

USE OF DISCRIMINANT ANALYSIS AND AN ARTIFICIAL NEURAL NETWORK IN FORMATION EVALUATION: A COMPARISON STUDY

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The complete characterisation of subsurface formations from the interpretation of well logs and core data is perhaps a fundamental requirement when geologists and geophysicists are involved in the exploitation of energy resources. It generally requires a multidisciplinary study of data acquired using a large number of geophysical and geological measurements. In this work, the characterisation of subsurface formations is tackled using a well-known multivariate statistical technique (Discriminant Analysis) and an artificial neural network (the Back-propagation Neural Network – BPNN). Two holes from the Ocean Drilling Program (ODP) are used in the analysis. Both techniques use training as a major step during the study. Minimum intervals for each different lithofacies or geological sequences present within the data are used for training in both techniques, in order to minimize the computing time. Neural network has shown better results than statistical technique despite its extremely higher computing time. The good results indicate the potential of Neural Network for the analysis of subsurface formations using well log data.