

Time and the River: Coastal Restoration as Climate Change Denial

Edward P. Richards, JD, MPH

Director, Program in Law, Science, and Public Health

Clarence W. Edwards Professor of Law

LSU Law School

richards@lsu.edu

Blog - <http://sites.law.lsu.edu/coast/>

<http://ssrn.com/author=222637>

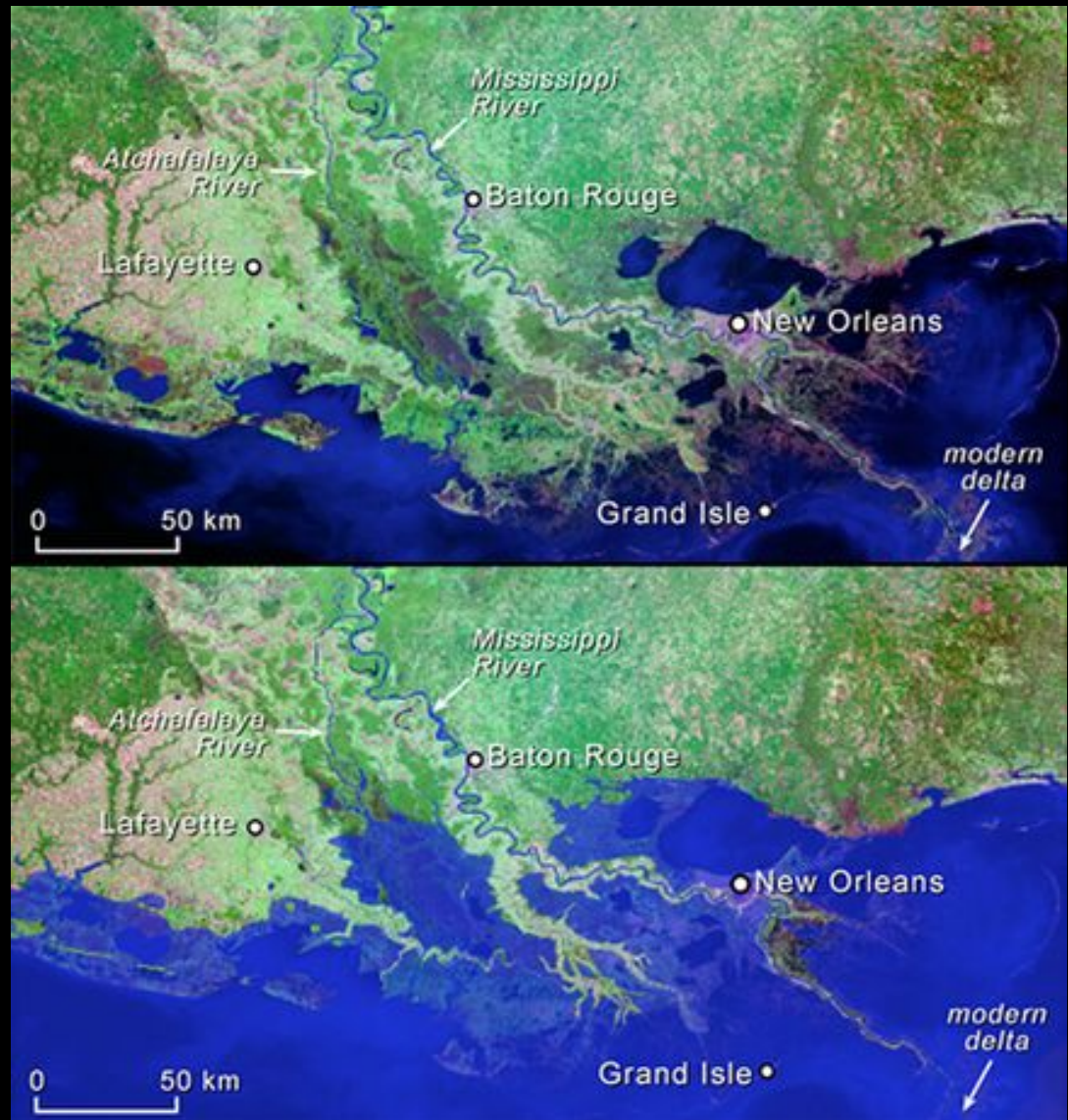
Take-Away Points

- The Mississippi Delta is not what you think.
- Sea level rise is rising. RSL is rising faster.
- Deltas are defined by sea level, not sediment.
- Thus restoration based on plants and sediment is an absurd idea.
- Attempts at restoration are environmentally damaging and increase the risk of disasters.

