

Question	Answer
Is anything known about the "timing" of the surface rupture in relation to the ground motion time histories?	A wonderful question. Yes, I am aware of research efforts in relating the timing of rupture in relation to SGM time histories. Super rupture possibility is currently studied. Unfortunately, all these are preliminary findings...
If this event could happen in the US, what region would most closely align with that region?	The East Anatolian fault has similarities to the strike-slip plate boundary faults in California (San Andreas)
Great team work, thanks for sharing your findings! A quick question: are there any plans to map and quantify the extent of surface manifestation of liquefaction and sand ejecta? If yes, will those be available through NGL database?	Yes, we anticipate including case histories from this event in the NGL database. Likely this will occur after we have geotechnical data from the sites, which is not available yet but is the subject of ongoing work. In the meantime, the data from the reconnaissance is in the GEER-EERI report and will be posted to DesignSafe.
Great team work, thanks for sharing your findings! A quick question: are there any plans to map and quantify the extent of surface manifestation of liquefaction and sand ejecta? If yes, will those be available through NGL database?	Thank you! Yes, these maps were provided as part of the reconnaissance reports. The extent of surface manifestations at a limited number of sites were mapped by lidar. Unfortunately not at every location...Yes, it is intended to be included in the NGL database...
"Fallacies do not cease to be fallacies because they become fashions." G.K. Chesterton  What can be said about the recognized (in the science peer reviewed literature) about the fallacies of Performance Based Design (that we have learned from these earthquakes)?	I doubt performance-based design principles were applied in the design and construction of most of the collapsed structures, so the poor performance cannot be used to judge the effectiveness of such procedures.
Concerning the moving of Arabian Plate, What do you think about the inexistence of earthquakes as much as that happened at the Anatolian Plate?	Earthquakes on the Arabian plate primarily occur on the Dead Sea fault. There are many historical large magnitude surface rupturing events on this fault. However, there is an earthquake cycle (time needed to reload the faults up to the failure threshold) and a region may be in the loading period. During this time faults appear seismically quiet (locked) but that does not mean that they are inactive. That is why we concentrated on the southern end of the rupture because northern tip of the Dead Sea fault has been "quiet" for ~600 years. This makes it a good candidate for triggered rupture.
Seismic Hazard Models prescribe rules for approval of engineering design; but what value are models if they are always in reference to the "last" earthquake? Shouldn't 50,000 fatalities be enough to "retire" seismic hazard model "required" approach?	A valid criticism. The use of deterministic approaches are currently and prematurely discussed in Turkey.
Would it be useful to refer to the Alaska Pipeline's designs for pipe support over known faults for reconstruction?	The Trans-Alaska Pipeline (TAPS) was a successful engineering design that performed well in the Denali Earthquake. So yes that is a good approach, however it is an expensive approach and useful when the project warrants.
What could be a solution for the gas pipes? can be flexible one?	In some pipeline situations the pipe has been isolated from the fault displacement, such as the Trans-Alaska Pipeline. In other situations HDPE has been successfully used for water pipelines subjected to ground deformations.
What could be a solution for the gas pipes? can be flexible one?	site selection and appropriate design (crossing angle, material type and other engineering solutions) can mitigate these effects

