

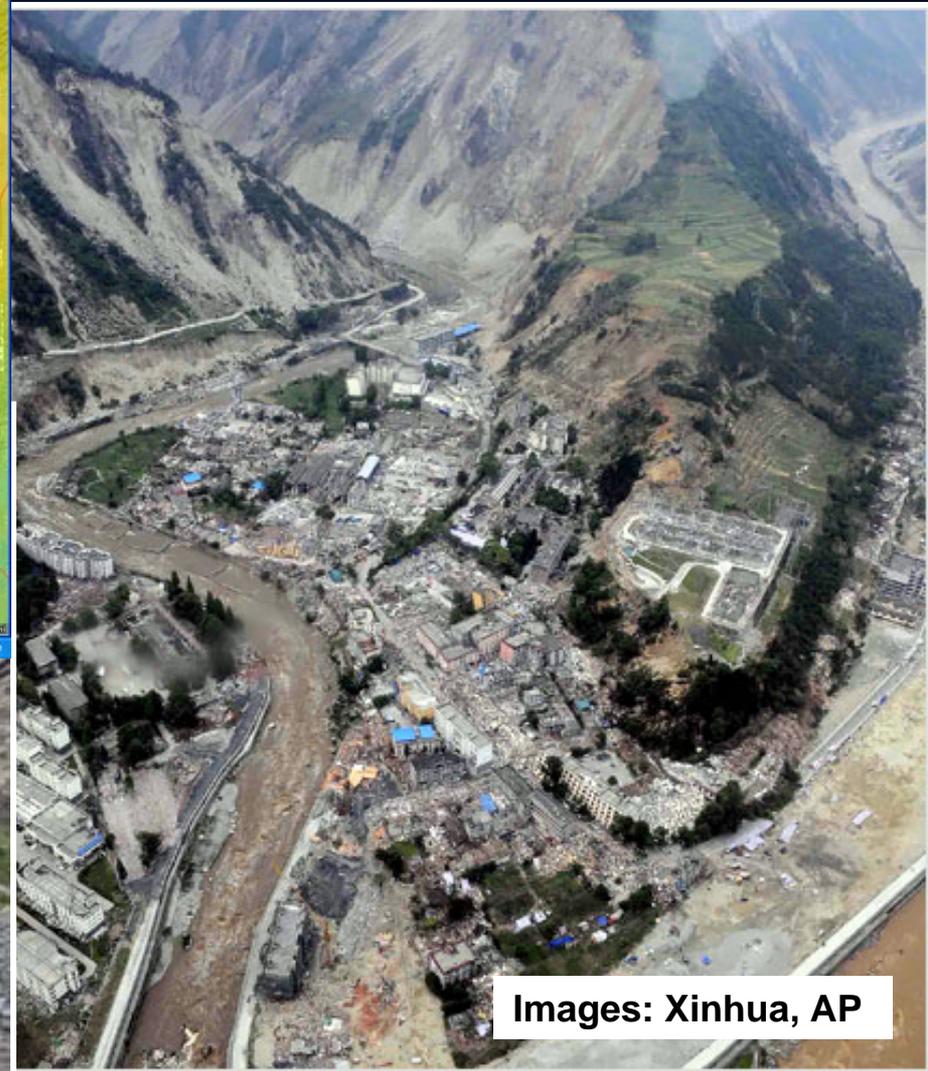
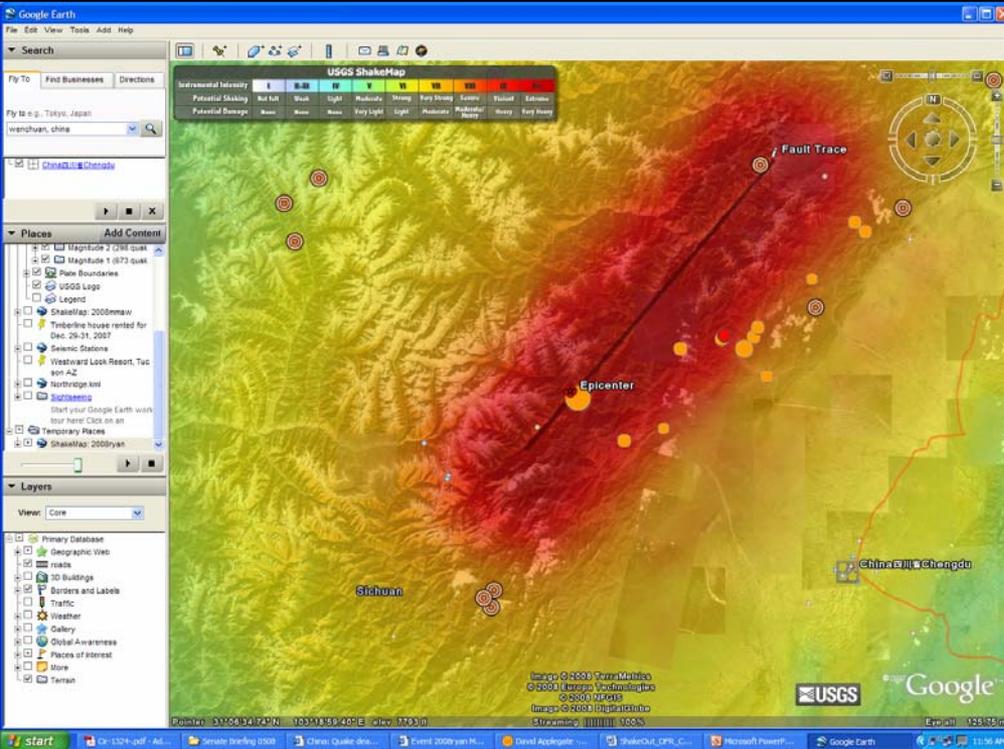
Update on USGS Earthquake Hazards Program