What Are We Worried About?

The Best Case by 2100 – One Meter RSLR

2100 is the one meter contour line on the existing map. This represents the lowest estimates of sea level rise, plus expected subsidence. The fingers, including New Orleans, only persist because of levees. In real life, the levees would likely be gone and the river would be rechanneled.

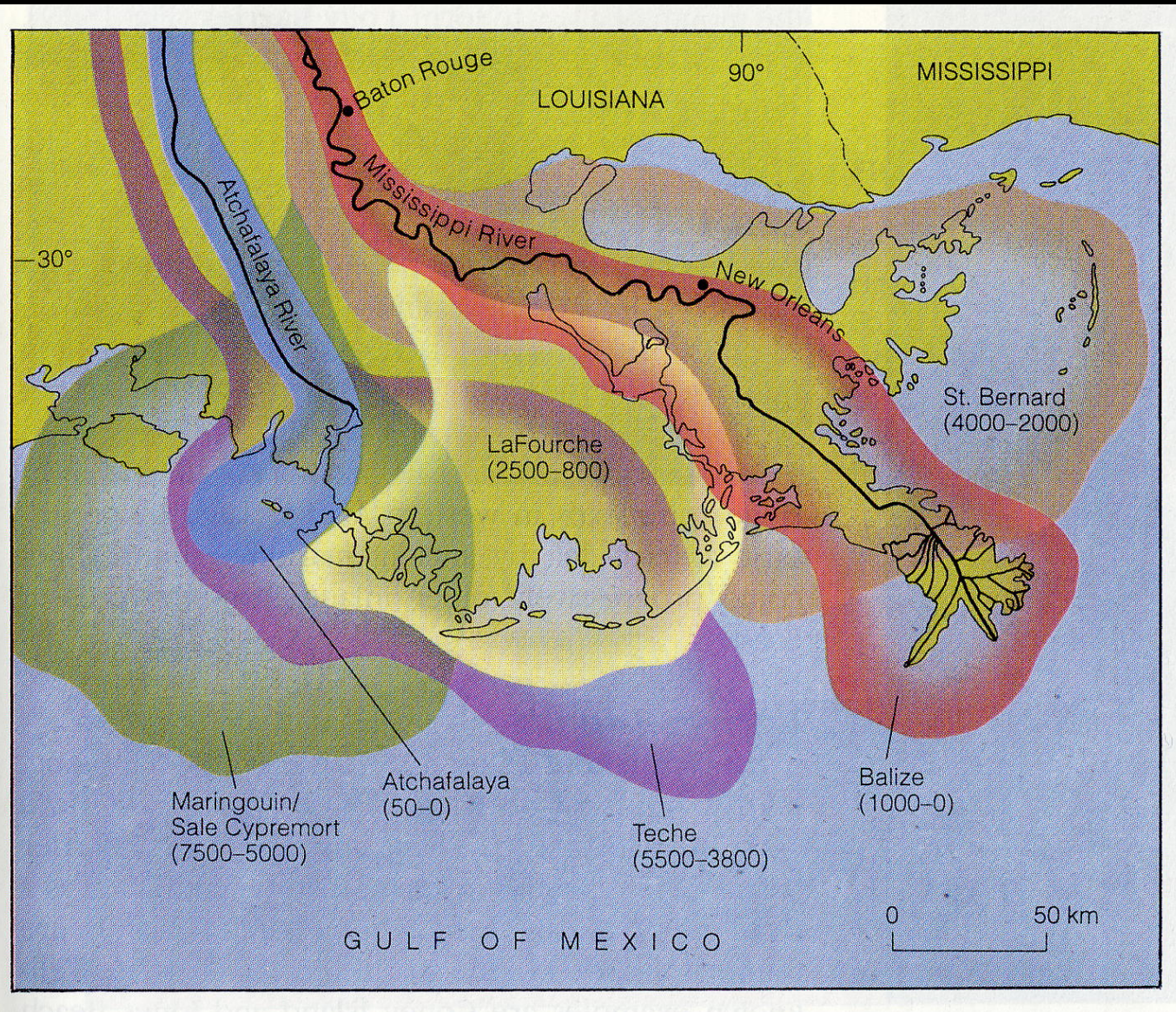


The Core Problem with Coastal Restoration

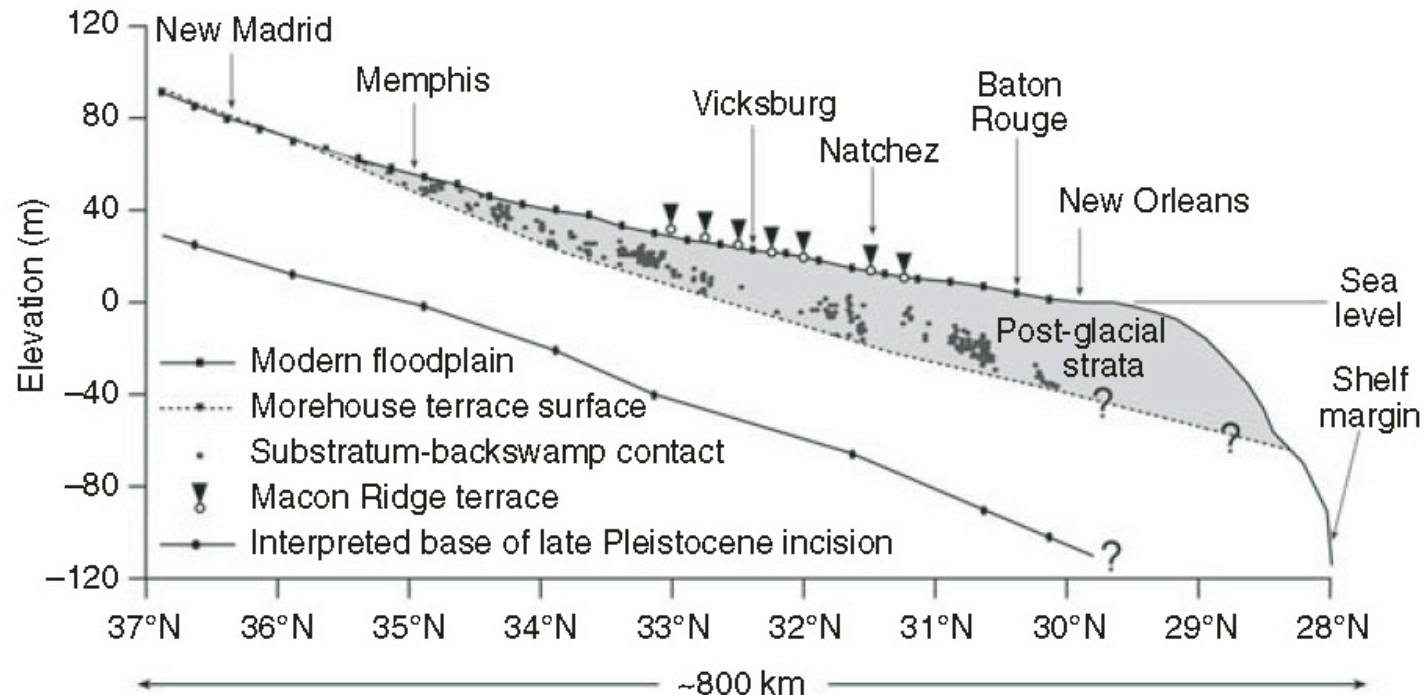
