



The Right Things in the Wrong Places

Friday March 14, 2014

8:30-10:00 AM

THE RIGHT THINGS... IN THE WRONG PLACES

We have a rich history of building houses, businesses, and even entire communities in unsuitable places, where the threat of fires, floods, and other foreseeable disasters pose staggering costs to the public. Zoning can and should steer people away from dangerous locations, and the scope of the police power is broad enough to allow government to limit efforts to rebuild once disaster strikes. This panel explores zoning tools that can be used to prevent construction—or reconstruction—in the wrong places.

Moderator:

Orlando Delogu, Emeritus Prof. of Law, Univ. of Maine
School of Law

Speakers:

Chris Duerksen, Senior Counsel, Clarion Associates

Julian Juergensmeyer, Ben F. Johnson Professor, Georgia
State University School of Law

Dwight Merriam, Partner, Robinson, Cole

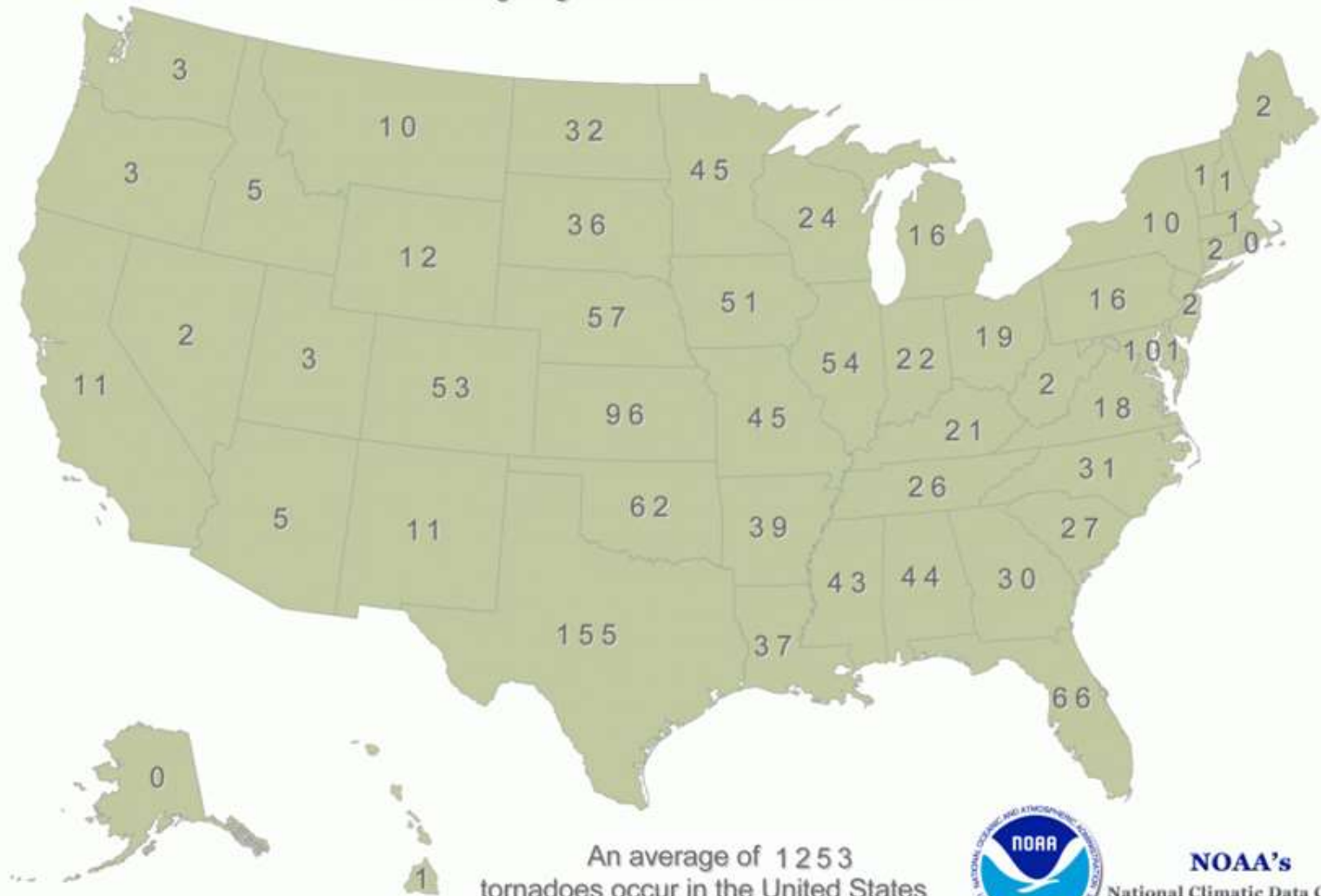
Orlando Delogu





Average Annual Number of Tornadoes

Averaging Period: 1991 - 2010



An average of 1253
tornadoes occur in the United States
each year



NOAA's
National Climatic Data Center

U.S. Tornado Deaths

2000	41
2001	40
2002	55
2003	54
2004	35
2005	39
2006	67
2007	81
2008	126
2009	21
2010	45
2011	553
2012	70



Hawaii – Mauna Loa

- **1843 erupted 33 times**
- **1868 8.0 magnitude earthquake**
- **1950 destroyed homes, a gas station, church and cemetery**
- **1983 \$7 million damage to roads and structures**
- **1984 came within four miles of Hilo**



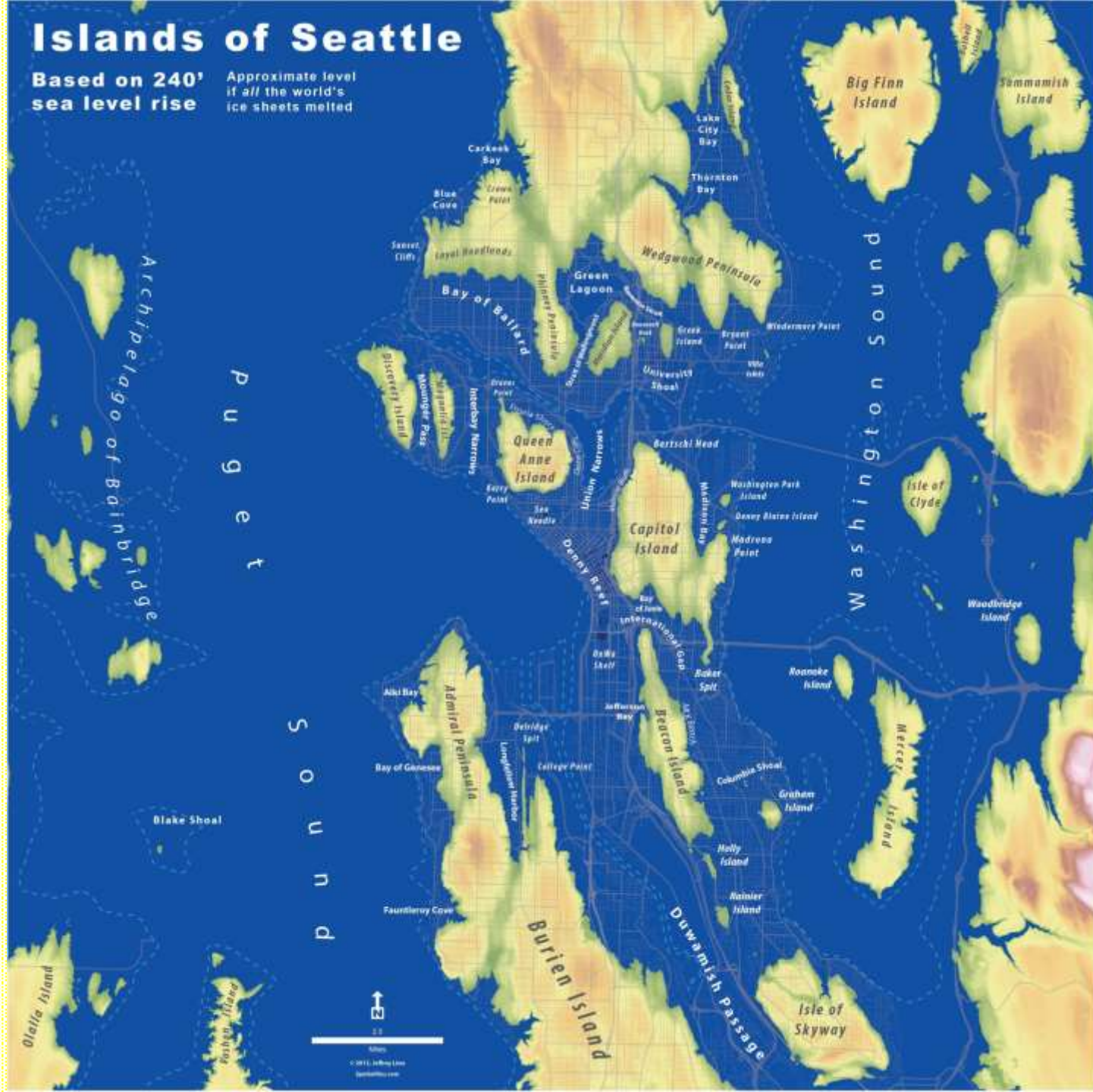


The last house on Holland Island in Chesapeake Bay, which once had a population of almost 400, finally toppled in October 2010. As the water rose and the island eroded, it had to be abandoned. Astrid Riecken for The Washington Post, via Getty Images