ACEHR Meeting, UC Berkeley

December 2008

USGS information saw heavy use in response to Wenchuan earthquake

ShakeMap layer for GoogleEarth



Images: Xinhua, AP

PAGER: Prompt Assessment of Global Earthquakes for Response



Hangwang town in epicentral area



M 7.9, EASTERN SICHUAN, CHINA

Origin Time: Mon 2008-05-12 06:28:01 UTC
 Location: 31.02°N 103.37°E Depth: 19 km

PAGER Version 8

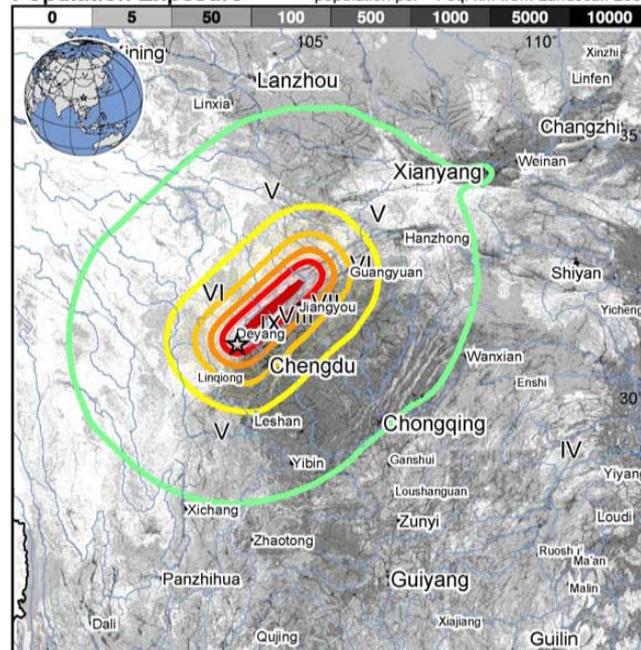
Created: 1 days, 8 hrs after earthquake

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	--*	--*	188,523k*	89,143k	15,400k	12,673k	3,897k	707k	610k	
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+	
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme	
POTENTIAL DAMAGE	Resistant Structures	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy
	Vulnerable Structures	none	none	none	Light	Moderate	Moderate/Heavy	Heavy	V. Heavy	V. Heavy

*Estimated exposure only includes population within the map area.