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I have curious questions concerning the seismographic stations themselves, How can be that they did not affected by the earthquakes? Are they isolated? Did you checked if any displacement occurred to it?	SGM stations were visited after the events to check the functionality of the equipment, and their possible interaction with the host structure response. At majority of stations, the conditions were favorable ...
What were the "depths" of the hypocentres?	The preferred hypocenter depths we have are 10, 13.1, and 16 km for the M7.8, M7.7, and M6.3 events, respectively.
Re Ground Motions - Most of the ground motion stations recorded data at 100 samples per second with a 40Hz bandwidth. The usual standard is 200sps/80Hz. What effect might this have had on the data, specifically on PGA for the near-field stations? Is this significant to: 1) data statistics or 2) damage correlations for stiff buildings?	Good question. This effect should be minimal for these events. The oscillator responses are saturating to PGA at periods a bit larger than the inverse of the Nyquist frequency
If known, can you please report the type of foundation these buildings have? are they supported on footings? piles? Thanks.	In general these buildings are all on shallow foundations; slab-on-grade or footings per columns.
What is (sounds like "hogging ground deformation")? Any relation to Pig Ground Acceleration?	Yes, hogging ground deformation, which we characterized as the ground arching or curving up.
Can you be a little clearer what consitiutes a "punching failure" of the foundation? What punched into what?	Good point. While one the ground, we considered punching failure when the building settlement was localized without a significant impact or influence on the surrounding ground.
Any liquefaction induced flow failure case observed in the field?	Some retaining walls were translated and tipped over due to liquefaction-induced flow failures...
Great work. Was there a clay crust at these locations? and if so, did the upward excess pore pressure flow transfer a significant portion of these clay particles to the ground surface (and contribute to the ejecta)?.	Unfortunately, we do not yet have a detailed soil profile for these sites we shared. We hope some follow up studies including in situ tests and soil index tests will help us better understand these system effects.
in the areas susceptible to liquefaction from both motions in the feb 6 sequence, was there any data collected to potentially attribute liquefaction manifestations to one or both sources, to follow up works from the new Zealand sequences?	The fact that the events were only seperated by 9 hrs has made this difficult. In most cases we are relying on witness reports as to the timing. For evidence at the far North or far South we can assume which event controls due to attenuations of ground motions.
Where will the next quake hit? The Cyprus arch?	I wish we knew. Currently it is impossible predict earthquakes. We can only point towards areas that are relatively more likely to experience an earthquake.
Do you think the location of the dams can affect on producing the earthquake? due to the huge amount of artificial lakes on the soil layers?	For very large dams there has been evidence that the water load and pore pressures can influence the seismicity (e.g., Aswan Dam). Here we are dealing with fairly small reservoirs which I would conjecture had no impact on the seismicity.
explain "seismic compression", and the field evidence for it?	Seismic compression is where the shaking results in densification or volumetric compression of the material.
I remember seeing some building tipped over while the adjacent almost-identical building seemed intact. Is it more of a geotechnical/foundation issue or due to different building design/construction? Thank you!	Robb Moss came up with a great way to think about this with his confusion matrix; good structural design and geotechnical design are required for building performance. From the examples we saw, there were combinations good structure & good geotech; poor geotech/foundation & good structure; good geotech & poor structure; and poor structure & poor geotech.

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<p>I remember seeing some building tipped over while the adjacent almost-identical building seemed intact. Is it more of a geotechnical/foundation issue or due to different building design/construction? Thank you!</p>	<p>As Diane said, structural and geotechnical both played a role in overall building performance. I think the photo you are thinking of may be included in our GEER-EERI report (linked in the chat) and was located in Golbsi.</p>
<p>It is important to note that even though seismic events are rare on the Arabian plate, distant earthquakes from Zagros and Makran can still pose significant challenges for high-rise cities, for example, cities such as Dubai or Abu Dhabi.</p>	<p>Agreed. I have worked in Dubai and the seismicity from the Zagros thrust controls the long period motions there.</p>
<p>There has been little mention of post-eq fire. In the Haywired Scenario for the Bay Area fire was a major—and controversial— issue. Thoughts/observations from your reconnaissance? Thanks!</p>	<p>Hi David, in TR construction is mainly concrete or steel. So residential fires are very limited. Post earthquake fires are therefore mainly limited to industrial facilities if they are not built accordingly.</p>
<p>There has been little mention of post-eq fire. In the Haywired Scenario for the Bay Area fire was a major—and controversial— issue. Thoughts/observations from your reconnaissance? Thanks!</p>	<p>There was a large fire in the Limak Port that raged for days. Other than that there was little reporting or evidence of fires. I agree with Oz that the construction materials controlled this.</p>
<p>Do we need new performance level for multi segment ruptures?</p>	<p>This is an interesting question. Can/should we design for a one-two punch. I think it would depend on how critical the structure is, and what the performance should look like.</p>
<p>Data wise, what were the most earthquake-resistant buildings? It looks like reinforced concrete still holds the record for most fatalities in 20th and 21st century earthquakes?</p>	<p>Poorly reinforced structures are the culprit. Not enough shear resistance and heavy roofs/floors is deadly.</p>
<p>There are lots of dams around the East Anatolian Fault as you remarked, therefore, if there is any affect of these dams caused huge turkish earthquakes? Thanks.</p>	<p>The scale of these reservoirs, in my opinion, is too small to either affect the loading or the pore pressures on the faults.</p>
<p>I just saw the presentation of Tristan Buckreis on ground motions from the Turkish earthquakes. Cl'd like to have access to these data (SA, PGA and distances, and if possible Vs30). Can you please provide me with the link to the dataset shown in his presentation. Thanks, Vladimir an you please provide the link to SA, PGA, R and Vs30 shown in presentation of Tristan Buckreis.</p>	<p>Here is the doi which includes everything except for the time-series: <a href="https://doi.org/10.17603/ds2-t115-bk16">https://doi.org/10.17603/ds2-t115-bk16</a></p>