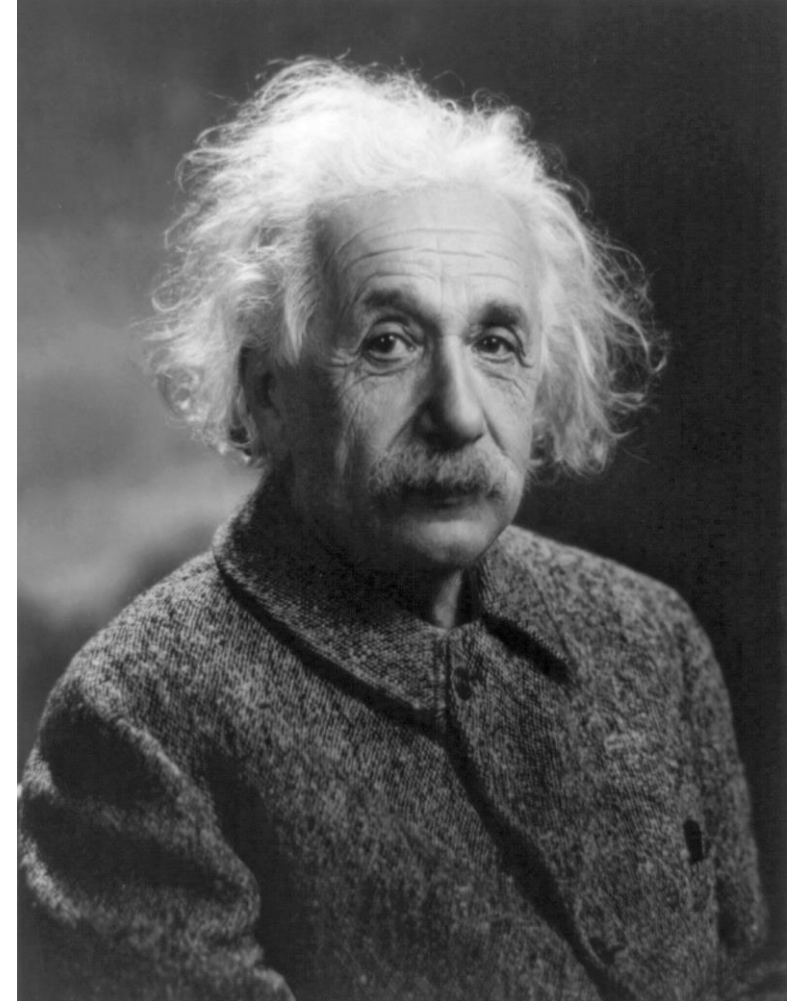


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# Same Old Data Different Approach

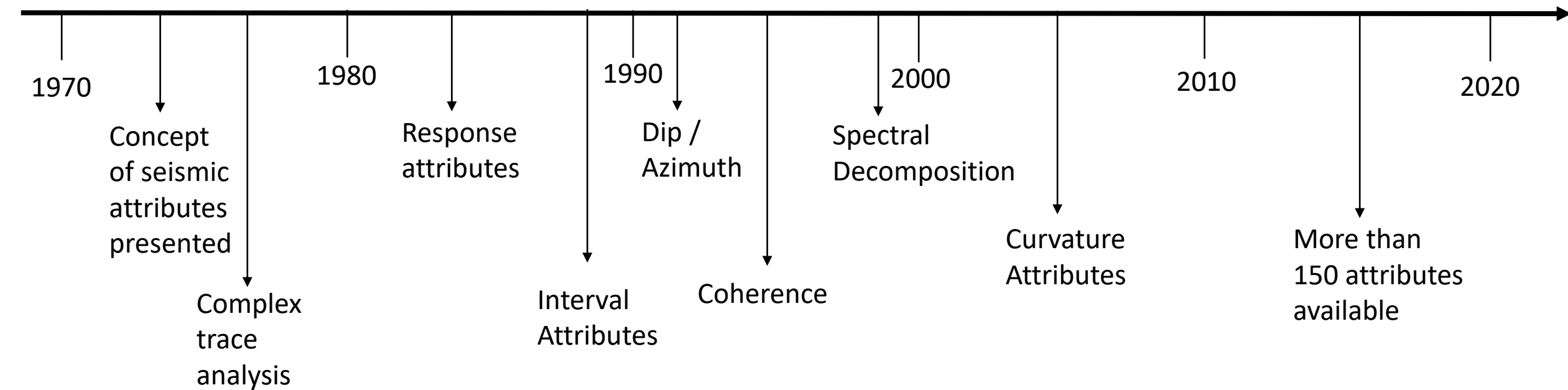
“The definition of insanity is doing something over and over again and expecting a different result.”



