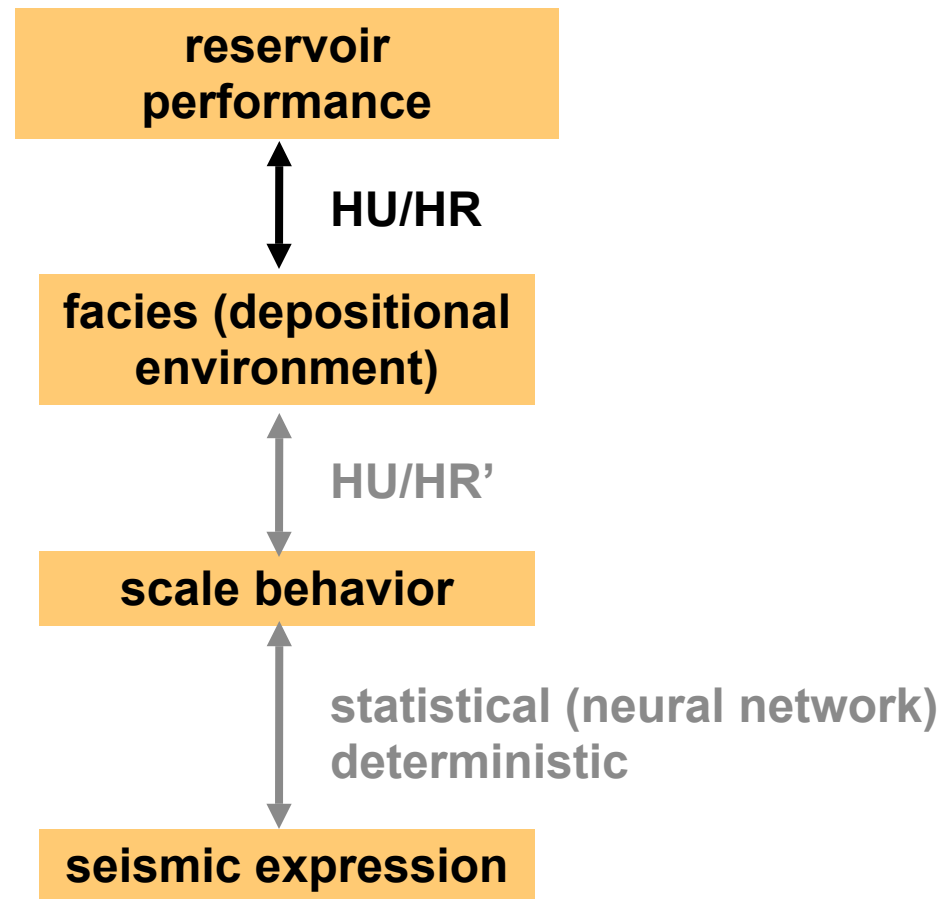




Amplitude Variation with Frequency

Michael Glinsky
Shell E&P Technology Co.

