



Correlation of Turbidite Sequences in a Submarine Canyon System using Geochemical Fingerprints and Discriminant Analysis (Dakar Canyon NW-Africa)

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Chemostratigraphy has been applied to three cores within the Dakar Canyon System offshore NW Africa using the geochemical element data of the sediment successions in order to distinguish and correlate their turbidite sequences. This modern submarine canyon system has been studied using joint sedimentological, geophysical and geochemical approaches during Meteor expedition M65/2 in 2005. The solid phase of the cores was microwave digested and 41 elements were measured using both, ICP-AES and ICP-MS at a depth resolution of 1 cm. We present a chemostratigraphic correlation resulting from the geochemical fingerprinting analyses. The sample dataset of in total 274 samples has been assessed statistically with discriminant function analysis (DFA) in order to first characterize and separate the hemipelagites sequences and the turbidite sequences precisely from one another. In a second step the use of DFA on the inorganic geochemical data provided a reliable correlation of the turbidite sequences across the cores at the three positions along the canyon thalweg. This combined approach shows, that with this large number of elements measured, the precision of DFA assisted correlation is much better than with all other methods. Especially like in the present case of a high number of especial thin and even stacked modern turbidite sequences showing no significant diagenetic overprint.