Scientific Visualizations of Multidimensional Data Collected from Various Sensors.

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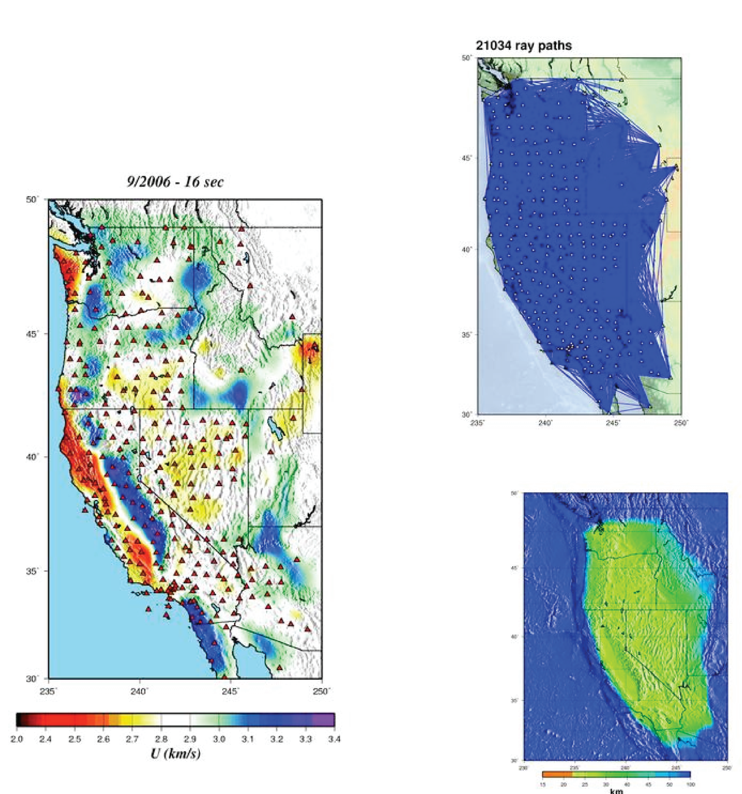
With the advances in the collection of greater quantities of higher caliber data, the field geophysics demands a new device to appropriately synthesize and compare the continuously-incoming slew of heterogeneous datasets from various branches of earth science. These data include earthquakes, sediment thickness, focal mechanisms, topography, tomography, Moho depth, aquifers, mines, geology, magnetics, faults, gravity, and photo-imagery. Due to the terminology, domain knowledge, and file formats associated with each data type and respective sub-discipline, the coherent translation of the data made accessible for all involved parties of researchers becomes a difficult task.

