

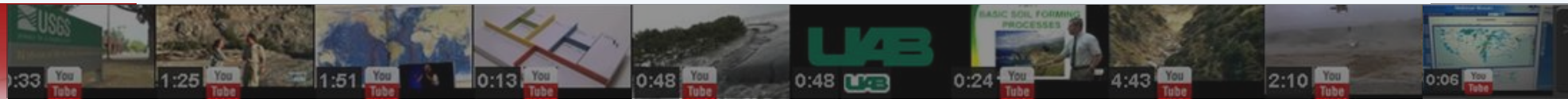
Public (Mis)&Understandings of Urban GeoHazards

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Dept. of Chemistry
Dept. of Electrical & Computer Engineering
UAB

Fifth Annual Continuing Education Conference
Birmingham, Alabama
26 May 2016

5/27/2016

1

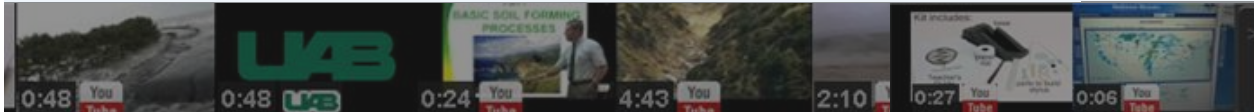




NBC "10.5" trailer – "Bad EQ Science"

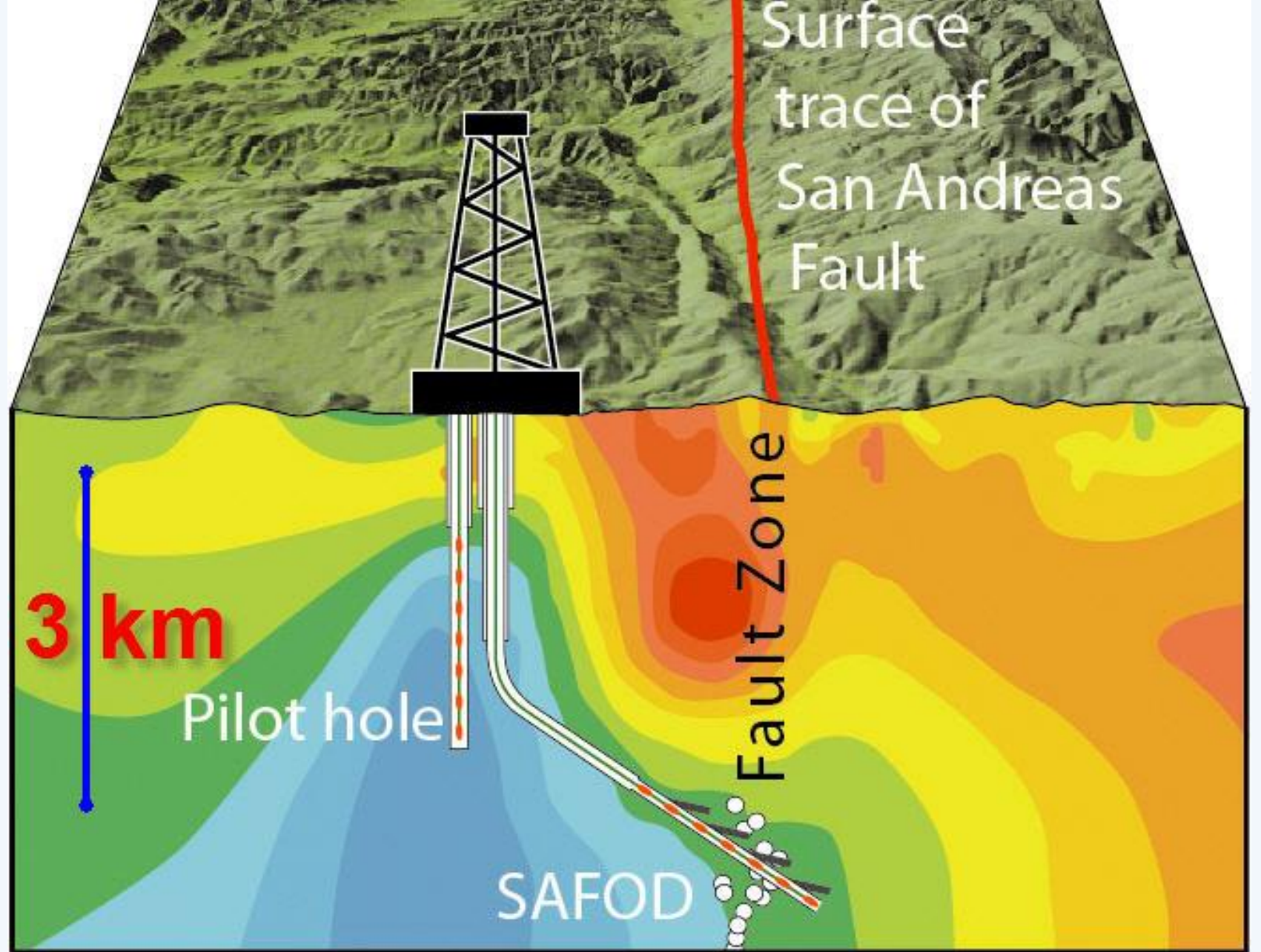
The Greatest
Quake in Human
History threatens
to Rock The
World!

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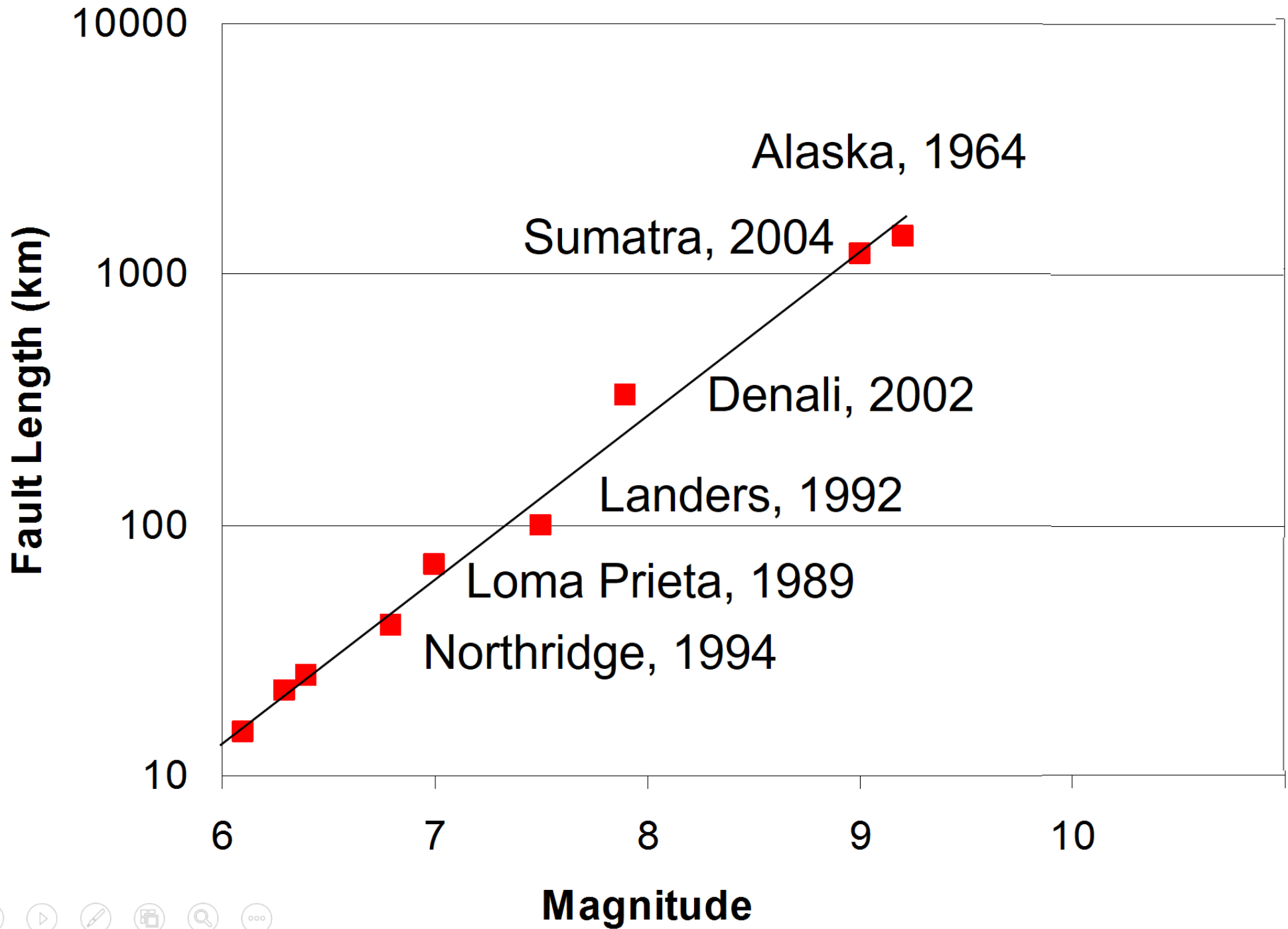


FICTION: Fault is 324 feet below surface!