A critical geophysical link needs to be made

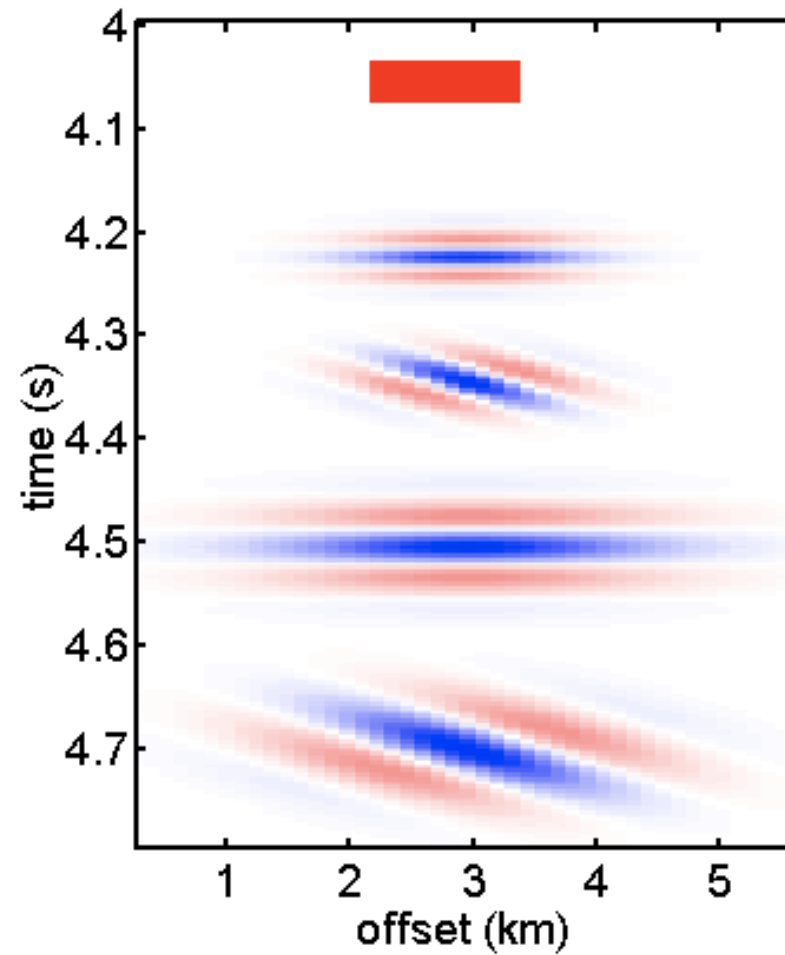


There has been a confluence of theoretical advances to enable this link

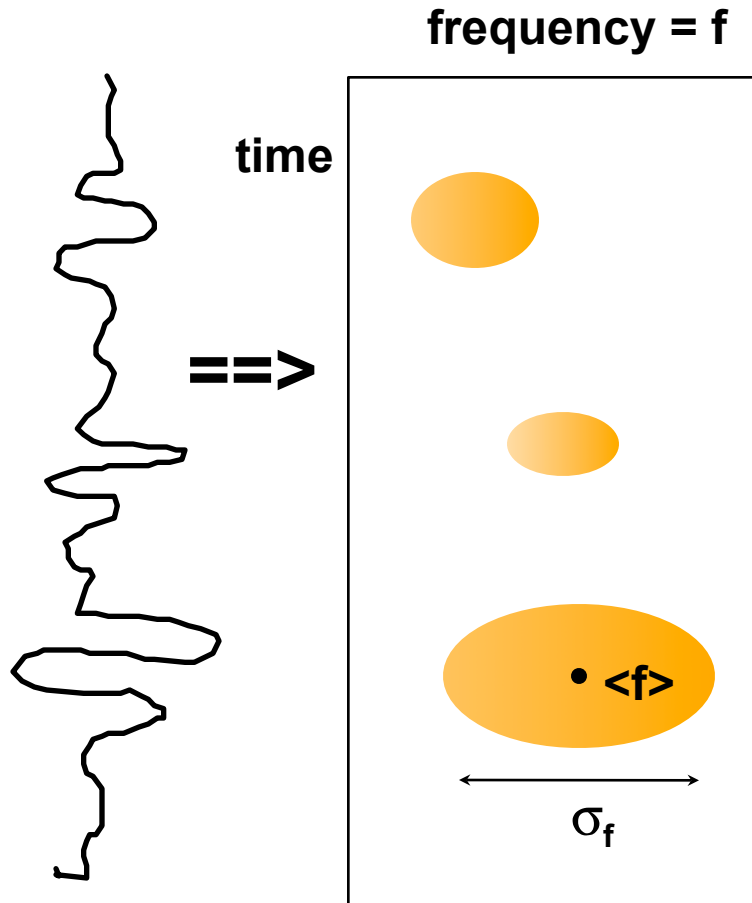


- **recognition of fractal nature of earth structure**
 - vertical
 - horizontal
- **wavelet decompositions**
 - 1D (vertical)
 - 2D and 3D (horizontal)
- **renormalization of multi-scale behavior**
 - link fractal nature to wavelet decomposition

What is a wavelet?

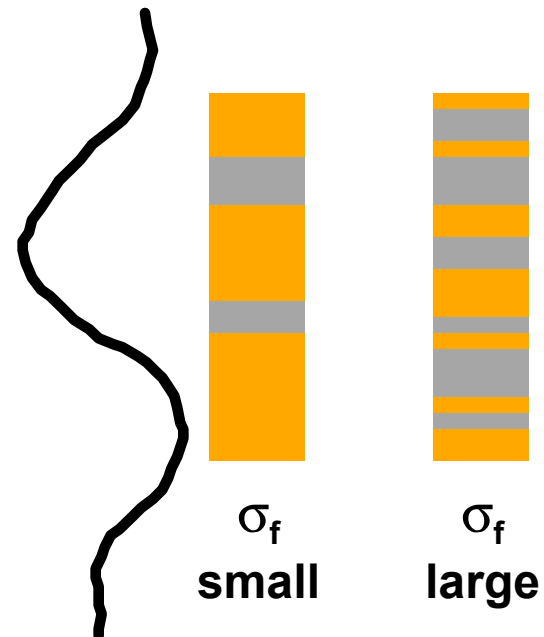


Amplitude Variation with Frequency (AVF)