Islands of Seattle

Based on 240'
sea level rise

Approximate level
if all the world's
ice sheets melted

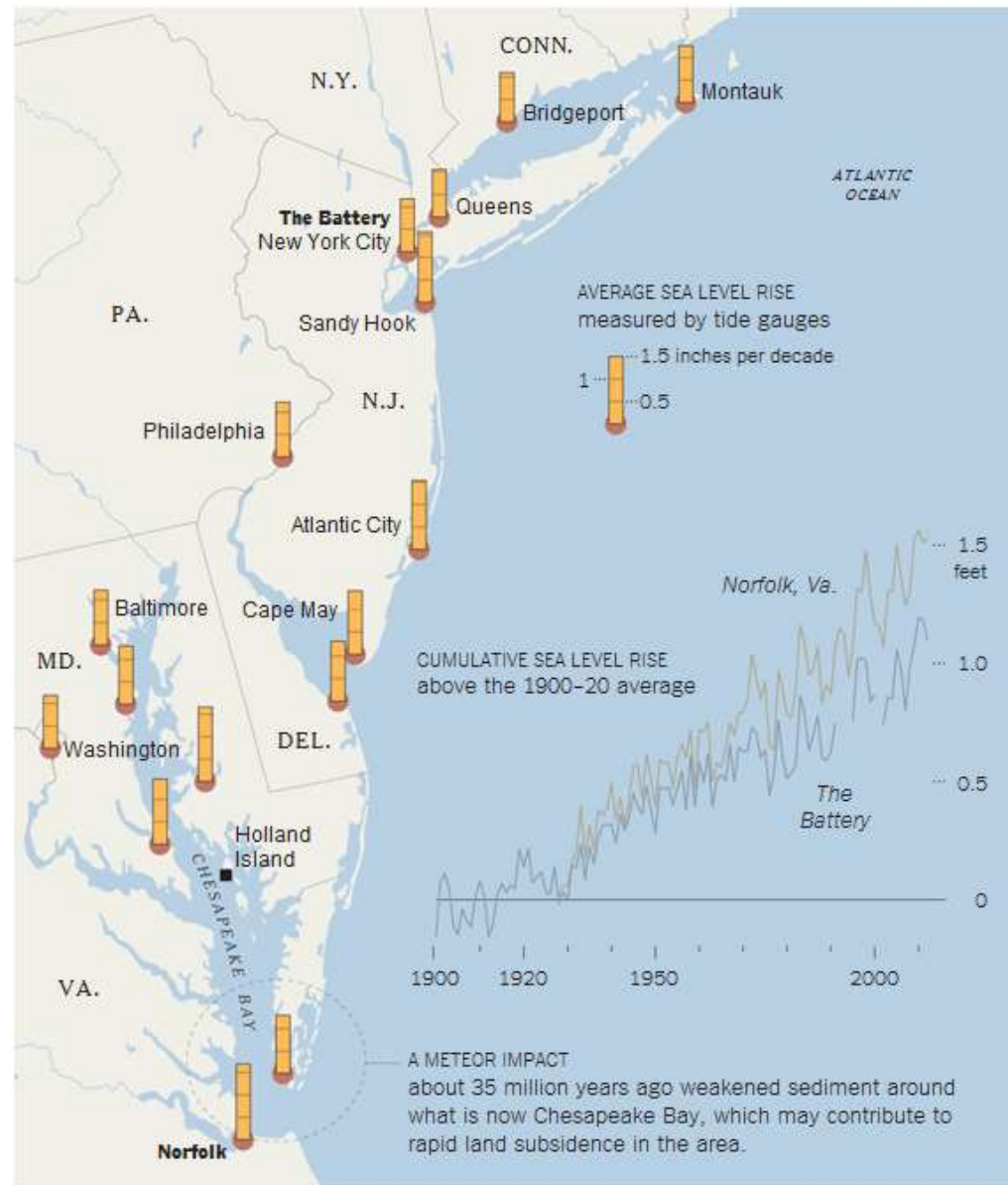


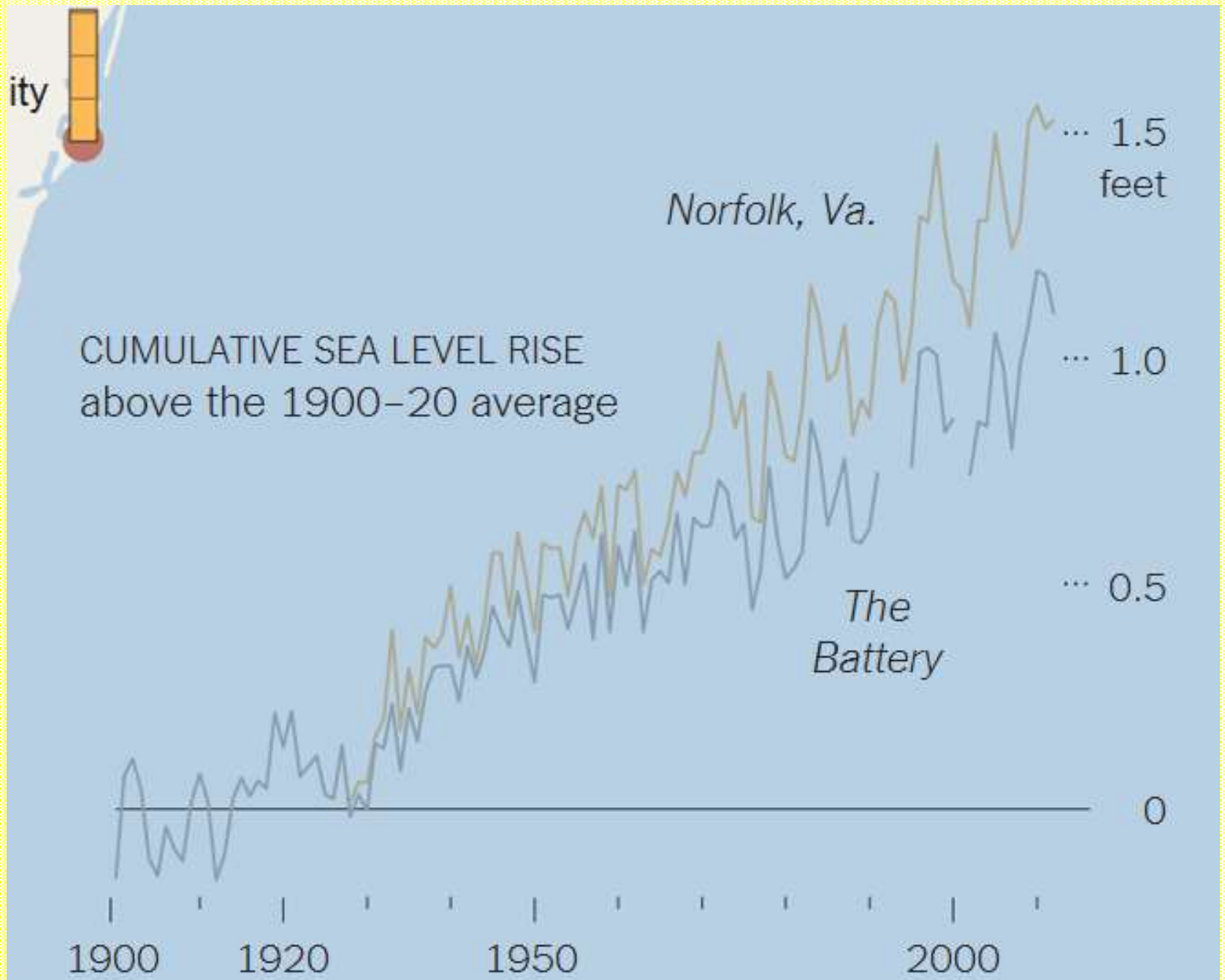




Rising Sea, Sinking Land

Tide gauges along the East Coast show a long-term increase in relative sea levels, in part because the ocean is rising and in part because areas of the coast are sinking.







