

Introduction

Through a partnership between the University of Kentucky (UK), the U.S. Department of Energy (DOE), and the U.S. Geological Survey (USGS), a combination of strong-motion accelerometers and intermediate period seismometers are currently being installed at various depths in the 1,950-foot (594 meter) borehole at the Central U. S. Seismic Observatory (CUSSO) near the central segment of the New Madrid Seismic Zone (Fig. 1). The borehole penetrated the entire sediment overburden (586 m) and was terminated 8 meters into limestone bedrock. Prior to casing the hole, electrical, sonic velocity (P- and S-wave) and deviation logs were acquired (Fig. 2). Other site characterizations (e.g., high-resolution seismic reflection surveys, etc.) are also being conducted at CUSSO.

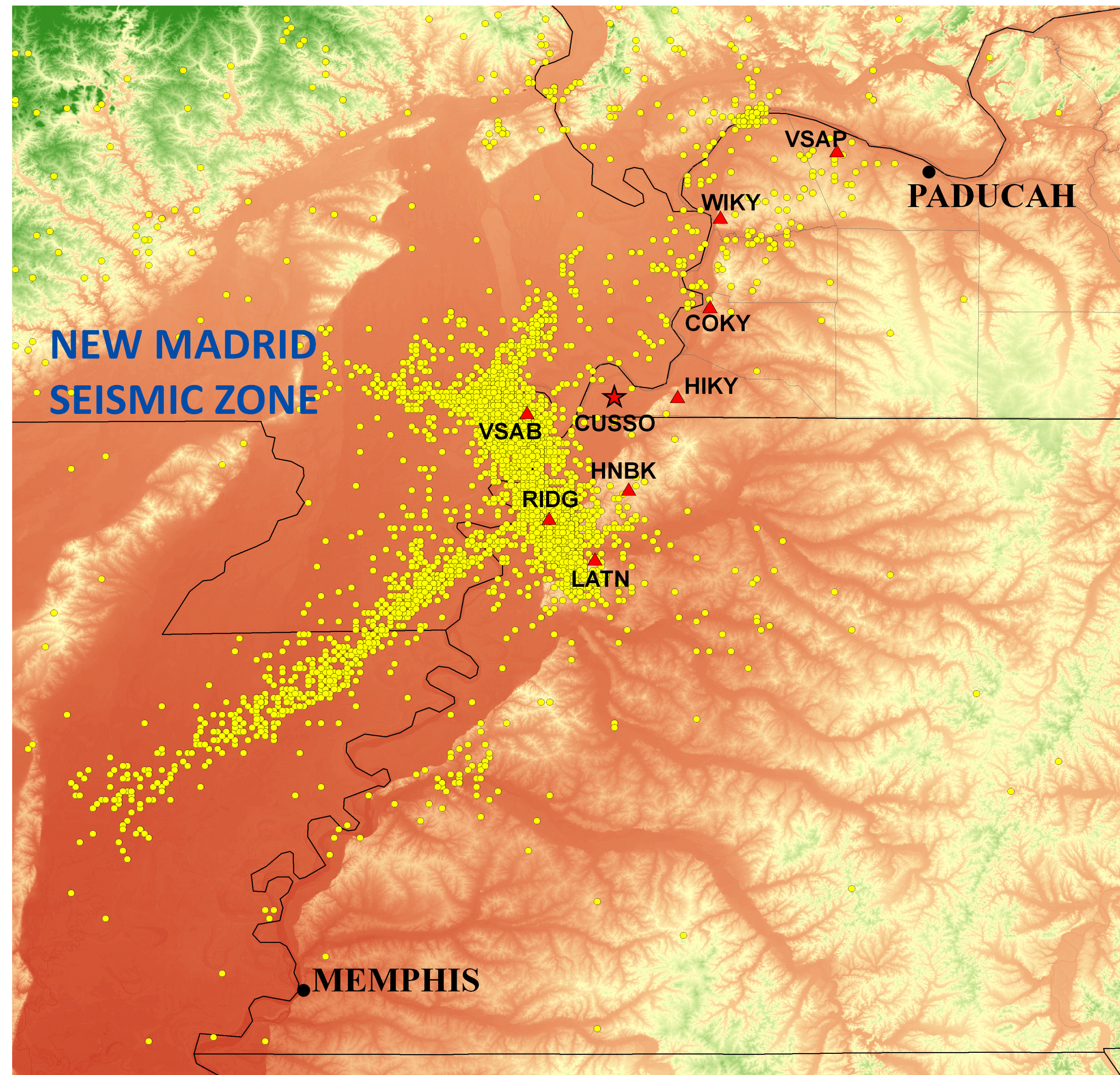


Figure 1. Locations of The New Madrid Seismic Zone and CUSSO.

