

Boonsville 3D Time to Depth Conversion



Structural Framework Workflow

Input Data

Process

Product

Well Markers

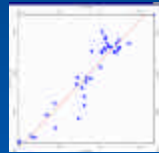
Seismic Time Horizons

Sonic Logs

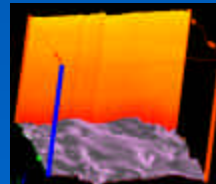
Velocity Surveys

Seismic Continuity Volume

Co-located
Co-Kriging

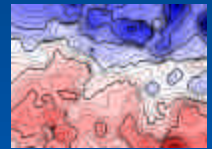


Build
Velocity Field



Fault
Framework

Depth Horizon
For Reference Surface

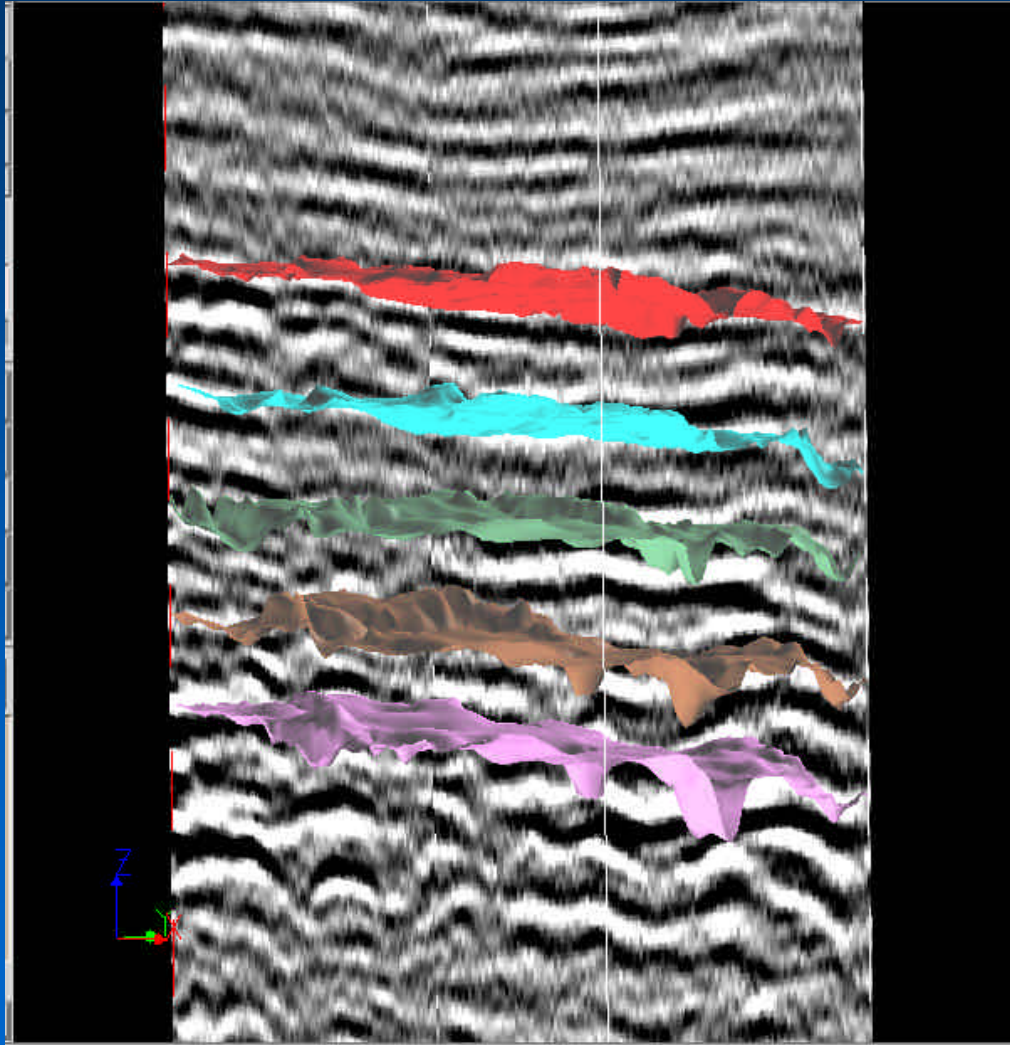


Depth Convert
Other Seismic
Horizons



Depth
Converted Fault
Network

Seismic Amplitude Section and Time Horizons



Caddo

