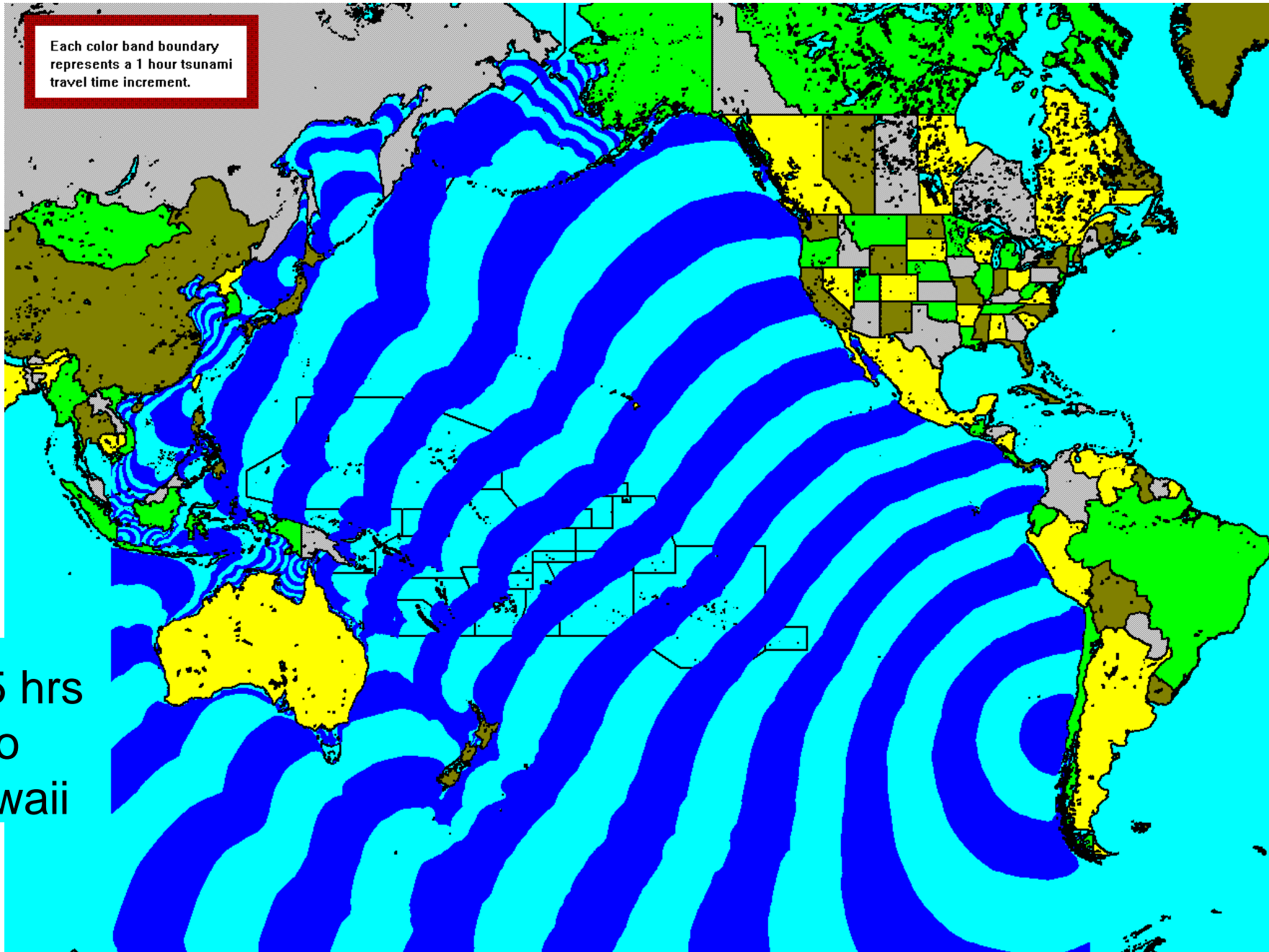


Tsunamis traveltimes -- one band = one hour

Each color band boundary represents a 1 hour tsunami travel time increment.

