Science Camp #170802.8

02-04 August 2016 @ the Condo, the Nelson Cabin, and surrounding area

Advisors
H. Roice Nelson, Jr., Andrea S. Nelson,
Paul F. Nelson, Benjamin B. Nelson

Attendees
Ethan E. Nelson, Grant M. Nelson, Colby C. Wright,
Taylor R. Wright, Ella D. Nelson, Halle N. Wright,
Bobbie Sophia Waldron, Dallin Spencer Nelson,
Avalyn Joyce Wright, Rachel Lee, & Ian Lee

Volumetric Data Allowed Study of 3-Dimensional Geology

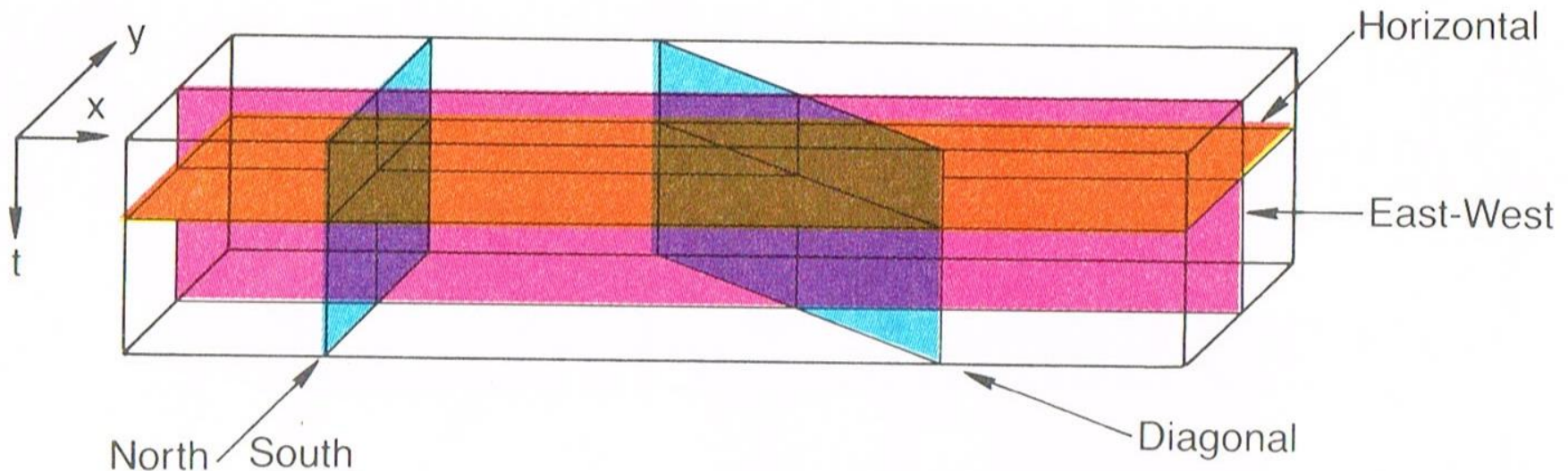96   *New Technologies in Exploration Geophysics*

Figure 4-1. A 3D data volume allows for a much more complete evaluation of the subsurface. The data can be vertically sliced in any arbitrary direction to allow interpretation along the lines critical to an accurate evaluation. Horizontal sections can also be generated from a data volume.

http://www.walden3d.com/photos/Grandkids_Science_Camps/170802-04_Science_Camp/7_3-D_Display.pdf

