



Every year, the National Oceanic and Atmospheric Administration tasks scientists with measuring the dead zone in the Gulf of Mexico. This year's map, based on that data, shows a zone the collective size of New Jersey.

Courtesy of NOAA

"Most of the nitrogen and phosphorus that drives this problem comes from the upper Midwest," Scavia says. "It's coming from agriculture."

[https://www.npr.org/sections/thesalt/2017/08/03/541222717/
the-gulf-of-mexicos-dead-zone-is-the-biggest-ever-seen](https://www.npr.org/sections/thesalt/2017/08/03/541222717/the-gulf-of-mexicos-dead-zone-is-the-biggest-ever-seen)

Usage of ecologically harmful agricultural practices correlates with farm leasing rather than ownership.

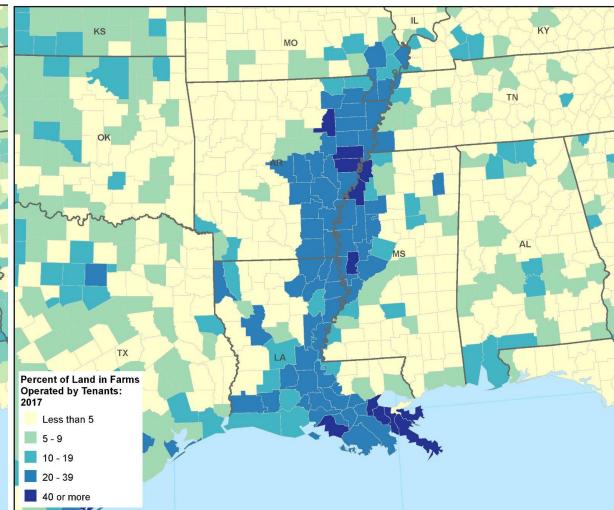
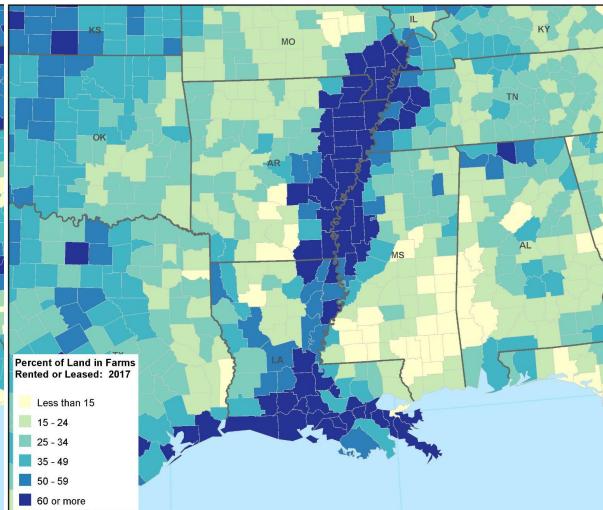
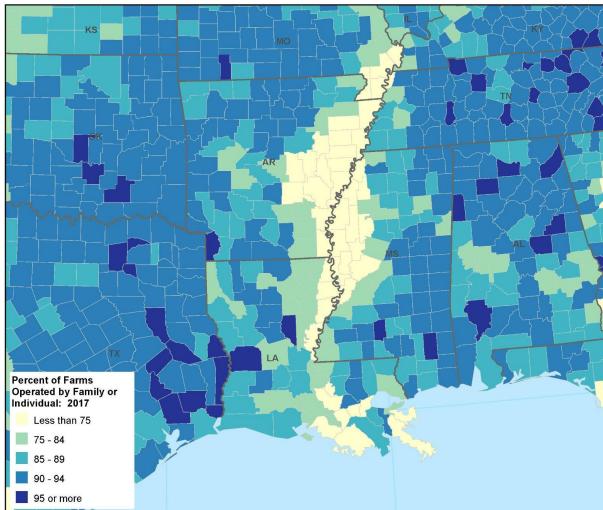
Left: Percent of farms operated by family or individual. Middle: Percent of farmland rented or leased. Right: Percent of farmland operated by tenants.

