

Visualizing Earthquake Simulation Data

Zhenge Zhao

zhengezhao@email.arizona.edu

Matthew Berger

matthewberger@email.arizona.edu

Youhao Wei

youhaowei@email.arizona.edu

Danilo Motta

danioloam@icmc.usp.br

Joshua A. Levine

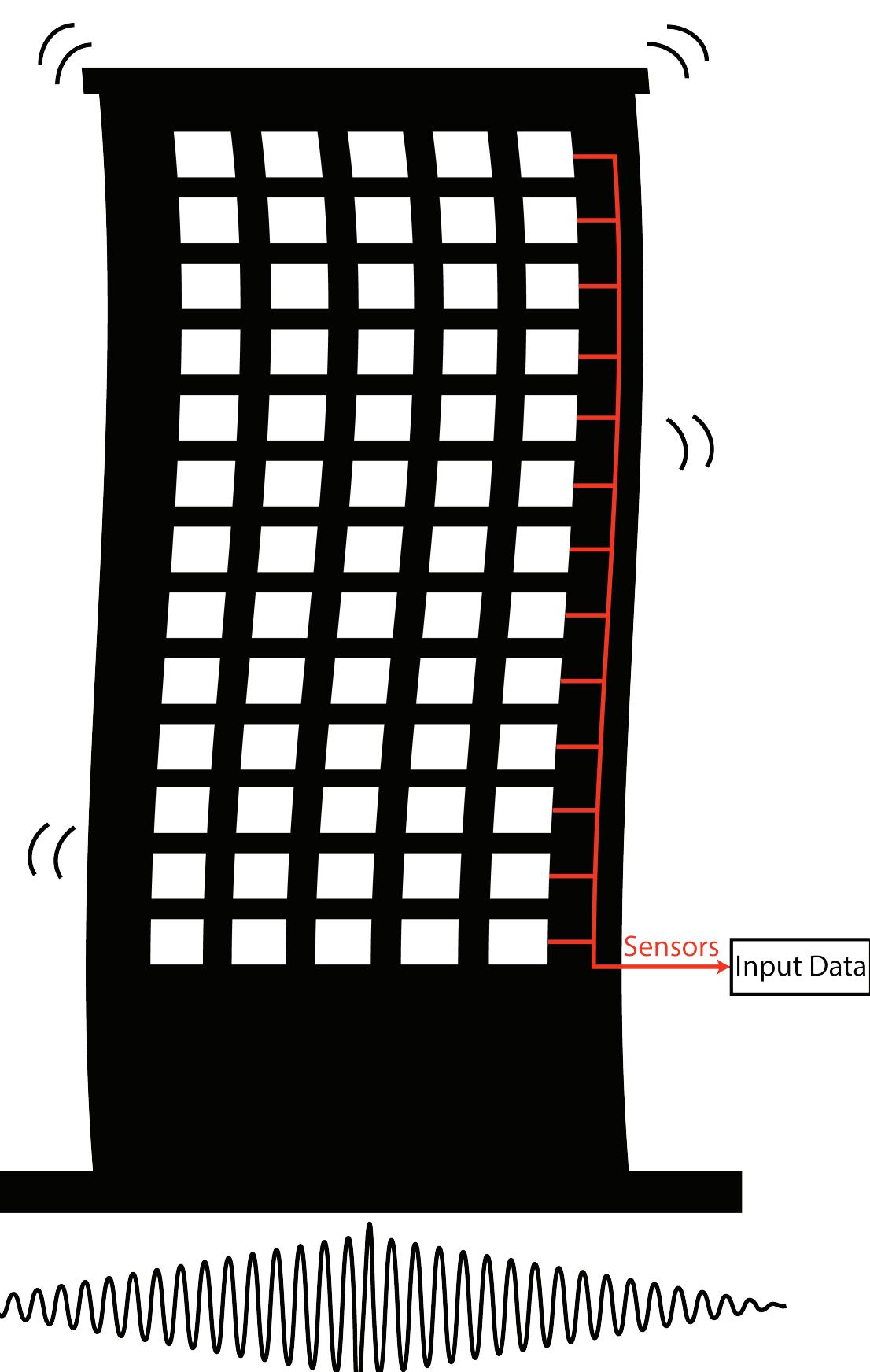
josh@email.arizona.edu

Carlos Scheidegger

cscheid@email.arizona.edu

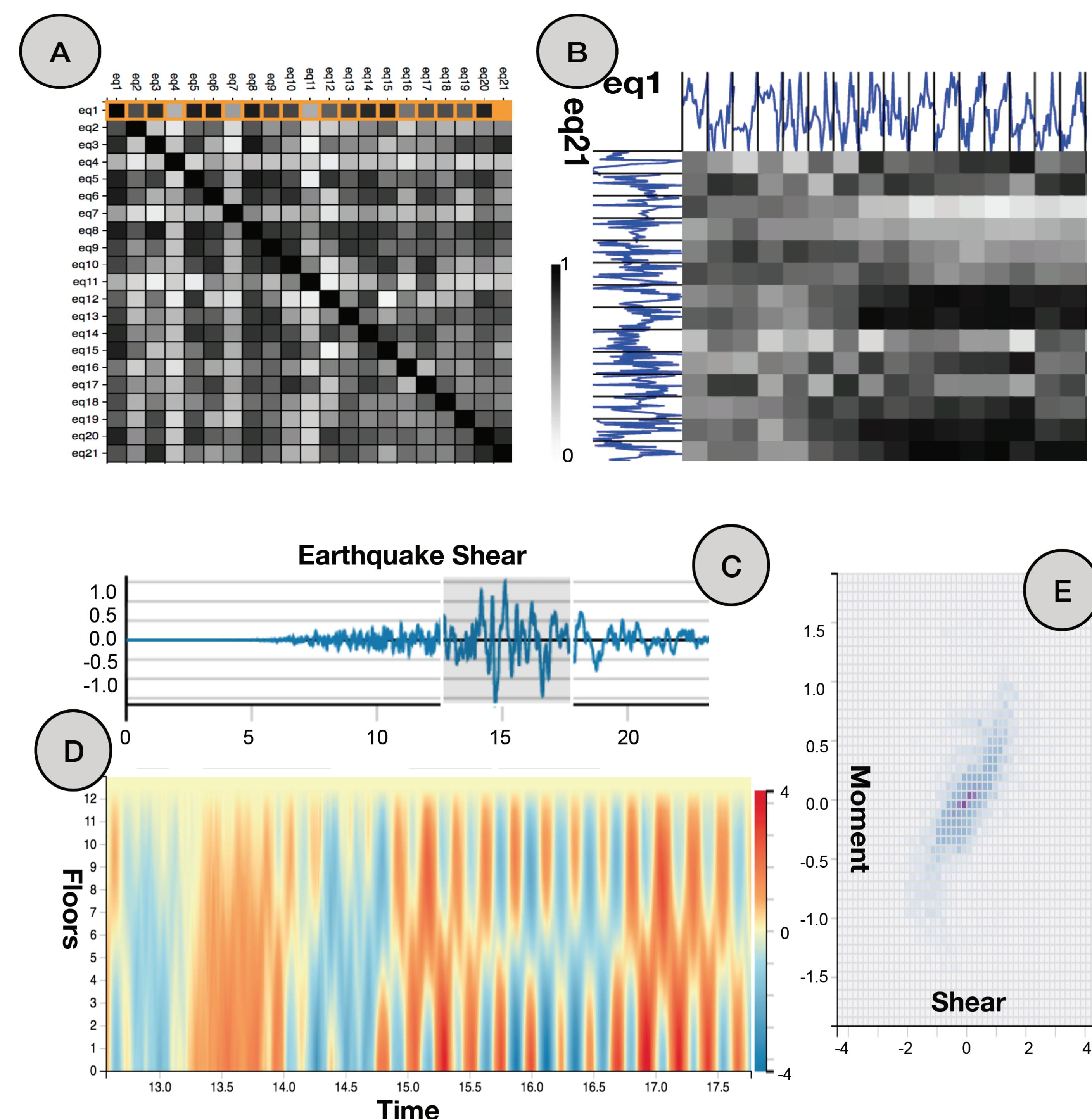
Problem

Computer simulations of the effect of earthquakes on built structures promise to let engineers understand different tradeoffs and design at an attractively low cost. However, the way in which a building responds to an earthquake is complex and controlled by multiple physical variables of interest, for example, shear, moment and diaphragm forces. By putting sensors on each floor, we can collect these various simulation data through time series.