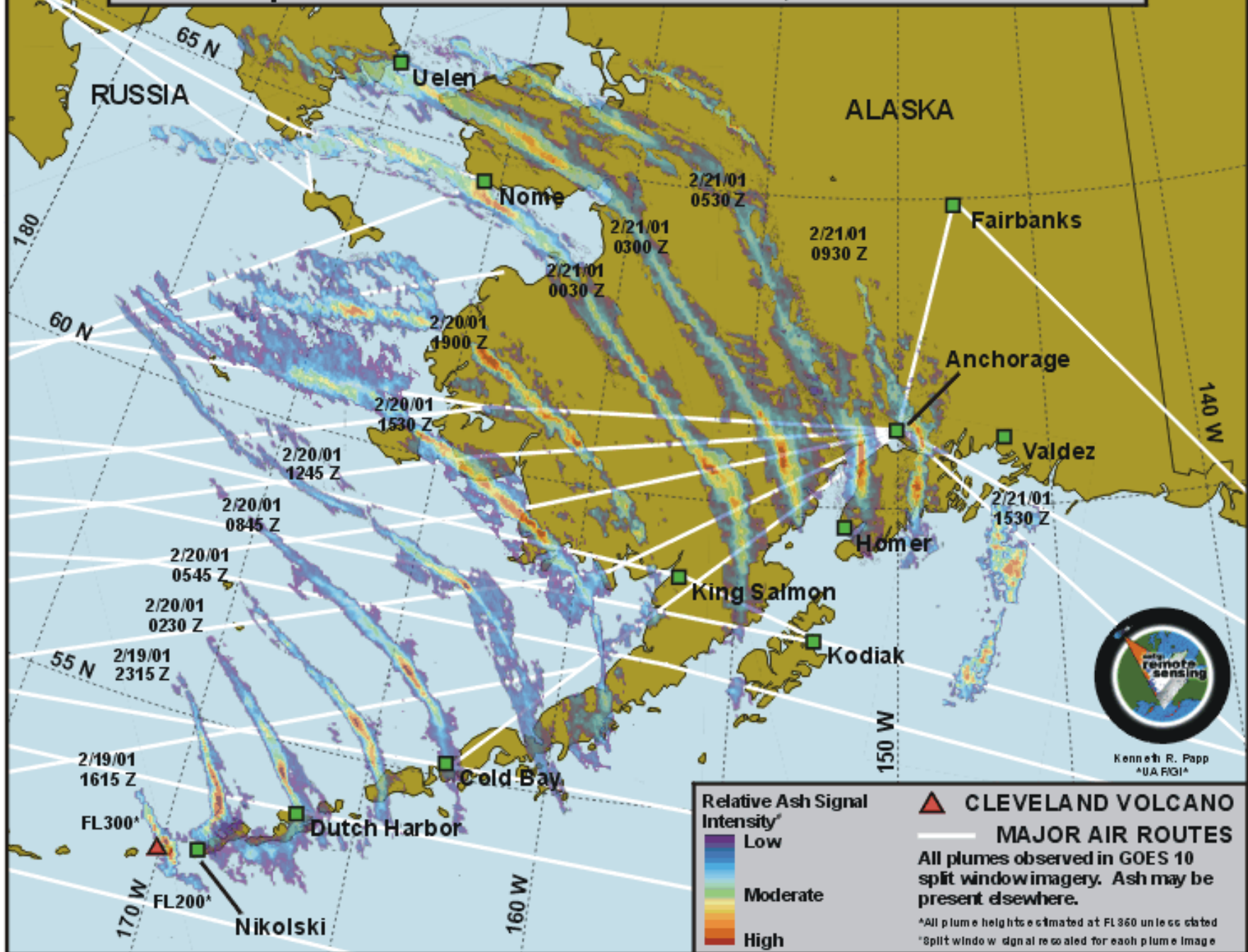
14.5 hrs
to
Hawaii





1991 Pinatubo,
Philippines eruption

The Eruption of Cleveland Volcano, Alaska: Feb. 2001

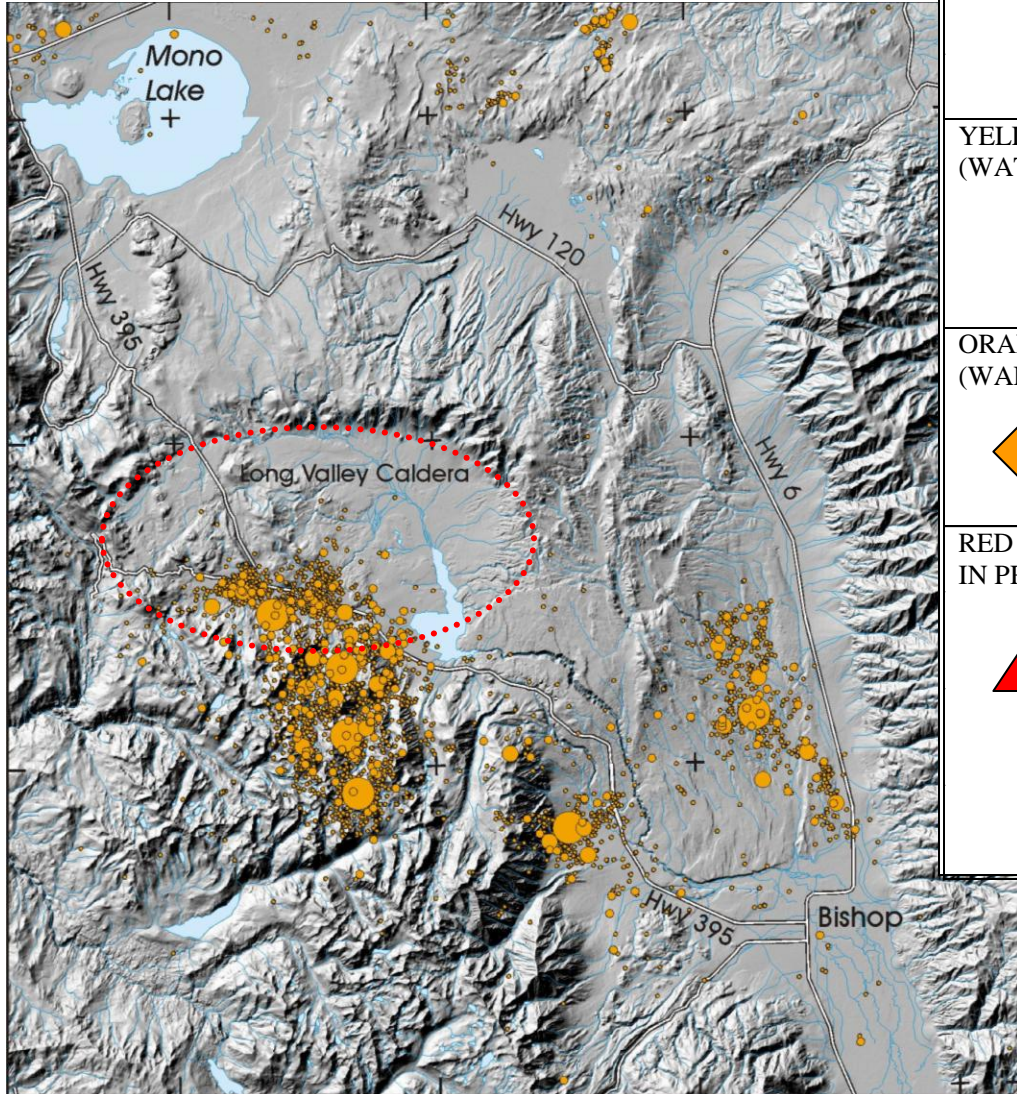


Challenges

- Not all monitoring networks state-of-the-art, built over time, no stable funding base
- Network analysis centers not staffed 24/7
- Separate monitoring/recording/processing systems for all 3 hazards
- Society's tolerance? for false alarms
- Natural systems “quirky”, even with reliable signals, can't always predict what will happen