GSI & E&S
3-D Displays

Figure 2-2. Example of a full-color, 3D display that is rotatable around an axis. Such capability enhances seismic data interpretation in a world with 3D relationships. (Courtesy Evans and Sutherland.)
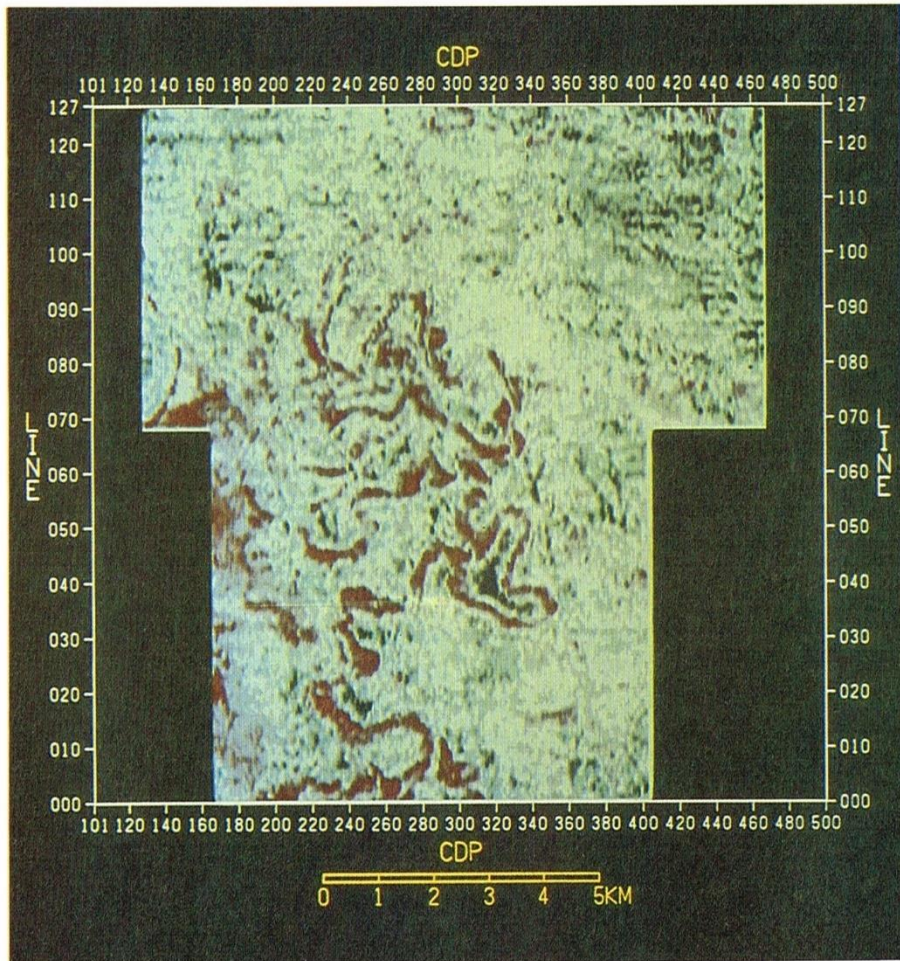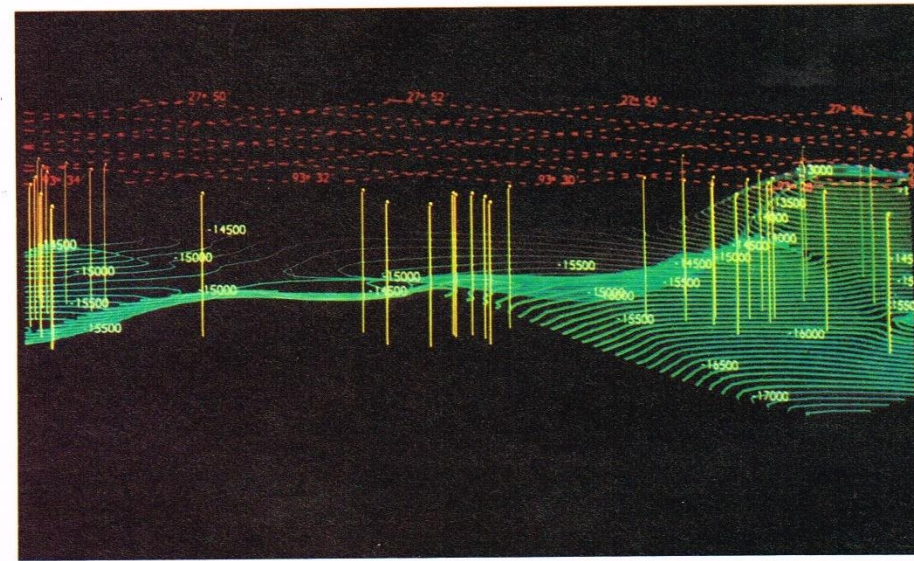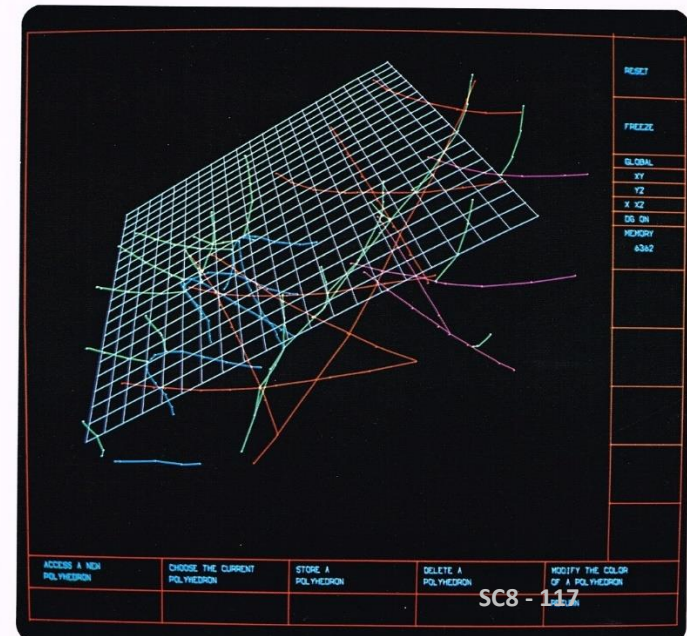
Figure 4-7. The unique capabilities to interpret a subsurface geologic sequence with 3D data volumes is shown by this horizontal (SEISCROP) seismic section slicing a meandering stream channel in the Gulf of Thailand. (Courtesy Geophysical Service, Inc.)