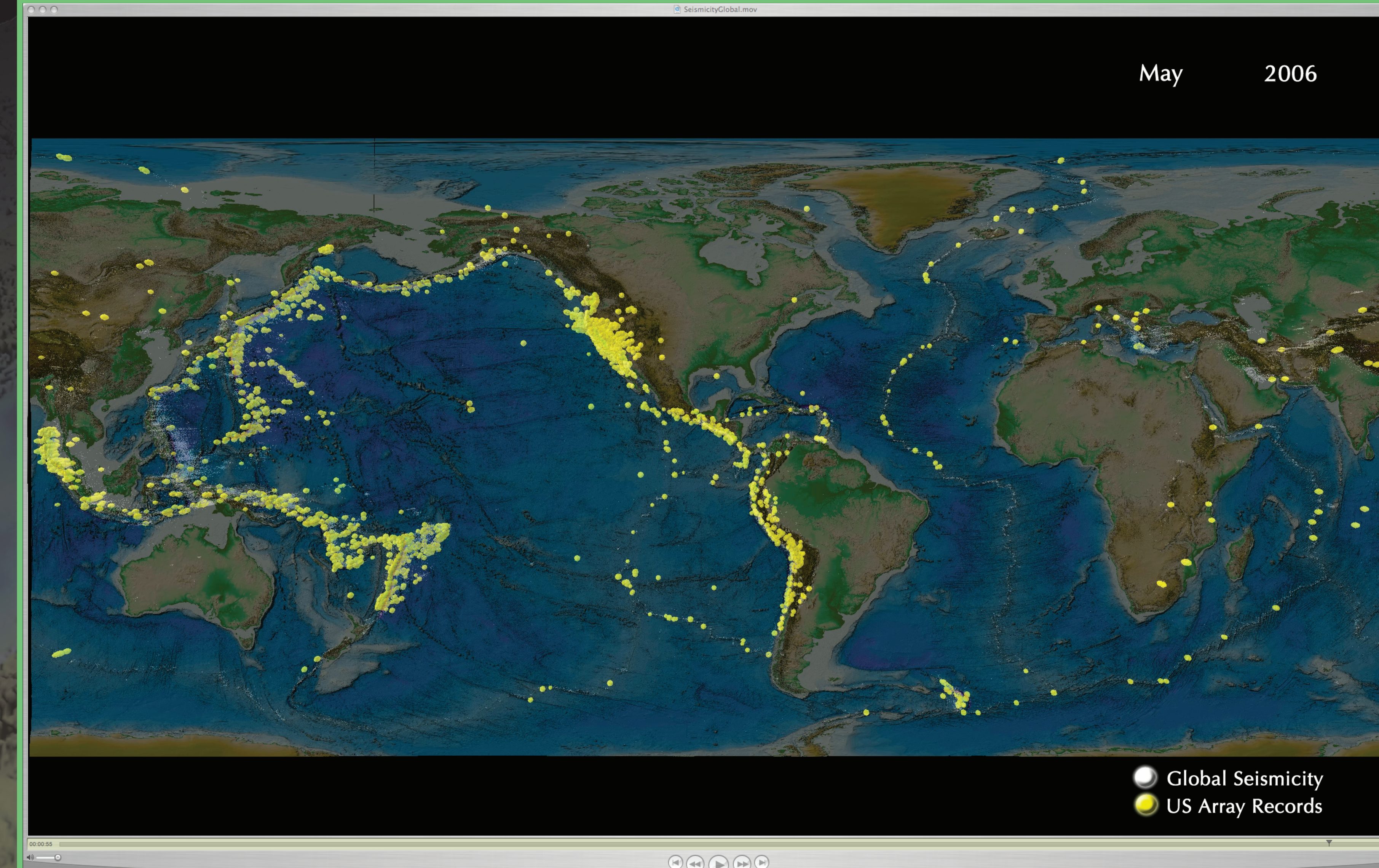
Herein, interactive 3D visualizations succor in advancing comprehension of interdependencies between datasets, even manifesting never-before-seen relations previously masked by directly interpreting raw data. One such example would be the examination of Californian fault systems. To assay the discrete intricacies of fault systems, we use 3D visualizations to posit representations of first motion mechanisms as sets of dual nodal planes (strike & dip) into a geographically-bound environment; once this is accomplished, a mere visual inspection yields the identification of certain regions as of high fault complexity (e.g., Coalinga, the San Jacinto fault) and of relative fault simplicity (e.g., Parkfield). These visualizations can be appended with imagery from earthquake locations (lat, lon, depth), surface fault traces, and seismic instrument locations. Other projects include interpreting and using data recorded by the USArray Transportable Array network to generate temporal snapshots of how surface wave tomography derived from ambient seismic noise has evolved with the expansion of the sensor network.