Davis

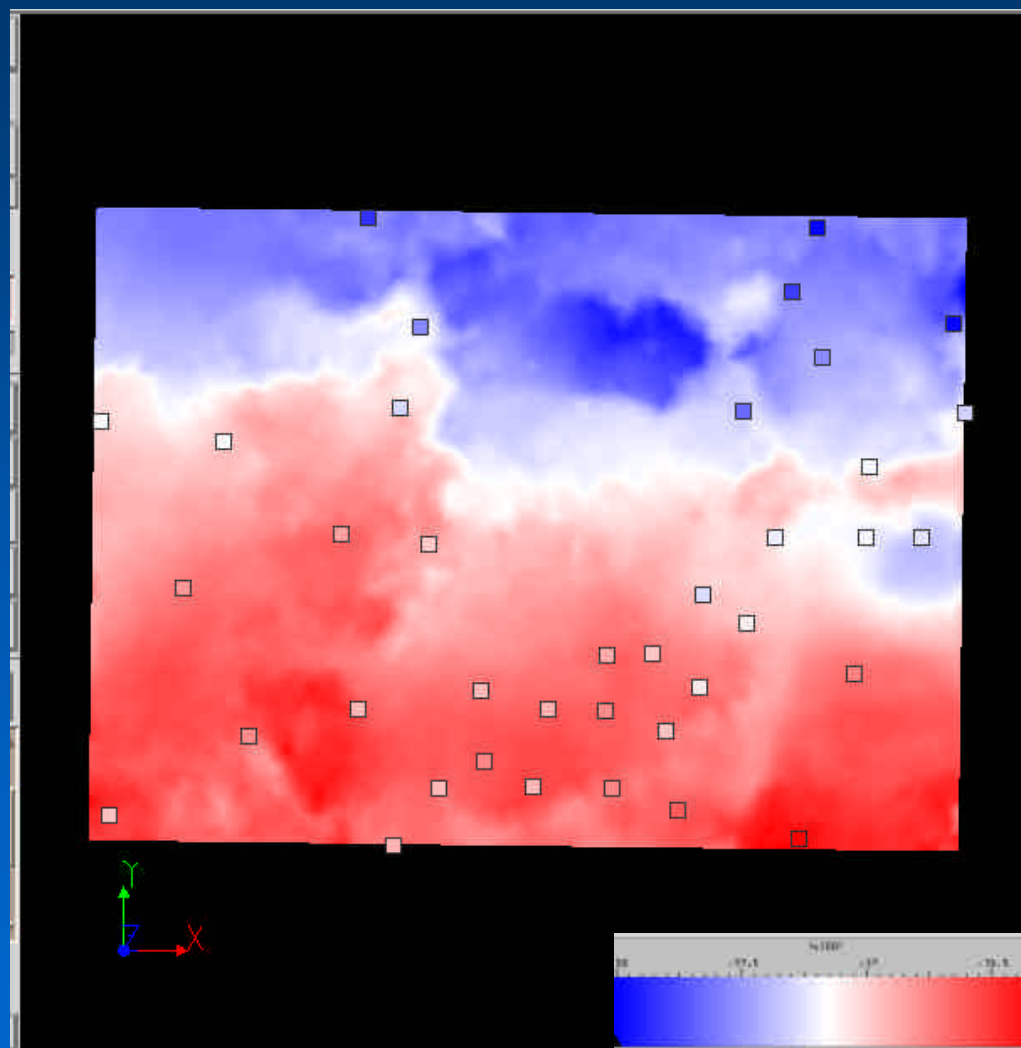
Runaway

Vineyard

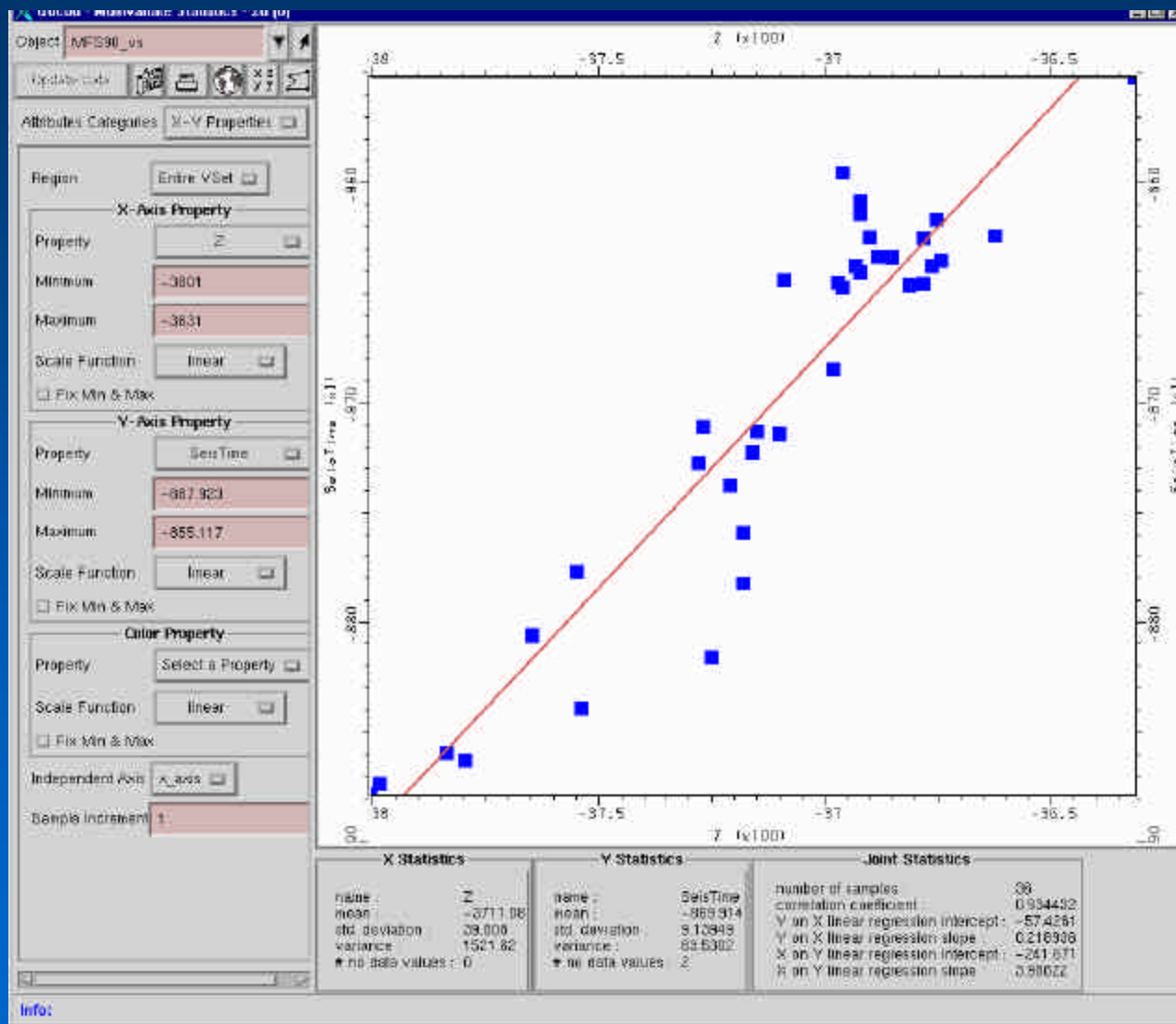
Marble Falls LS

Atoka Group

Caddo Time Horizon and Well Marker Subsea Depths



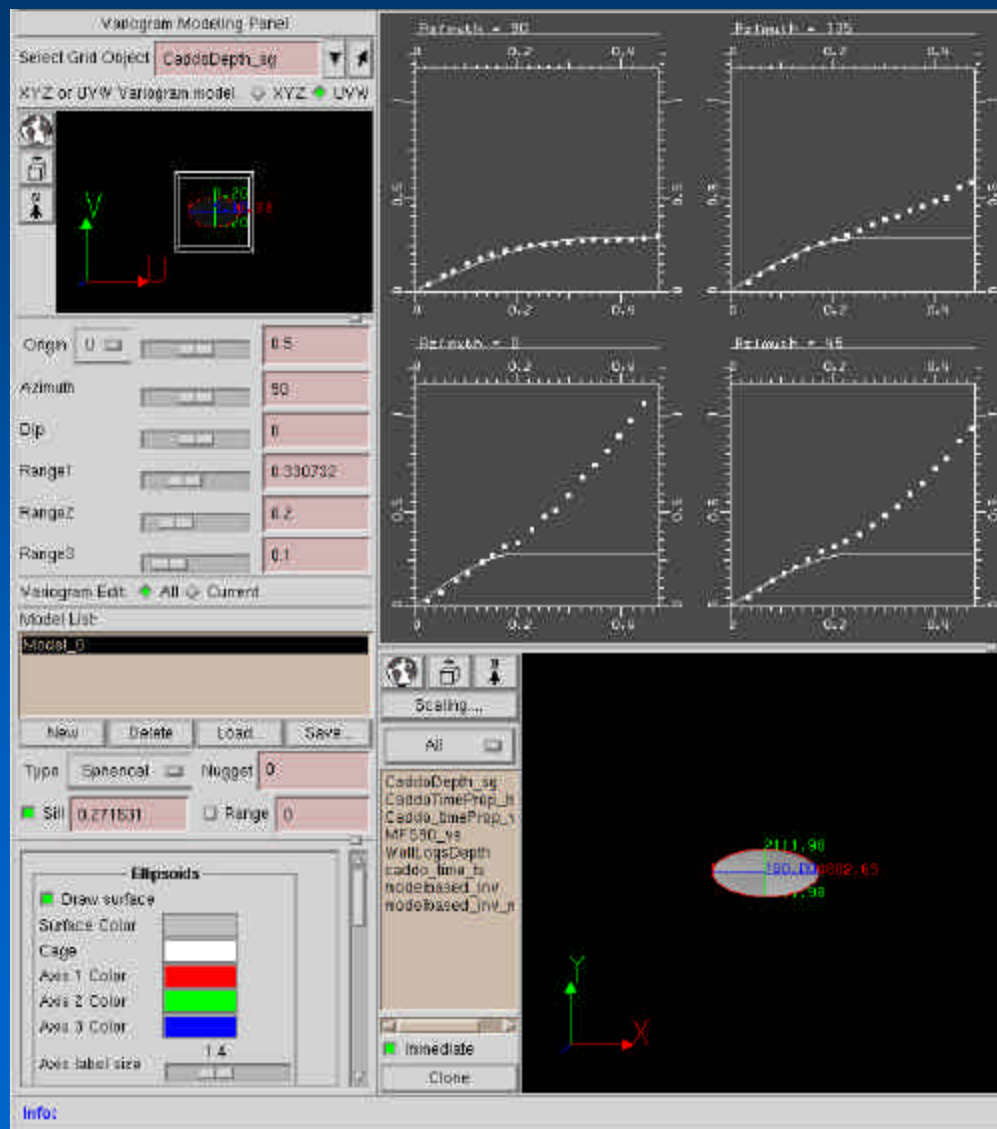
Cross-Plot of Caddo Time Horizon at Wells vs. Well Marker Depth



