

EGU2020-2059

<https://doi.org/10.5194/egusphere-egu2020-2059>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## **Quantitative analysis for amplitude anomalies at the seabed in the Laminaria High North West Shelf of Australia from 2D (1992 Cauerpa) and 3D (1995, Laminaria) pre-stack seismic data**

**Lamees Abdulkareem**

University of Baghdad, Earth sciences, Iraq (la81na@gmail.com)

Variation in seismic amplitudes provides different information from the subsurface such as evidence of hydrocarbon accumulation or changes in the lithologies. Furthermore, amplitude anomalies may also be created by thin layers. However, amplitude anomalies are affected by various factors that may not be caused by changes in the lithology or the existence of hydrocarbons such as those caused by acquisition or processing of the seismic data. Hence, these effects need to be understood, eliminated or reduced to background noise levels. Reprocessing of 2D (1992, Cauerpa) and 3D (1995, Laminaria) pre-stack seismic data were applied to examine the veracity of amplitude anomalies at the seabed in the Laminaria High NW Shelf of Australia. This study showed that by applying simple but similar processing steps to that applied to the 3D seismic volume that were used in previous studies; it is possible to produce similar amplitude anomalies at the seabed. However, it was noted that amplitude anomalies at the seabed are sensitive to the velocity model; in particular, when applying radon demultiple to suppress the multiple energy in the seismic data. The result of reprocessing these data suggested that the different results of mapping the seabed reflector in this study and previous studies could result from the different processing parameters applied to each data set. Furthermore, reprocessing of the 2D (1992, Cauerpa) that covered the Laminaria High showed similar but not identical amplitude anomalies compared with the original 3D seismic volume (1995), and it is proposed that these difference could be related to the processing applied on each data set. It is concluded in this study, that amplitude anomalies at the seabed are frequency dependent so any manipulation in the frequency filters could affect these amplitude anomalies.