Can we show their differences?

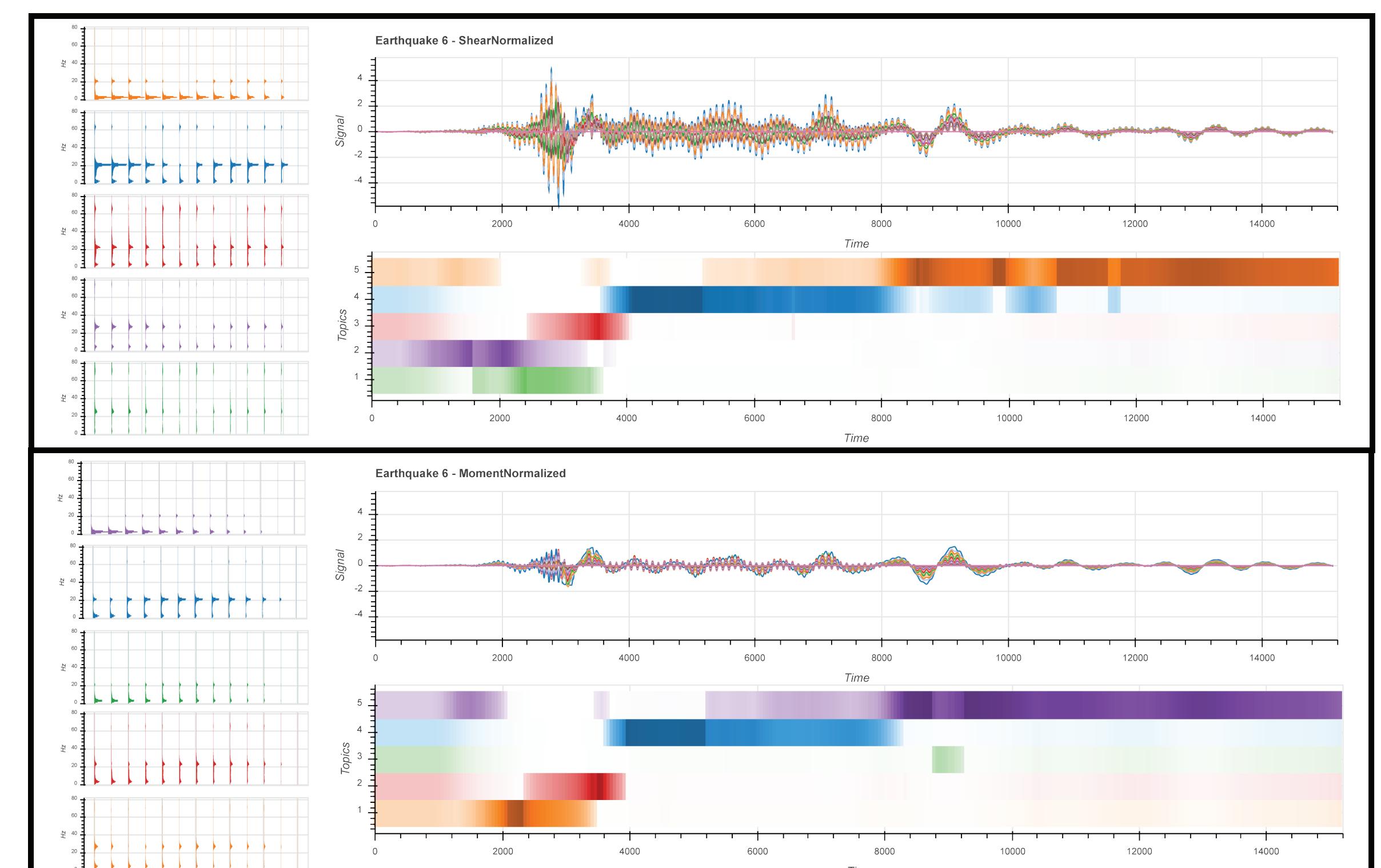
(A) is a matrix diagram view showing the overall similarities of shear across 50 earthquake simulations. In addition, an earthquake simulation are compared to one another in (B).