Hurricane Sandy

- **\$25,000,000,000.00 lost business activity**
- **8,100,000 homes lost power**
- **57,000 utility workers -- 30 states and Canada**
- **1,008 beds in tent city for relief workers in Rye, NY**
- **78% of respondents to a Quinnipiac University poll “believe we are experiencing large storms such as Sandy and Irene more frequently as a result of climate change.”**



Hilo, Hawaii April 1, 1946

- 55-foot high waves
- 173 killed in Hilo
- 163 injured
- 488 buildings destroyed
- 936 others damaged
- \$25 million damages (1946 dollars)

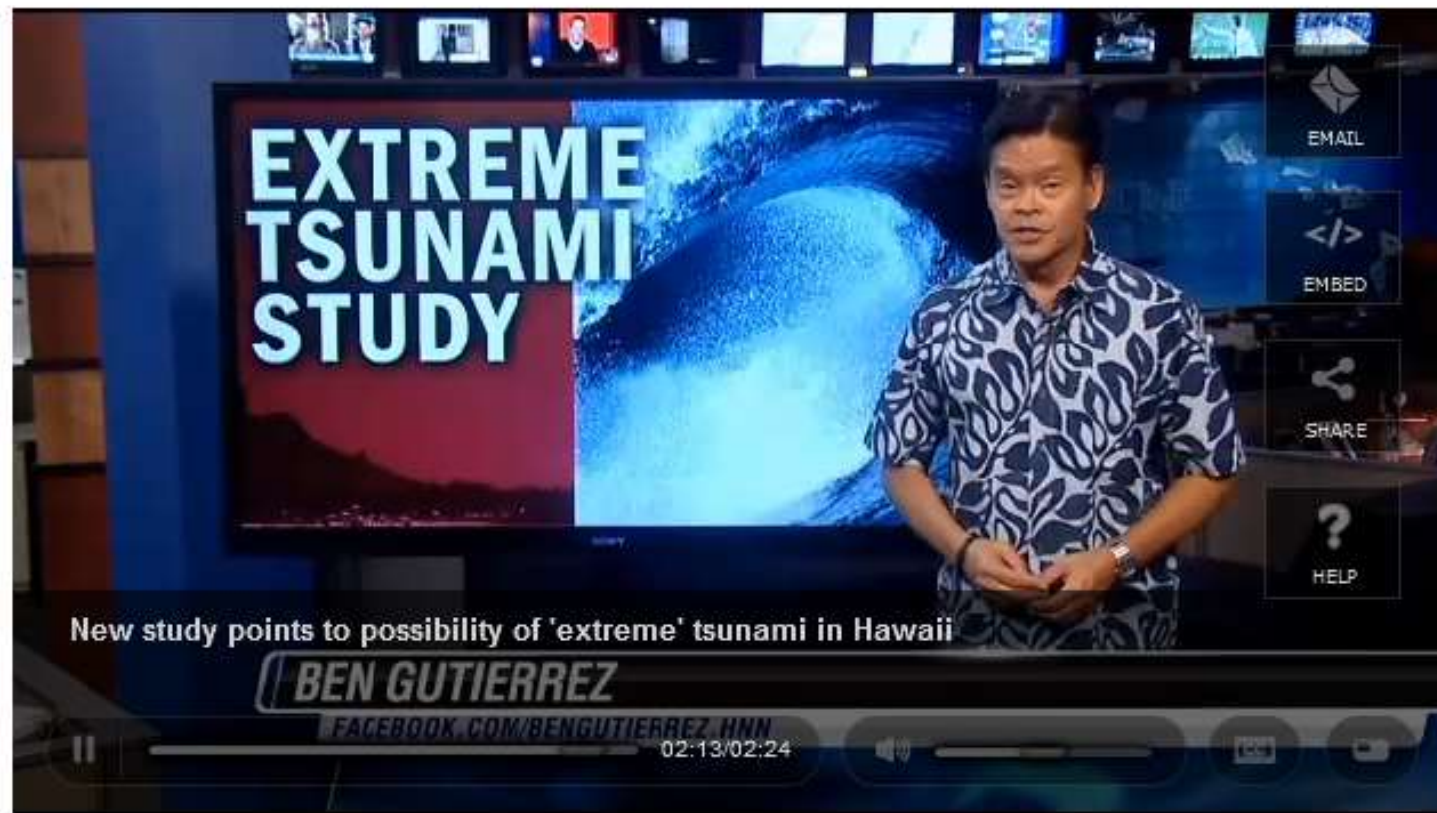


New study points to possibility of 'extreme' tsunami in Hawaii

Posted: Dec 20, 2013 2:45 AM EST

Updated: Dec 20, 2013 3:34 PM EST

By Ben Gutierrez - [bio](#) | [email](#)







Wellington, Washington

February 28, 1910

- 96 people killed





Yarnell Hill Fire

June 30, 2013

- **19 City of Prescott firefighters killed**





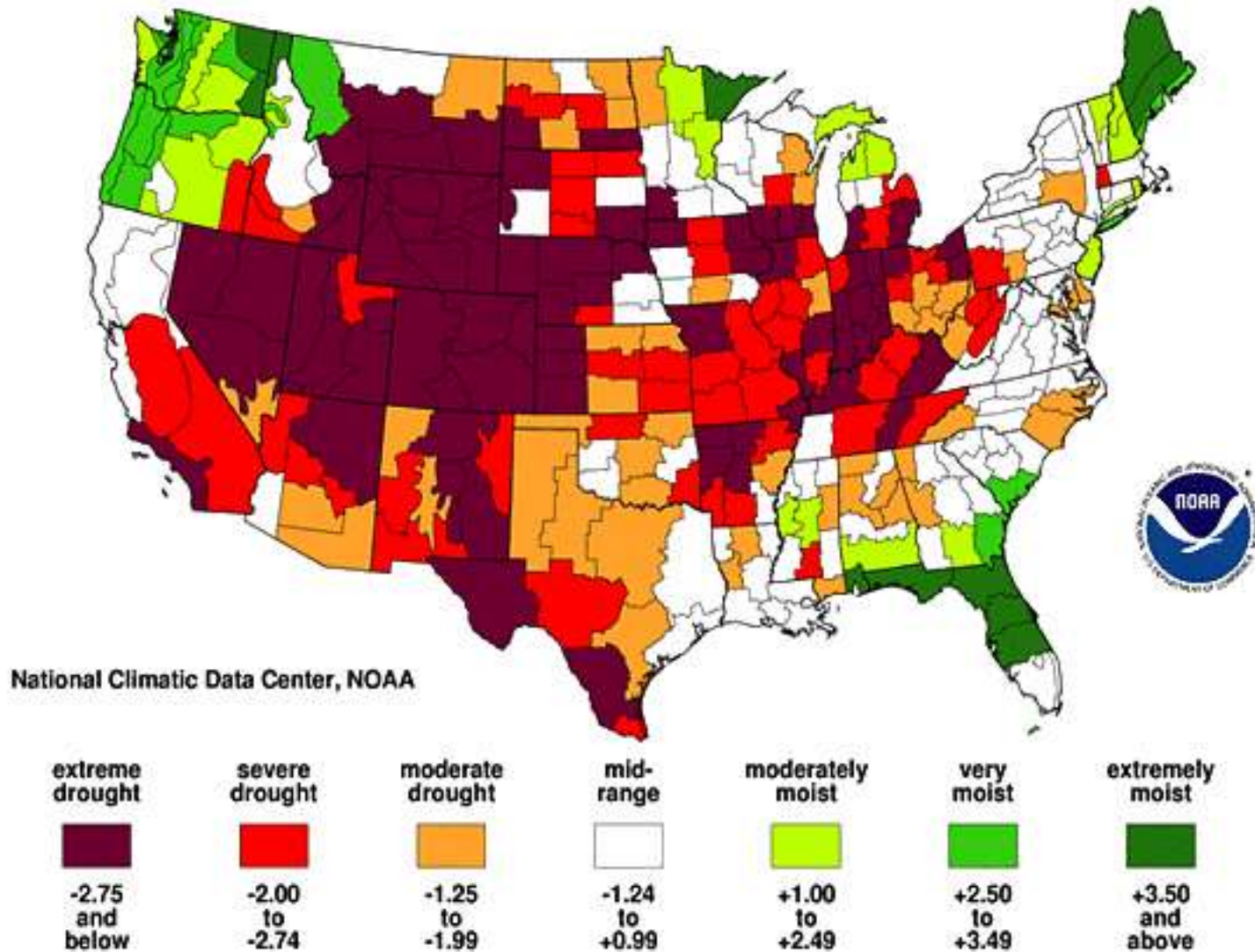
2012 Drought

- Similar to the Dust Bowl
- Largest in 50 years
- 54.6 of lower 48 was in drought June 2012