Long Valley Caldera

M > 3 earthquakes:
1978-1999



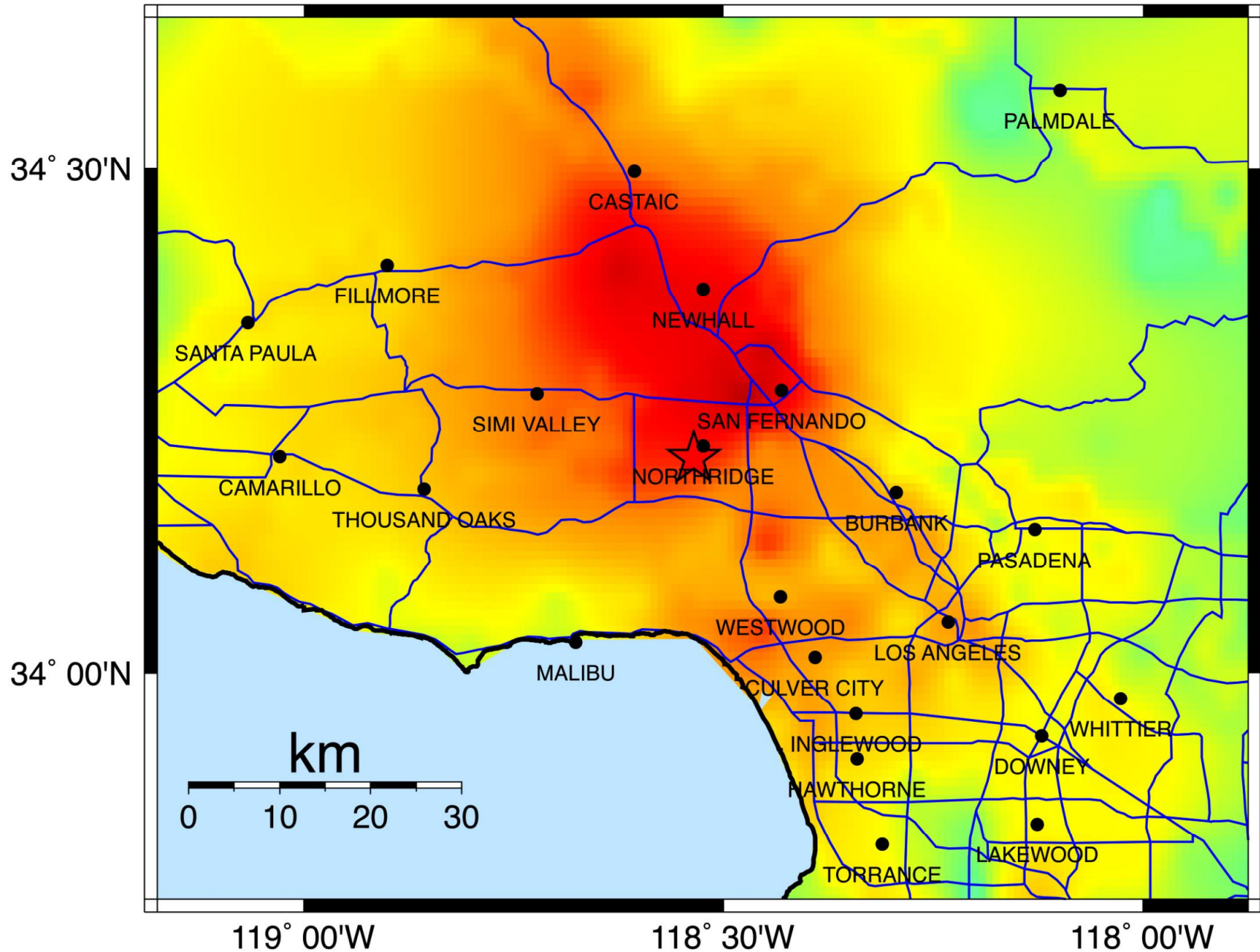
10 miles

Alert Levels

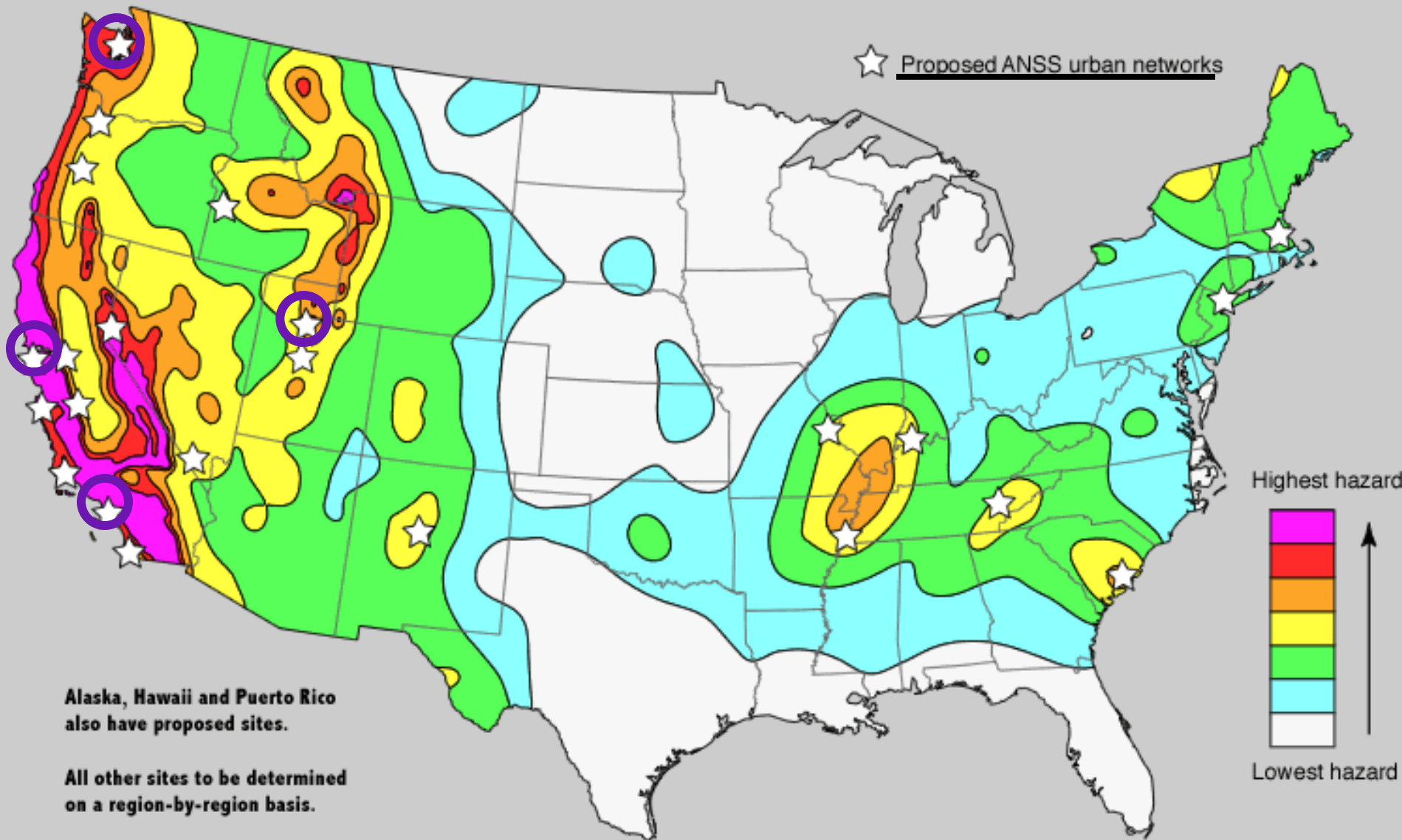
CONDITION	USGS RESPONSE ¹	ACTIVITY LEVEL
GREEN – No immediate risk 	Normal operations plus information calls to appropriate authorities for weak through strong unrest as appropriate	Background or quiescence
		Weak unrest
		Minor unrest
		Moderate-to-strong unrest
YELLOW (WATCH) 	Full call-down and EVENT RESPONSE	Intense unrest
ORANGE (WARNING) 	Full calldown and EVENT RESPONSE (if not already in place under YELLOW)	Accelerating intense unrest: eruption likely within hours to days
RED (ERUPTION IN PROGRESS) 	Full calldown and EVENT RESPONSE (if not already in place under YELLOW or ORANGE) Daily or more frequent updates on eruption levels	LEVEL 1: Minor eruption
		LEVEL 2: Moderate explosive eruption
		LEVEL 3: Strong explosive eruption
		LEVEL 4: Massive explosive eruption

TriNet ShakeMap: Instrumental Intensity Map

JAN 17 1994 (M6.7) Northridge Earthquake



U.S. Geological Survey Advanced National Seismic Network



Opportunities

- **Advanced National Seismic System (USGS)** -- modernize nation's seismic infrastructure, only funded at 10% authorized level
- **EarthScope (NSF)** -- Major Research Equipment facility in President's FY03 request, dense temporal coverage of ground deformation
- **Synthetic Aperture Radar mission (NASA)** -- dense spatial coverage of ground deformation, component of EarthScope MRE
- **Facilities alone insufficient**, funding needed for operations, to fully exploit data, and for research yielding better understanding of natural systems

Predicted P-Wave Travel Times

01/07/24 17:42:41 32.87S 71.34W 33.0 5.6M A NEAR COAST OF CENTRAL CHILE