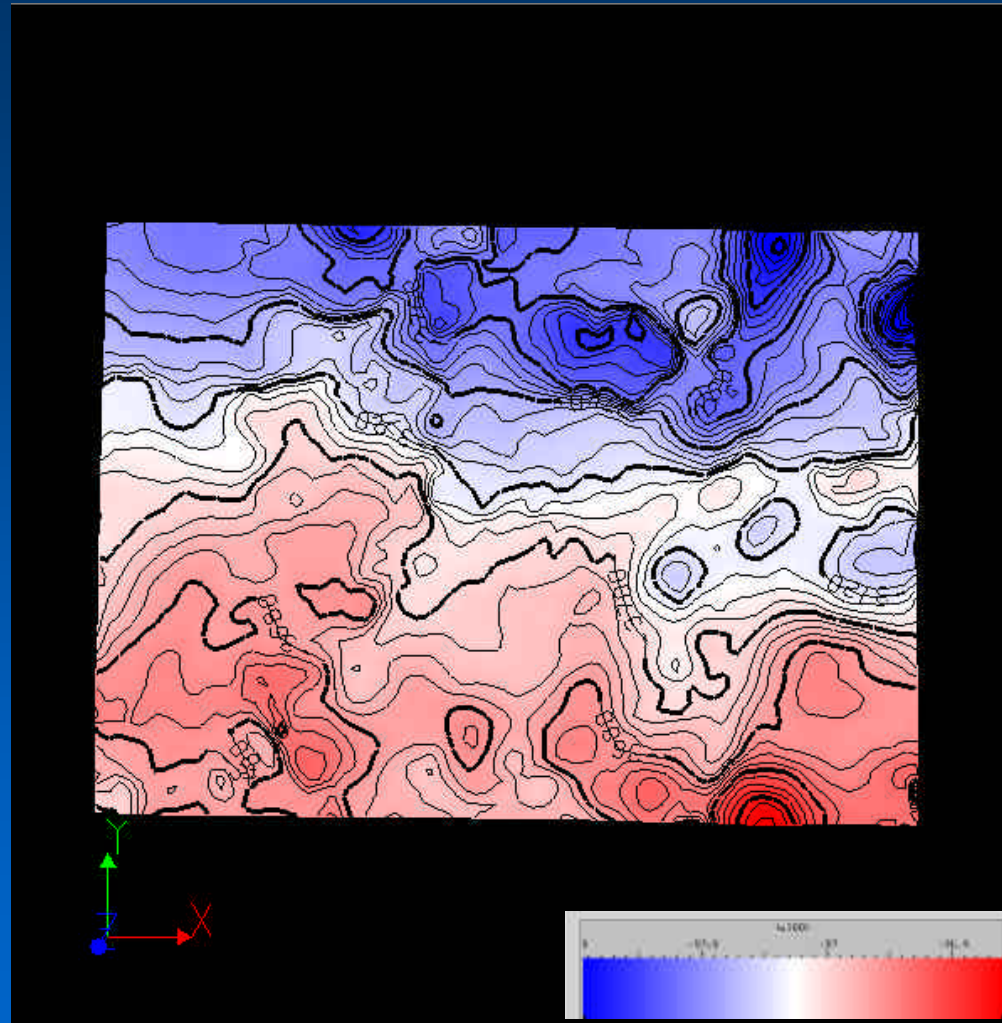
Time scaled by -1 to position in an altitude framework