The Delta is not What You Think it is

The Traditional Delta Lobe Map

A Short, Steady State Picture of the Intertidal Zone

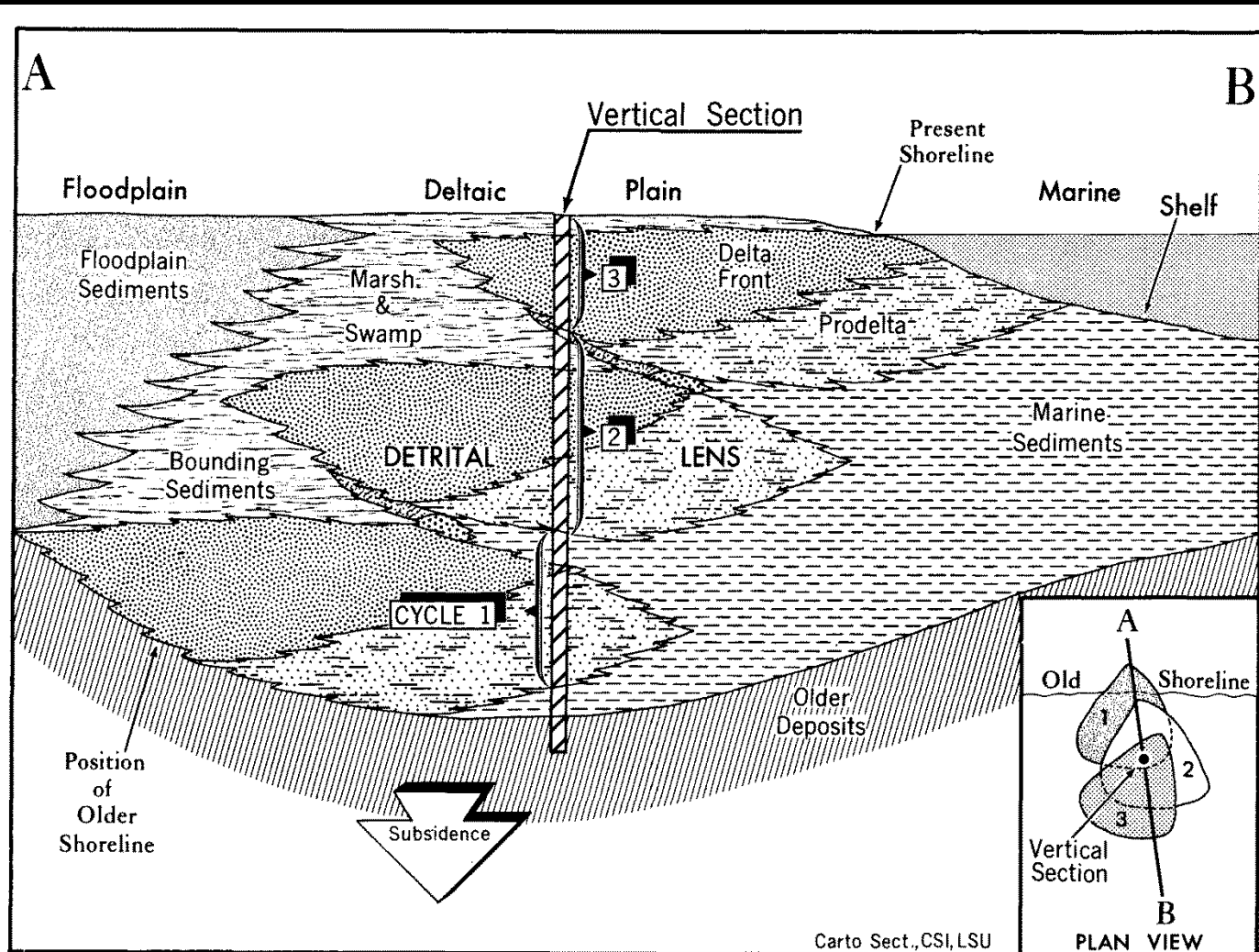


The delta is the mountain of sediment laid down over multiple glacial cycles.