Population Exposure

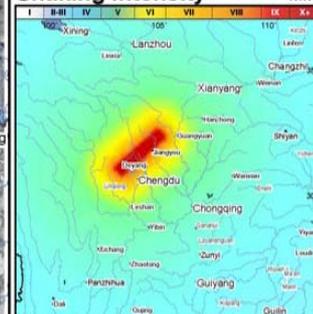


Selected City Exposure

MMI City	Population
VIII Jiangyou	127k
VIII Tianpeng	60k
VII Deyang	152k
VII Linqiong	55k
VII Chengdu	3,950k
VII Mianyang	264k
VII Guangyuan	213k
V Nanchong	7,150k
V Chongqing	3,967k
V Lanzhou	3,200k
IV Shiyao	3,480k

bold cities appear on map (k = x1000)

Shaking Intensity



Overall, structures in this region are vulnerable to earthquake shaking, though some resistant structures exist. A magnitude 6.4 earthquake struck the Sichuan, China region on August 23, 1976 (UTC), with estimated population exposures of 1,500 at intensity IX or greater and 5,700 at intensity VIII, resulting in 41 deaths. Additionally, a magnitude 7.3 struck this region in 1933 killing 6,800 people. Recent earthquakes in this area have also triggered landslide hazards that have contributed to losses. Users should consider the preliminary nature of this information and check for updates as additional data becomes available.



House Natural Resources Committee hearing (May 22, 2008)

- First-ever oversight hearing on USGS earthquake program
- Testimony from
 - Lloyd Cluff, Pacific Gas & Electric
 - former SESAC chair/ACEHR member
 - Tom Jordan, SCEC
 - former SESAC mbr)
 - Jim Wilkinson, CUSEC
 - USGS (Applegate)

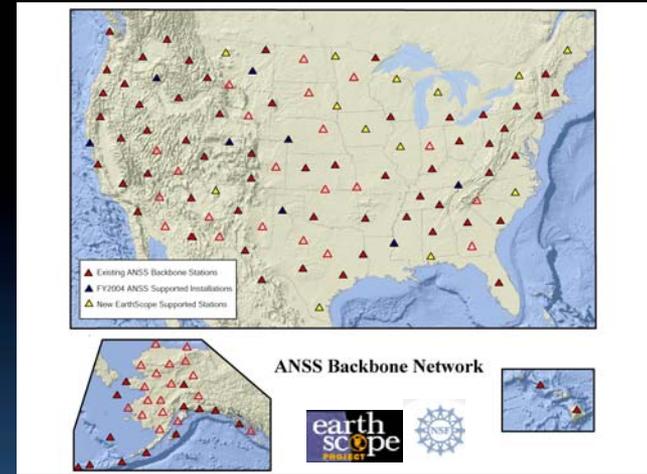


Rep. Jim Costa (D-CA)
Subcommittee chair

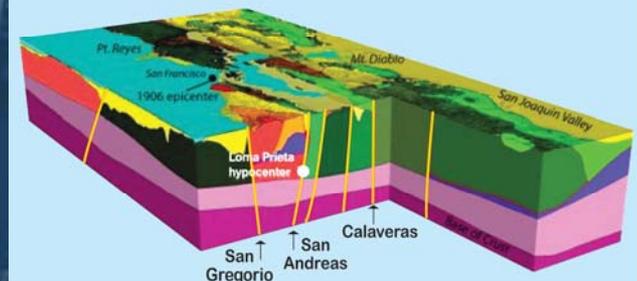
The USGS role in NEHRP

- Provide earthquake monitoring and notifications,
- Assess seismic hazards, and
- Conduct research needed to reduce the risk from earthquake hazards nationwide.

Making the handoff from research to implementation.