EVANS & SUTHERLAND

SC8 - 117

Seismic Data Analysis—The Picture System can be a powerful tool for interpreting seismic data. Here fault lines are displayed beneath a grid representative of the earth's surface. Color is used to identify lines belonging to a common fault plane.
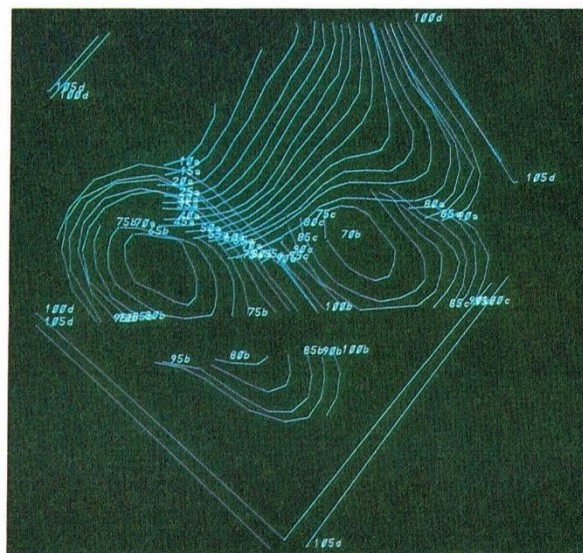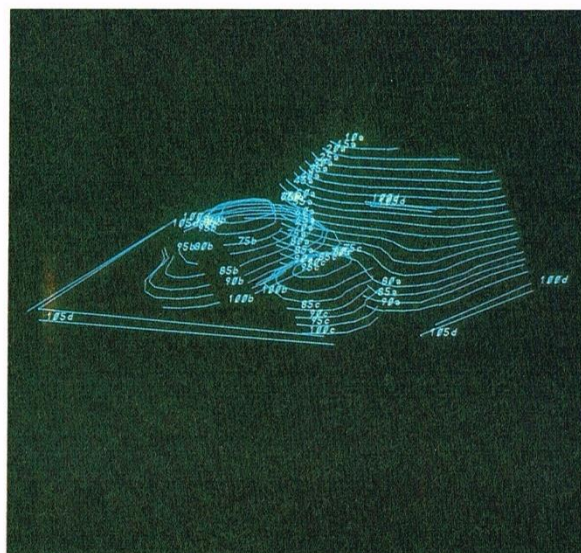
A
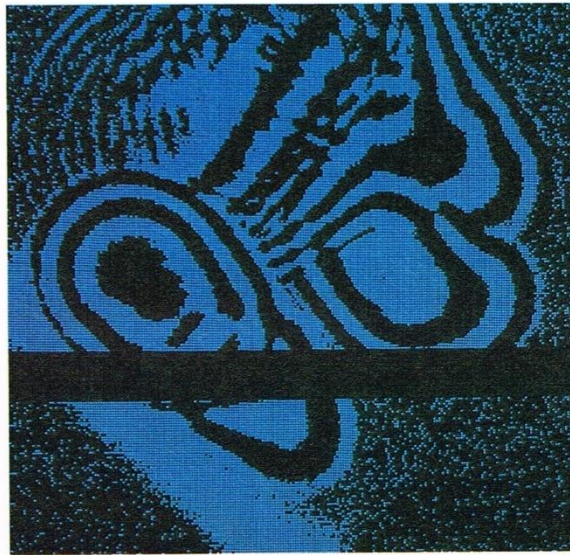
B

Figure 4-8. Interactive 3D interpretation techniques are becoming much more common. Here two horizontal sections across the SALGLF model are shown (A and B). There is no data in the black strip because of a data collection error.
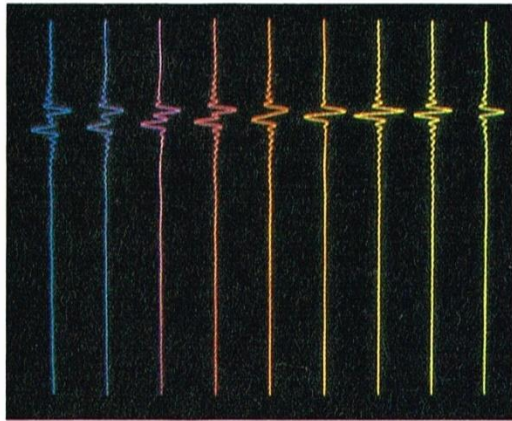
C