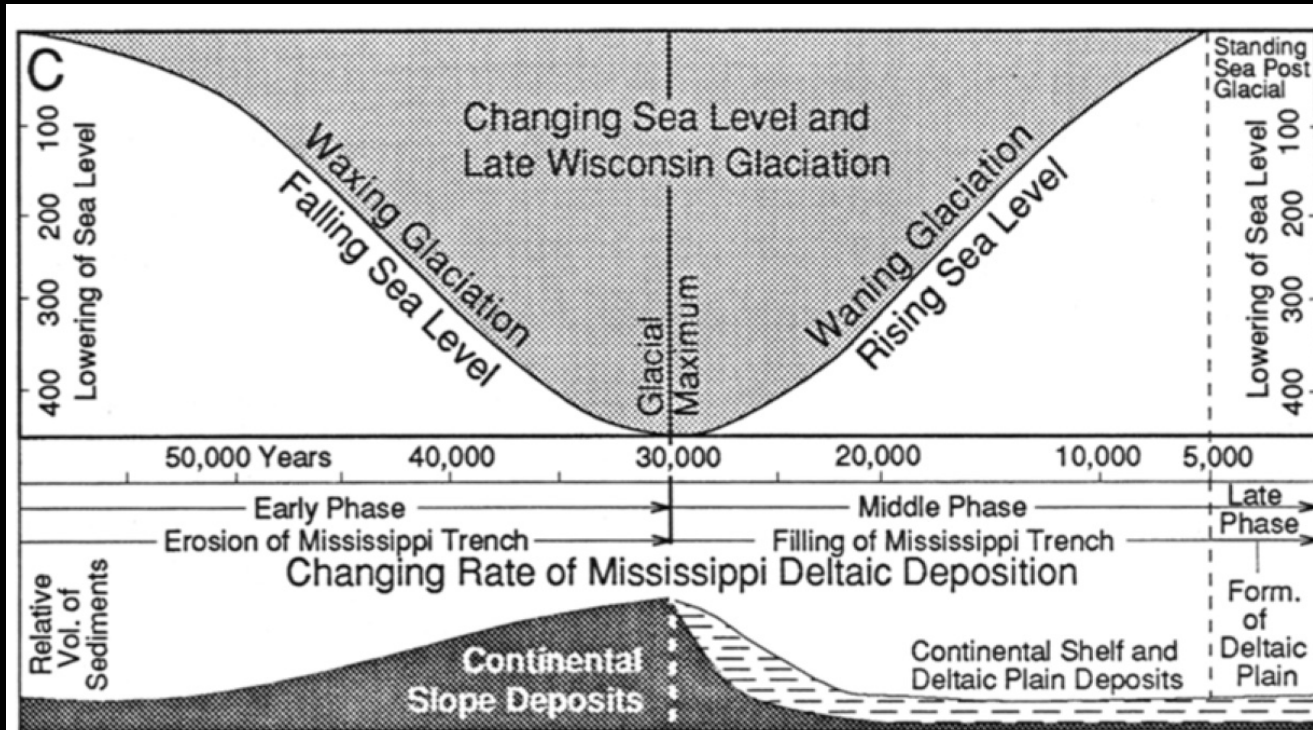
Blum MD, Tomkin JH, Purcell A, Lancaster RR. Ups and downs of the Mississippi Delta. *Geology*. 2008;36(9):675–8.

Cross Section of the Delta Stack



Coleman JM, Gagliano SM. Cyclic sedimentation in the Mississippi River deltaic plain. 1964;