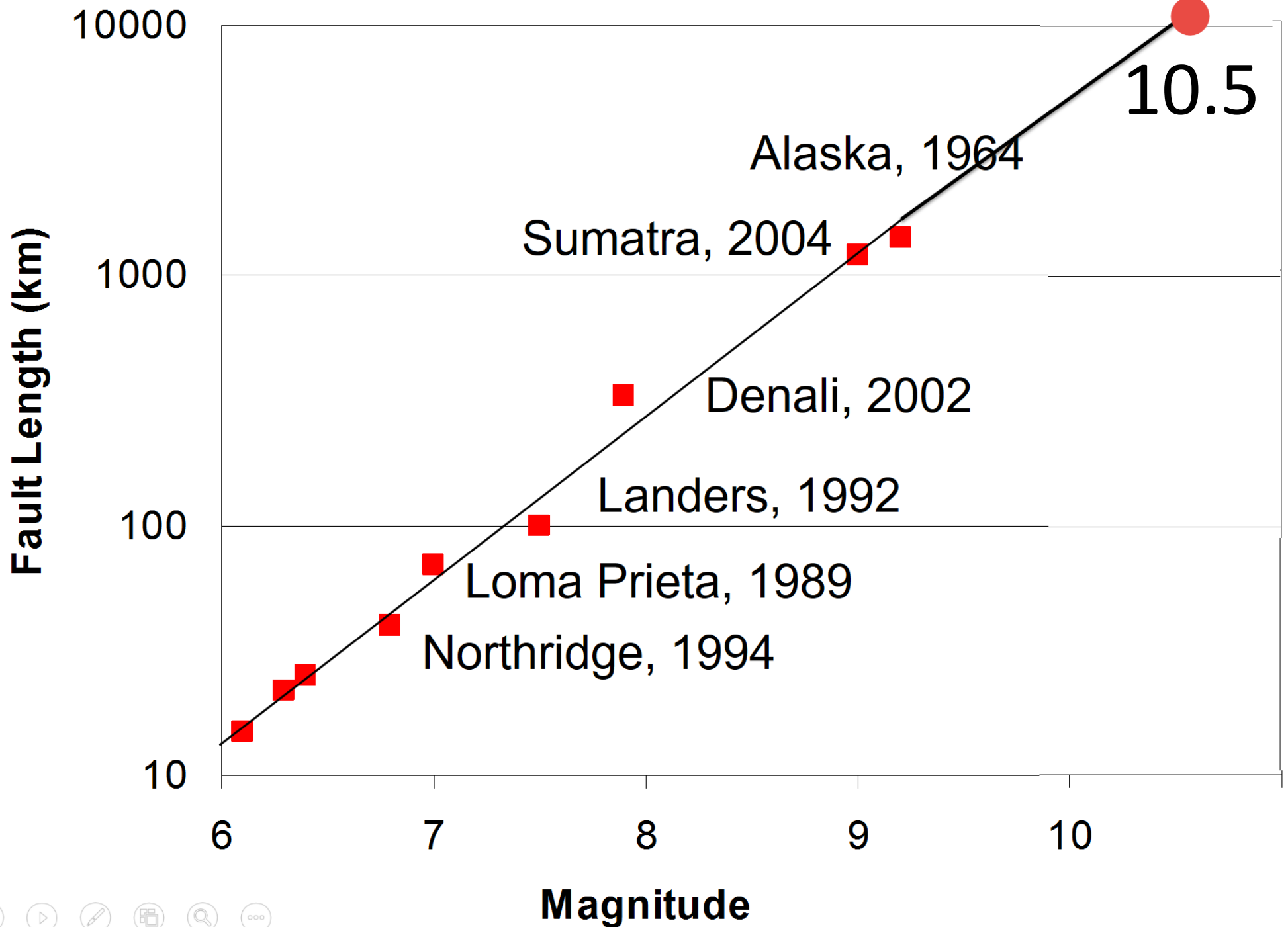
FACT: S.A. Fault is kilometers down!



FICTION:
Mag. 10.5
CAN
occur!



Earth's
Diameter
=
12,740
km



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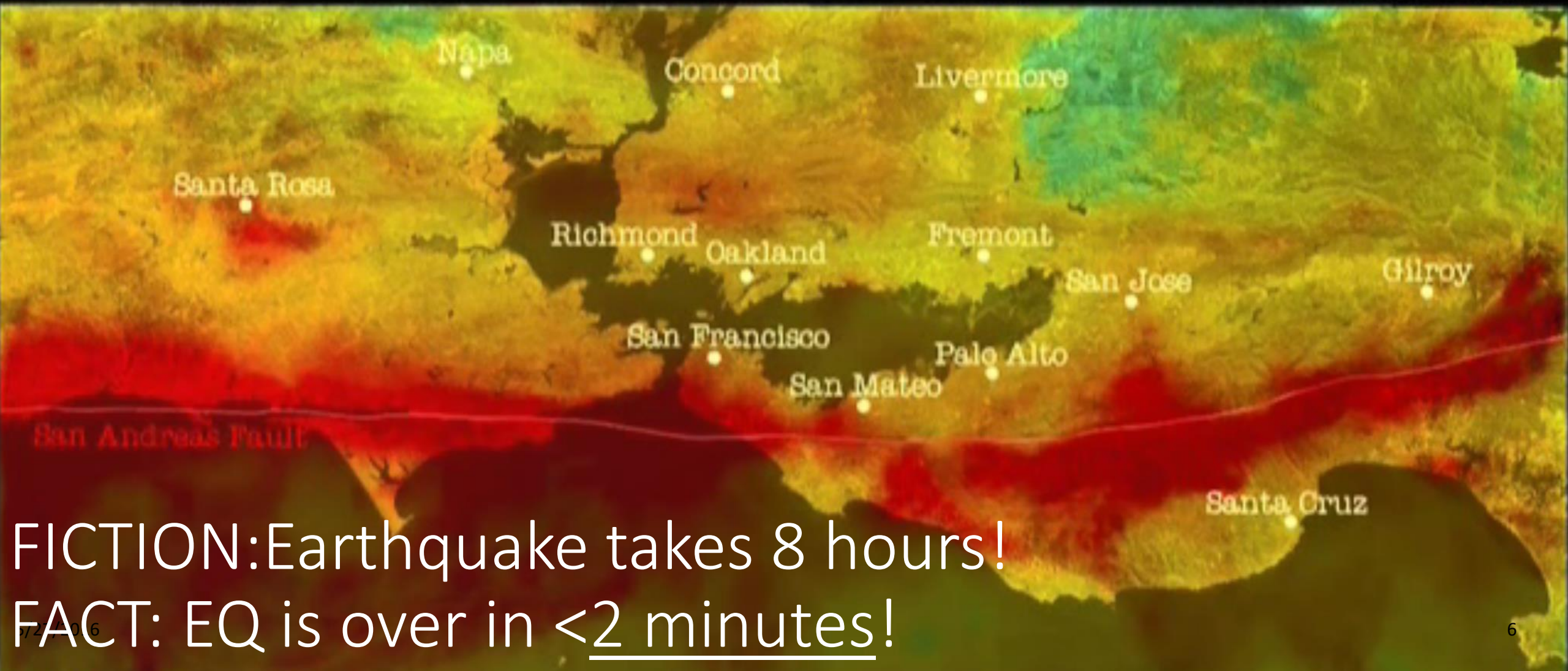