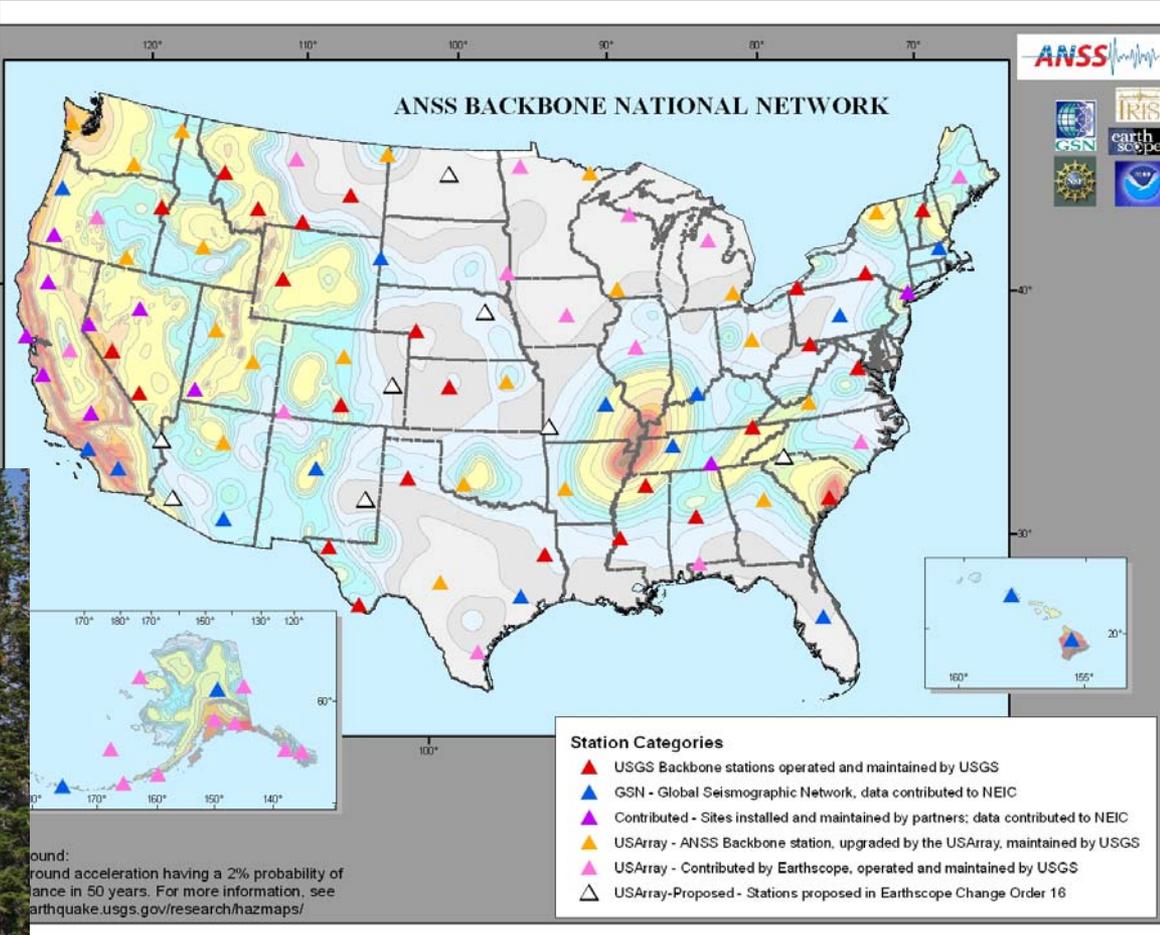
3D Geologic "fault and block" model



Bob Jachens, Russ Graymer, Bob Simpson, and Carl Wentworth



Advanced National Seismic System (ANSS)