$$R^2 = 0.93$$

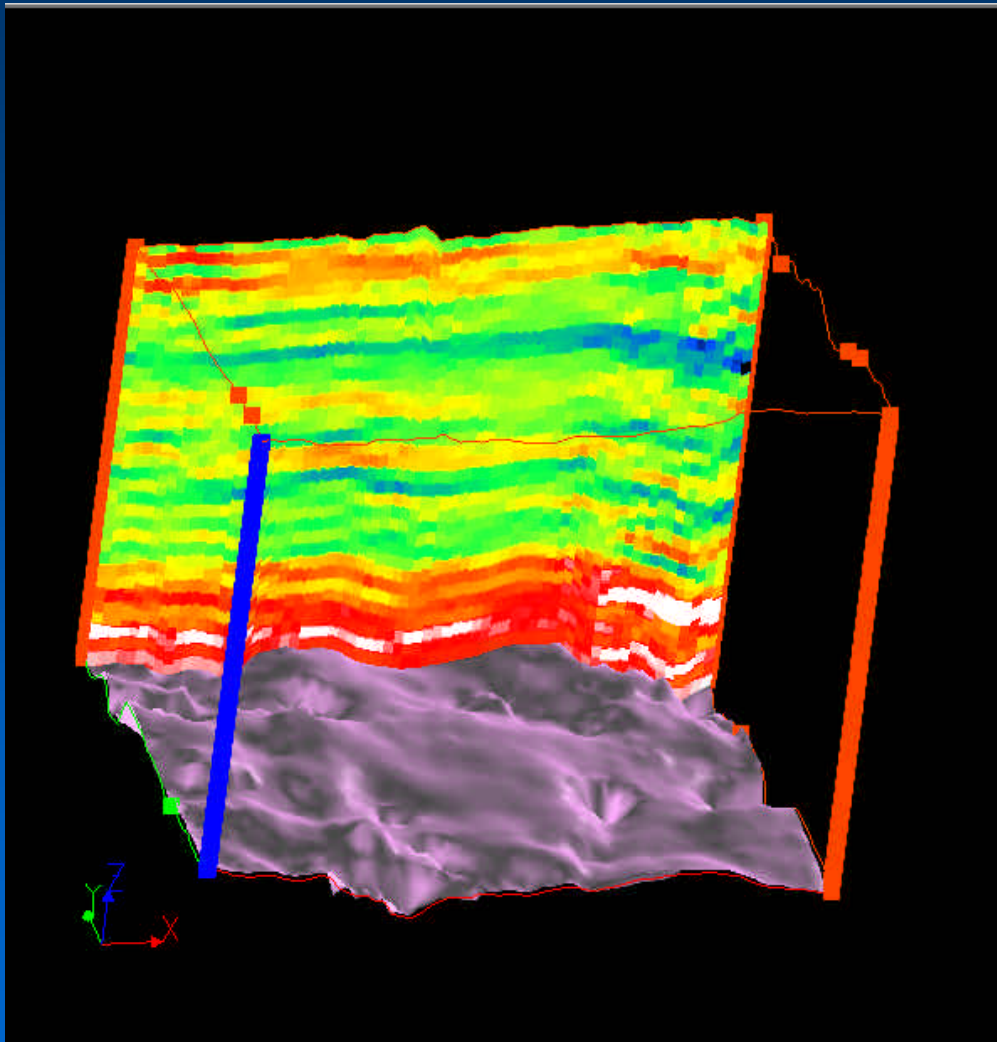
Variogram of Caddo Time Horizon For CoKriging With Well Markers