Palmer Z Index Short-Term Conditions

June 2012



Evacuation order lifted for California mudslide area

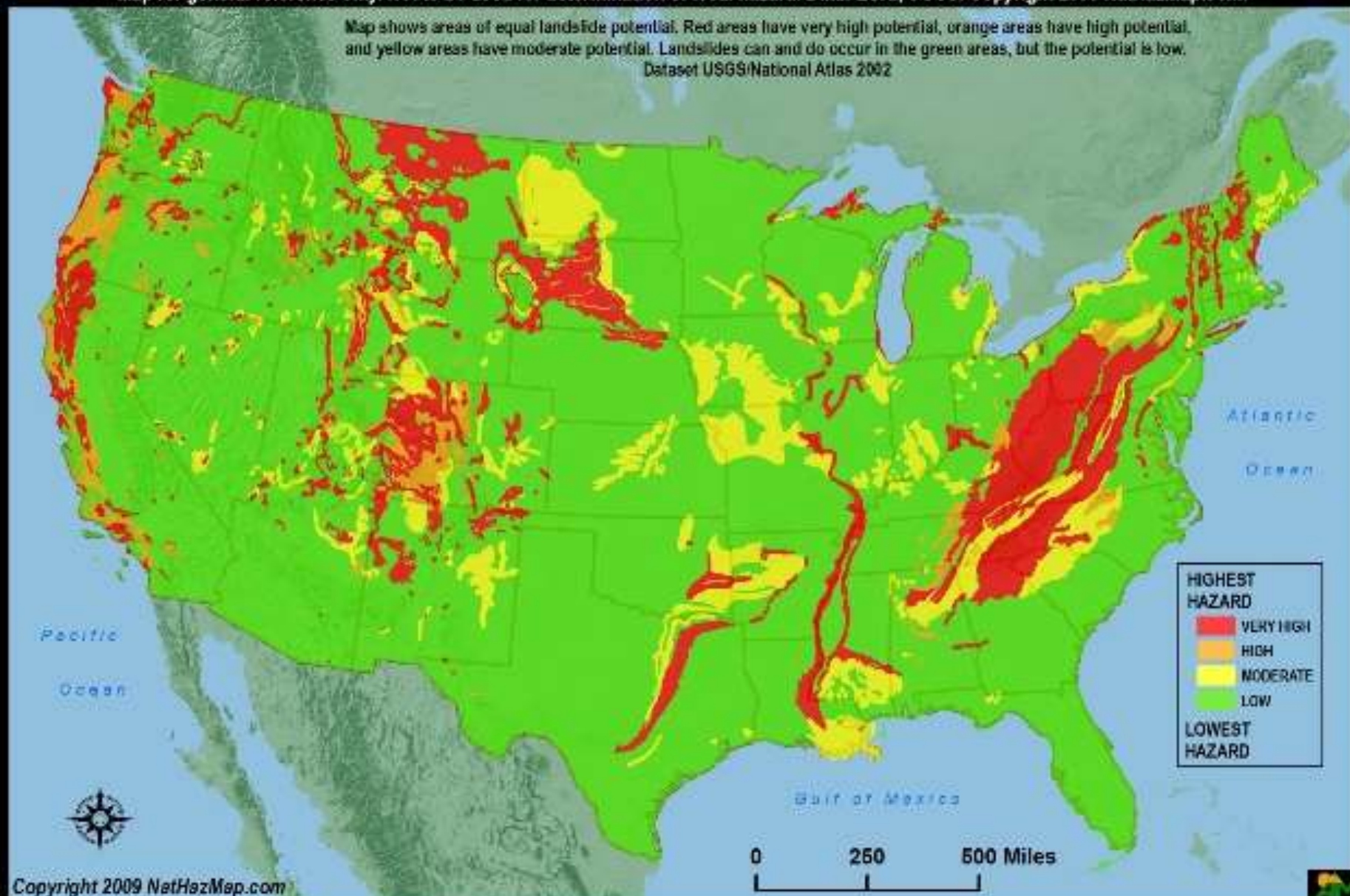
February 10, 2010 11:57 a.m. EST



Heavy weekend rains caused mudslides and damaged houses in La Canada Flintridge, California.

Map for general reference only. Not to be used for determination of local hazard. Data: ESRI, USGS. Copyright 2009 NatHazMap.com.

Map shows areas of equal landslide potential. Red areas have very high potential, orange areas have high potential, and yellow areas have moderate potential. Landslides can and do occur in the green areas, but the potential is low.
Dataset USGS/National Atlas 2002



Copyright 2009 NatHazMap.com

Landslide Hazard of the Conterminous United States

- Each year, landslides in the U.S. cause \$3.5 billion in damage and kill 25-50 people.
- May 1980 eruption of Mount St. Helens
 - Largest landslide in history.
 - Rockslide debris avalanche would fill 250 million dump trucks traveled about 14 miles,
 - Destroyed nine highway bridges, numerous private and public buildings, and many miles of highways, roads, and railroads.



A Note on Biggert-Waters

- **National Flood Insurance Program (1968)**
 - Cheap insurance
 - Predictable outcomes
 - Payments often exceeded premium revenues
 - Owners allowed to rebuild
 - Deficits ballooned





- **Biggert-Waters Flood Insurance Reform Act**
 - Rates reflect true cost of risk; partially removes incentive to rebuild in the wrong place
 - A new generation of flood maps
- **Weak link is local government**
 - Unwilling to regulate
 - Need spending restrictions on infrastructure

To Summarize...

Standardized Mortality Ratios (SMRs)



< -0.50 Std. Dev.

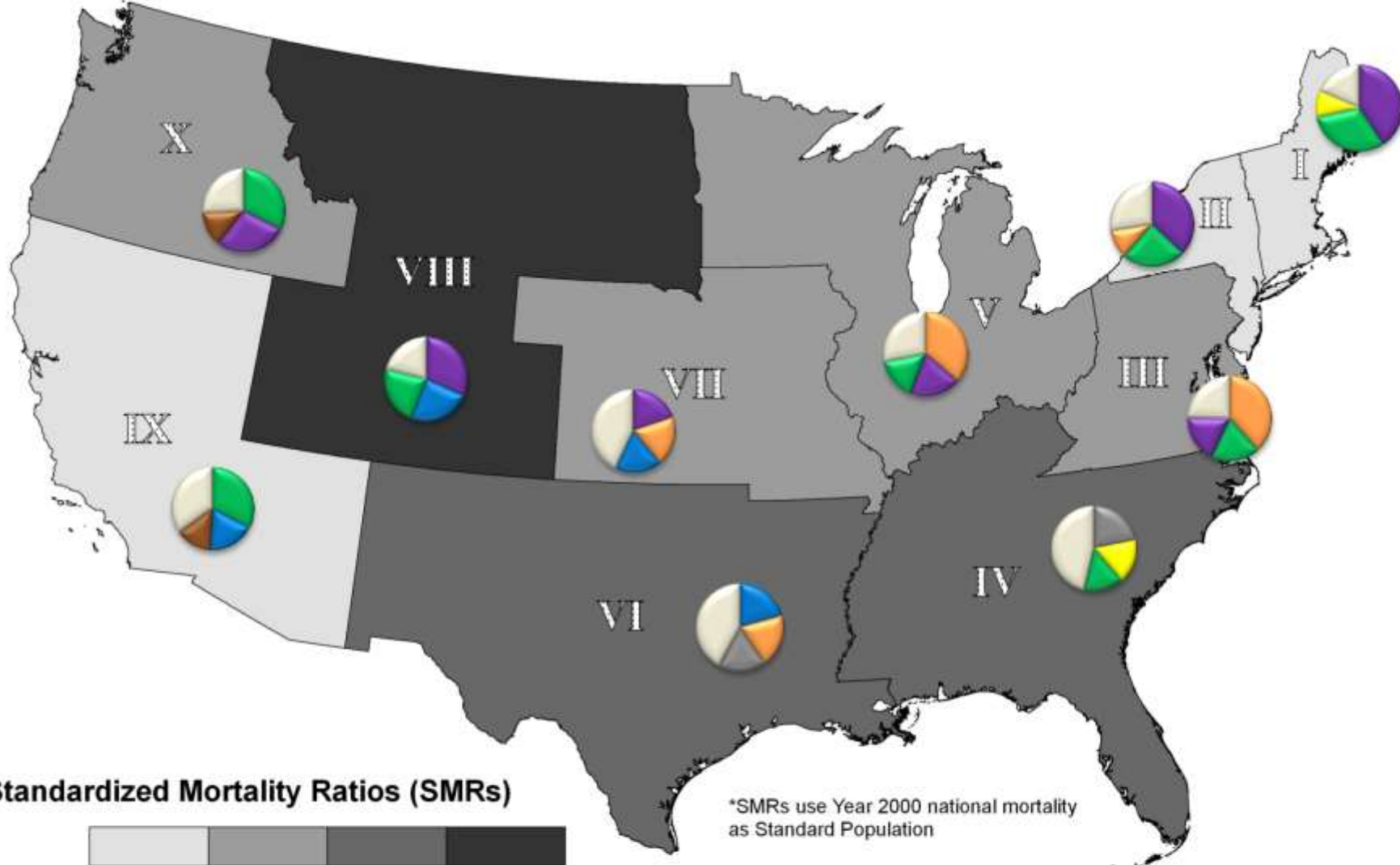
-0.50 - 0.50 Std. Dev.