D

Figure 4-8 (continued). As horizontal sections are stepped through, they can be interactively interpreted as a 3D contour map that can be rotated in 3D space in real time (C and D).
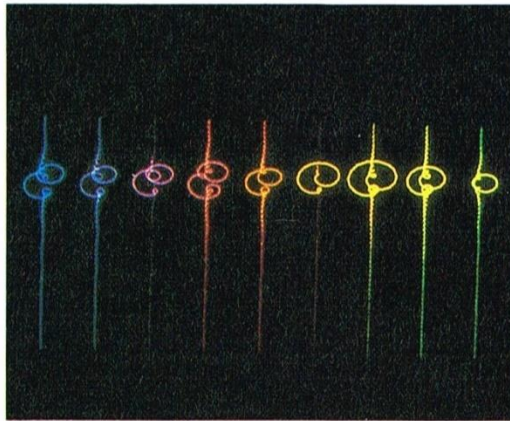
First Interactive 3-D Displays on the Adage Raster Segment Generator and Vector Display
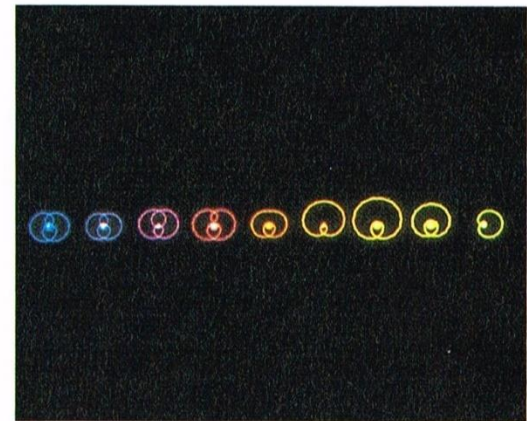
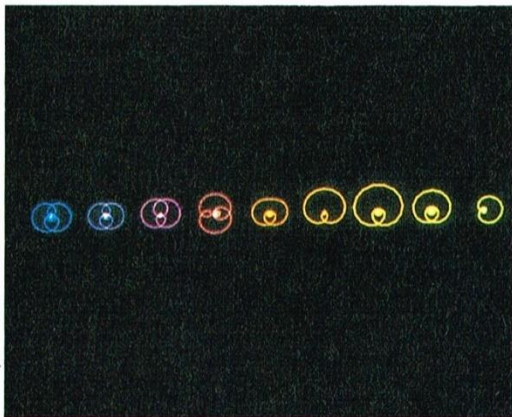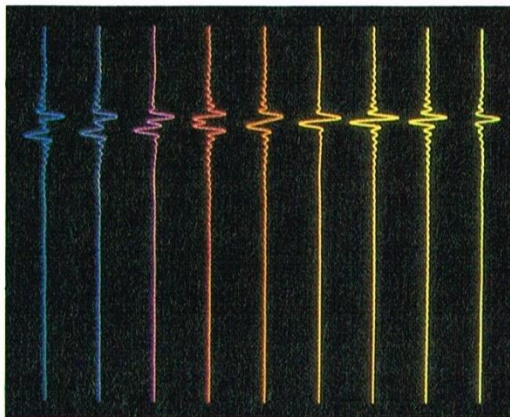# Complex Seismic Traces
3-D Rotating Phase at NASA on E&S