Final Depth Surface for Caddo LS



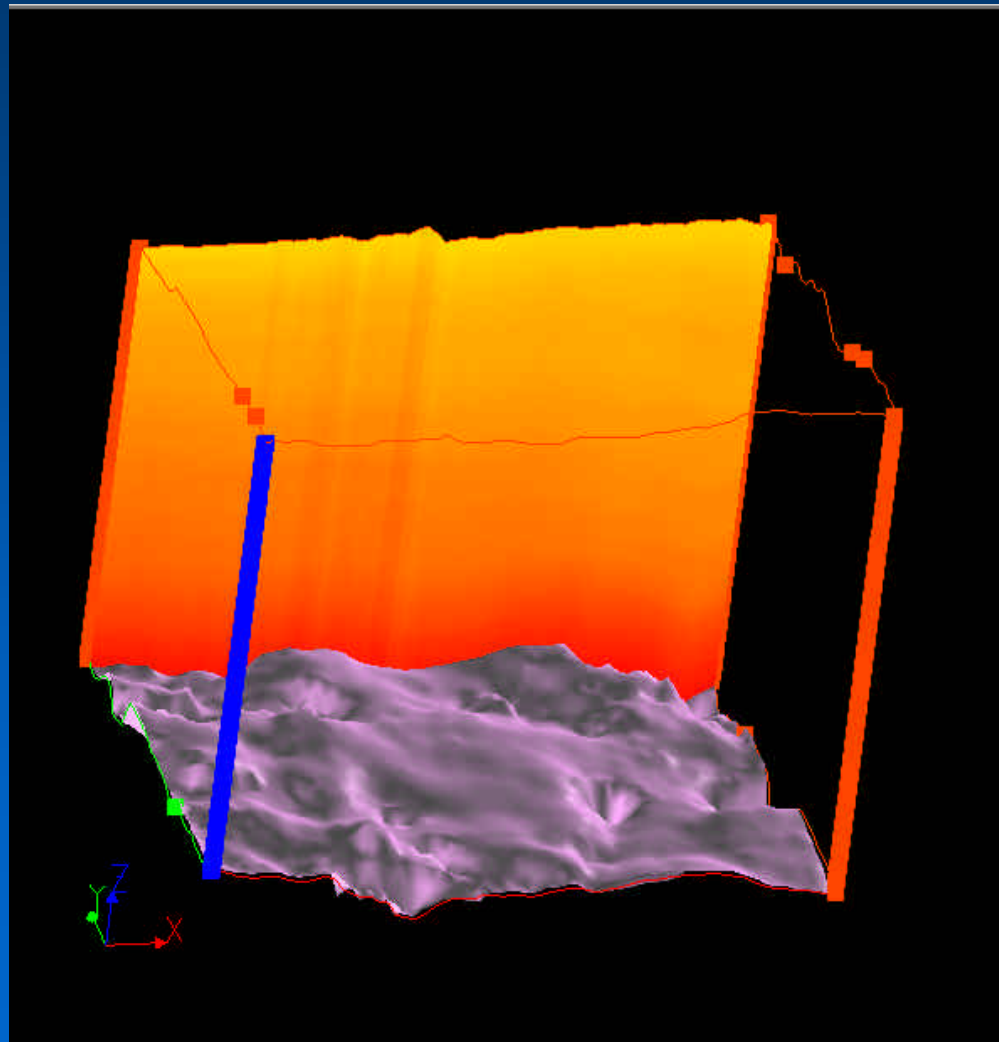
AI Between Caddo and Marble Falls LS



$$\text{Log(Velocity)} = 0.66 + 0.85 * \text{Log(AI)}$$

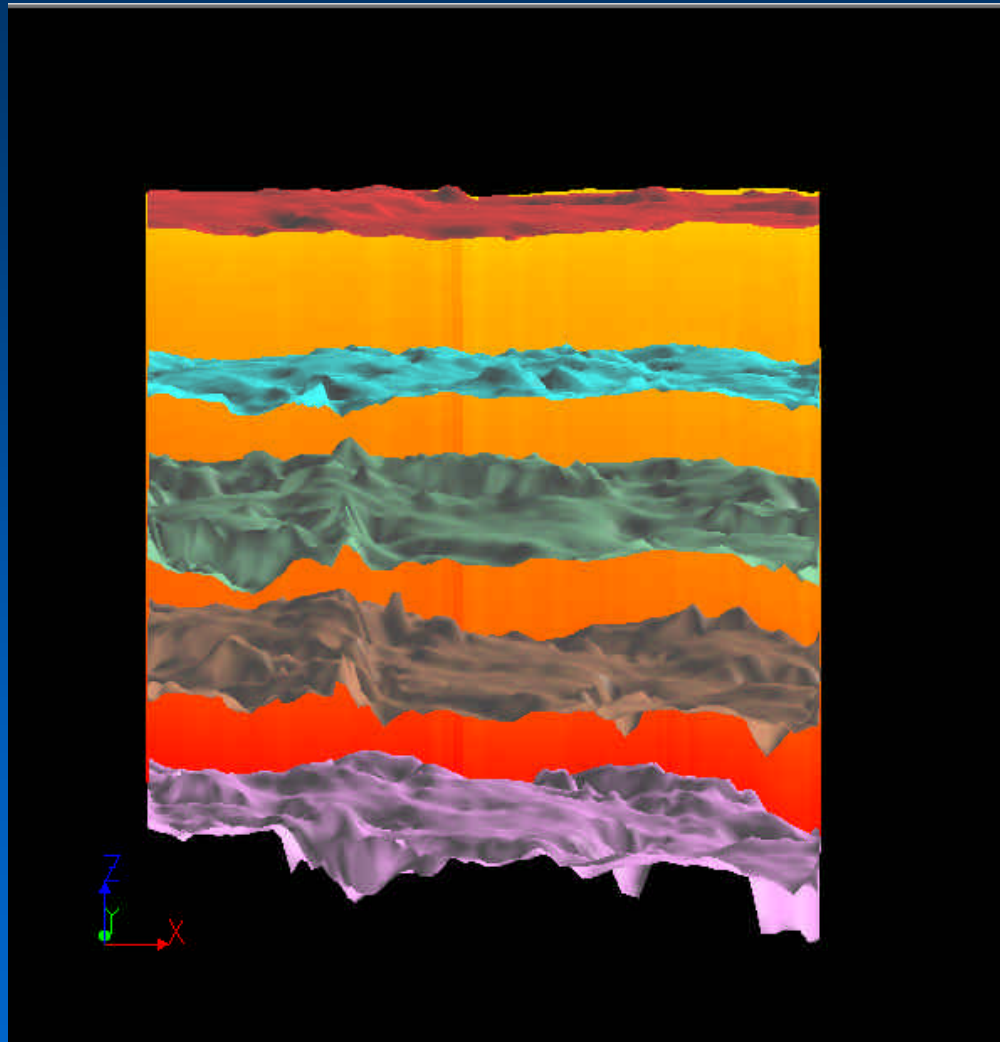
Convert AI to
Interval Velocity

Average Velocity Field Used for Depth Conversion of Volume and Other Time Horizons



