

MULTICHANNEL SEISMIC PROCESSING APPLIED TO FR16 LINE FROM WESTERN IBERIAN MARGIN

Maria Alcaide Garcia

1 Abstract

This research work aims to deepen the understanding of the seismic reflection method and the analysis and processing of multichannel seismic data. Here it is presented an overview of the seismic method and the main steps usually performed during the processing sequence and its theoretical basis. To achieve this, the processing modules will be used to produce a clean image of the FR16 profile, located on the Moroccan western coast and recorded during the FRAME cruise in a 2D multichannel seismic arrangement.

The first part of the thesis describes the theoretical bases of several processing steps, while the second part is dedicated to describing the processing workflow and tests performed for different steps, as well as the selected parameters to obtain the final image. A new result's presentation by mobile figures is suggested, to facilitate the observation of the changes produced by the different processes and parameters in the data.

The followed workflow can be resumed in these four main points: normal move-out correction, deconvolution, demultiplexing, and migration. During the seismic data processing, the obtainment of a proper velocity model was one major challenge, because having an accurate stack velocity model is a key not only for the quality of the final image but also for several intermediate processes which are velocity depending (e.g. radon, F-K filters, DMO). It has been done a velocity picking and verifications after main processes like deconvolution, SRME, Radon, and DMO. Also, the difficulty of demultiplexing the traces has led to the employment of numerous demultiple jobs and filters, which are SRME, Radon and F-K filterings.

Noise, multiples, NMO effect and dipping events presented in the seismic raw data, have been mostly attenuated. The project result is a seismic line ready to be interpreted. Bibliographic research has served to interpret the line, and discussion of previous results has been made.

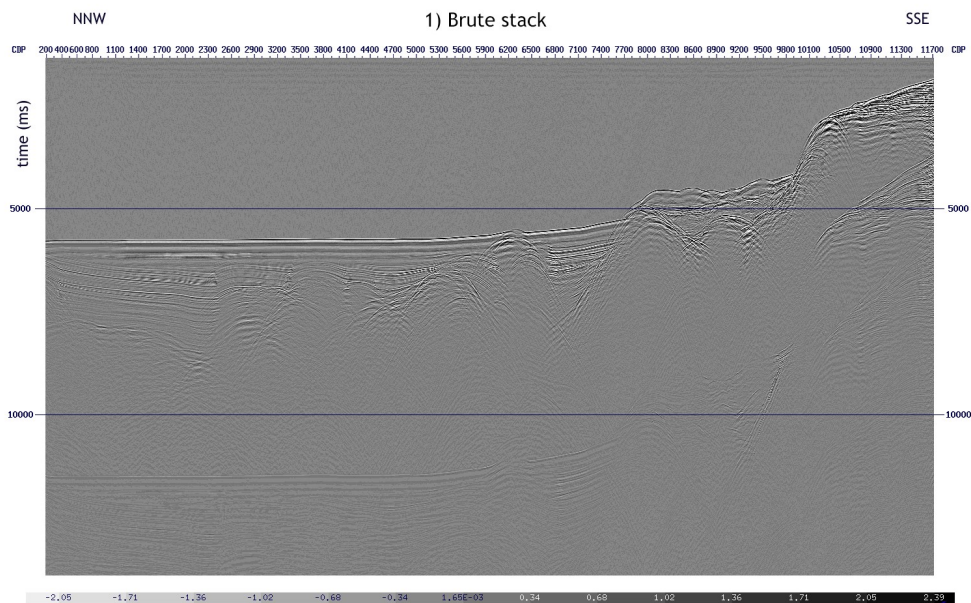


Figure 1: Recompile of main processes applied plus the final stack and interpretation. 1) Brute stack, 2) Previous data + Spherical divergence correction, 3) Previous data + Deconvolution, 4) Previous data + Demultiple, 5) Previous data + DMO + Mutes, 6) Previous data + Migration