# Seismic Data Available

UKCS 3D Seismic (Cumulative Totals; Proprietary in NDR)

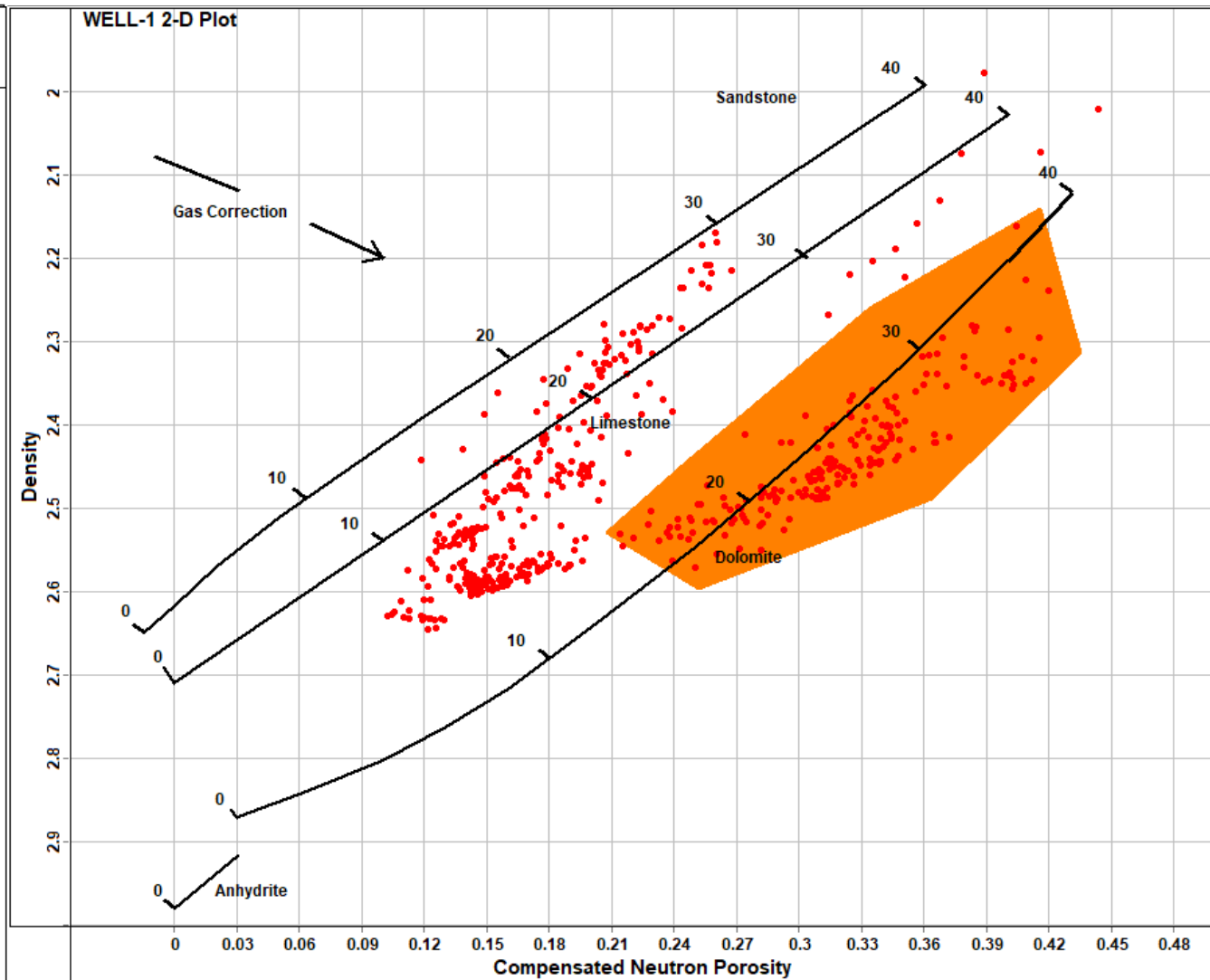
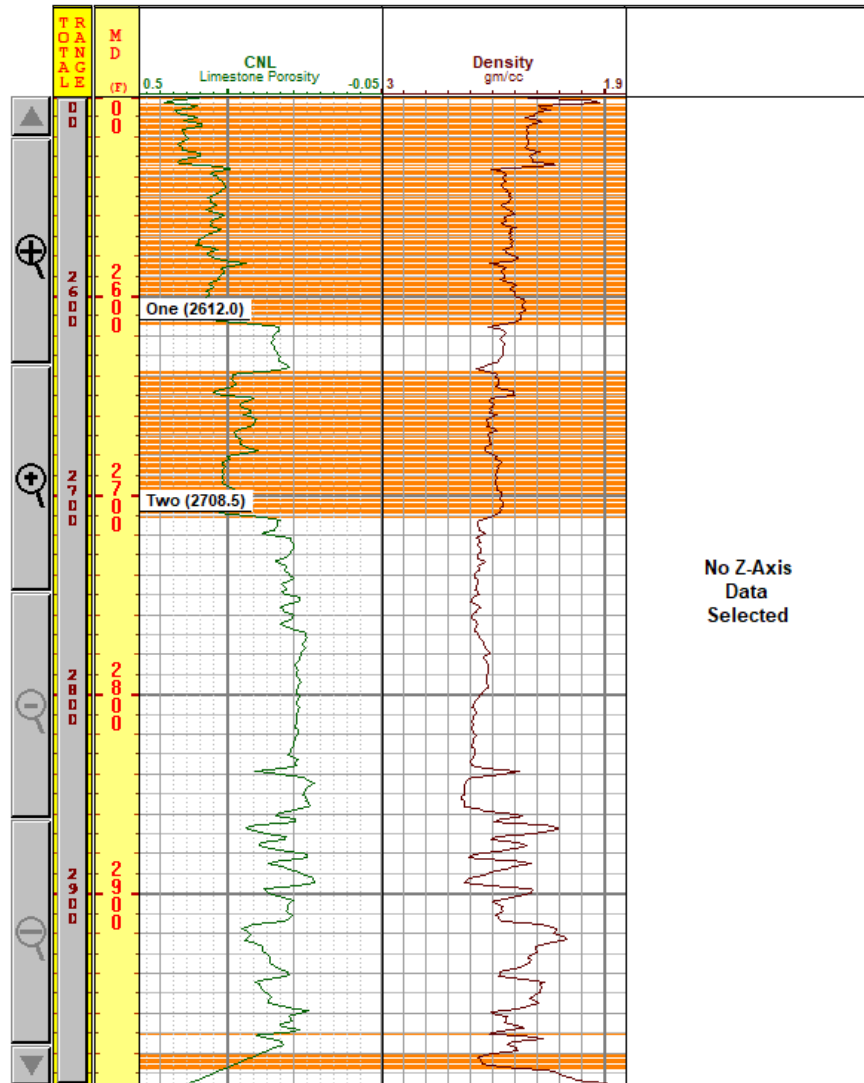
Projects	6	32	73	216	323	359	392	420	435
Size	1.67GB	66.93GB	2.52TB	40.3TB	95.2TB	145TB	185TB	330TB	363TB