Figure 9-11. This sequence of photos displays a 90° phase shift of one synthetic complex seismic trace across a formation pinchout. From A to B the complex traces are rotated, until a top down view is reached in C. At this point, all of the traces are in phase. In D, the fourth trace from the left is rotated to an out-of-phase position. It remains in this out-of-phase position when the entire group of traces is then rotated back to their original vertical position (E). It now appears that the fourth trace no longer fits into the pinchout. Such phase discrepancies are commonly found when trying to tie seismic sections together from different surveys. This is only one example of the subtle characteristics of and problems with seismic data interpretation. (Courtesy Geosource, Petty-Ray Geophysical Division.)
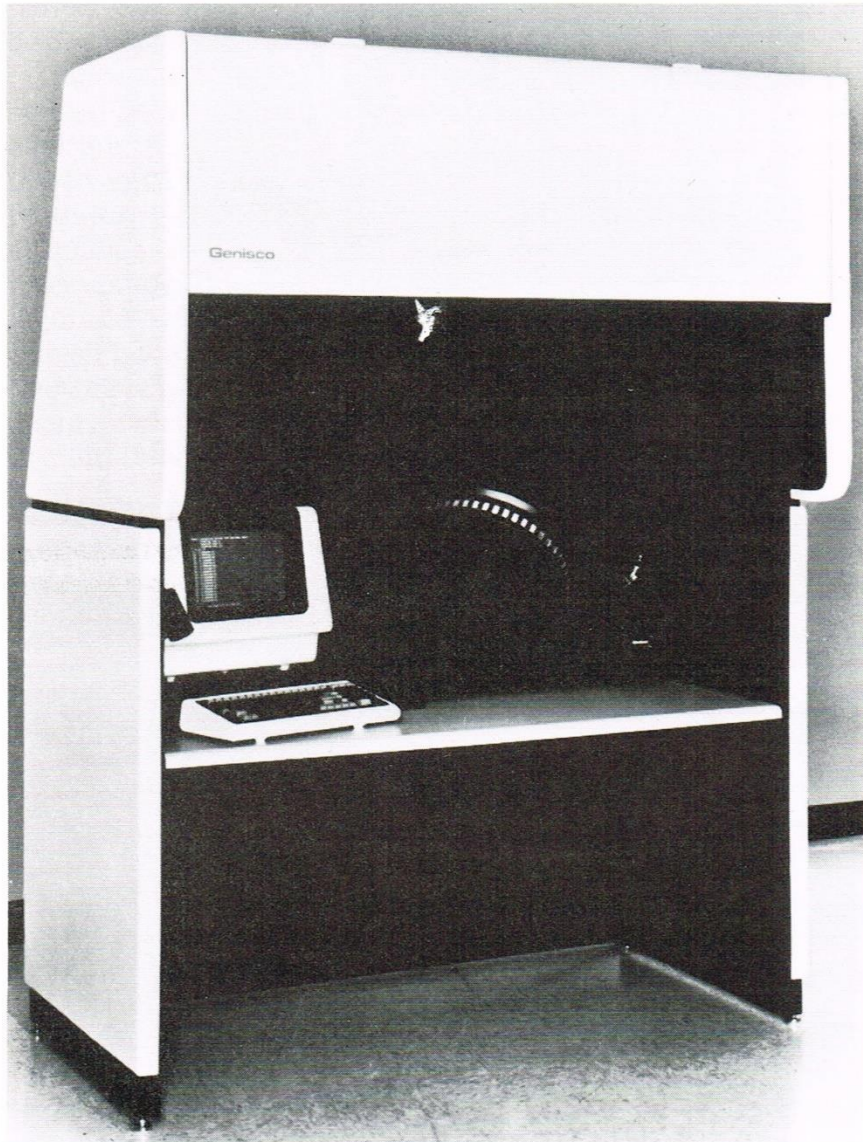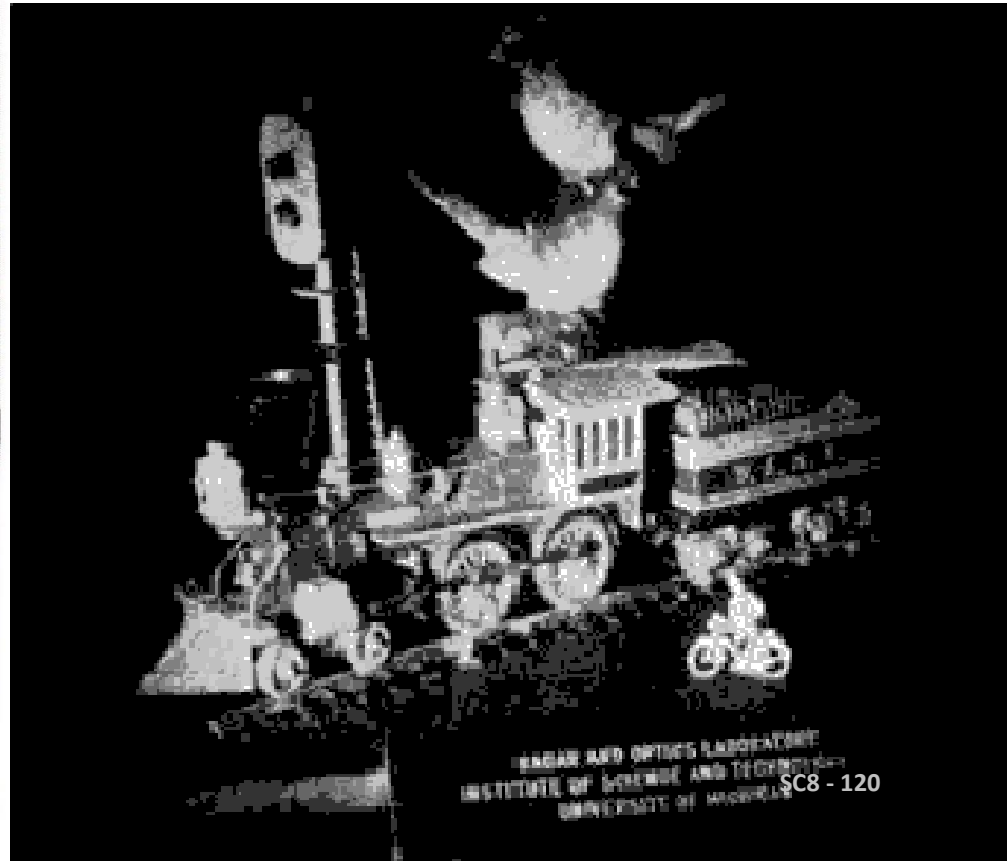