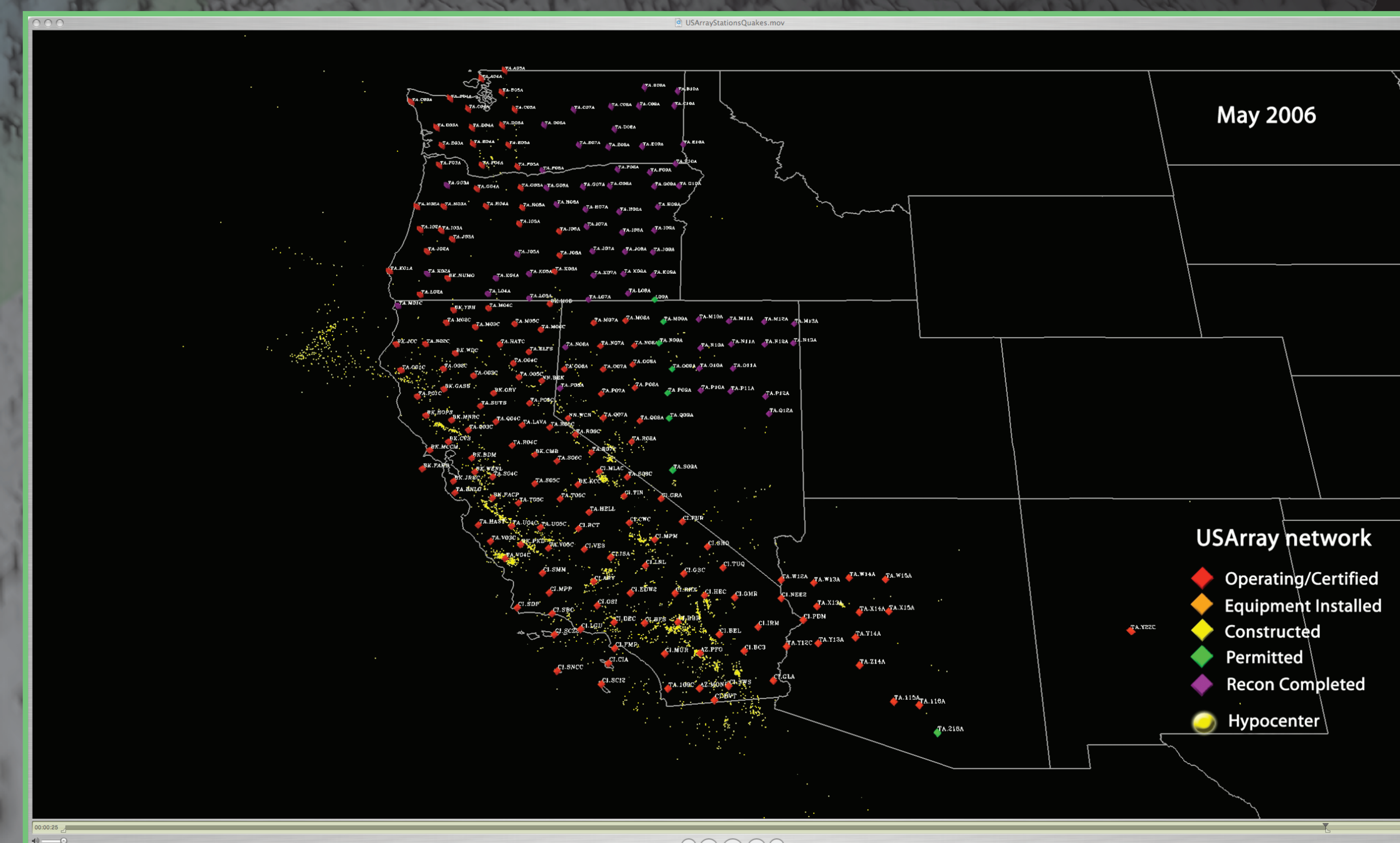
Likewise, these "snapshots" can be visualized to produce stunning presentations. Visualizations such as the aforementioned are available to the public through download at the Scripps Visualization Center's visual objects library (http://siovizcenter.ucsd.edu/library.php). This library includes 3D interactive visualizations, Quicktime movies, and on-line tools. Please contact us at vizinfo@ucsd.edu if you would like to collaborate on visualizing your geophysical data.

16 s RAYLEIGH WAVE GROUP VELOCITIES
Cumulative: Oct. 2004 - Sep. 2006



Figures: **Left:** Group Velocity Map, **Upper Right:** Ray Path Map, **Lower Right:** Resolution Map





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