Sea Level, Not Sediment, Determines Where the Land Meets the Water

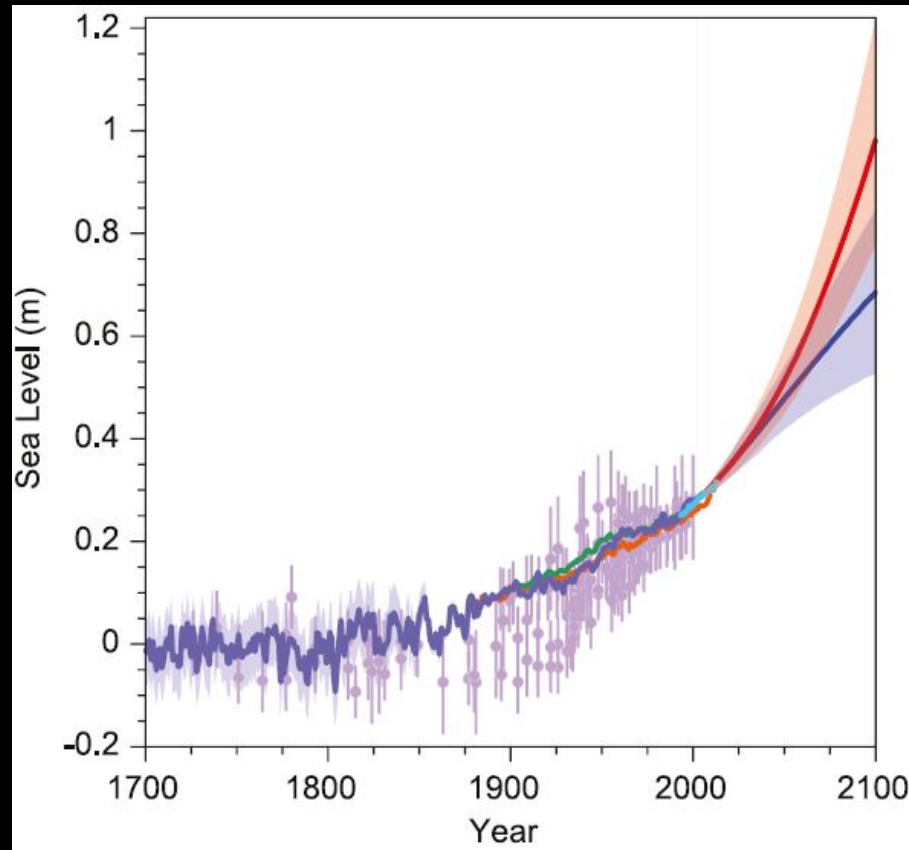


Stanley DJ, Warne AG, Dunbar JB. Eastern Mississippi delta: late Wisconsin unconformity, overlying transgressive facies, sea level and subsidence. *Engineering Geology*. 1996;45(1):359–81.

Sea Level Rise and Deltas

- The intertidal zone retreats inland when sea level is rising, independent of sediment.
 - During maximum sediment flow – the primary period of glacial melting – the zone moved inland.
- The current delta lobes only built when sea level rise (SLR) leveled off.
- Sea level rose 8 inches over the past 100 years, a high rate historically.
- If you believe in climate change, sea level rise will increase.

The IPCC Best Case is Twice the Current Rate of Sea Level Rise by 2100



The Effect of a Higher Rate of Sea Level Rise

- The intertidal zone is already moving inland over most of the delta.
- Even at times of massively more sediment, the intertidal zone still moved inland.
- Sea level will rise faster than any possible increase in delta height.

Why Restoration is Absurd

- Restoration implies returning to a previous state. Even the weak version of preserving some of the current intertidal zone goes against basic delta science and history.
- Restoration can only be meaningful in a world that denies climate change, even the existing increase in sea level from the last century's GHGs.

Some Analogies to Help Explain LA Coastal Restoration

Coastal Protection and Restoration Authority – CPRA

- Think of the Tobacco Institute and its role in smoking and health.
- The Tobacco Institute funded its own research, co-opted journals, and suppressed opposing views.
- It sent out a smoke screen of dubious reports and research to create controversies over science when none really existed.

Louisiana Coastal Restoration Plan (LCRP)

- Environmentally, think of the Everglades and the development of southern Florida.
- Politically, this is climate change denial in concrete and clay.
- Economically, it is a patronage scheme to divert other people's money to LA politicians' friends.

Key Elements of the Coastal Restoration Plan

- Levees – protection from storm surge
 - This is the heart of the plan.
- Wetland building - wetlands block surge
 - They also are beloved by environmentalists
- River diversions
 - Water diversions to fertilize the wetlands
 - Sediment diversions to build new land

Why Levees?

