

Communicating earthquake risk effectively, responsibly, and safely

David D. Jackson

UCLA

Needs for Scientists to be involved in policy

1. Earthquake happens, .e.g. 4.5 near San Andreas: “what’s next?”
2. Official statement of earthquake probability (e.g. UCERF report on California probability)
3. Possibly credible earthquake prediction.
4. Nut case, trouble maker

My experience

8 years California Earthquake Prediction Evaluation Council (“**CEPEC**”: Advises **Governor** through California Emergency Management Agency)

6 years National Earthquake Prediction Advisory Council (“**NEPEC**”: Advises **Director of USGS**)

Not a lawyer! Nothing I say is legal advice

Personal View

- We need answer that satisfies scientific community
 - “Generic earthquake”: ETAS clustering model ok
 - “Special case”: moderate earthquake near “sleeping giant”
 - Involves conditional probability $P(\text{big} | \text{moderate})$
 - Need to establish data base for comparable situations
- We need additional advisory layer for appropriate response
 - Engineers, economists, builders, social scientists
 - Cost benefit analysis
 - May recommend serious compromise from scientific wisdom: e.g. “plan for m7, even if m8 is possible”

Legal protection in US

- Scientists generally well protected against lawsuits
 - National:
 - Defendant is Director of USGS
 - Justice Department defents
 - Scientist is “material witness”
 - State of California

Legal liability in California

- Criminal Liability
 - Difficult to Prove
- Manslaughter
 - Criminal negligence
 - Mens rea (malicious intent)
 - Beyond a reasonable doubt

Civil Liability: California

- NEGLIGENCE
 - Duty
 - Breach
 - Causation
 - Damages
 - Burden

California Government Code §955.1

“[T]he Governor may, at his or her discretion, issue a warning as to the existence of an earthquake or volcanic prediction determined to have scientific validity. The state and its agencies and employees shall not be liable for any injury resulting from the issuance or nonissuance of a warning pursuant to this subdivision or for any acts or omissions in fact gathering, evaluation, or other activities leading up to the issuance or nonissuance of a warning.”

Liability Protections in California Law

- Sovereign Immunity
- California Tort Claims Act (Cal. Gov. Code 810, *et seq.*)
 - Immunity waiver
 - §820.2. Immunity for Discretionary Acts
 - Course and scope of duties
 - Public Employee
 - Discretionary acts –“whether or not this discretion was abused”
 - §822.2. Misrepresentation
 - Course and scope
 - Public Employee
 - Exception: fraud/corruption/malice

Liability Protections in California Law, Continued

- Cal. Gov. Code 955.1 –Liability Protections for issuance/nonissuance of earthquake or volcanic warning
- Article I, section 19 of the California Constitution –Property
- Police Power
 - Reasonably necessary to protect the order, safety, health, morals, and general welfare of society.

Conclusions

- In US, and specifically in California, scientists in advisory capacity have extensive protection
- The next step is ours
 - Provide scientific basis for effective advice
 - Find mechanism to connect science with appropriate response to risk