QUANTIFICATION OF FACIES RELATIONSHIPS VIA PROPORTION CURVES

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Proportions curves have been revealed as a powerful tool for sequence stratigraphy analysis and for quantification of lithofacies purposes. Both qualitative and quantitative interests will be describe via several examples coming either from analogues studies or from real oil fields. Two main types of proportions curves can be computed: Vertical proportions curves (VPC) and Horizontal proportions curves (HPC). VPC are roughly histograms of lithofacies computed level by level in a parallel direction to a reference level closed to a depositional paleo horizontal in a given sequence. The order of the sequence depends on the amount of available data and on the aim of the study. The VPC provide the sequential evolution. Typical signatures are obtained in different environments, separating for instance meandering systems deposited in a low accommodation context from those deposited in a high one. Theses curves clearly display the possible errors in the correlation or in the determination of the reference level. HPC represent the spatial distribution of the lithofacies. They are calculated well by well and projected on cross-sections or plotted on map views. They emphasize the stationary or non- stationary behavior of lithofacies in the fields.The impact of such proportions curves will be illustrated and discussed on several examples. Subtle sea-level changes will also be shown on the more complex matrix of proportion curves.