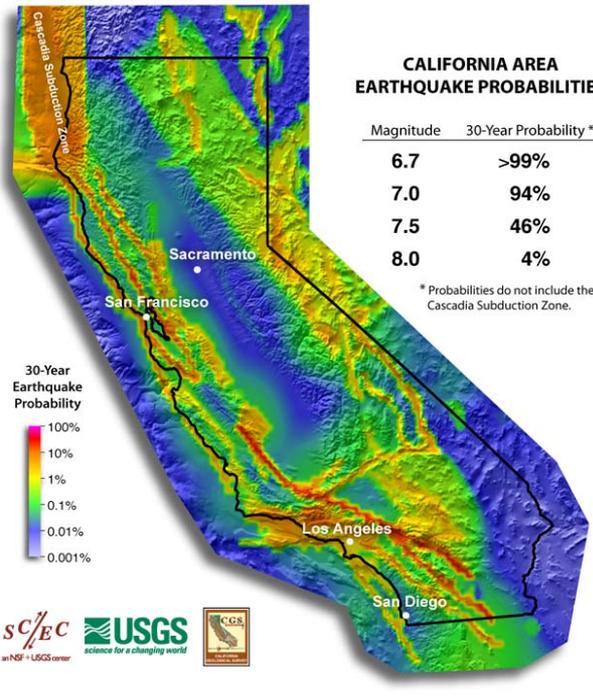
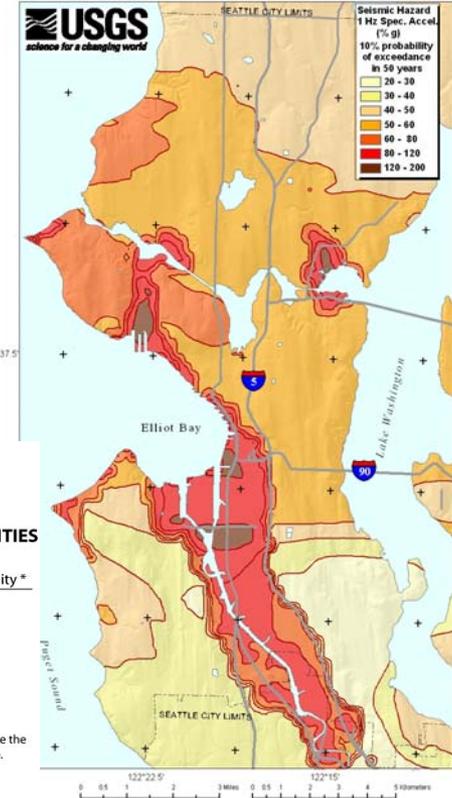
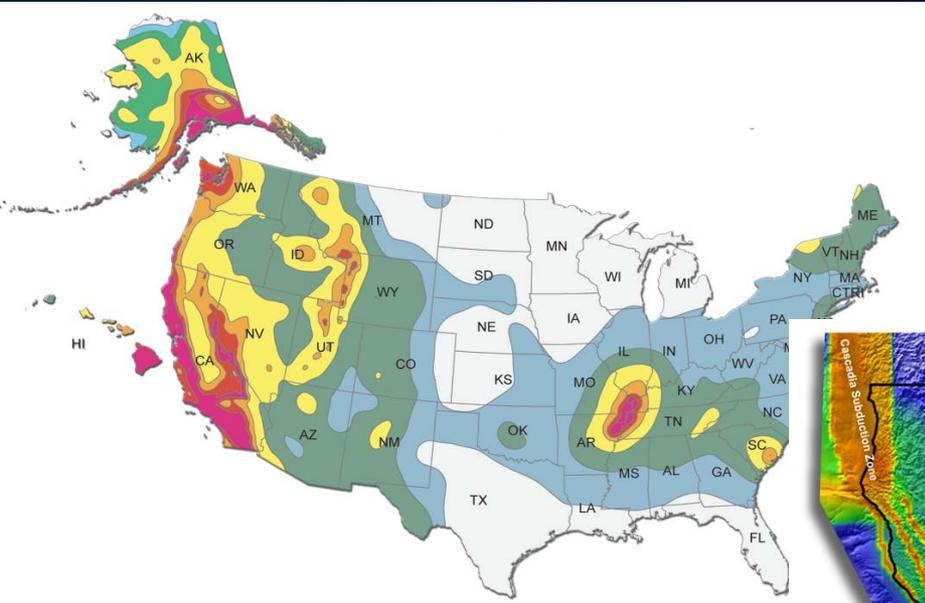