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Professional Geologists

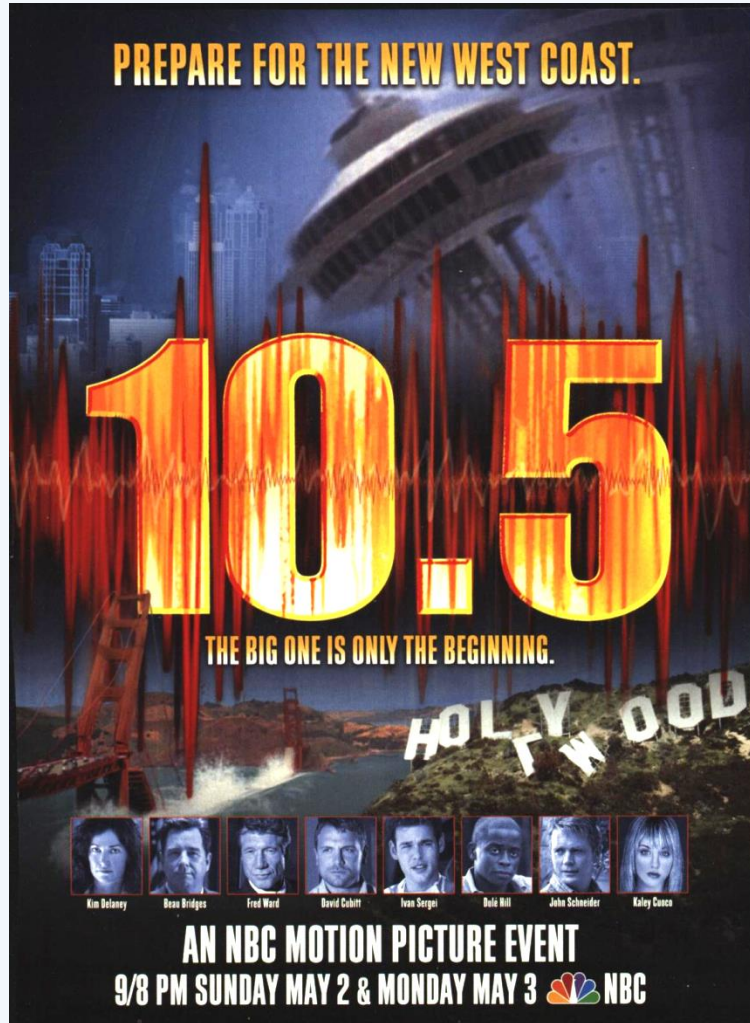


1906 M7.8 San Francisco Eq

Time=68.7 s



“10.5” (NBC, 2004) – bad science



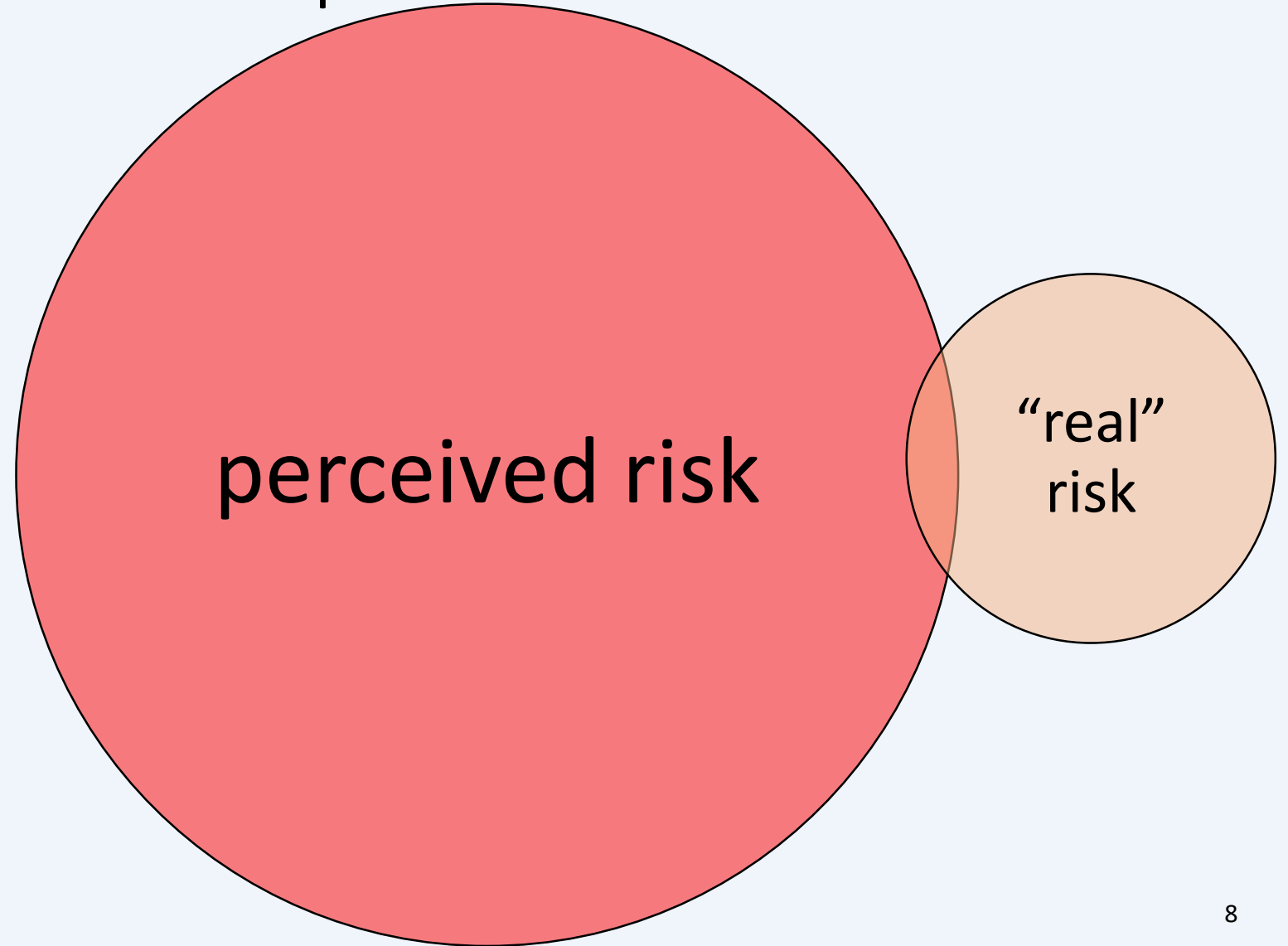
- “10.5” riddled with scientific errors
- Sci Fi Channel aired 03/17/07
- 10.5 mag. impossible
- <http://www.earthquakecountry.info/10.5/MajorMovieMisconceptions.html>

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7

Influences of Public Perceptions of Geohazard Risk

- Hollywood Movies
- YouTube Video
- Social Media
- Bad Journalism
- Lack of understanding of basic science
- & etc...



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8

Public MisUnderstanding vs Science Understanding

- Hazards are more common
- Hazards are more dangerous
- Hazards are more deadly
- Hazards are present everywhere
- Hazards elsewhere will happen here

- Hazards are more rare
- Hazards are less dangerous
- Hazards are less deadly
- Hazards are local
- Hazards elsewhere are less likely to happen here

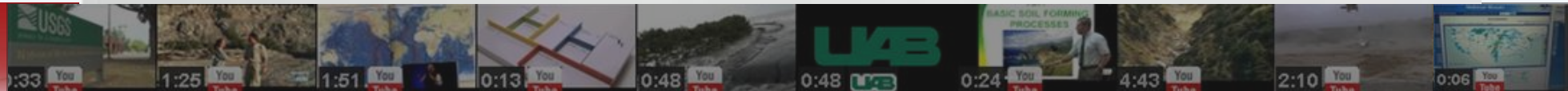
How to protect your home/apt. against earthquake risk



