

Short Abstract (200-300words)

WorkShop

How Can Broadband Seismic Data Improve Reservoir Characterization?

Customization of Preconditioning and Inversion processes for broadband data. A case study from the Campos Basin, Brasil.

Many tools and methods of structural interpretation and reservoir characterization have been developed for what is now referred to as conventional seismic data, (i.e. data with source and receiver ghosts which limit the low frequency bandwidth). Broadband seismic data has changed the way processing is performed and also there are also implications for the interpretation and reservoir characterization.

Horizon picking using existing interpretation tools is affected by the presence of low frequencies; well to seismic tie is also affected by the length of the wavelet.

The use of broadband data in reservoir characterization has proven advantages – that was shown on multiple case studies and every time it is confirmed that presence of low frequencies in seismic data significantly decreases the uncertainty of inversion results between wells and provides better a match with logs especially with respect to absolute values. However, the whole workflow should be reviewed and renewed in order to get all the advantages of broadband data.

In this case study the impact of the presence of additional low and high frequency signal in the data on the well-to-seismic tie is shown using an example located in the Campos Basin (Xelerete area). The workflow proposed addresses the following objectives: to distinguish signal and noise in calibration process, to QC and optimize broadband seismic data preconditioning in order to obtain data valid and effective low frequency data for reservoir characterization. Additionally, the inversion test of the broadband data from Campos Basin is shown with the objective to highlight the main points of difference in the workflow and show the benefits of the using the broadband seismic gathers in inversion.