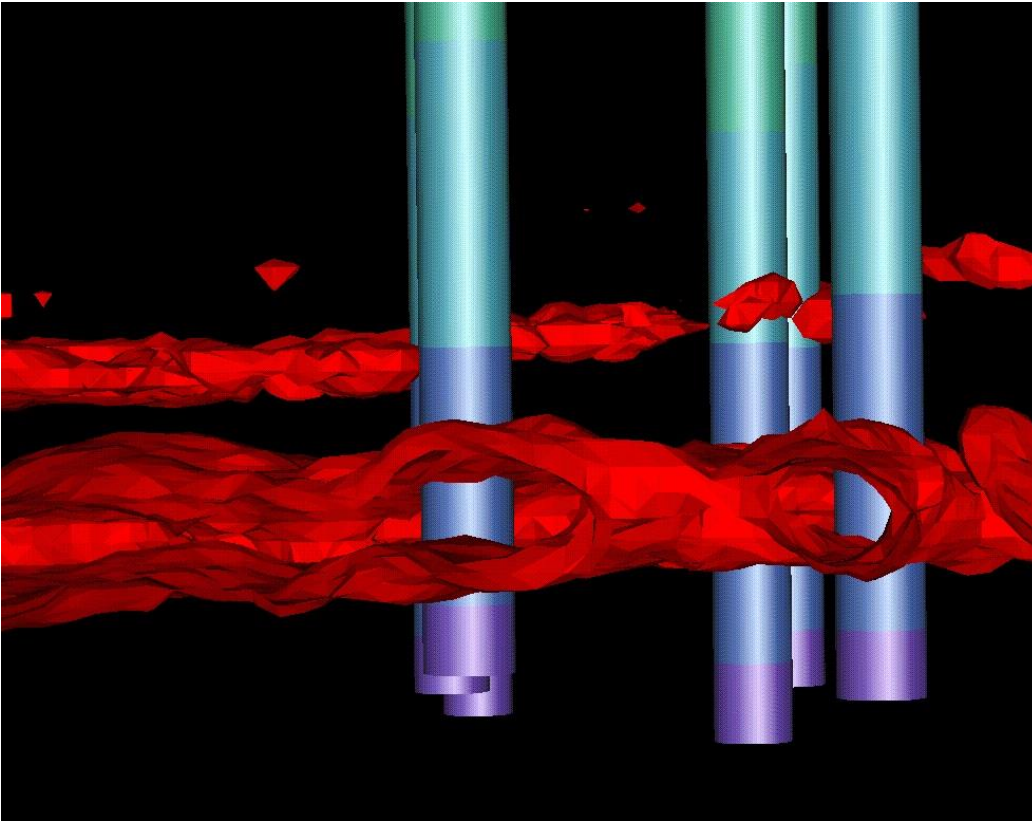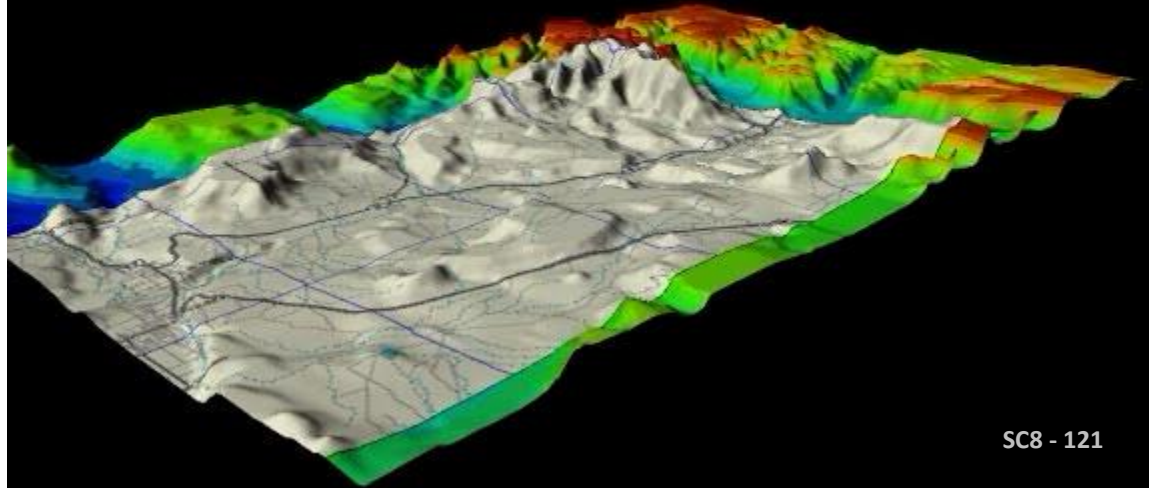
Figure 8-10. The Genisco SpaceGraph vibrating mirror 3D display device. A 40-cm vibrating mirror is partially shown at the center of the display. A high-resolution CRT is housed within the overhead casing. (Courtesy Hand Stover, Genisco Computer Corp.)
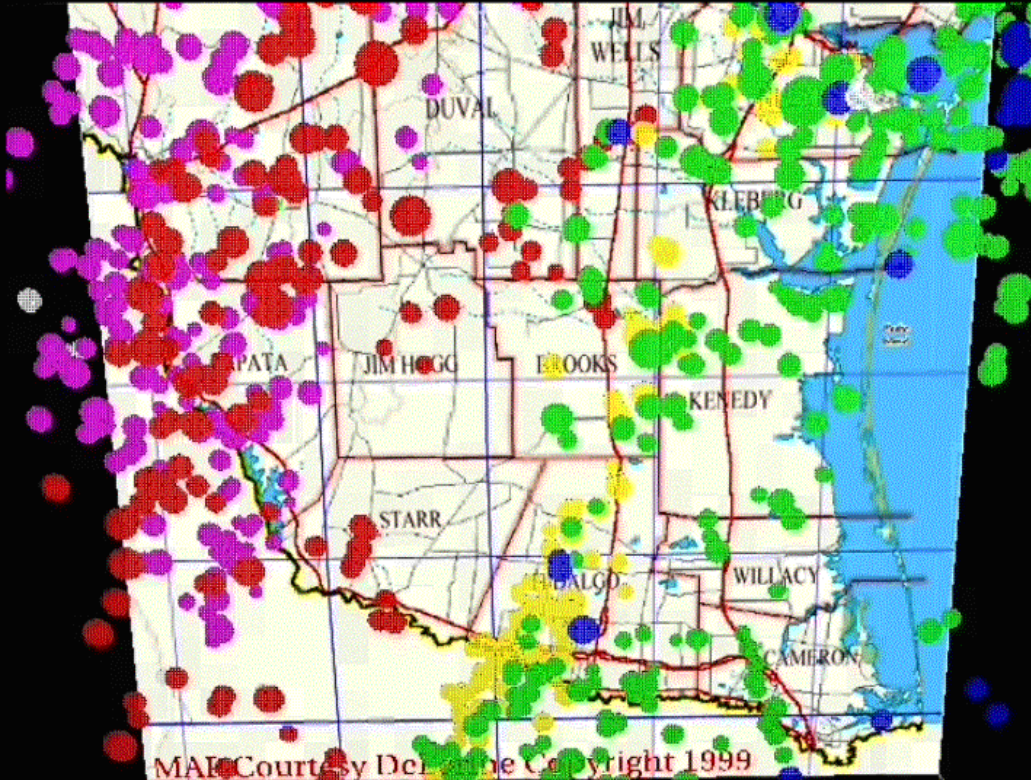
Vibrating Mirrors
&
Holograms
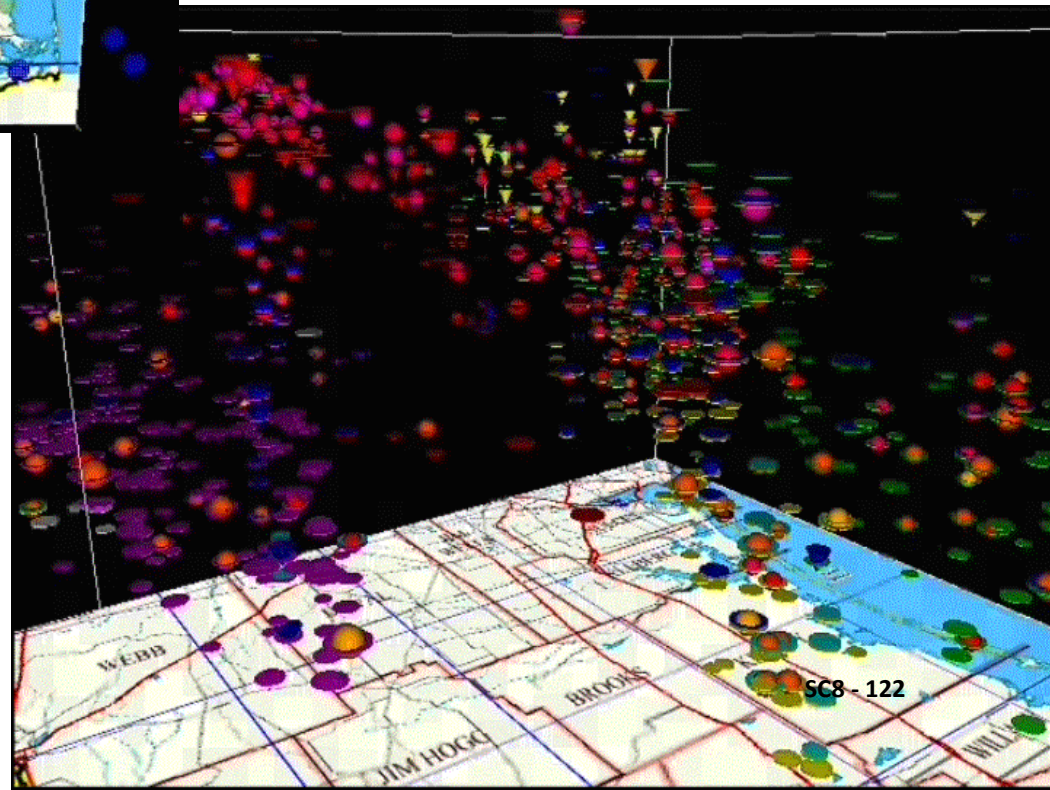