- Levees mean no one will have to move away from the coast – no hard choices.
- Levees game the flood insurance system so rates are kept artificially low.
- Levees are huge, long term public works projects, with very costly ongoing maintenance.
 - Historically paid for by the federal government.
 - Perfect patronage.

The Dutch Can Do It, So Can We

- Different topography
 - Subsidence
 - No place to retreat
- Different culture
 - Can you say maintenance?
- Different economics
 - Valuable land and property
 - Willingness to spend several % of GDP
- NO HURRICANES

The New Levees are Perfect

- Still built to funding and politics
 - The Corps uses an unrealistically low estimate of 100 year risk
 - Building to real risk would be much more expensive, disruptive, and expensive to maintain
 - NOAA modeling shows a slow Cat 3 flooding the city with the new levees.
- The levee board is already trying to dodge the maintenance duties.

The Environmental Risks of Levees

- Levees block the inland migration of the wetlands as relative sea level rises.
- Levees hasten the subsidence of land behind the levees and destabilize the ecology.
 - “Leaky levees” are impossible with rising sea level.
- Best case, you get a below sea level basin behind a wall with the ocean lapping on the outside.
 - This wall will then fail when hit with additional sea level rise and hurricanes.

The Human Risks of Levees

- Levees encourage dangerous land use decisions
- Levees encourage people to not evacuate
- Levees encourage politicians to do Potemkin disaster preparation.
- Levees hide the risk and thus discourage people from moving to safer places.
- Belief in levees killed 1800+ in Katrina
 - How many more will die in the next big storm?

Water Diversions

- The best science shows that nutrients in the river water destroy the wetlands.
- Think the dead zone, in slow motion.
- Plans to use wetlands to remove nutrients from the Mississippi to prevent the dead zone are crazy.
 - Better the dead zone than dead marshes.

Sediment Diversions

- The Atchafalaya builds a few hundred acres of low delta a year.
 - Low subsidence area
 - 30%+ of the sediment and flow of the river
- You could do one or two more diversions and not kill navigation on the river.
 - At best you could build maybe 10% of the land being lost – unless RSLR increases.
- The diversions are huge projects that destroy a lot of wet lands to build and operate, in the hopes of building land in the long run.

Why Talk Restoration if You Just Want Levees?

- Wetlands reduce storm surge so we need to build wetlands.
 - **Disproven for LA and similar situations.**
- The real rationale is that national environmental groups would never stand for a pure levee program.
- Restoration buys off the national environmental groups.

Why Aren't Environmentalists Fighting Coastal Restoration?

The Word “Restoration” Makes Environmentalists Stupid

- Restoration sounds so good people suspend their critical faculties
- The whole notion of restoration is from a steady state world, one that is only 6,000 years old in Louisiana.
- Deltas have been driven by climate cycles since the dawn of time.
- The idea of restoring a delta is head-on climate change denial.

Social Justice Blindness

- There is no socially just way to decommission the coast.
 - The free market solution results in Detroit
 - Even if the feds provided relocation money, no one wants to make people leave.
- So, if there is no just solution, you assume away the problem.

The Enemy of My Enemy is My Friend

- Environmentalists hate oil companies
- A levee board sues the oil companies
- Thus the levee board is a friend.
- What is wrong with this picture?
- Levee boards are most environmentally destructive force in LA
 - Yes, they are worse than oil companies.

Are There Restoration Actions that Make Sense?

- Push down the spoil banks on canals through the wetlands.
 - Low cost, no damage, might help in the short run
- Pumping sediment
 - Extremely expensive and only short term, but not very damaging
- Shut down all the existing diversions

What Should an Environmentalist Do?

- Oppose all levee and diversion projects.
 - Every EIS should be litigated to the bitter end.
 - Groups should oppose these projects before Congress and the administration.
- Stop supporting people just because they hate oil companies.
 - Every coastal restoration dollar from BP or the levee board lawsuit will go to environmental destruction.