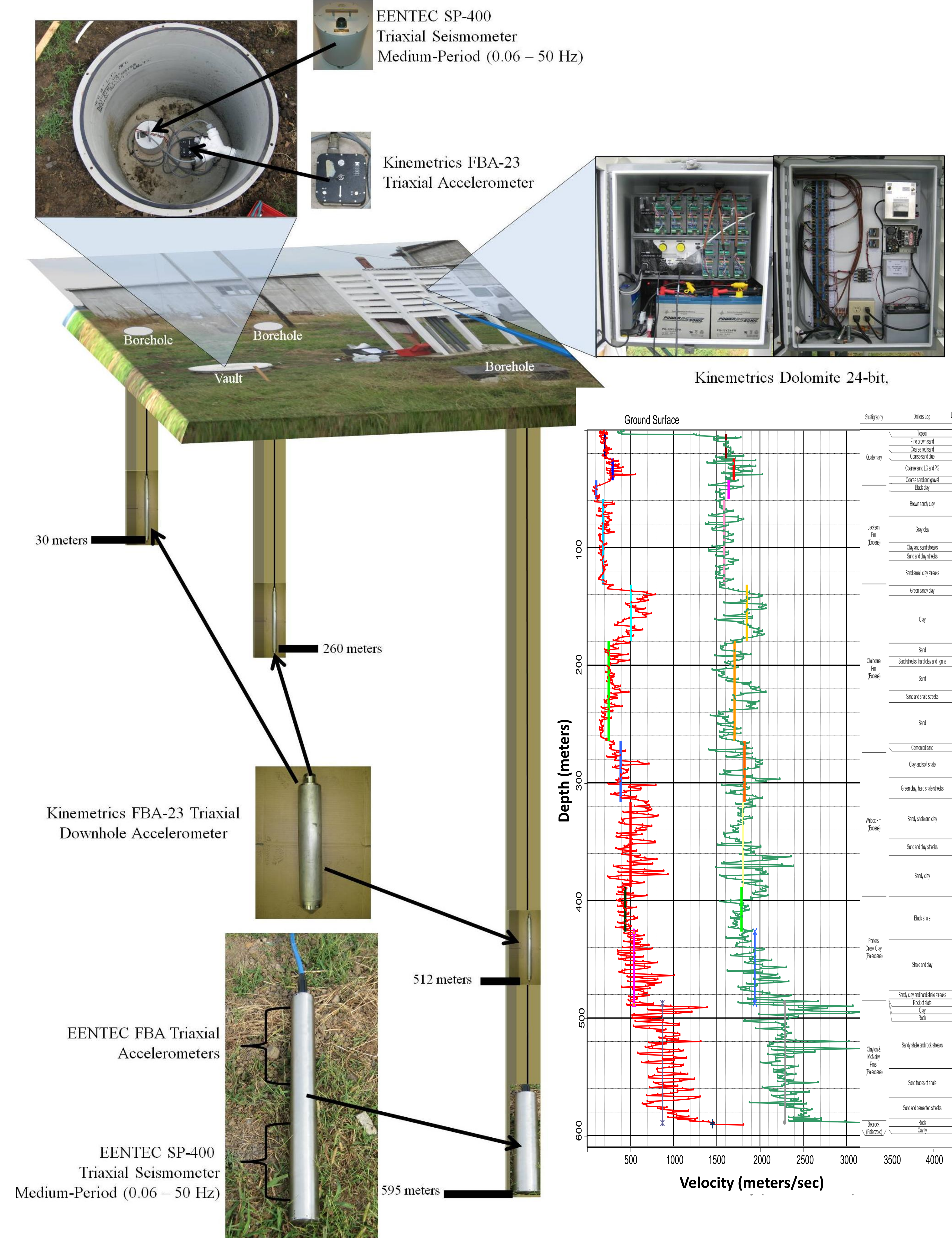


Figure 2. Borehole logs and instrumentations at CUSSO.

Research Objective

1. To evaluate the effect of thick sediments on strong and weak motions in the Upper Mississippi Embayment.
2. To evaluate current analytical and empirical methods for site amplification in the Central United States.
3. To evaluate soil dynamic properties of the sediments
4. To provide constraint on seismic hazard (strong motion) estimates in the New Madrid Seismic Zone

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