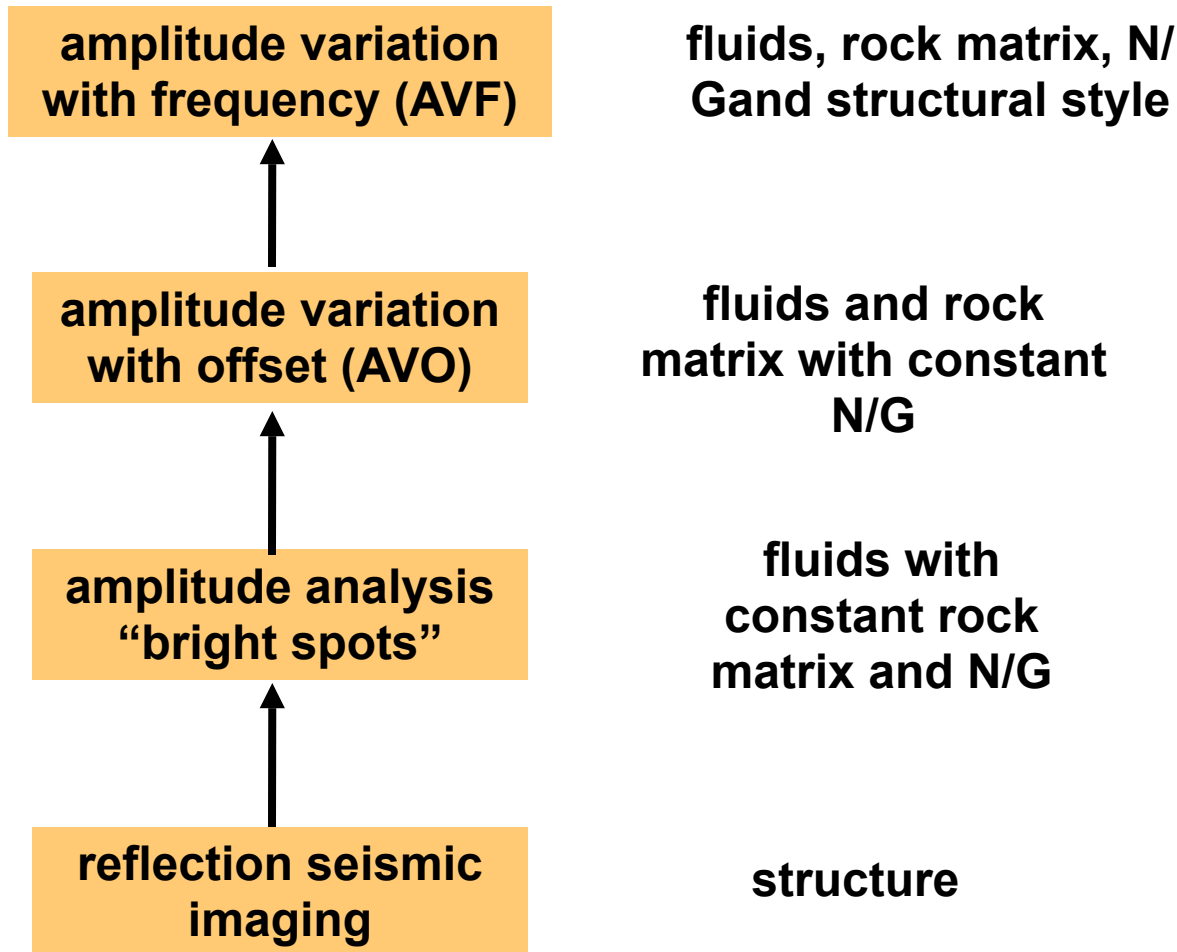
concept:

$<f>$ and σ_f give information on statistics of lithology over seismic wavelet



O'Doherty and Anstey, Geo. Prosp. 19, 430 (1971)
Shapiro and Hubral, Geophysics 61, 1282 (1996)
S. Devi, SEPTCo, lithology estimation

AVF inversion could be the next seismic game changer



Example of utility of AVF



tell the difference between:

A. low NtG gas sand

B. high NtG oil sand