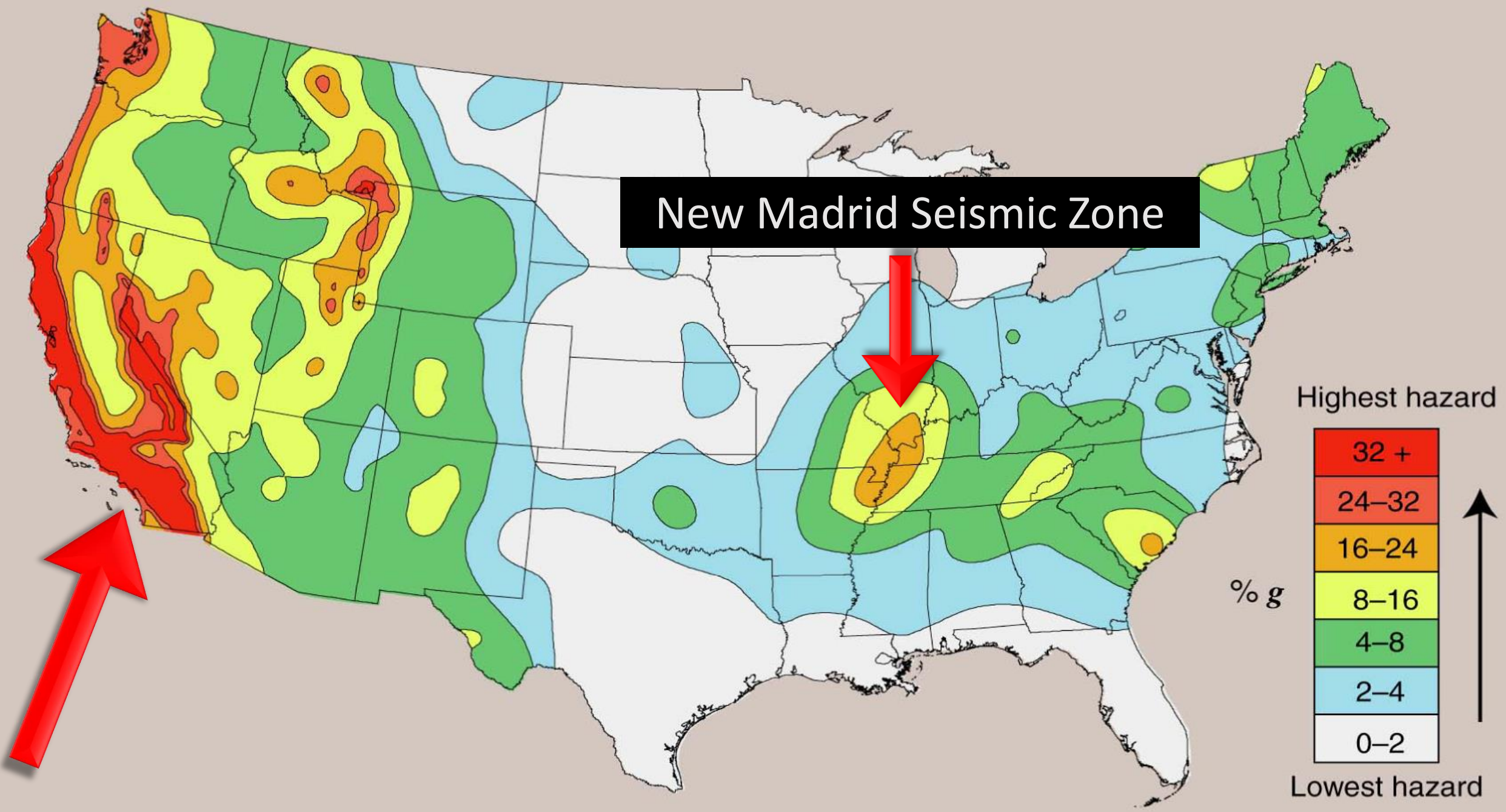
<http://www2.iii.org/videos/protect-your-home-against-an-earthquake.html>

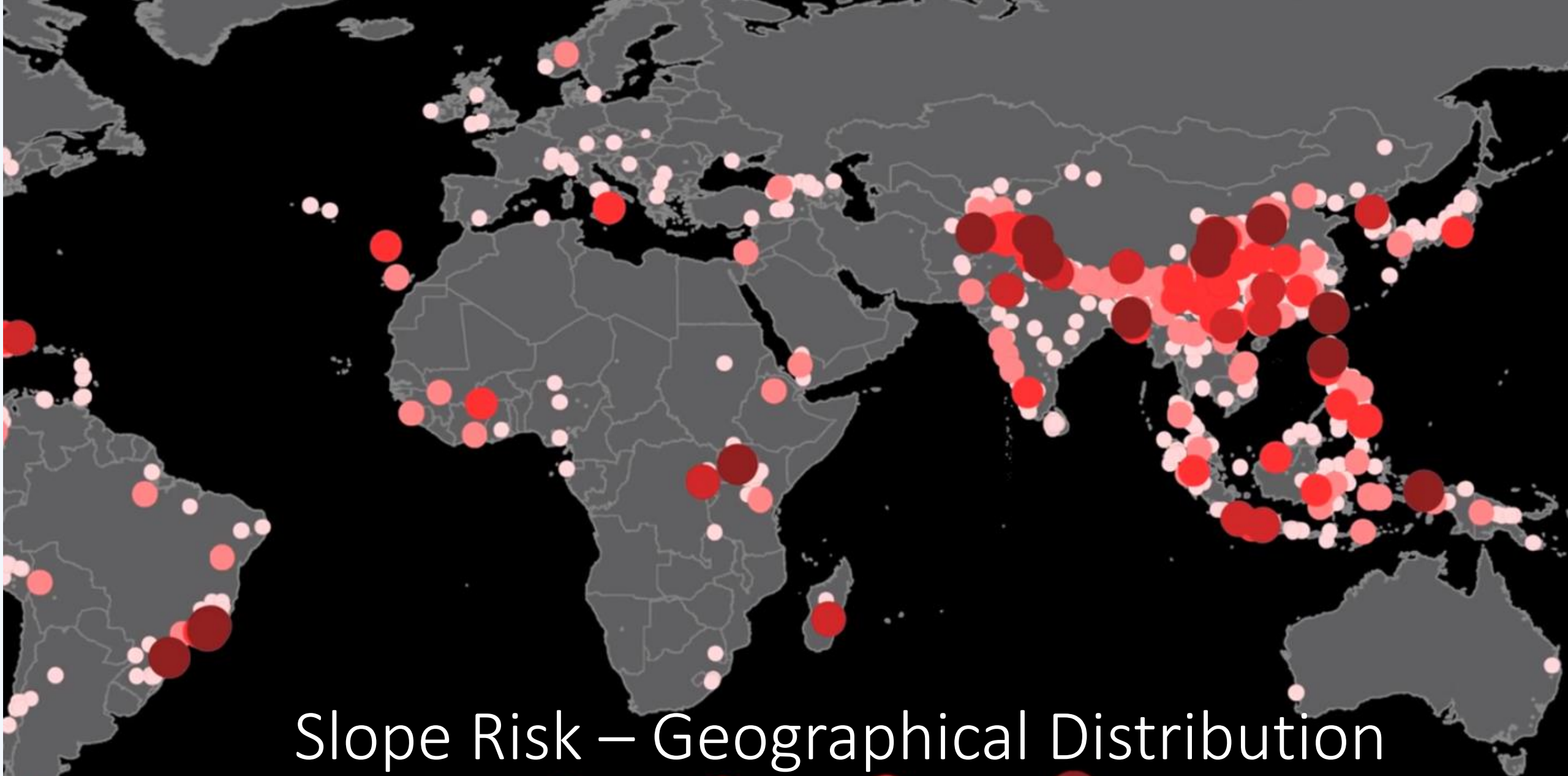


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New Madrid Seismic Zone





Slope Risk – Geographical Distribution



5/27



Risk Reduction – Beach Armor Agree?



