Seismic Data Processing

Analogue Processing
- Geophone response (e.g. frequency bandpass filter)
- Array response (e.g. wavenumber bandpass filter)
- Vertical stacking

Digitization
- Sampling criteria
- Aliasing

Signal Detection/Enhancement
- Vibroseis Correlation
- 1-D filters (freq or wavenumber bandpass)
  - Spectral Analysis
- Wavelet shaping
  - Deconvolution
- 2-D filters (e.g. FK bandpass, FX decon, coherency)
- CMP stacking
  - Velocity Analysis

Imaging
- Migration
  - Pre-vs post-stack
- Time vs Depth
- Dip-moveout

Interpretation
- Modeling
- Correlation

Dataset Size: Consider a single 50 km survey with typical oil exploration parameters, i.e.

\[ 50 \text{ km} \times 1 \text{ CMP/0.025 km} \times 48 \text{ fold/CPM} \times 1 \text{ sample/0.004 sec} \times 5 \text{ sec} \times 8 \text{ bytes/sample} = 960,000,000 \text{ bytes, or} \]

\[ 960 \text{ MB.} \]