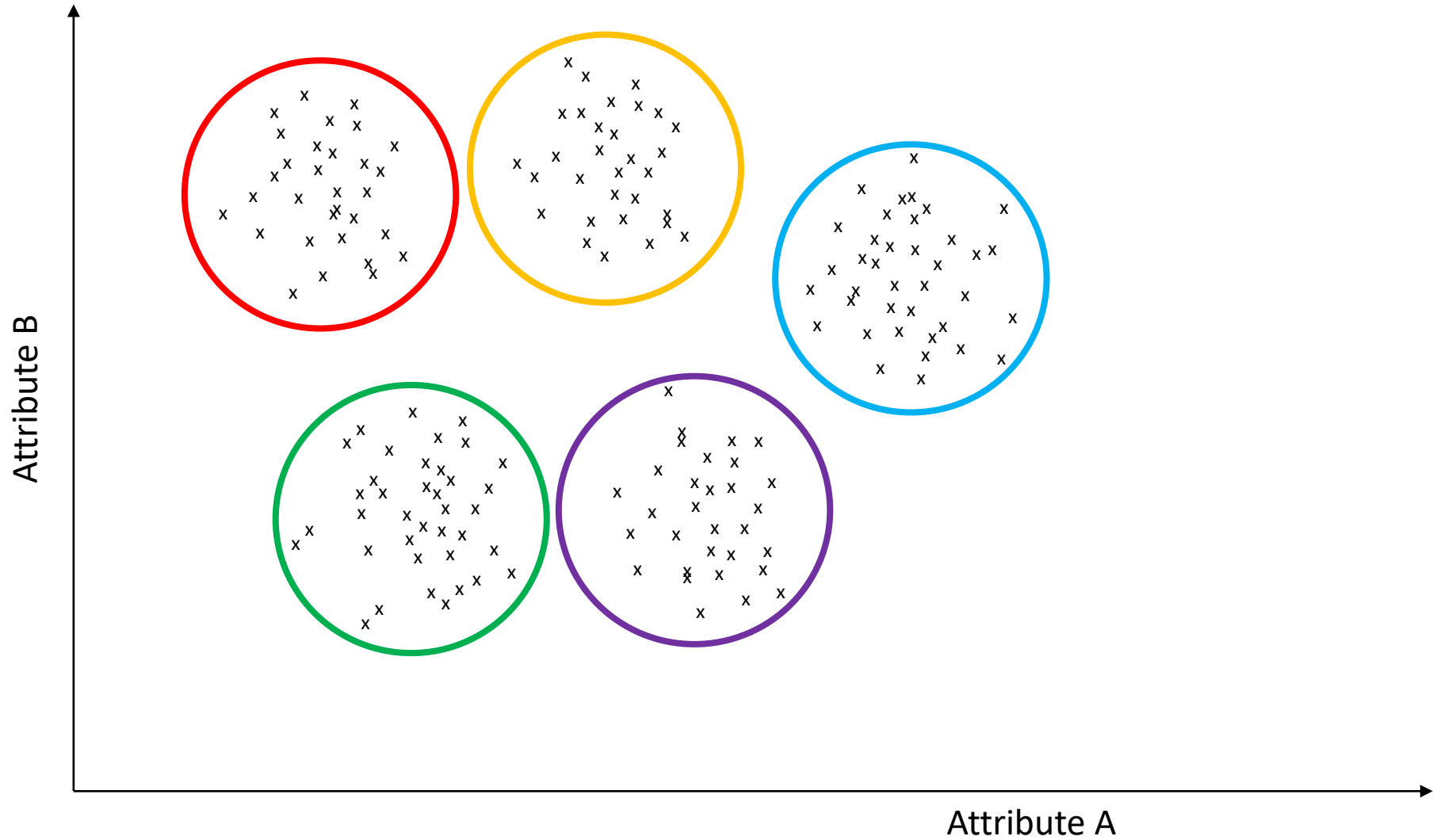
# Available Attributes and their Uses

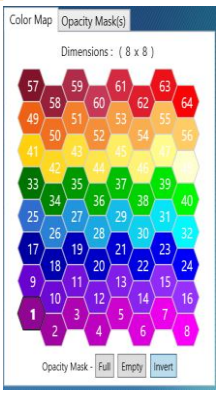
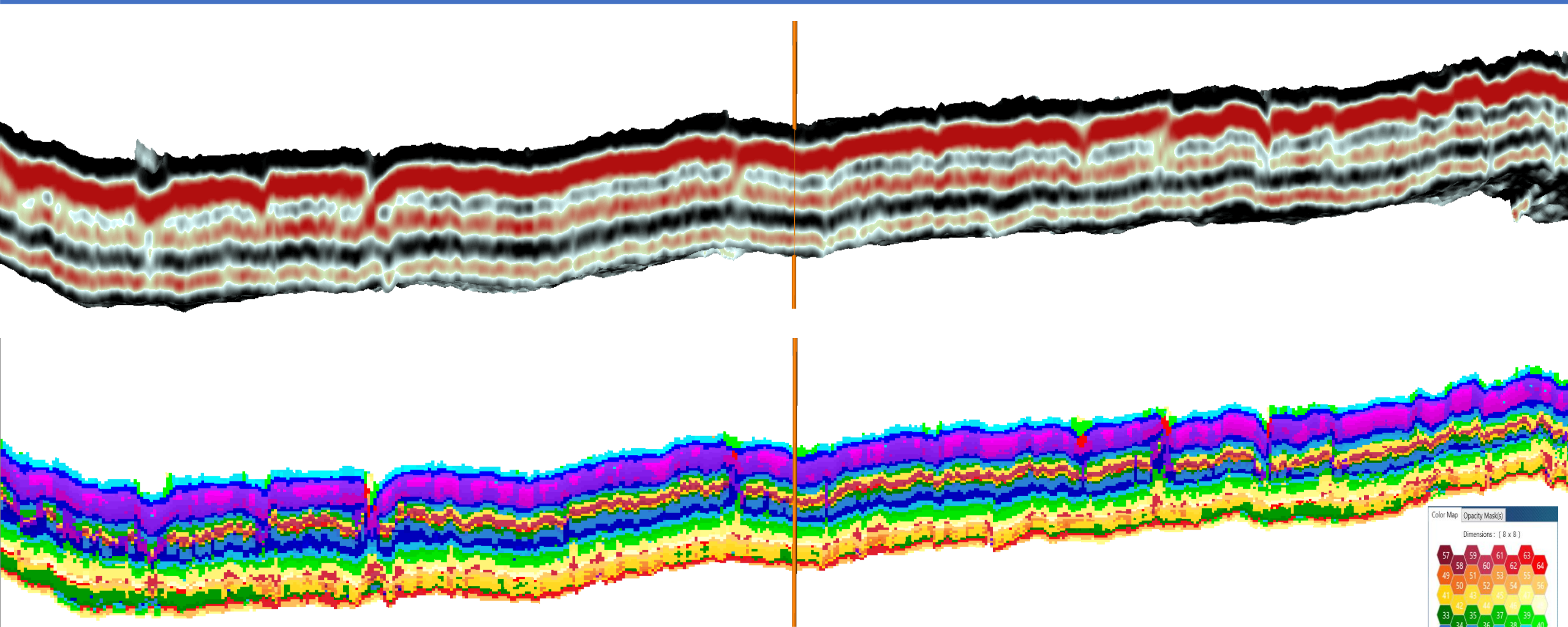
Category	Type	Interpretative Use
Instantaneous Attributes	Reflection Strength, Instantaneous Phase, Instantaneous Frequency, Quadrature, Instantaneous Q	Lithology Contrasts, Bedding Continuity, Porosity, DHIs, Stratigraphy, Thickness
Geometric Attributes	Semblance and Eigen-Based Coherency/Similarity, Curvature (Maximum, Minimum, Most Positive, Most Negative, Strike, Dip)	Faults, Fractures, Folds, Anisotropy, Regional Stress Fields
Amplitude Accentuating Attributes	RMS Amplitude, Relative Acoustic Impedance, Sweetness, Average Energy	Porosity, Stratigraphic and Lithologic Variations, DHIs
AVO Attributes	Intercept, Gradient, Intercept/Gradient Derivatives, Fluid Factor, Lambda-Mu-Rho, Far-Near, (Far-Near)Far	Pore fluid, Lithology, DHIs
Seismic Inversion Attributes	Colored inversion, Sparse Spike, Elastic Impedance, Extended Elastic Impedance, Prestack Simultaneous Inversion, Stochastic Inversion	Lithology, Porosity, Fluid Effects
Spectral Decomposition	Continuous Wavelet Transform, Matching Pursuit, Exponential Pursuit	Layer Thicknesses, Stratigraphic Variations