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EDGE OF OBLIVION
INSIDE THE HOMES ENDANGERED BY E



8:11 | 36°

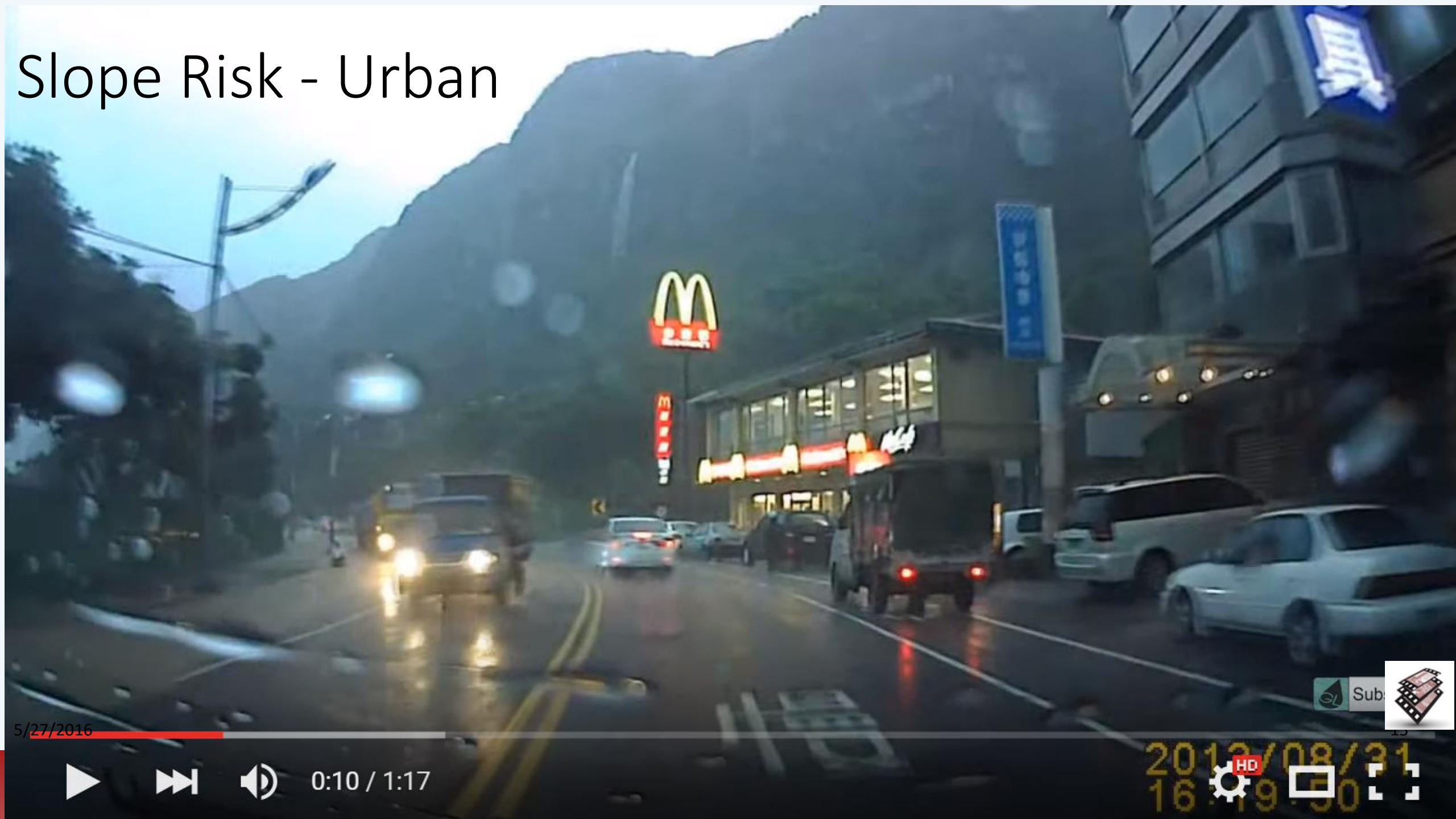
<https://www.ezsrips.com/rTuSnboqL-4eF>

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14



Slope Risk - Urban



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Sub 

▶ ⏩ 🔊 0:10 / 1:17

2016/08/31
16:19:50    

Multiple Triggers

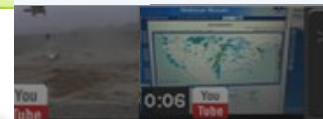
Steve Jones
Polk County maintenance supervisor

<http://ezsnips.com/Dd-A2-Pz9-n54>

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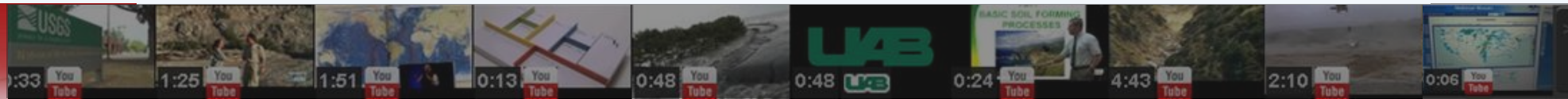


Caution Ignored!



Reduction of Risk – Behind the Scenes

- Engineering Design
- Landscape Modification
- Construction of Barriers
- Research of Failure Conditions
- Development & Deployment of Warning Systems



WSDOT

Presents



Rockfall – Reducing Risk

Hold up! Adam's got a hanger.



natgeotv.com



Rockfall – Reducing Risk



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Reducing Risk - Engineered Debris Fence



Geobrugg Debris Fence:

**Crash tested in accordance with the
test specifications of the FIA Institute**



Risk Reduction — Experimental Rockfall and Risk Analysis



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Seismic Engineering 1 – Structural Design



SCIENCE
NATION



Seismic Engineering 2 – Base Isolation, Los Angeles



KTLA
5

• COM
10:31 PM 58°

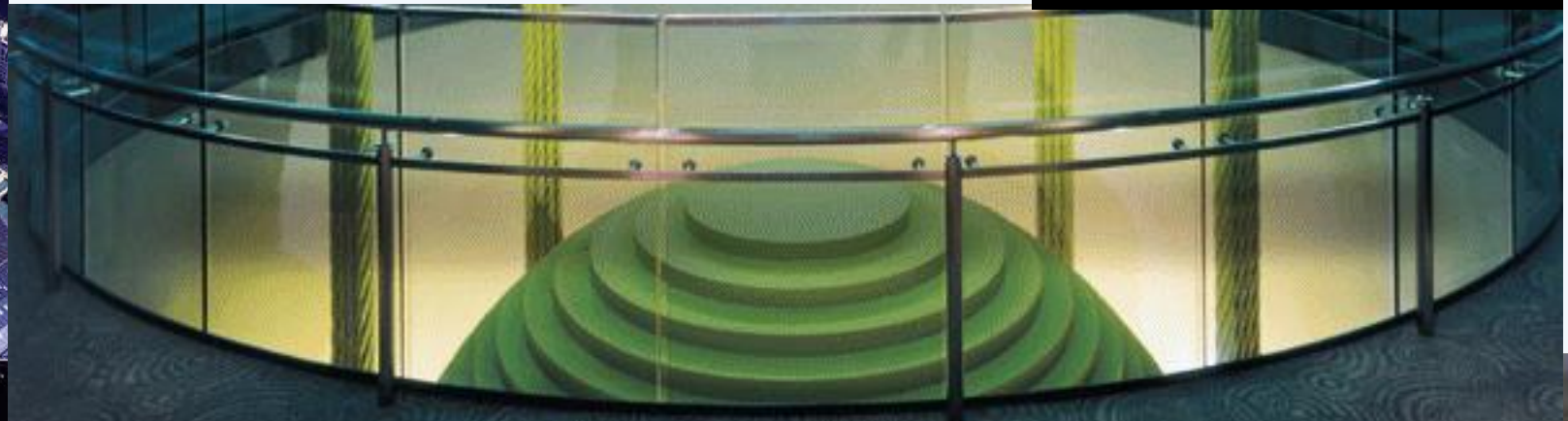
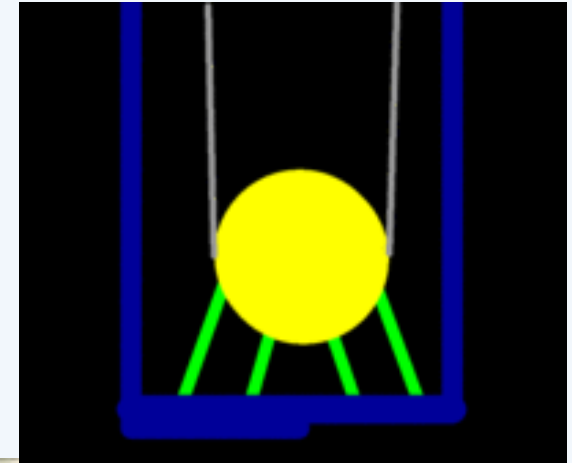
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25



Tuned Mass Damper protects buildings

- Taipei 101 – 5th tallest building in world
1,667 ft (509 m)
- 730 ton mass suspended from the 88th floor; can move 5 feet any direction



Taipei
101

Taipei
City,

Taiwan



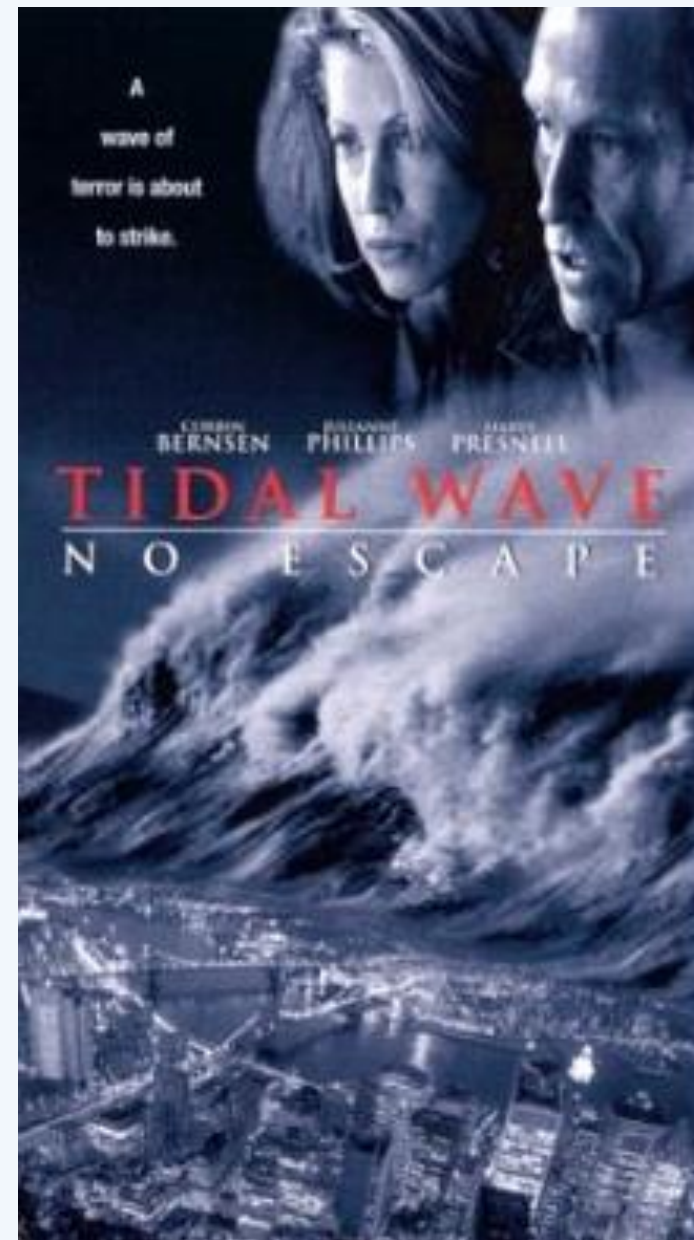
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Tidal Wave (the movie, 1997) bad science