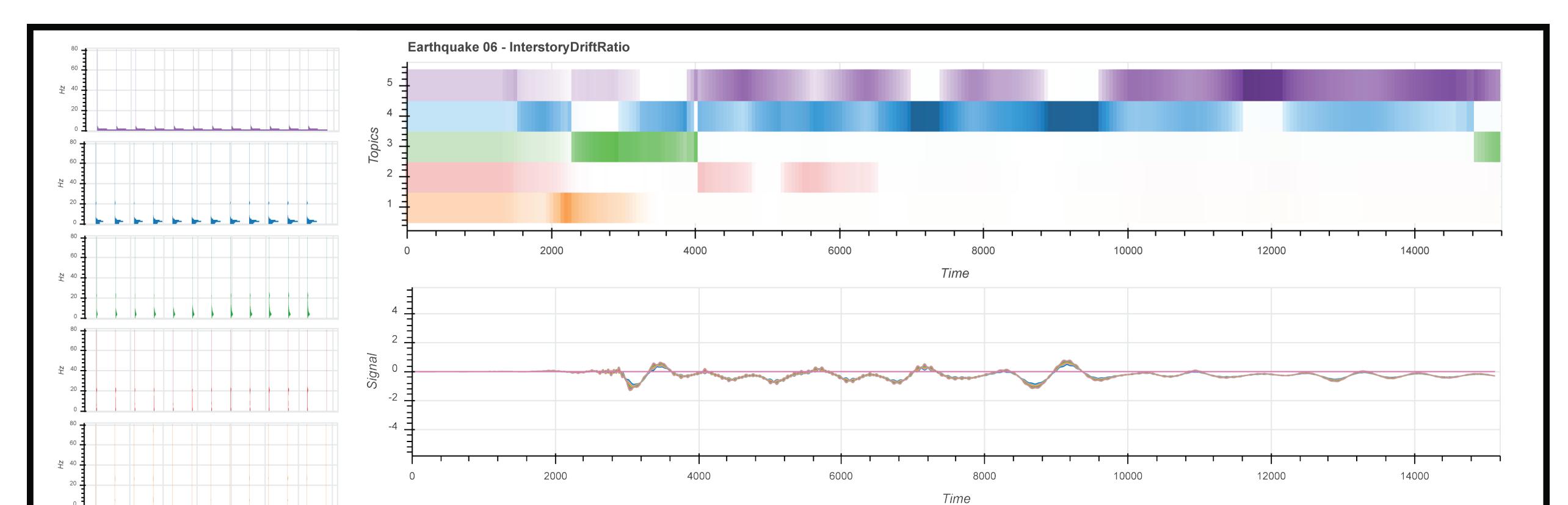
Analysts can select a portion of the ground acceleration (C) and drill down into a specific earthquake simulation (D), to visualize the response of a single physical variable plotted over time (x coordinate) and building floor (y coordinate). Finally, a 2D histogram can be used to compare two different attributes over the same period of time.

Topic modelling can help identify time-varying multisignal evolution!

Fusce in ipsum tristique dolor ultrices dictum eget vel sapien. Aenean finibus lorem eget enim finibus, eget interdum purus tincidunt.



Fusce in ipsum tristique dolor ultrices dictum eget vel sapien. Aenean finibus lorem eget enim finibus, eget interdum purus tincidunt.



Suspendisse erat erat, faucibus ut scelerisque vitae, rhoncus a risus. Vestibulum imperdiet lacinia tortor, nec accumsan est. Aenean a odio massa. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc vestibulum, risus fermentum tincidunt sodales, tellus lacus facilisis mi, a placerat mauris dolor eget nulla. Ut nec venenatis magna. Orci varius natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Pellentesque semper eros sit amet elementum rutrum.

References

Mauris iaculis, quam vitae imperdiet interdum, urna nibh suscipit sapien, ut faucibus quam sem id risus. In accumsan arcu a elit rhoncus, non imperdiet massa faucibus. Curabitur placerat malesuada magna, in ultricies nisi pharetra quis. Sed eget velit viverra, cursus massa at, aliquam augue. Integer a lacinia augue, et molestie elit. Nulla id ligula nisl. In vel convallis lacus. In vel mauris libero.