# Cross Plots



# Cross Plots





# Example

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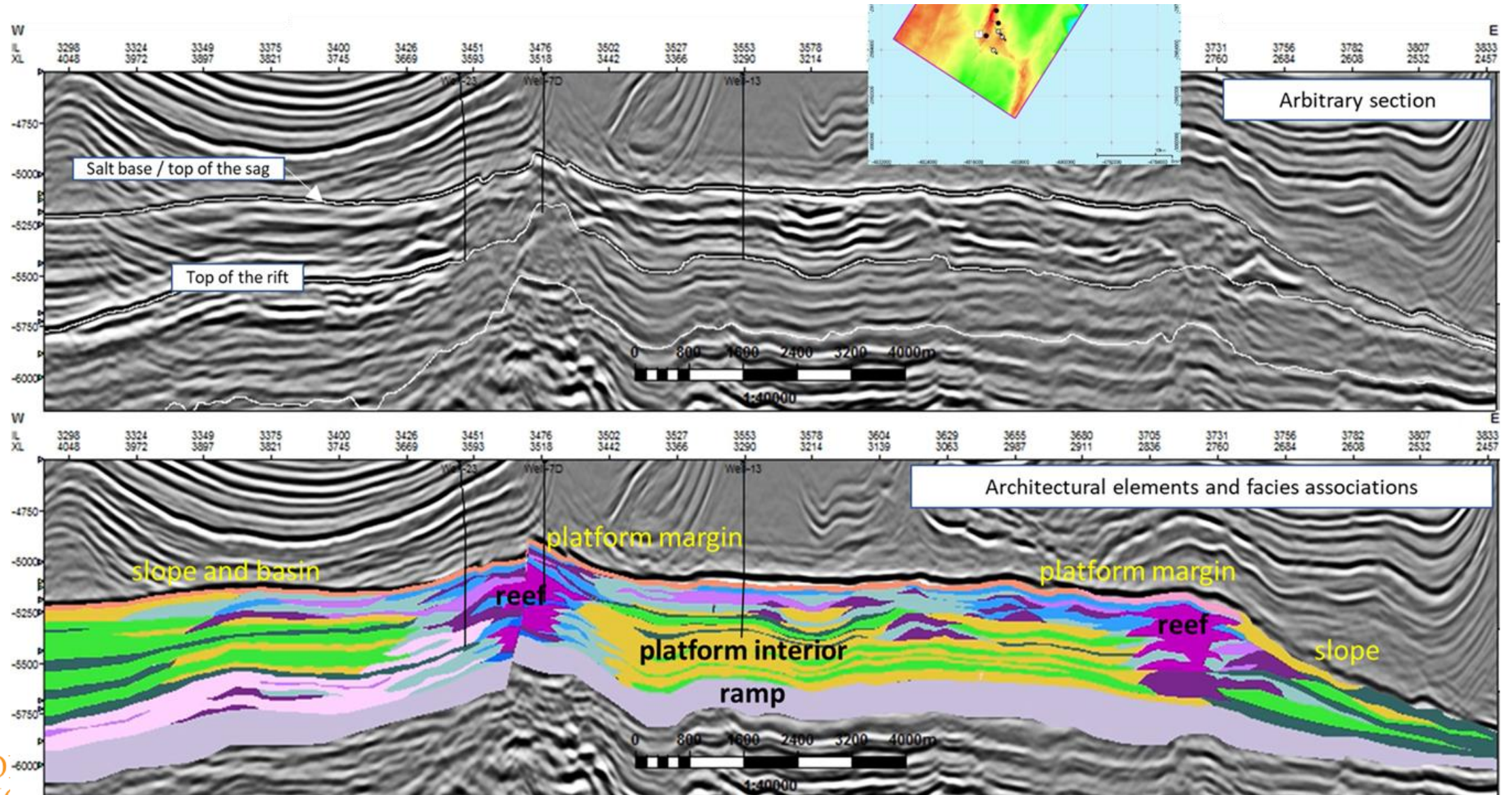
## Applying unsupervised multi-attribute machine learning for 3D stratigraphic facies classification in a carbonate field, offshore Brazil