Depth Converted Horizons

Background is V_{avg}



Caddo

Davis

Runaway

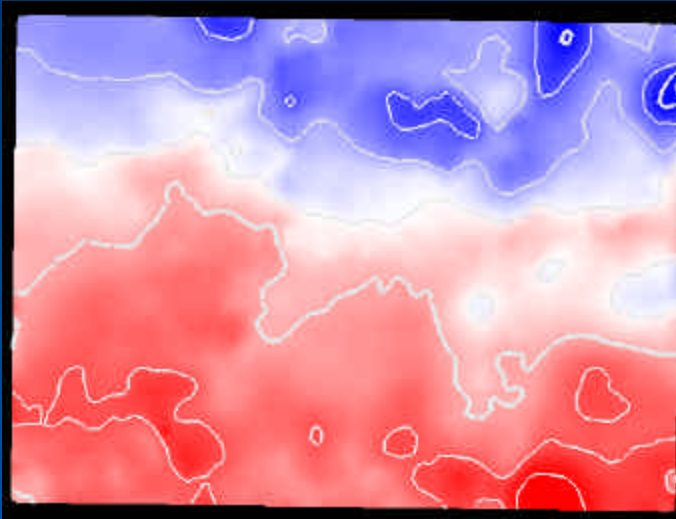
Vineyard

Marble Falls LS

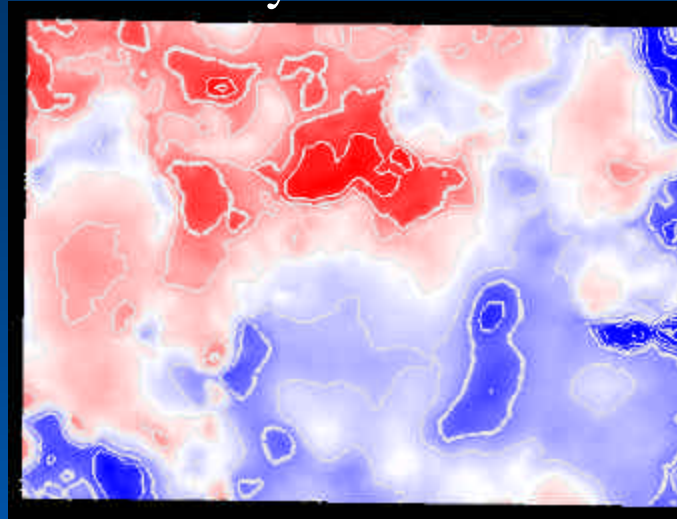
Atoka Group

Depth Structure Maps of 4 Key Reservoir Intervals

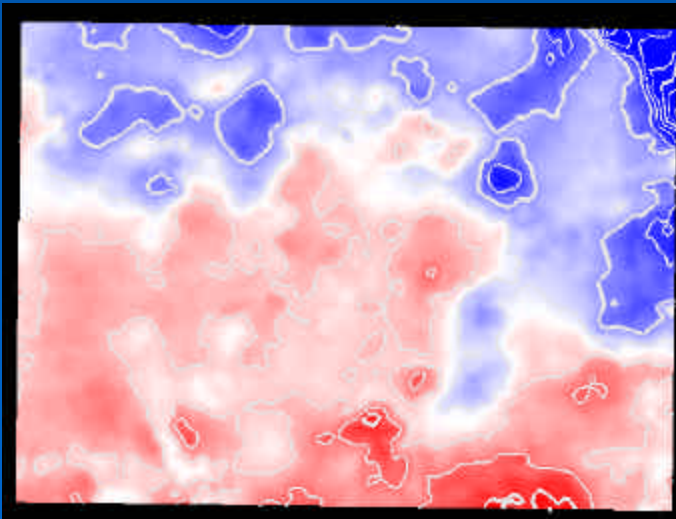
Caddo



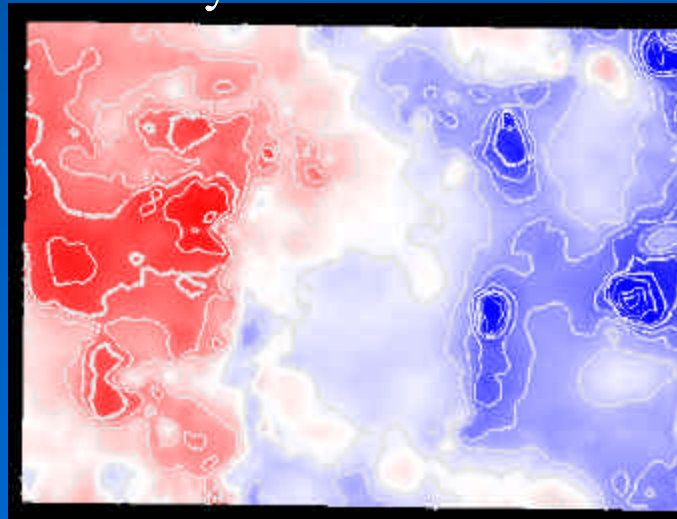
Runaway



Davis



Vineyard