Backbone completion with support from NSF's EarthScope



Seismic hazard assessments: National, regional, urban

U.S. National Seismic Hazard Maps



Uniform California Earthquake Rupture Forecast



Seattle urban hazard map

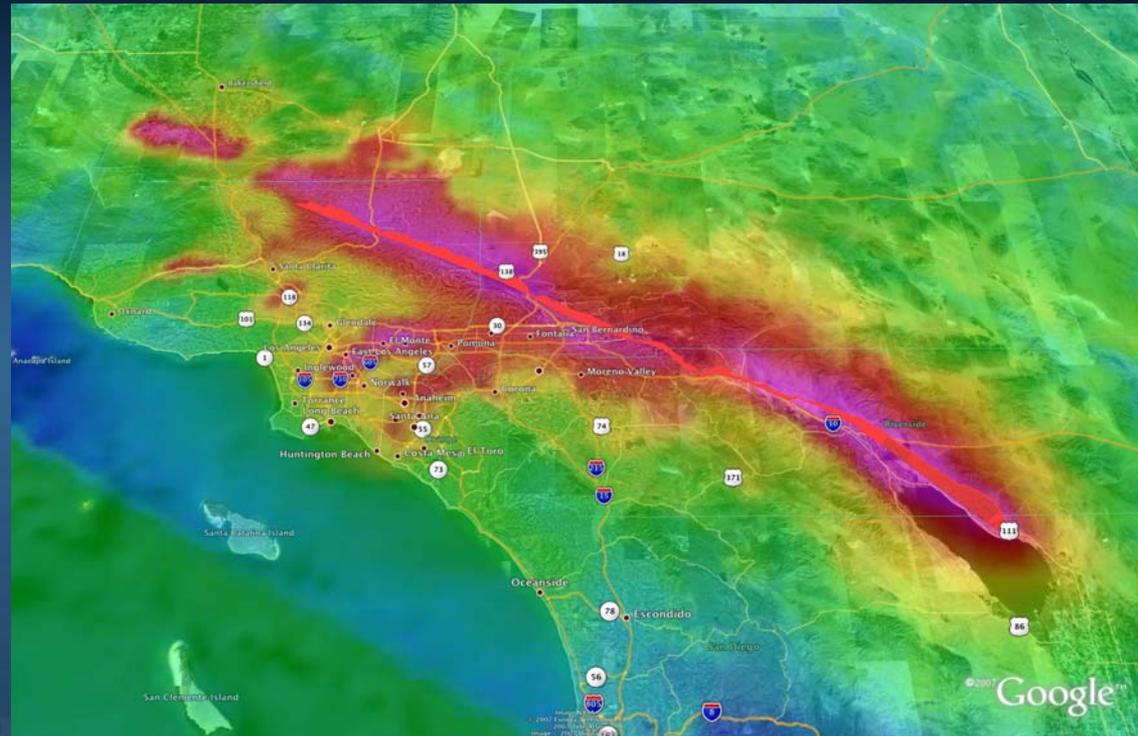


San Andreas ShakeOut Scenario



- Top request of partners
- Rallying point for community

- San Andreas 'Big One' simulated earthquake; multi-hazard scenario
- Initiation near Bombay Beach, rupturing to the northwest
- Disruption of critical lifeline infrastructure (freeway, internet, power and gas lines) along surface rupture
- Strong shaking throughout region, including urban areas