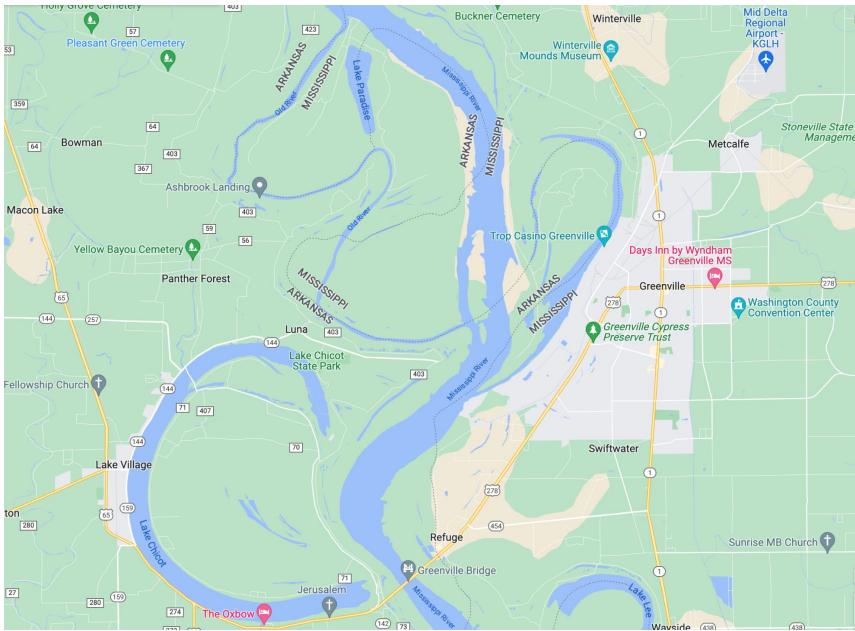
image source: [USDA 2017 Farm data map](https://usda.fas.usda.gov/farmdata/)

"Nearly 40% of U.S. farmland is rented or leased from agricultural landowners...These non-operating landowners (NOLs) may not realize the value of rental agreements that include implementation of conservation practices.

"In-field conservation practices like no-till, cover crops, and extended rotations will, over time, make the soil and each year's crop more resilient to floods, droughts, and pests....These practices also reduce nutrient losses to our streams and capture carbon out of the atmosphere. But a farmer has no reason to implement these practices on rented land."

- Upper Mississippi River Initiative conservation efforts,
<https://umri.org/2020/07/20/a-year-of-water-quality-efforts-in-iowa/>





Mississippi River at Greenville, a major Delta city and one of the worst flooded in 1927. This shows the River in Google Maps terms, as a waterway in a flat human landscape of cities, landmarks, and roads. 2023, Google Maps.



Here, the satellite view of the same area shows the paths of the river over time inscribed in the landscape. We see the fragile human settlement at the edge of a non-anthropogenic, geographically-dominant force. 2023, Google Maps.

Additional References

Rising Tide (John Barry, 1997)

Ecology of Fear (Mike Davis, 1998)

Rule of Experts (Timothy Mitchell, 2002)

Atlantic article about black farmers in Mississippi
Delta dispossessed of their land through lending
and insurance prejudice:

<https://www.theatlantic.com/magazine/archive/2019/09/this-land-was-our-land/594742/>

Non-Operating Land Owners (NOL)s and farmland
conservation:

<https://www.sciencedirect.com/science/article/abs/pii/S0264837716301594>

First Street's "Risk Factor" website, check your
address:

<https://riskfactor.com/>

guest videos

- insurance industry
- https://www.youtube.com/watch?v=IK_DE0nlmt8
- anthropocene
- Ethopian megadam:
<https://www.youtube.com/watch?v=fVfOzqG6xXY>

I was poking around USDA data

to understand the Mississippi Delta for a research project. Within a few minutes, I noticed striking patterns...

Image: location of black farmers in the USA reflect location of overall black population. However, these farms exhibit some unusual characteristics.

image source: [USDA census map](https://nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Ag_Census_Web_Maps/Overview/)