0.50 - 1.5 Std. Dev.

> 1.5 Std. Dev.

*SMRs use Year 2000 national mortality as Standard Population

Proportional Hazard Mortality



What We Need To Do

- 1. Get over the reluctance to regulate**
 - a. Zoning**
 - b. Subdivision controls**
- 2. We need to stop bailing out people who choose to locate in harm's way**
 - a. Eliminate subsidized insurance**
 - b. Stop lending on properties in high risk areas**
 - c. Condition disaster relief on relocating**
 - d. Put the infrastructure in the right place**

Chris Duerksen



Tropical Storm Irene: Flooding in Vermont's Mad River Valley



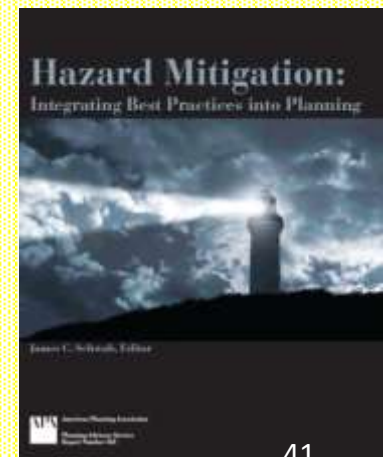
Tropical Storm Irene: Mad River Valley Flooding

Damage Estimates:

- **Roads - \$170-250 million (500 miles of damaged roads and 200 damaged bridges)**
- **Homes and Businesses – more than \$36 million in total FEMA aid (more than 6,727 FEMA aid registrations, 3,169 VT residents given housing assistance)**
- **Crops – Nearly 1,300 acres of crops destroyed (Corn, hay, vegetables, pasture)**
- **Other damage - deposits of silt, gravel, and debris, fences destroyed, land gouges**

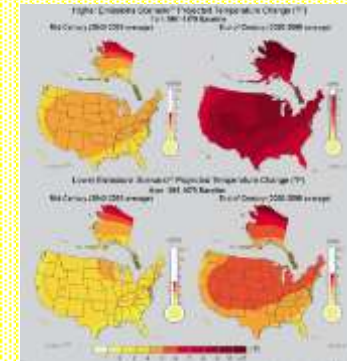
The Climate Change Adaptation/ Resiliency Imperative

- **Climate Change Adaptation:**
Approaches and strategies to adapt to or become more resilient in dealing with unavoidable impacts of climate change and associated natural hazards.
- **Climate adaptation and resiliency should be addressed in comp plans and codes—not just emergency response plans**



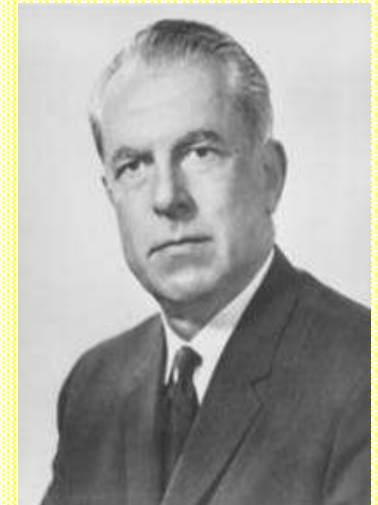
The Challenges Of Climate Change Adaptation

- Local impact data lacking
- or inconclusive
- Multiple and widely varying climate change impacts
- Differing community resources and contexts (urban, rural, coastal, interior)
- Lack of political willpower to restrain development in hazard areas
- Multiple local/state/federal agencies



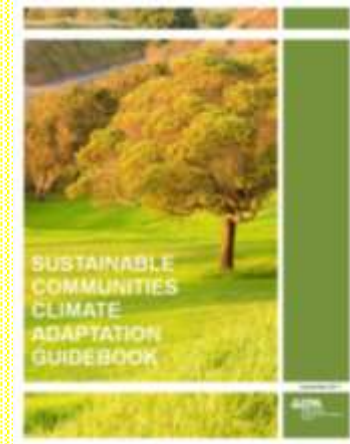
The Legal Framework For Addressing Climate Adaptation And Natural Hazards

- National Flood Insurance Act of 1968 (42 USC 4104c) and Biggert-Waters Flood Insurance Reform Act of 2012 (129 Stat. 916)
- Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.)
- Coastal Zone Management Act (16 USC 1451 et seq.)
- Federal Wildfire/Wildland Fire Management
- Clean Water Act (33 USC 403; 1251)—Dredge and fill and storm water control



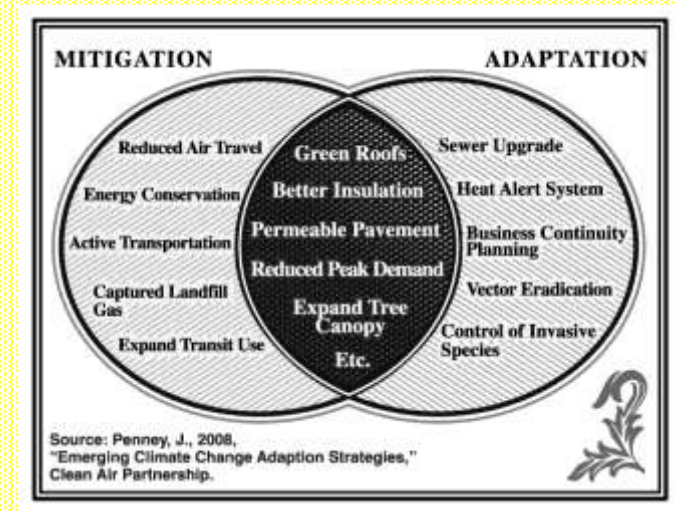
Making The Planning/Zoning Hazard Resiliency Connection

- Hazard planning: Natural extension of sustainable/smart growth land use planning--focus on use of existing proven smart growth tools = SAFE GROWTH
- **Three primary categories of approaches**
 - Protect vulnerable undeveloped areas from development
 - Protect people and assets already in vulnerable areas
 - Encourage sustainable development in appropriate, less-vulnerable areas



Getting Started: Vulnerability Planning Basics

- **Scope CC impacts--Identify vulnerable areas**
- **Risk assessment**
- **Prioritize planning areas**



Planning Areas with Systems that are...		
	Low Vulnerability	High Vulnerability
High Risk	May be priority planning areas	Should be priority planning areas
Low Risk	Are unlikely to be priority planning areas	May be priority planning areas

#1: Protect Vulnerable Undeveloped Areas From Development

Identify areas in the community that:

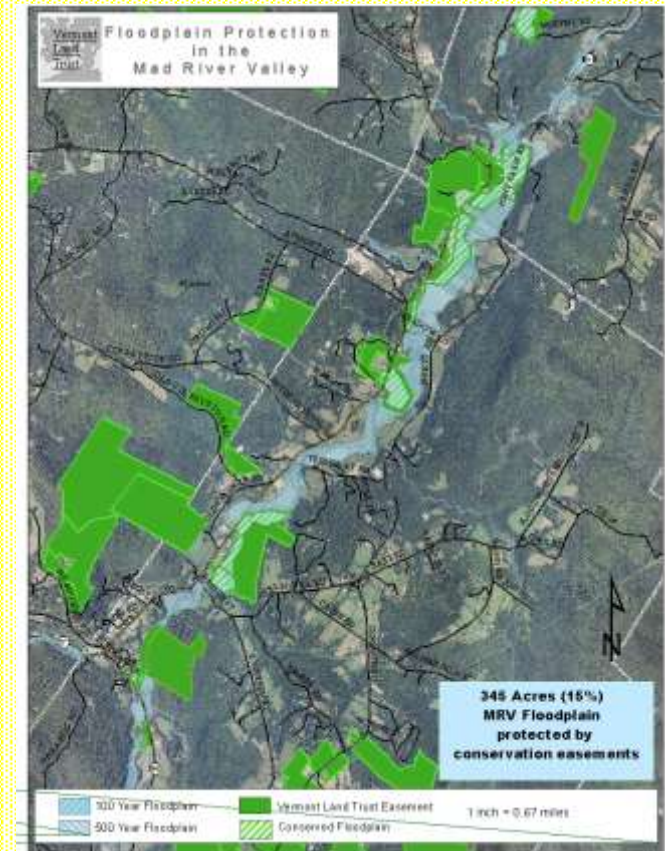
- **Are undeveloped (e.g., floodplains, wildlife habitats, steep slopes), and**
- **Have a higher vulnerability and risk due to climate changes (violent storms, sea-level rise, wildfires)**



#1: Protect Vulnerable Areas

From Development: Menu of Tools

- Clarify and strengthen protective regulations for vulnerable areas
 - Steep slope standards
 - Stream buffers
 - Tree protection provisions
 - Increase minimum lot sizes



#1: Protect Vulnerable Areas From Development

Consider supplements to regulations:

- Provide density bonus incentives for cluster development
- Evaluate and adjust development subsidies provided in vulnerable areas (roads, water/sewer extensions)
- Purchase and transfer of development rights
- Conservation easements



#2: Protect People And Assets in Vulnerable Areas

- **Traditional approaches:**
 - Engineered protective structures—bank armoring
 - Stream channelization
 - Elevating and retrofitting buildings
 - Relocating people, infrastructure, buildings



#2: Protect People And Assets In Vulnerable Areas: Smart Growth Approaches

Adopt No Adverse Impact Stormwater Management Approach:

- **Definition: Actions of one property owner are not allowed to adversely affect the rights of other property owners in terms of:**
 - **Flood peaks, flood velocities, increased erosion/sedimentation, etc.**
- **Based on principle that flood control is a local responsibility—goes beyond elevating structures one foot above 100-year flood**

#2: Protect People And Assets In Vulnerable Areas: Green Infrastructure Stormwater Management

1. Protect natural resources and open space
2. Promote compact development and infill
3. Design complete smart streets that reduce imperviousness
4. Encourage efficient parking supply
5. Adopt green infrastructure stormwater provisions



#2: Protect People And Assets In Vulnerable Areas: Green Infrastructure Stormwater Management

- **Remove Barriers**

- Provide more flexibility in meeting parking requirements--count on-street spaces,
- Encourage permeable pavement as preferred alternative in parking lots.
- Allow street-side swales to replace curb/gutter in low-traffic areas



#2: Protect People And Assets In Vulnerable Areas: Green Infrastructure Approaches

- Create Incentives
 - Grant density bonus and storm water management credit for green roofs
 - Reduce off-street parking requirements if bicycle parking racks provided



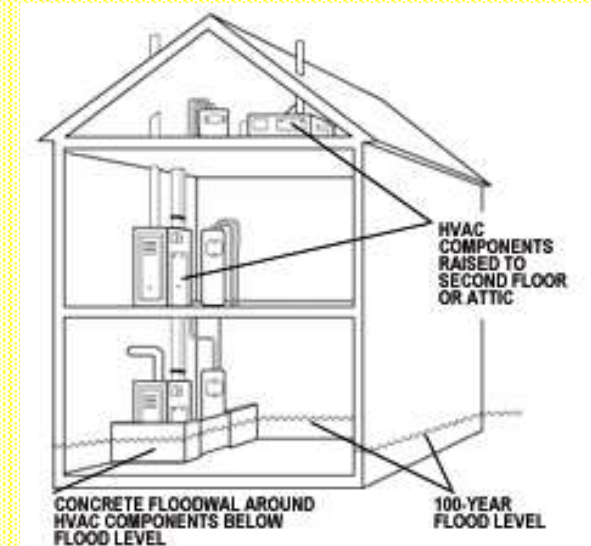
#2: Protect People And Assets In Vulnerable Areas: Green Infrastructure Approaches

- Fill Regulatory Gaps
 - Adopt standards requiring minimum % of parking lot to drain into landscaping
 - Strengthen stormwater management regulations
 - Limit driveway lengths and required shared driveways



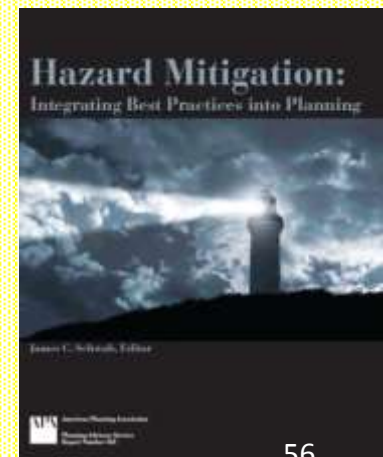
#2: Protect People And Assets In Vulnerable Areas

- Amend non-conforming building regs and building codes to promote safe redevelopment in vulnerable areas
- Update comprehensive and hazard mitigation plans
- Pursue non-structural flood mitigation measures such as parkland acquisition for vulnerable sites



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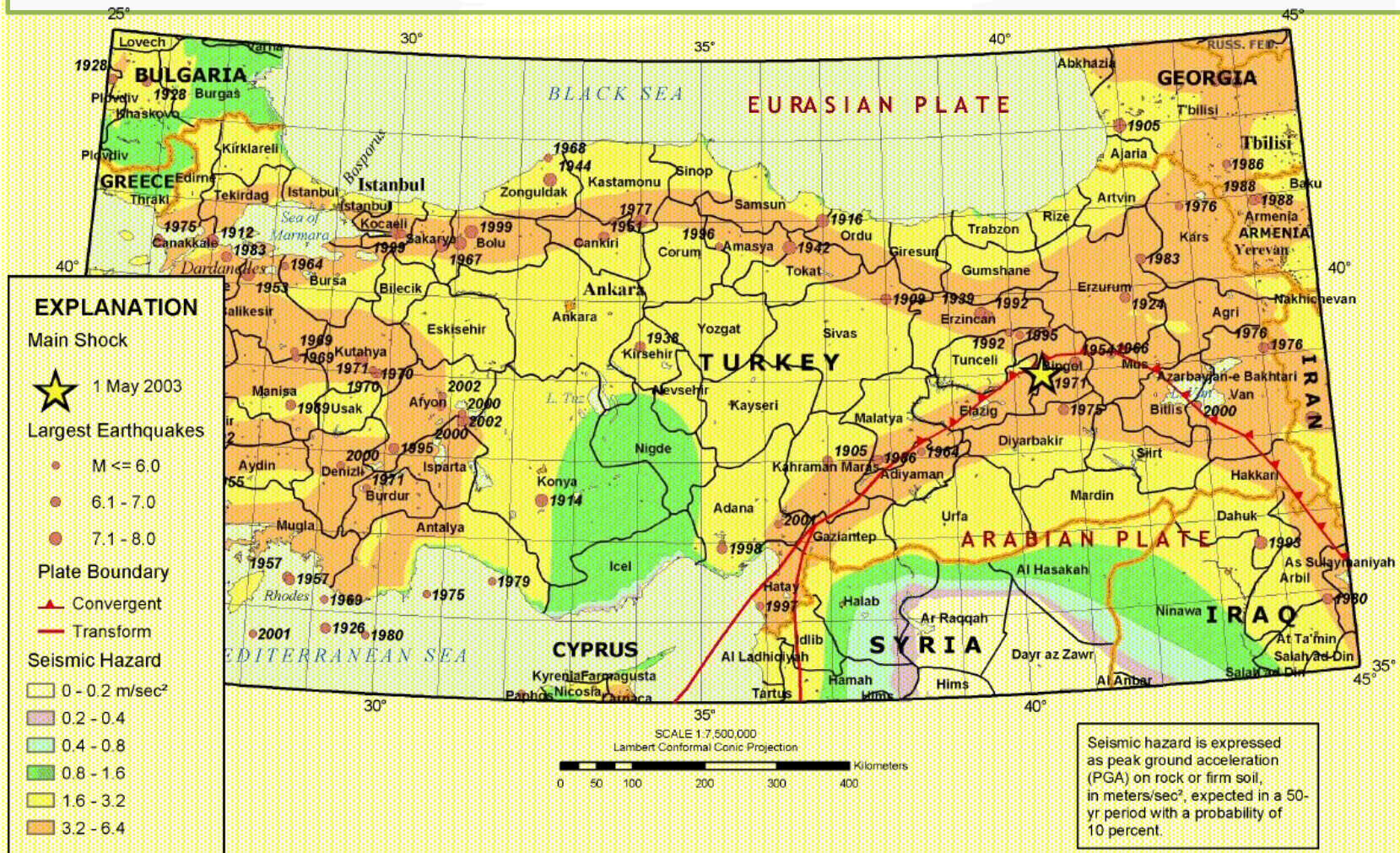