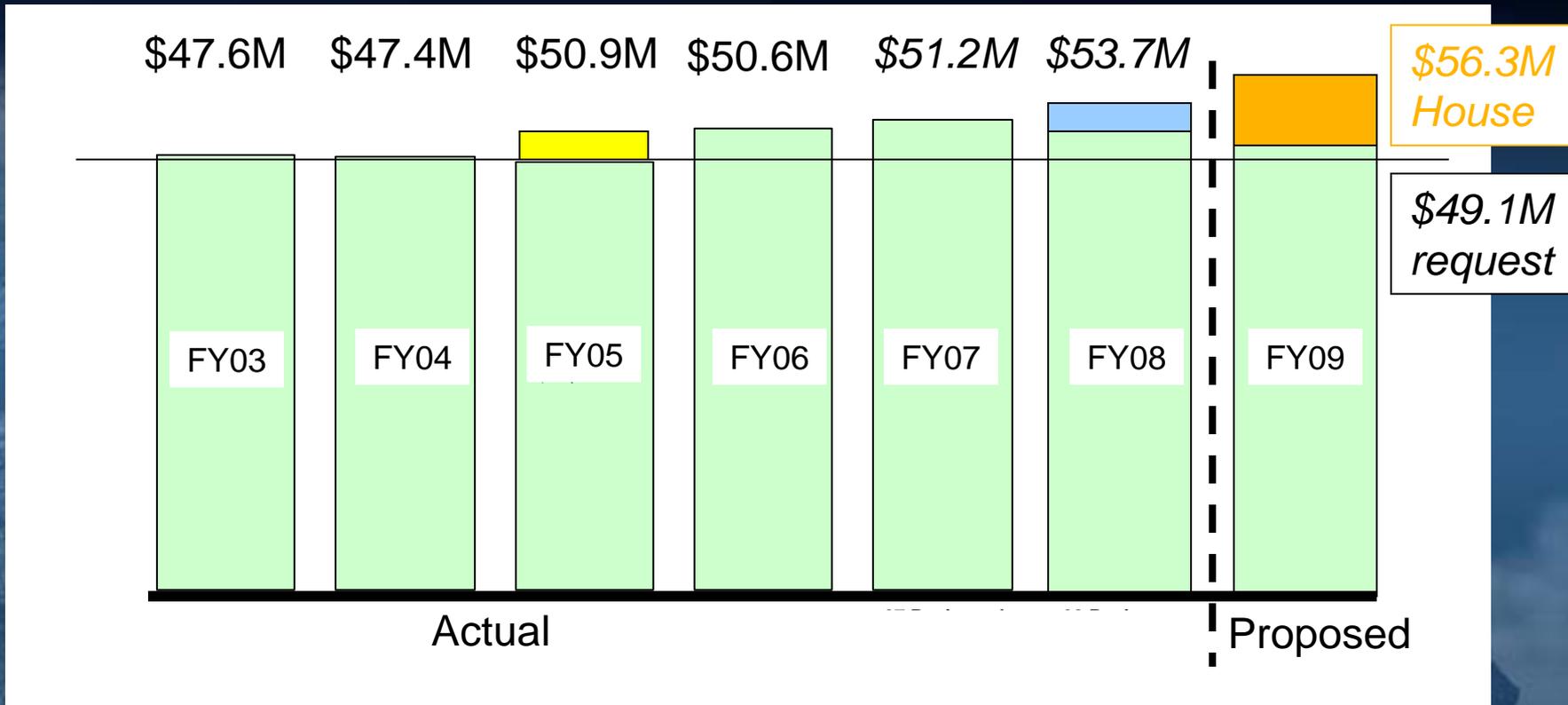


The Great Southern California ShakeOut

- November 13, 2008
- Golden Guardian exercise
- Public drills (5.4 million people)
 - School earthquake drills
 - Business emergency drills
- Int'l Earthquake Conference hosted by City of LA
- Earthquake Spectacle



Recent Earthquake Hazards Program funding history and FY09 request



Tsunami Supplemental
(became part of base in FY06)

Multi-Hazards
Demonstration Project
(congressional add)

FY 2008 final appropriation

- Requested increase for uncontrollable costs (\$1.3M) significantly offset by across-the-board rescission (\$0.5M remains)
- Build on Southern California multi-hazards demonstration project and expand elsewhere in the Nation (\$2M)
 - Pacific Northwest
 - Central U.S.
- Global Seismographic Network (\$0.5M)

 USGS



FY 2009 decreases in President's request

- Eliminate congressional FY08 congressionally added increases
 - Multi-hazards demonstration project (-\$2M)
 - GSN (-\$0.5M)
- Reduce external grants (-\$3M)
- Across-the-board travel reduction (-\$0.2M)
- Increase for uncontrollable costs (+\$0.6M)



FY 2009 House Appropriations proposal

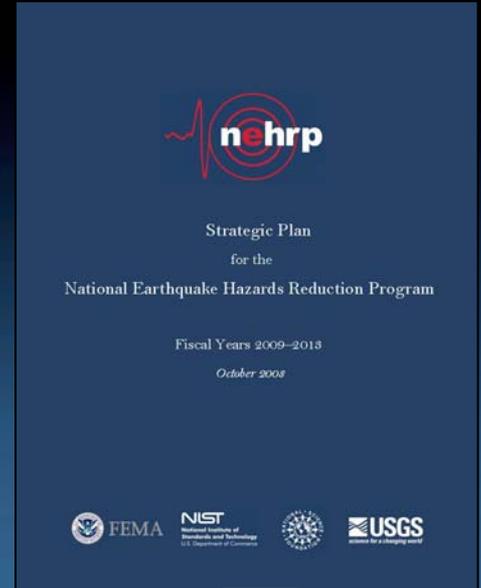
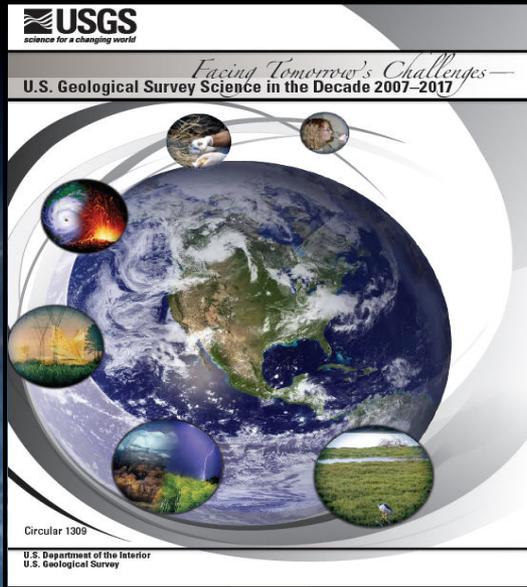
- Provides requested increase for uncontrollable costs (+\$0.6M)
- Continue to build on Southern California multi-hazards demonstration project and expand nationally (additional \$2M over FY08)
 - Pacific Northwest
 - Central U.S.
- Rejected “reckless budget request to reduce earthquake science grants”
- Global Seismographic Network (+\$1.5M)

 USGS

 nehrp

Senate? Omnibus?? Signature???

Planning for the future...



**USGS
Earthquake
Hazards
Program**

Five-Year Plan