Tohoku EQ and Tsunami – Japan 2011



LIVE

SENDAI
JAPAN



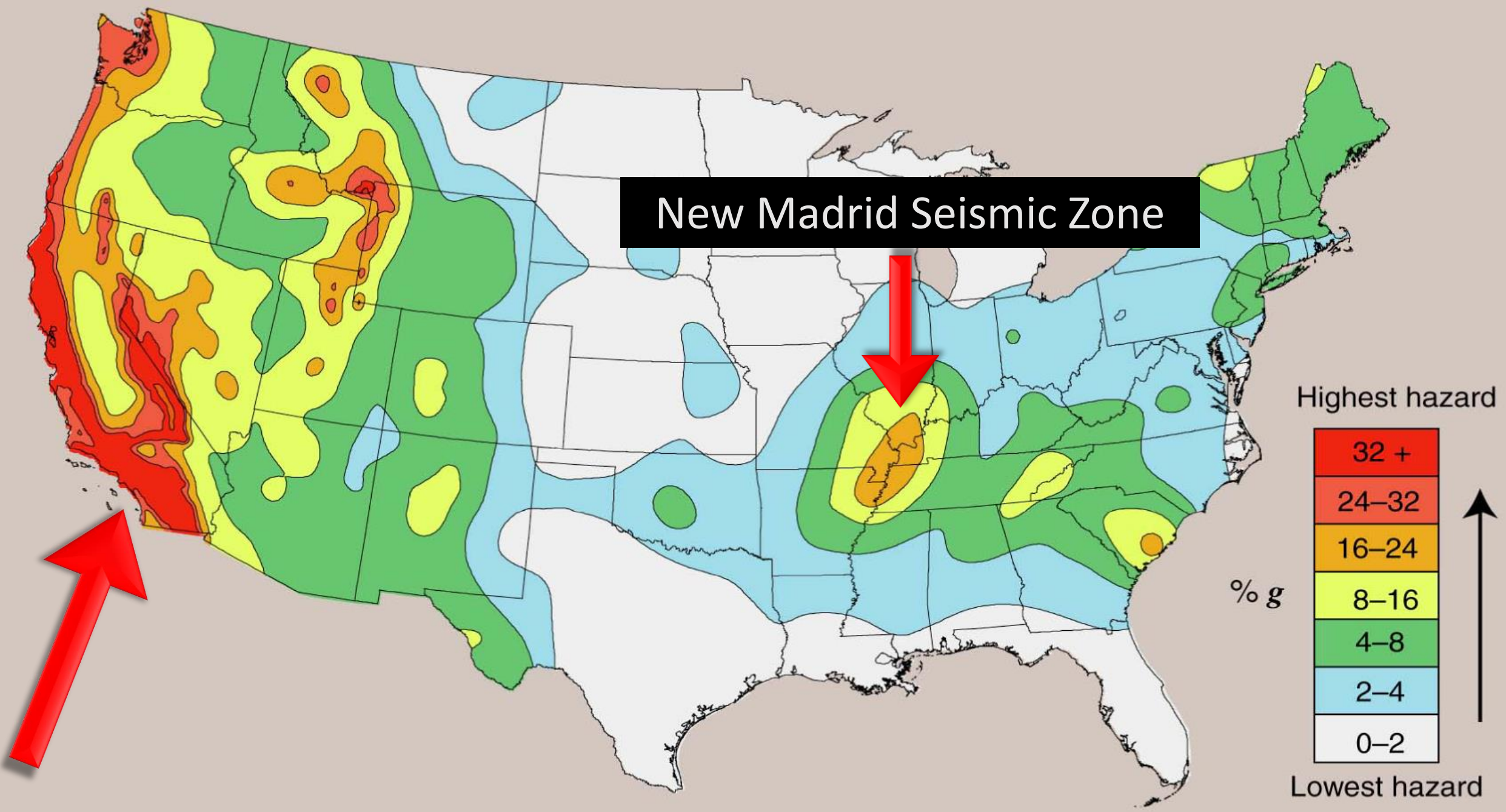
NHK WORLD

津波の被害

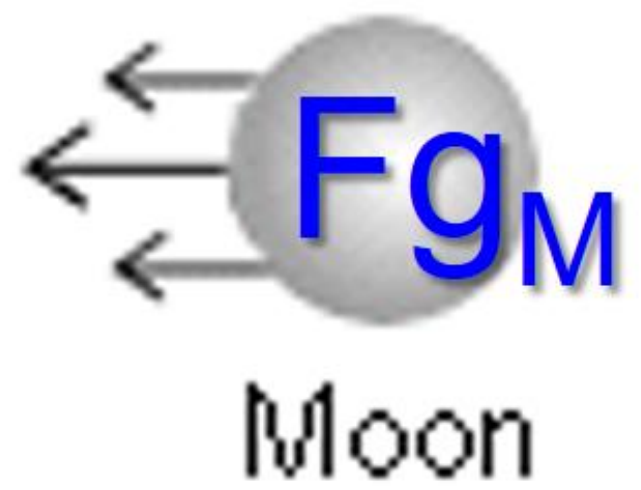
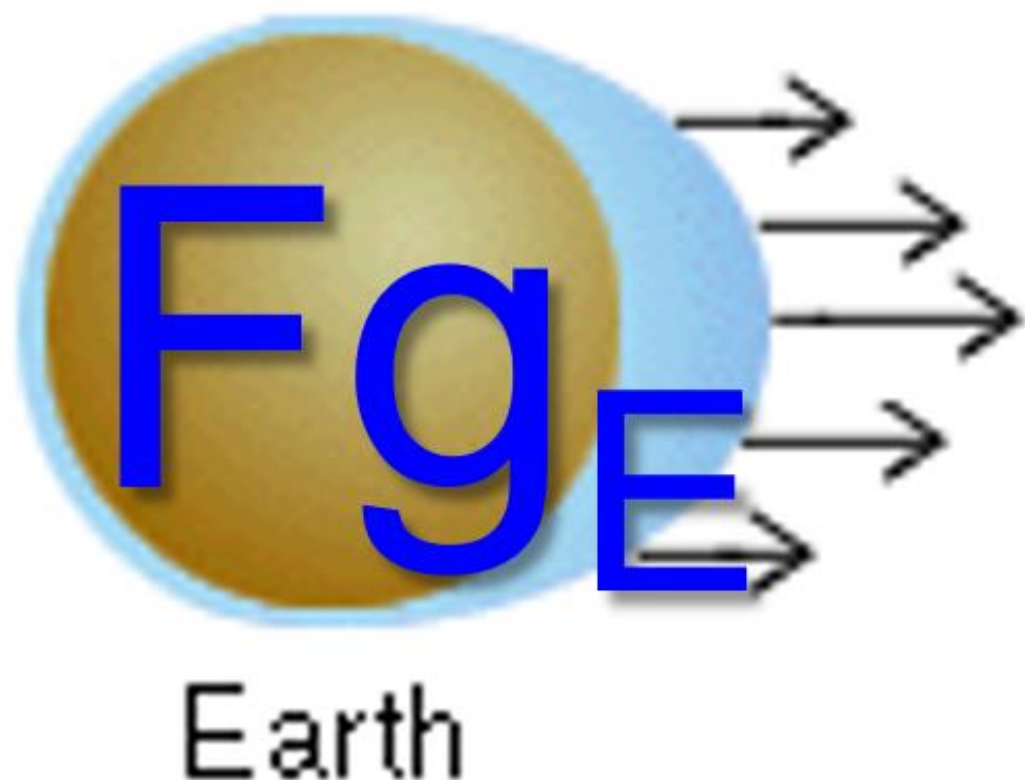
5/27/2011