Julian Juergensmeyer



The Wrong Places: Turkish Response to Development in Earthquake Prone Regions

Seismic Hazard in Turkey



Turkey is one of the world's most active seismic zones

Transformation of Areas under Disaster Risk [Law 6306 (16 May 2012)]



- Published 31 May 2012
- Intended to address the problems presented by residents at risk of death from earthquakes due to precarious living situations
- Two main sections
 - 1.) Risky Structures
 - 2.) Risky Areas

Damaged buildings in Erics, Turkey after 7.2 earthquake in which 279 people died

Risky Structures

- Owners must test the building by paying a contractor
- If the building is found risky, flat owners have a meeting to determine what they want to do
 - If all owners want to stay, they may tear down the building and construct a new building after contracting with a private developer, the flat owners allocate the risk



A crane lifts debris after Ercis earthquake

Risky Structures

- Most of the time the owners will agree to the building destruction if they can rebuild the new building with more floors
 - Then they can sell the floors, with selling rights based on previous flat ownership in demolished building
 - But the city does not offer a variance, the demolished buildings are usually just outdated and therefore not up to the code of the surrounding area
- If 2/3rds of the owners are in favor, majority wins but those that don't agree may be able to sell flat as is or be forced to comply
 - If owners don't want to participate in building new building, they can try to sell their ownership/flat to a new owner
- If enough owners don't agree, the government may condemn the building and assume ownership rights

Risky Structures

- Post demolition get ownership of land according to sq. footage of ownership of previous building
- New buildings must comply with planning regulations



Risky Areas

- The government announces risky areas through the urban Planning and Environment Commission
- Risky areas are included in the comprehensive plan



New high rise blocks in Bursa

Risky Areas

- Every person in an area marked as risky must demolish their structures
- If there is a risky area, the zoning may be changed to a higher density so that everyone can profit
- New buildings are constructed under the auspices of TOKI: the prime minister's housing office



Central Kaledibi risk areas – all buildings within the zone are demolished

Risky Areas - TOKI

TOKI

**BUILDING TURKEY
OF THE FUTURE**

29 YEARS OF EXPERIENCE
HOUSING DEVELOPMENT ADMINISTRATION OF TURKEY

**In 81 Cities, 800 Towns, with
2.862 Worksites, 618.711 Housing Units..**

- Gives contracts to private contractors – private contractors then make the money and pay back in compliance with comprehensive plans, BUT because of the shortened timelines frequently regulatory steps are skipped
 - Led to allegations of corruption – Dec 17th investigation
- TOKI operates in all major cities

TOKI Projects

ADANA

Yüreğir



BURSA

Nilüfer



ERZİNCAN

Merkez - Çarşı



BALIKESİR

Manyas



Risky Areas – Public Perception

- The projects are popular, people are eager to buy new homes
- The best ones are now bought by Arab investors
 - Also many are occupied by Syrian refugees
- Previous inhabitants are consulted about what the new structure will be, but previous residents are guaranteed a unit
 - Must have previous ownership rights in land
 - Illegal immigrants are typically granted amnesty every 5 years and get property rights



Environment Minister Erdogan Bayraktar

Corruption/Unpopularity

Gezi Park



Corruption/Unpopularity

- In the heart of the city, TOKI is tearing down all of the old trees and green space to build a shopping center
- Has led to demonstrations and protests
- Representative of perception that government demolishes and develops without regard for citizen preference
 - Counter: requirement that the government must poll citizens before implementing changes to the comprehensive plan
 - These surveys are very invasive
 - There is an administrative fee for not complying



Corruption/Unpopularity - Surveys

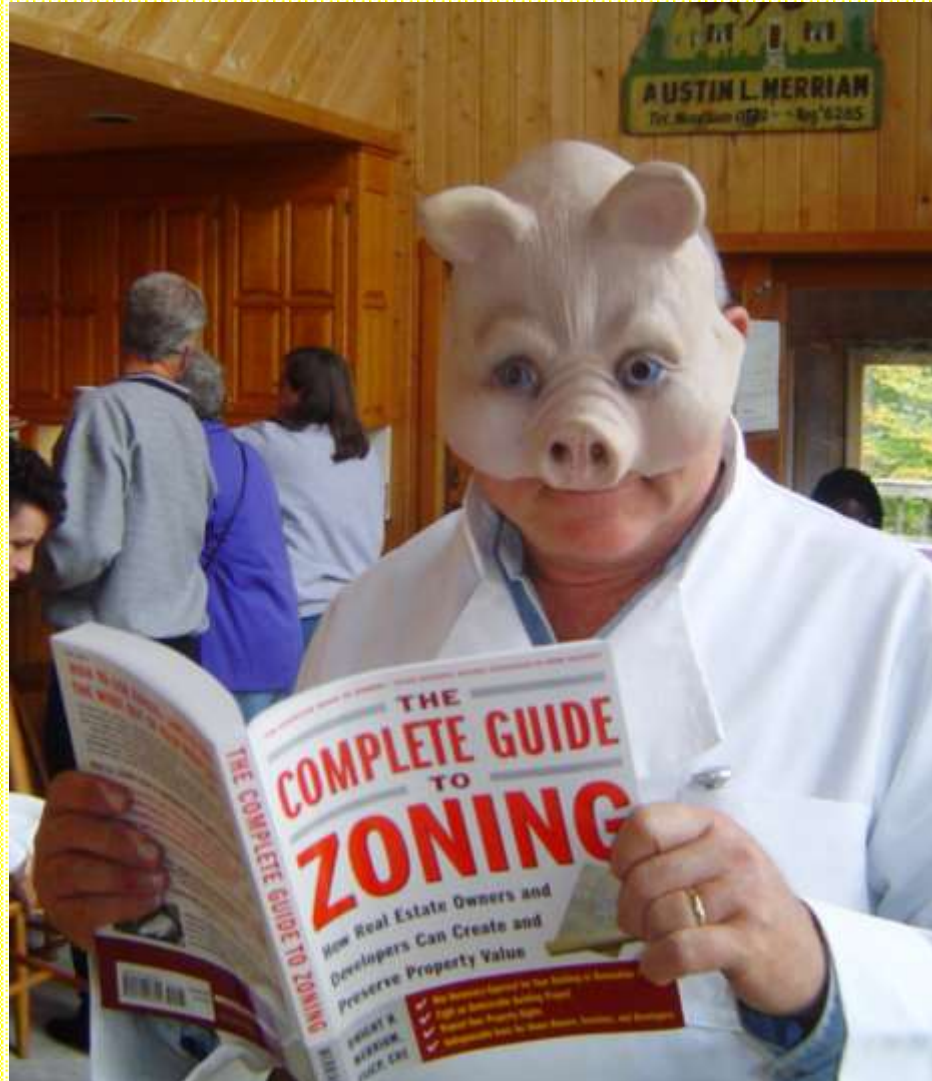
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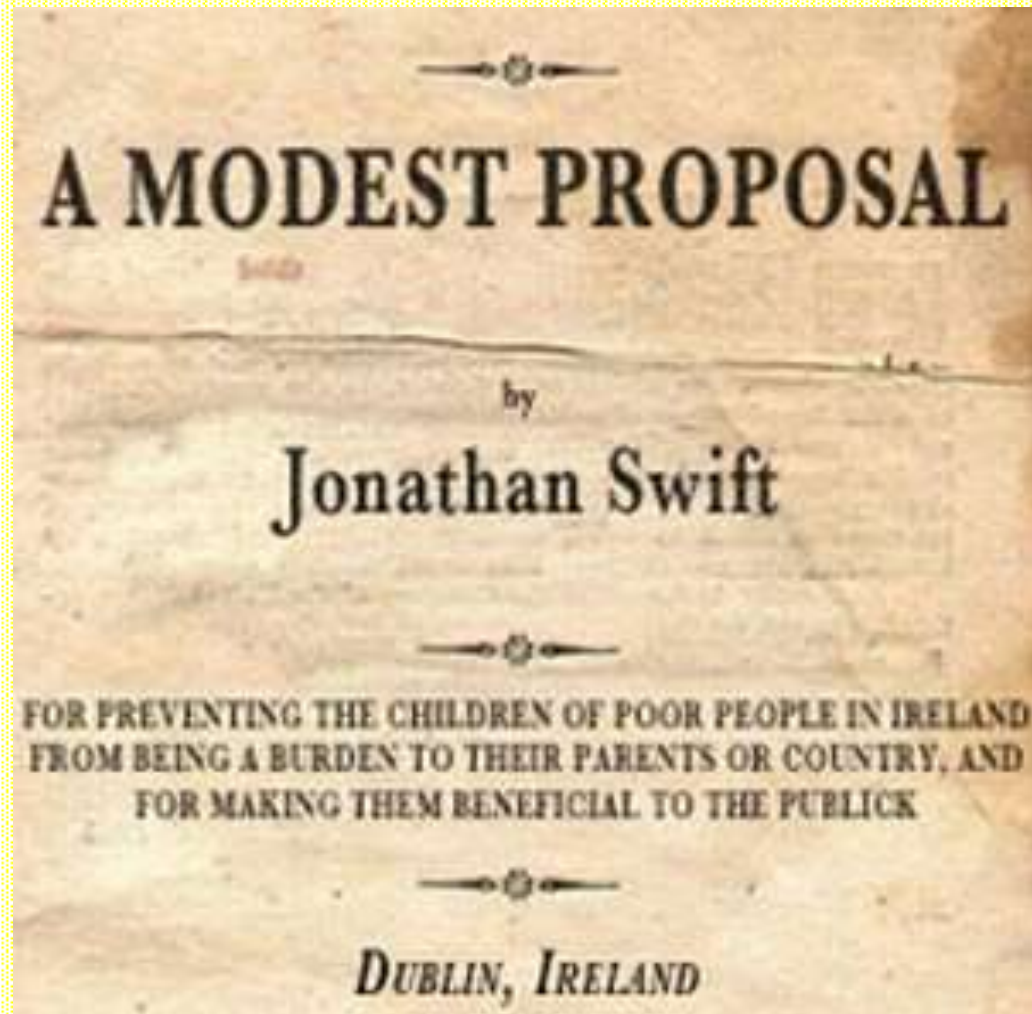
Oneryıldız v. Turkey