SC8 - 120

U of U 3D
&
Continuum
Resources

Zion and the
Road to Hurricane
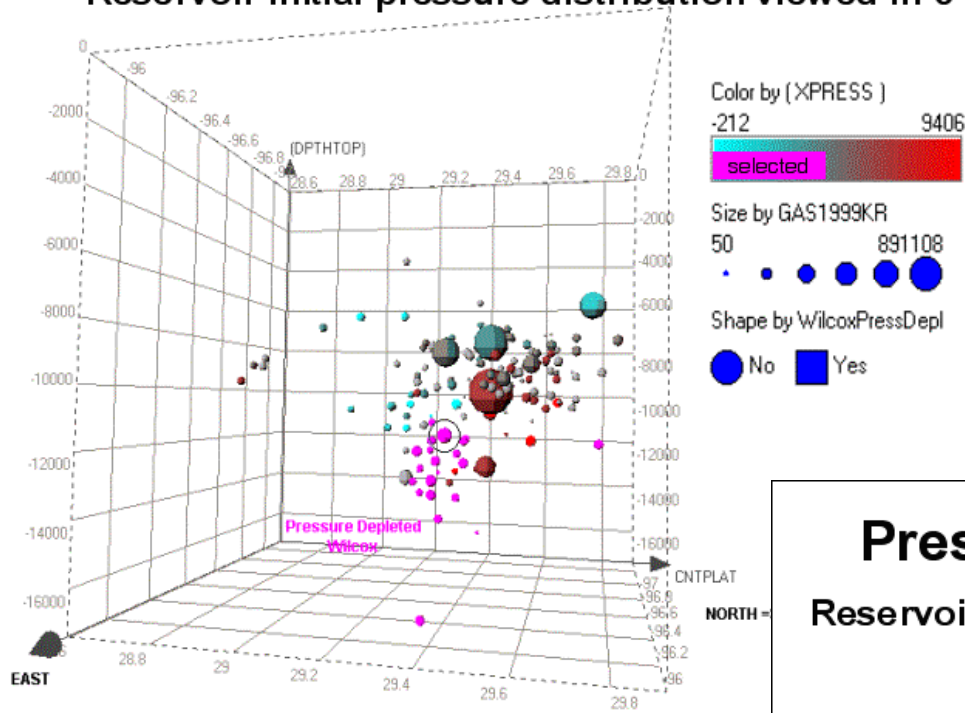
South Texas Horizon Tops in 3-D at Continuum

South Texas Example of Visualizing an Entirely New Exploration Play: Wilcox Turbidite Channels
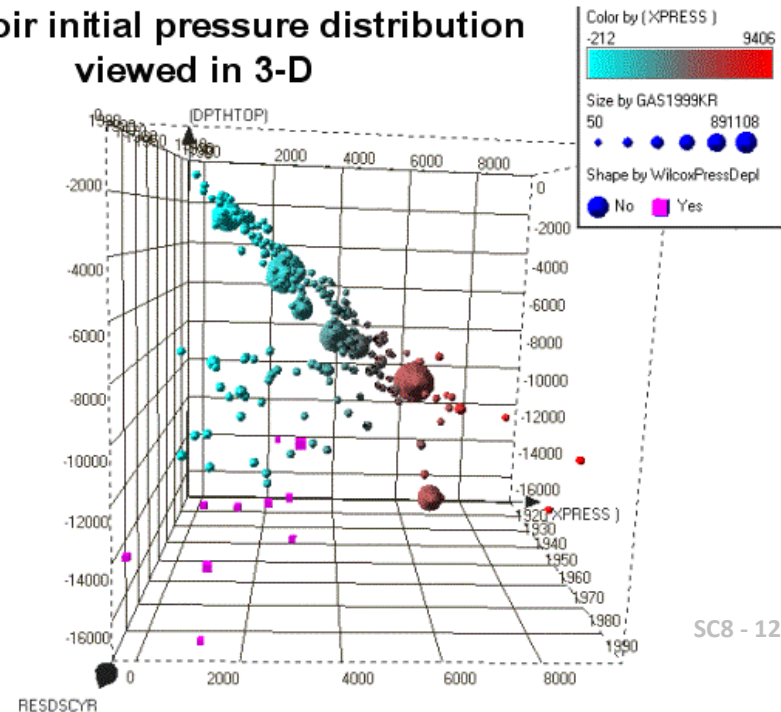
Data Mining and Search Strategies

Reservoir initial pressure distribution viewed in 3-D

Depth of Gas & Geopressure

Pressure/Depth Exploration History

Reservoir initial pressure distribution viewed in 3-D

Colorado County
Gas Wells and
New Trends

SC8 - 123

Notes

2017 Science Camp

- What was best about 2017 Science Camp?
  - _____
  - _____
  - _____

- What would be your ideal 2018 Science Camp Theme?
  - _____
  - _____
  - _____