Figures from Luan Cardoso, G., A. Kolisnyk, E.D. Bronizeski, E. Selmara de Abreu, C. Laudon, 2022, Applying unsupervised multi-attribute machine learning for 3D stratigraphic facies classification in a carbonate field, offshore Brazil: Second International Meeting for Applied Geoscience & Energy, SEG/AAPG, Expanded Abstracts, 441–445.

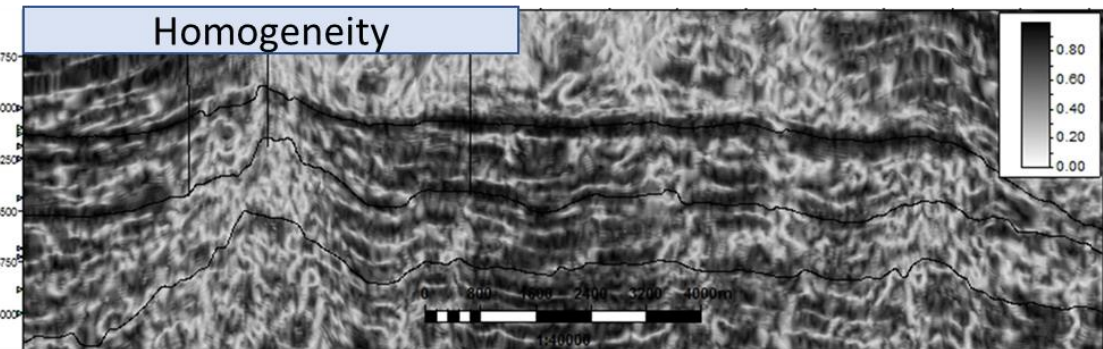
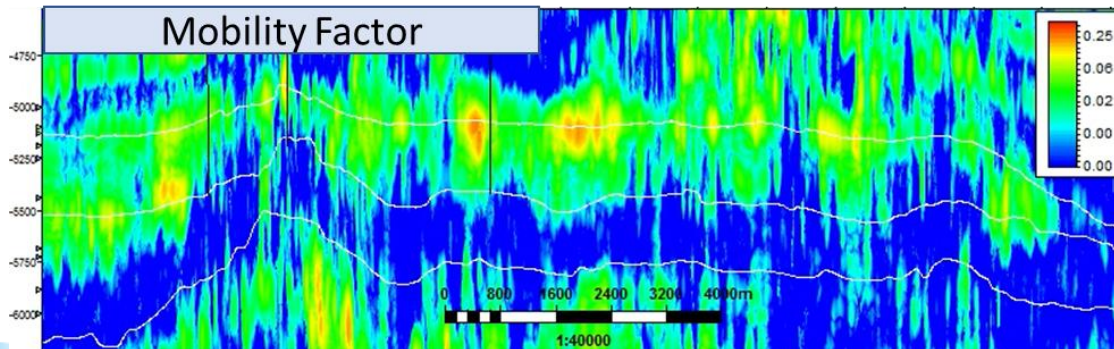
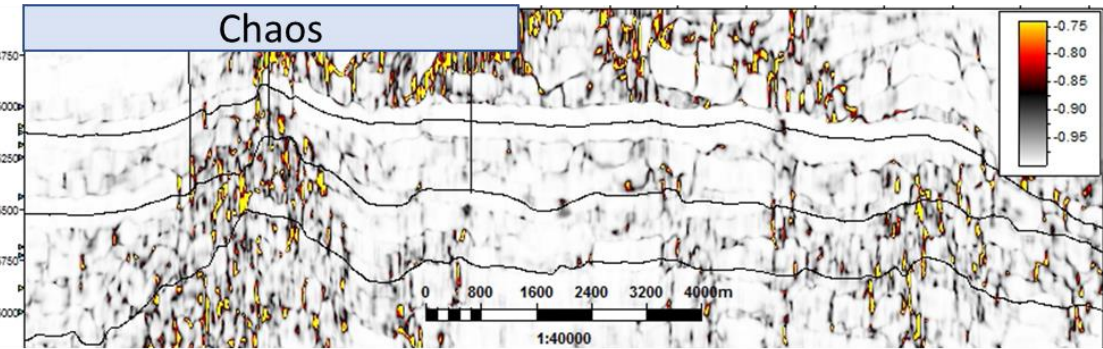
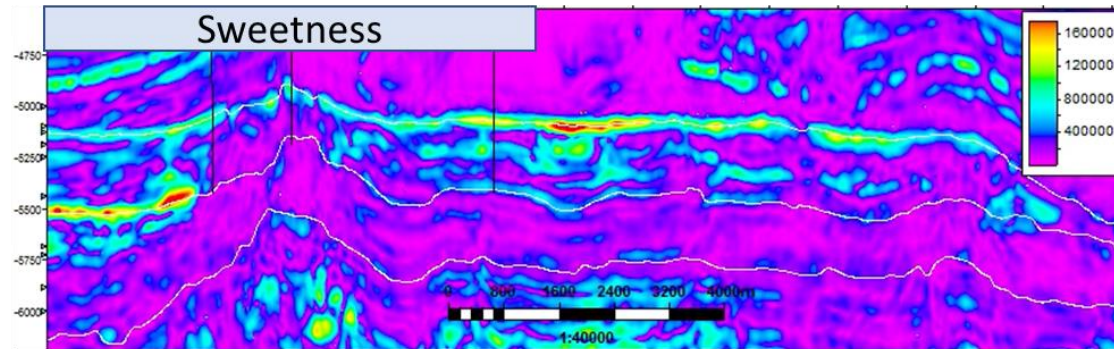
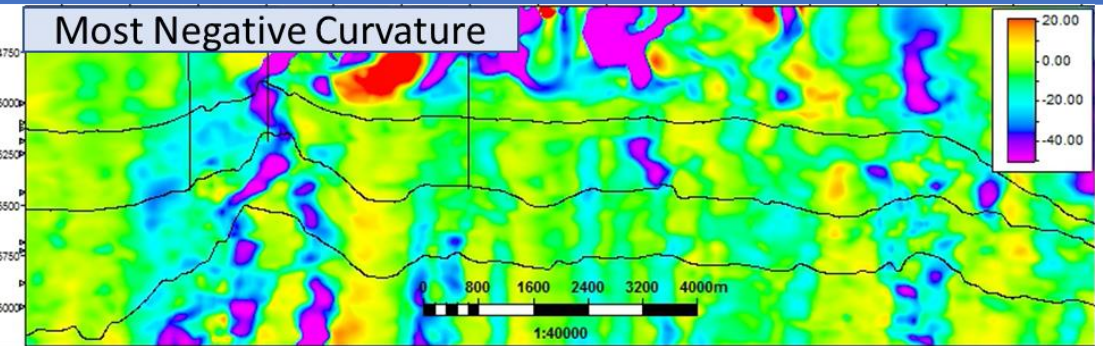
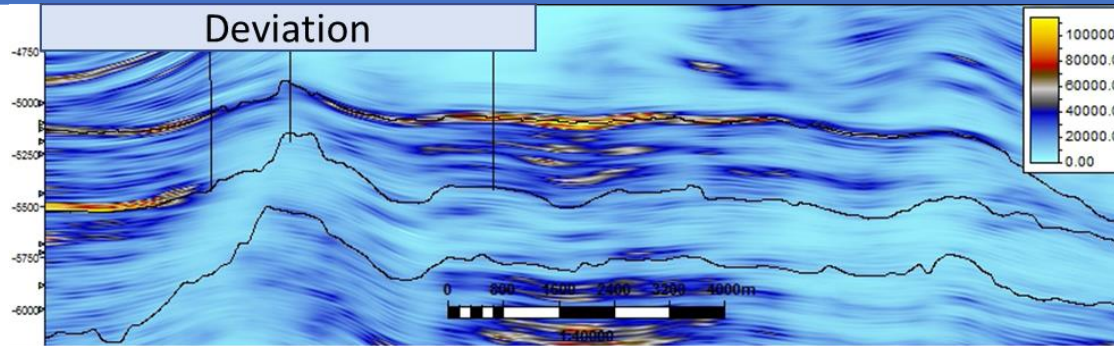
<https://doi.org/10.1190/image2022-3750985.1>



