

# DEEPER DIVE EARTHQUAKE INVESTIGATION

- Click the [2024 M7.0 Earthquake in California](#) link, then click “pdf” in the first box (Teachable Moment presentations).
- Explore the slides and answer the questions below.

Slide	What question does each slide answer? A. Where did the earthquake occur? B. Which tectonic processes caused it? C. What seismic patterns exist in the region? D. What hazards and impacts occurred?	What visual is used and how do the visuals help explain the earthquake?	Which slides focus on Earth processes and which focus on human impacts?
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## DEEPER DIVE EARTHQUAKE INVESTIGATION - ANSWER KEY

Slide	What question does each slide answer?	What visual is used and how do the visuals help explain the earthquake?	Which slides focus on Earth processes and which focus on human impacts?
2	A. Where did the earthquake occur?	Overview map showing epicenter location orients the viewer to where the earthquake took place. A photo of earthquake effects shows some of the human impact of the event.	Human impacts
3	A. Where did the earthquake occur?	Pictures of the local area and native wildlife. Provides context for why this location matters.	Human impacts
4	D. What hazards and impacts occurred?	ShakeMap showing MMI intensity contours across Northern California. Illustrates where shaking was strongest and how it decreased with distance.	Earth processes / Human impacts
5	D. What hazards and impacts occurred?	PAGER population exposure chart showing the number of people exposed to each shaking intensity level. Connects shaking data to human vulnerability.	Human impacts
6	D. What hazards and impacts occurred?	Seismic hazard map compared to population density map. Shows where people live in relation to the most hazardous regions.	Human impacts
7	D. What hazards and impacts occurred?	A visualization showing how the ShakeAlert early warning system works and how it performed for this event.	Human impacts
8	D. What hazards and impacts occurred?	A video highlighting the importance of the ShakeAlert early warning system and its role in public safety.	Human impacts
9	D. What hazards and impacts occurred?	An image explaining what to do during an earthquake. Connects the science of shaking to personal preparedness.	Human impacts

10	C. What seismic patterns exist in the region?	Foreshock and aftershock sequence graph and video showing the distribution of earthquakes before and after the mainshock. Explains how stress redistributes after a major rupture.	Earth processes
11	C. What seismic patterns exist in the region?	An animation or photo showing historic seismicity and plate tectonics in the region. Puts the current event into a larger spatial and temporal perspective.	Earth processes
12	B. What tectonic processes caused it?	A map showing tectonic plates and their movement. Illustrates how plate motion builds stress that ultimately triggered the earthquake.	Earth processes
13	B. What tectonic processes caused it?	Focal mechanism (beach ball diagram) showing the earthquake occurred on a transform/strike-slip fault. Explains the type of fault motion and direction of stress release.	Earth processes
14	D. What hazards and impacts occurred?	A video explaining how a tsunami forms. Provides background on tsunami hazards relevant to earthquakes that may have triggered one.	Earth processes / Human impacts
15	B. What tectonic processes caused it?	A diagram explaining how strike-slip faulting works at the Mendocino Triple Junction. Deepens understanding of the fault mechanics and highlights past major seismic events in the area.	Earth processes / Human impacts
16	C. What seismic patterns exist in the region?	GPS/geodetic data showing long-term plate velocity vectors in the region. Explains what GPS data is and what it reveals about ongoing tectonic motion.	Earth processes
17	C. What seismic patterns exist in the region?	GPS/geodetic data showing long-term surface displacement vectors. Connects tectonic motion rates to seismic hazard in the region.	Earth processes
18	C. What seismic patterns exist in the region?	GPS/geodetic data showing short-term surface displacement as a result of the earthquake. Shows how the ground moved during the event.	Earth processes
19	C. What seismic patterns exist in the region?	A seismogram from a nearby seismic station. Shows how the earthquake was recorded instrumentally and what the waveform reveals.	Earth processes
20	C. What seismic patterns exist in the region?	An animation showing how seismic waves traveled through the Earth and were registered at stations across the US. Illustrates wave propagation and how distance affects the signal.	Earth processes