عنوان مقاله:

Identifying the location of hydrocarbon reservoirs from seismic data using continuous wavelet transform

محل انتشار:

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خلاصه مقاله:

It is decades from beginning of usage of seismic method and the last three decades is the peak of efforts and studies to improve the efficiency of the method for displaying the betterand more accurate picture from complex geological structures. In seismic sections many events and important geological structures in reservoir discussions are not recognizable andare invisible in usual methods, so lots of efforts for using different approaches andinnovation of new methods are done to determine some other important properties that are concerned in geology and petroleum engineering.Access to reservoir geology, reservoir fluid and the reservoir geometry from seismic data, using different analytical methods, is one of the most challenges in petroleum engineering.However, conventional seismic techniques were not successful in determining and drawing on thin sections and indicating hydrocarbon locations. ۱۹۹۹ before Spectral decomposition methods were great progress in determining reservoirs characteristics. Also, complexreservoir structures such as reef that have a significant potential of hydrocarbon accumulation, determine the low-frequency shadows beneath hydrocarbon reservoirs,especially in important gas reservoirs including sandstone reservoir that is not visible in usual and common seismic sections and several other items.Since the time-frequency mapping is a non-unique process, there are many approaches for non-static signal analysis.In the past two decades Wavelet Transform has been used in many branches of science and engineering. Continuous wavelet transform (CWT) uses a different method in timefrequencyanalysis. In this way, instead of supplying time-frequency spectrum, it provides time-scale map which is called Scalogram. Since the scale shows a frequency band, it is understandable to interpret signals frequency content.Spectral analysis methods can be powerful approaches of extracting information fromseismic data to reach the location of hydrocarbon reservoir. In recent efforts, Spectral analysis methods have been introduced as a direct hydrocarbon indicator. This is paper shows the application of CWT as a hydrocarbon indicator to reveal the location of gas in a southern Iranian field.

کلمات کلیدی:

direct hydrocarbon indicator, seismic, spectral decomposition, timefrequency mapping, Continuous wavelet transform