The World of Decon

Traditional Decon (60 years old)

Assume

(1) The source is not a (time symmetric) Ricker wavelet
(2) The inverse source wavelet is causal (vanishes before t=0).
(3) Your data is a superposition of source wavelets convolved with an excitation function.
(4) Least squares

Consequence

(1) Not only the inverse source wavelet is causal, the source is too. (min phase)
(2) The calculation depends only on the autocorrelation of the data
(3) The excitation function is white noise. Its high frequencies are garbage.

L1 norm or entropy based (not yet standardized)

Motivation

(1) Want a clear exhibit of polarity and a sparse excitation function

Consequence

(1) Clarifies seismic polarity (Wonderful!)
(2) Non-standard method (Claerbout and Antoine Guitton)
(3) Need a few coefficients before t=0, i.e. slightly non-causal
(4) Regularization can be tricky.

Skewed Hubbert (all yours!)

(1) Is a decomposition of data
(2) Two parameters, alpha and beta
(3) They should be non-stationary, i.e. alpha(t,x), beta(t,x)
(4) The method has not yet been invented
(5) Statistical estimation (entropy based) versus Machine Learning
(6) Need some fun-looking real data
(7) Skewness(t,x) should be fun to view