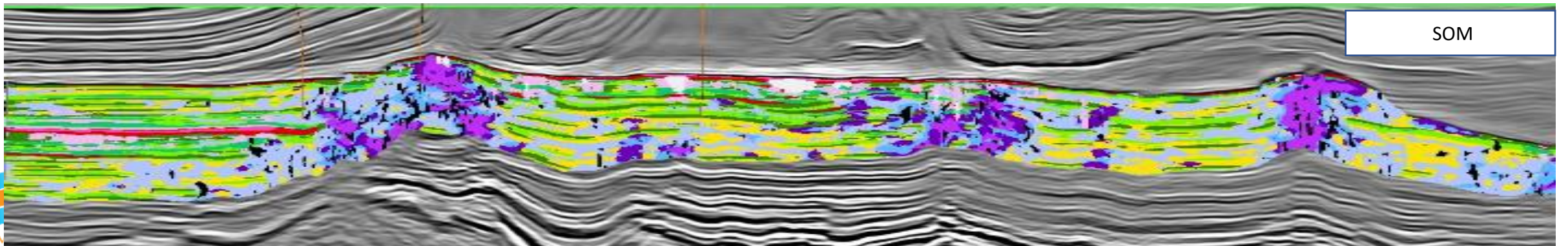
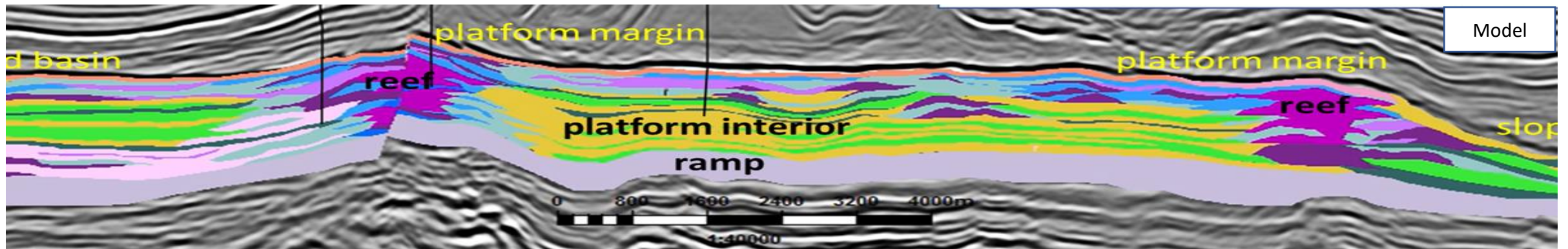
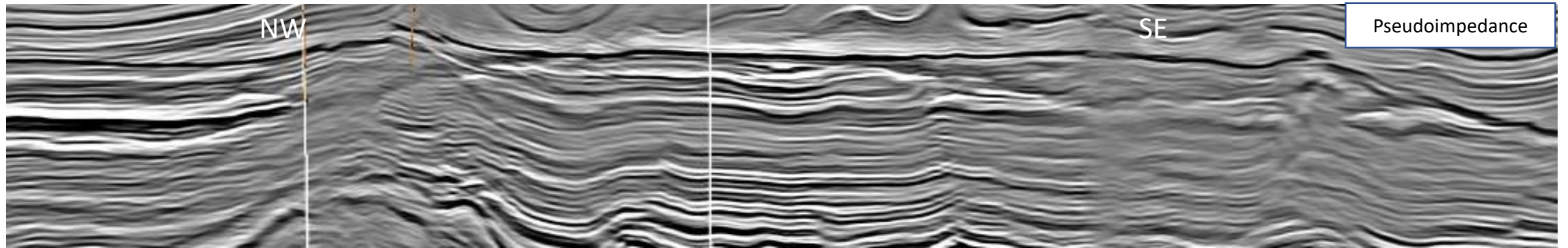
# Example - Original



# Example Seismic attributes used for facies classification



# Example Comparison to modelled facies



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Thanks

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