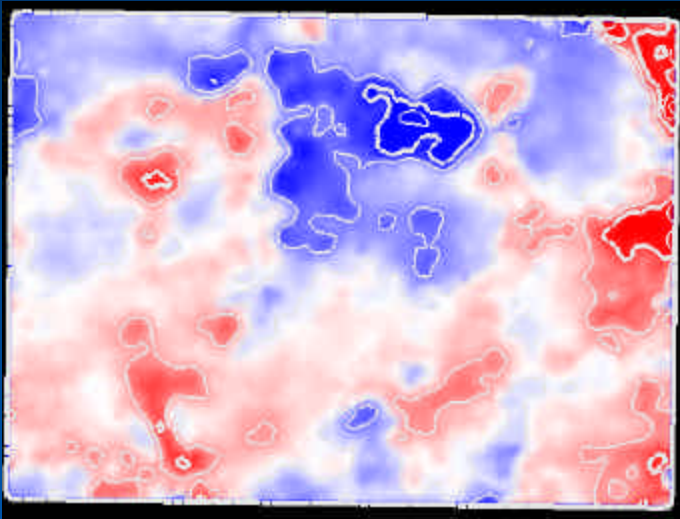
Low



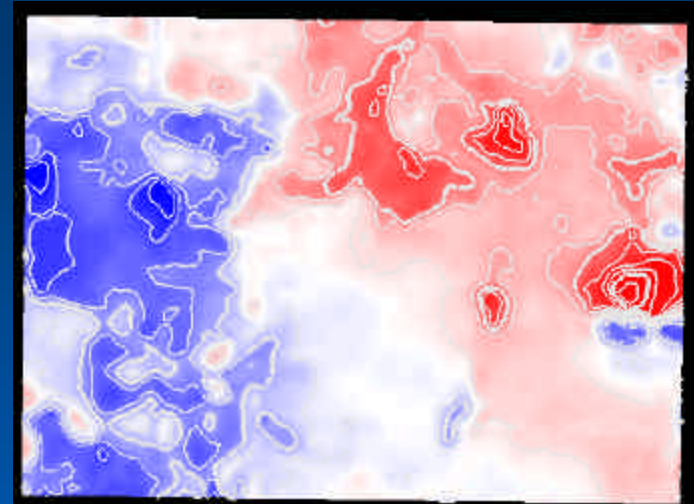
High

Isocore Maps of 4 Keys Reservoir Intervals

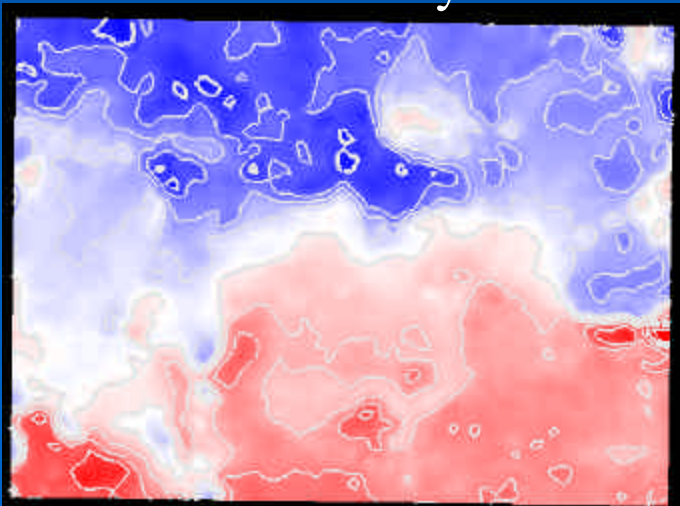
Caddo - Davis



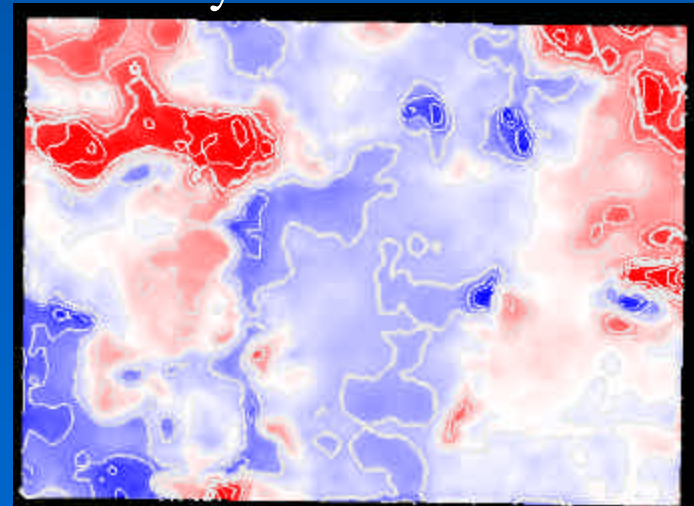
Runaway - Vineyard



Davis - Runaway



Vineyard - Marble Falls



Thin



Thick

Depth Converted AI Volume For Correlating With Well Log Properties