- In the European Court of Human Rights
- City dump, illegal housing
- 39 people living in slum dwellings were killed by a methane explosion
- The question becomes an issue of human rights
 - The right to life: there is a negative obligation of the government to not kill individuals
 - The positive obligation of the right to life: If there is a risk to human life (with concrete evidence) then it is a function of the police power to react and prevent death
- Court ruled against Turkey: 30 November 2004
- This is the basis of the law applying police powers in removing citizens living in risk areas

Dwight Merriam



A Modest Proposal...



**Designate,
notice,
limit investment,
and prepare to acquire...
To stop senseless rebuilding**

Step One

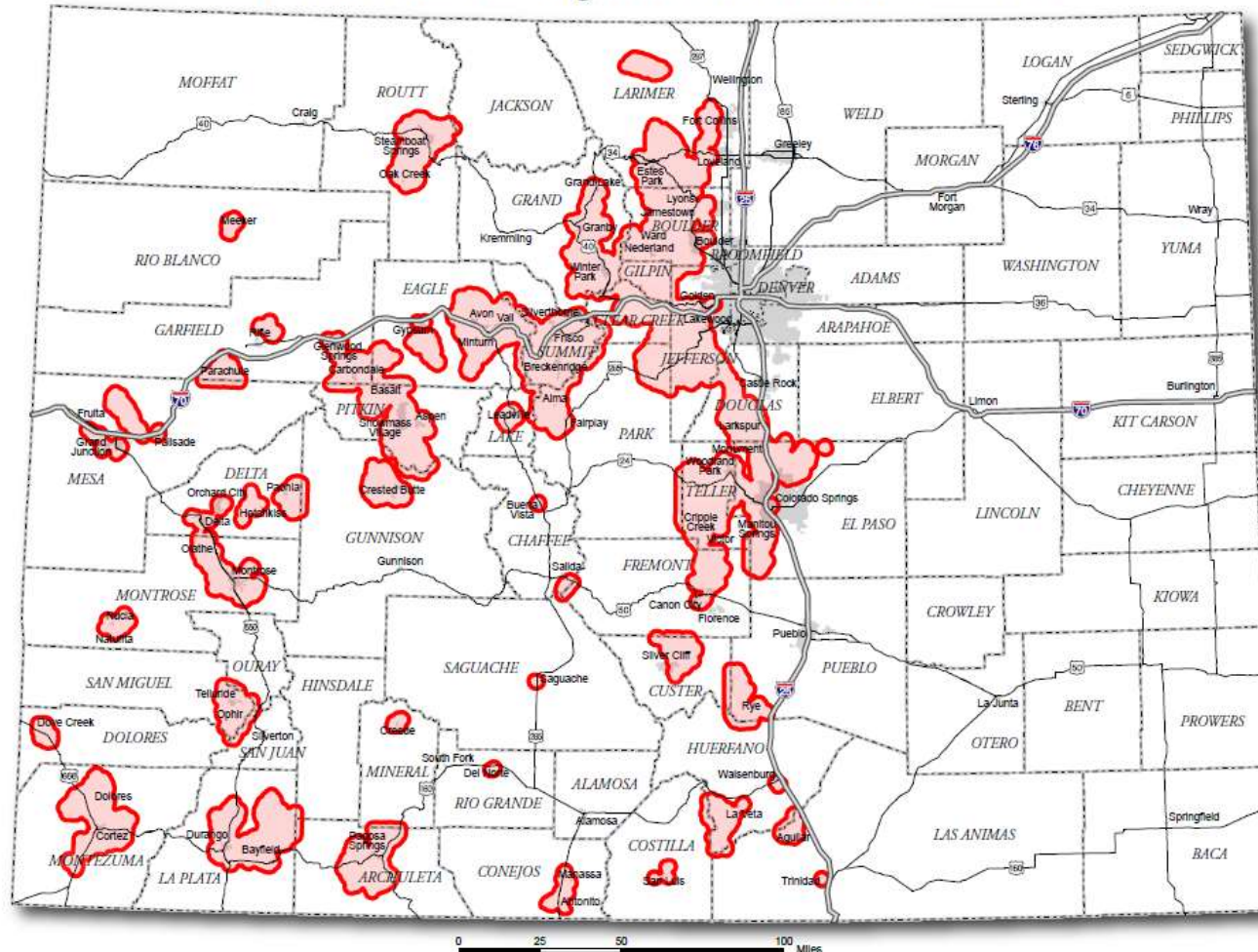
Overlay Map of High Hazard Areas



 Potential Tsunami Inundation Areas

Colorado Red Zone

Interface Areas of High Wildfire Risk in Colorado



- Red Zone
- Cities
- County
- State
- Interstate
- US Highway

Red Zone Population:
748,350 (1990 Census)
979,851 (2000 Census)

Homes in Red Zone:
370,000 (1990 Census)
474,000 (2000 Census)

Red Zone Acres:
6,300,000 (2000)



Map Created September 2004
Colorado State Forest Service

Step Two

Place Notice on the Land Records



Step Three

Amend the Standards for Rebuilding

About the Building Safety Division Requirements

The Building Safety Division is committed to expediting flood rebuild permits.

(d) A residential or commercial building may be repaired, rebuilt or replaced after being damaged or destroyed by a natural disaster or other act of God to eliminate or reduce nonconforming features to the extent possible, without the need to obtain a variance as provided in Code of Virginia, § 15.2-2310, as amended. If such building is damaged greater than 50 percent and cannot be repaired, rebuilt or replaced except to restore it to its original nonconforming condition, the owner shall have the right to do so.

Step Four

Limit Investment



Step Five

Create a Reserve Fund

- Special tax district
- Conveyance tax
- Ad valorem tax surcharge



Step Six

Buy after Destruction



Questions and Answers