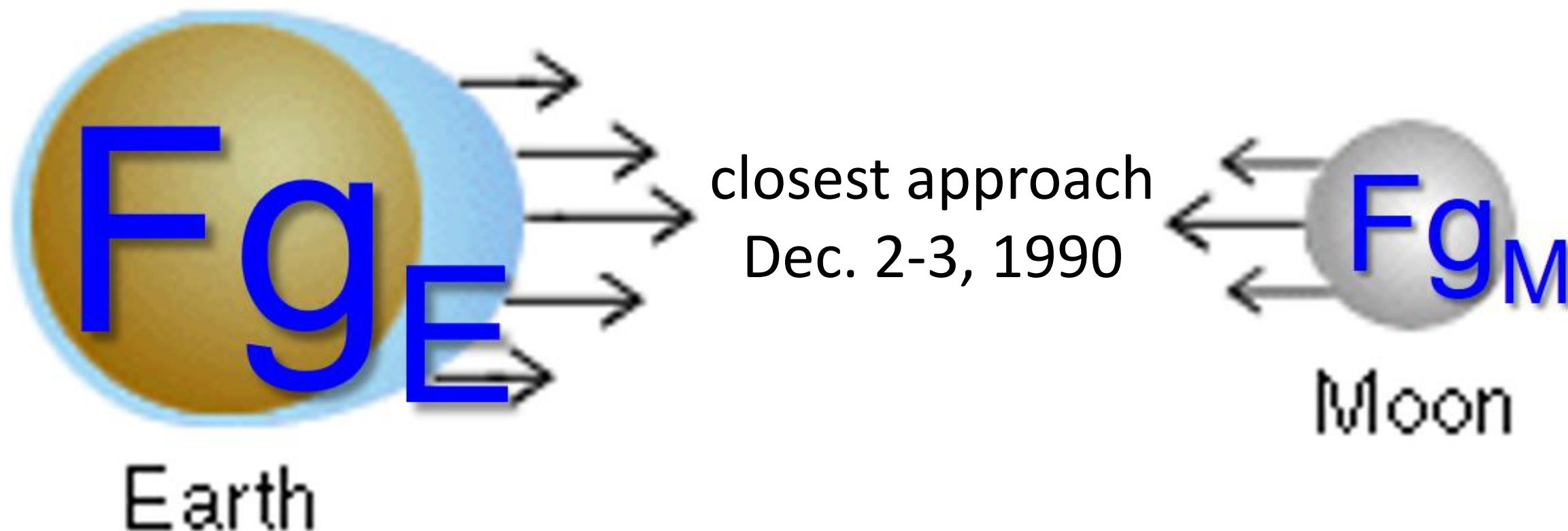
New Madrid Seismic Zone



Browning's theory – earthquakes triggered by lunar gravity



Browning's theory – earthquakes triggered by lunar gravity



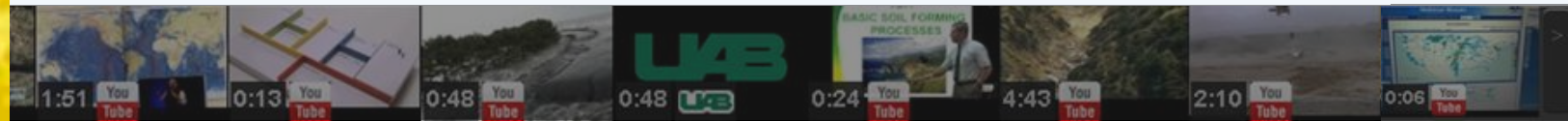
Earthquake Fears, Predictions, and Preparations in Mid-America

John E. Farley

Pesce, Carolyn. "6 years old and scared." USA Today. 29 November 1990.

Reed, Mary S. "Earthquake Center workers field hysterical phone calls." The Jackson Sun. 4 December 1990.

Stroud, Jerri. "Damaged Property: A Checklist Of Some Things To Remember Before The Insurance Adjuster Arrives." The St. Louis Post-Dispatch. 28 October 1990.



Brande's prediction for December 2-3, 1990

Sunday, Dec. 2, 1990

Earthquake!

Browning's prediction not taken seriously by scientists because his theory is flawed

The Birmingham News

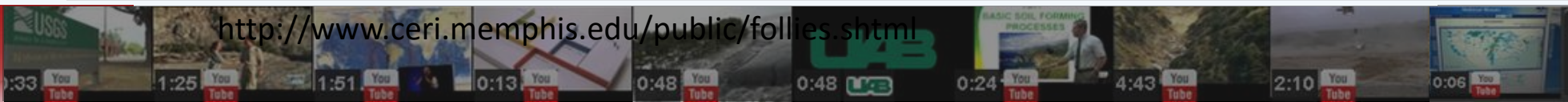
By **Scott Brande**
Special to The News



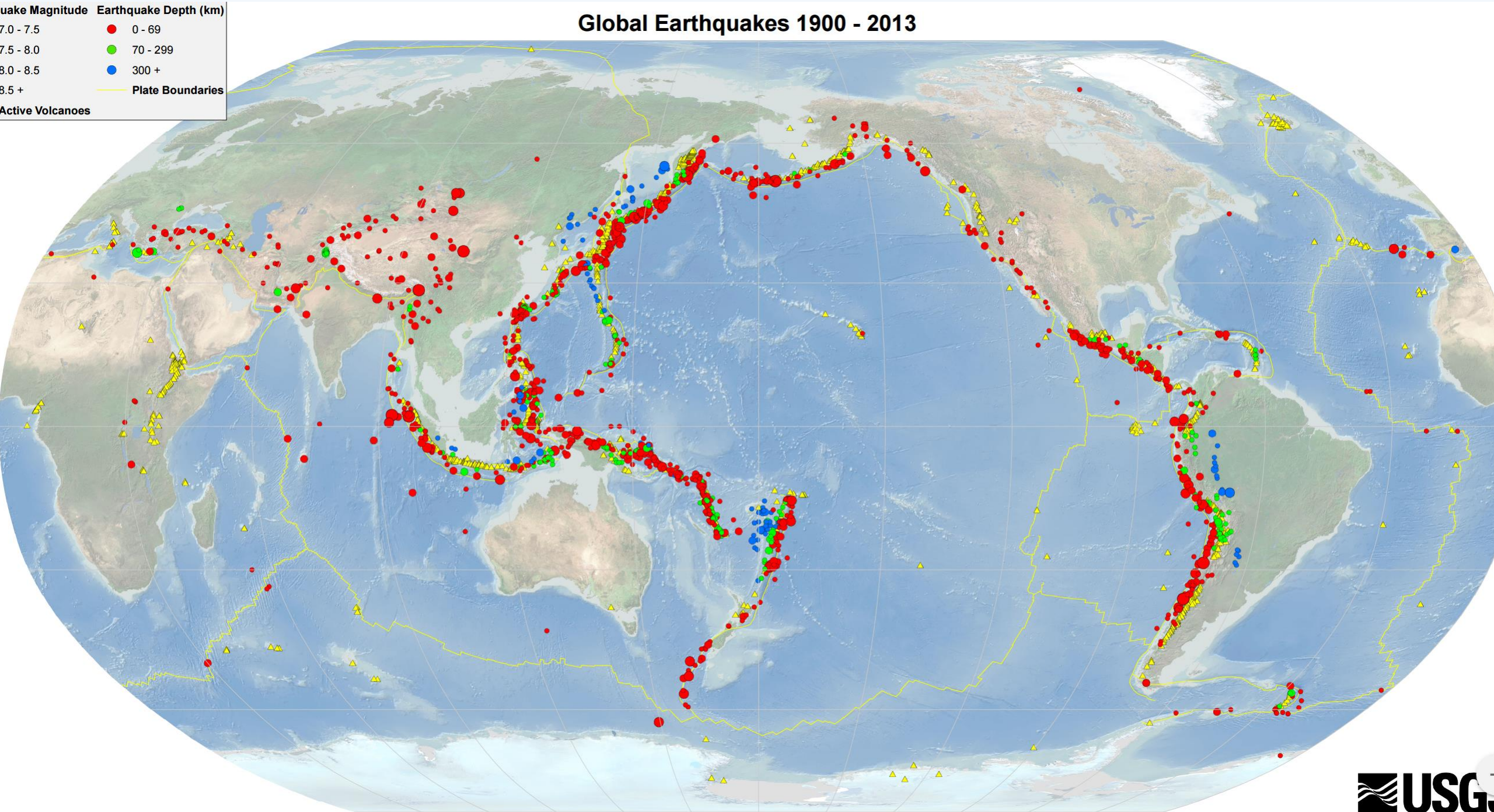
How often do large, destructive, earthquakes occur?

