

# Homework 4

Homework 4 is due on 11.55 p.m. 25th October, 2018. Deadline extension requests will not be entertained. You are to create a pdf file with the necessary figures and text. Figures should be generated in jpg or gif format (see next slide) and should be legible.

You have to submit the assignment **individually**.

# Saving plots in SU

- You should save plots in .ps and jpg format, with labels:
- `suwind < vikinggraben.su key=cdp min=450 max=450 > cdp450.su`
- `suxwigb < cdp450.su key=offset label1="Lag (s)" label2="Offset (m)" title="Viking graben, CDP450" perc=99 & —— Plot wiggle plot with labels, with percentile clip`
- `supswigb < cdp450.su key=offset label1="Lag (s)" label2="Offset (m)" title="Viking graben, CDP450" perc=99 > wiggle_cdp450.ps —— Save wiggle plot with labels, with percentile clip`
- `suximage < cdp450.su label1="Lag (s)" label2="Trace" title="Viking graben, CDP450" perc=99 & —— Plot image plot with labels, with percentile clip`
- `supsimage < cdp450.su label1="Lag (s)" label2="Trace" title="Viking graben, CDP450" perc=99 > image_cdp450.ps —— Plot image plot with labels, with percentile clip`

You can export the .ps file to jpg format, in the following fashion:

- `convert image_cdp450.ps image_cdp450.gif —— Convert postscript to gif format`
- `convert image_cdp450.ps image_cdp450.jpg —— Convert postscript to jpg format`

# Choosing parameters for deconvolution

- The deconvolution tutorial contained an example where we did spiking and then predictive deconvolution for the synthetic data. Generate 4 sets of *minimum phase* synthetic data for signal-to-noise ratio values of a) 10 b) 25 c) 50 and d) 100. Now, for each of the datasets, you need to figure out:
  1. optimum spiking (gap) lag (0.004 to 0.02 s)\*
  2. optimum operator length (0.1 to 2s)\*
  3. optimum pre-whitening parameter (0.0001 to 0.01)\*

\*the values in the brackets are *suggested* ranges for the parameters, feel free to experiment!

**As you do this exercise, read section 2.4 of Yilmaz.**

## Deconvolution on viking graben data: ntg

On the  $t^2$  corrected ntg gather, minimum phased using sushape: Try to eliminate the sea-bottom multiples using predictive error filtering (supef). Bandpass filter the data after deconvolution. Pick the optimum parameters for deconvolution. Are the multiples attenuated?

(Consult the shell script “minphs\_pred\_decon.sh” for an example of how to use supef and how to do bandpass filtering. Caution: do not use the same parameters as in the shell script (those parameters are for the synthetic data).. you will have to tune your parameters according to **your** data!)

Deconvolution on viking graben data: CMP gathers

Repeat the steps from last slide for the three CMP gathers in the Viking Graben data. You have to nmo correct the CMP gathers (with water velocity) prior to deconvolution.