<i>Description</i>	<i>Magnitude</i>	<i>Ave. freq. / year</i>
Great	8.0+	1
Major	7.0-7.9	18
Large (destructive)	6.0-6.9	120
Moderate (damaging)	5.0-5.9	1,000
Minor (damage slight)	4.0-4.0	6,000
Generally felt	3.0-3.9	49,000
Potentially perceptible	2.0-2.9	300,000
Imperceptible	<2.0	600,000+

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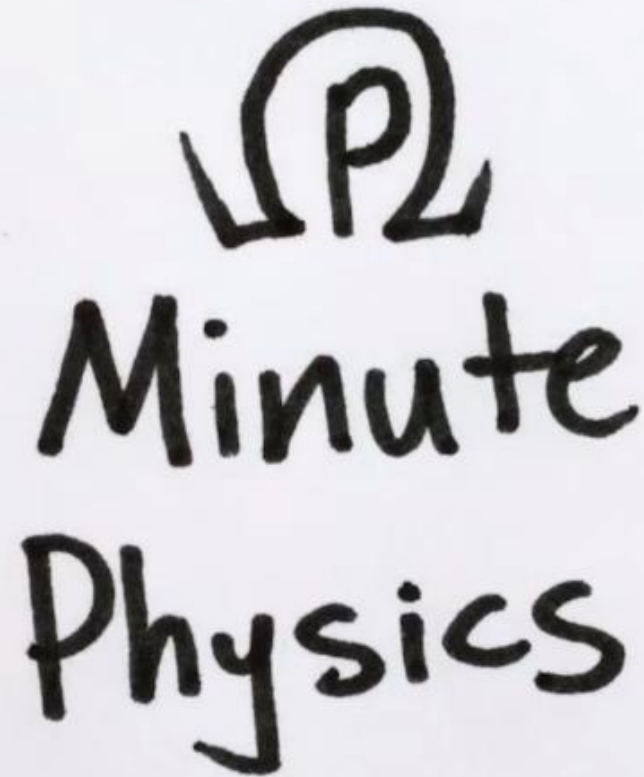
Global Earthquakes 1900 - 2013



Video is a Powerful Medium for Understanding & MisUnderstanding




Video is a Powerful Medium for Understanding & MisUnderstanding



Minute
Physics

education on YouTube

Contact Information - Questions?



Ge shorts

Scott Brande

Works at UAB, Birmingham, AL, USA
Attended Stony Brook University
Lives in Birmingham, AL USA

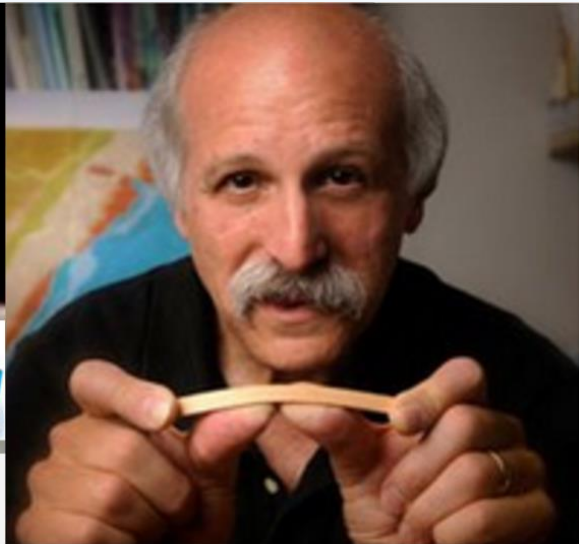
133 followers | 300,408 views

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Scott Brande
Education...
Prof. UAB;
Birmingham, AL
Current Education
Previous Education
Education



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39

YouTube Channels

[physics experiments](#)

[biology experiments](#)

[chemistry experiments for college](#)

[engineering experiments for college](#)

[NASA experiments](#)

[Biointeractive](#)

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[The Slow Mo Guys](#)

[Geology experiments](#)

[Sick Science!](#)

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[Hydraulic Press VS](#)

nps.gov

National Park Service
U.S. Department of the Interior



Bureau of Reclamation



UAHuntsville News



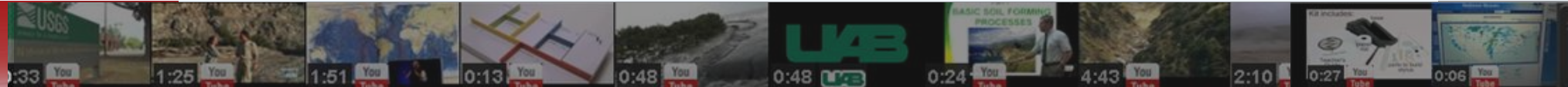
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atticus™
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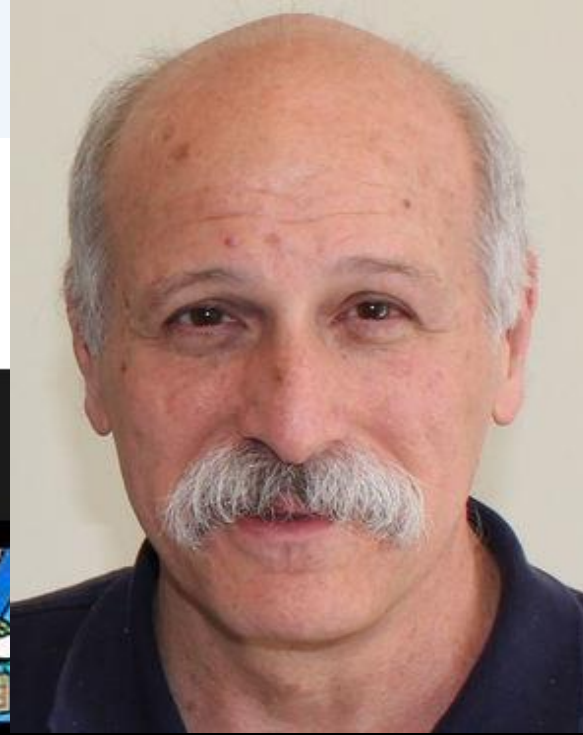
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TAMAKI PAENGA HIRA
AUCKLANDMUSEUM.COM





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by Brande & Arslan



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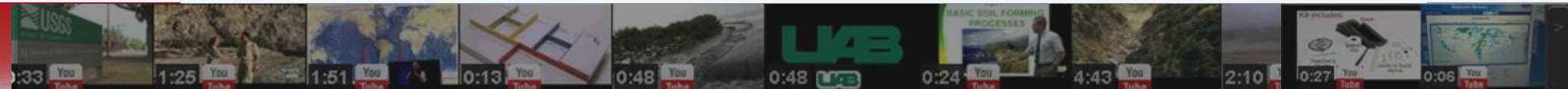
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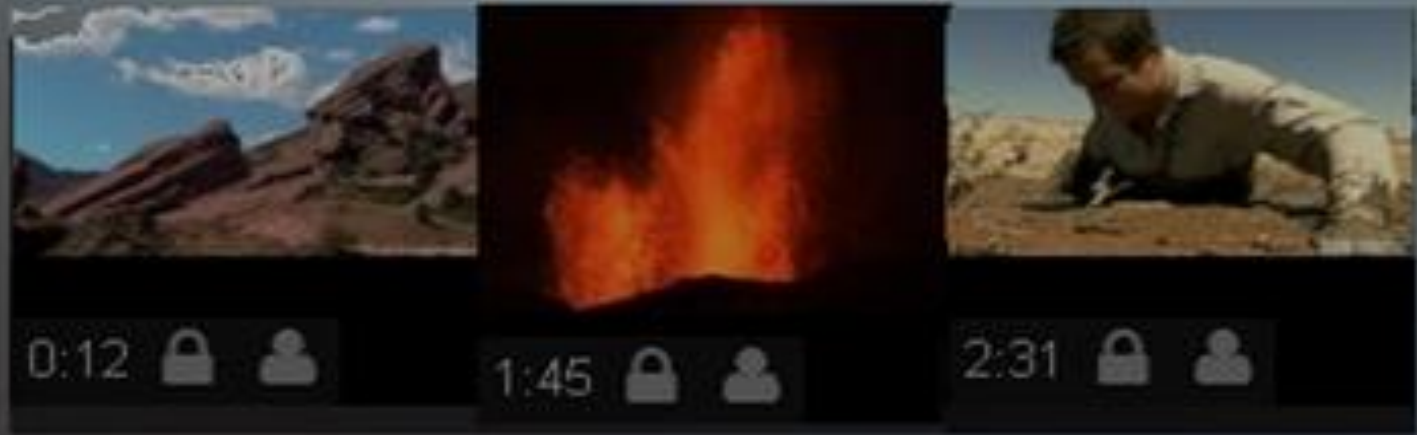
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