

Clay Mineralogy and Geochemistry of the DSDP and ODP cores from the Arabian Sea, the Bengal Fan, and the Gulf of Mexico

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The present study attempts to interpret factors influencing the clay mineral composition and geochemical characteristics in drilled cores from the Arabian Sea, the Bengal Fan, and the Gulf of Mexico. The number of samples used in this study is 80 from the Arabian Sea, 78 from the Bengal Fan, and 59 from the Gulf of Mexico. Clay fractions under 2 micron were analyzed by means of XRD, XRF, and ATEM. XRD analysis shows the presence of the following clay minerals such as smectite, chlorite, illite, and kaolinite in all of samples studied. Palygorskite was found in only samples of the Arabian Sea. ATEM enables clay mineral species to divide subspecies : a di-octahedral type and a tri-octahedral one. The smectite in this study exhibits the predominance of di-octahedral Al-Fe beidellite in three study areas, whereas a di-octahedral montmorillonite and nontronite are not common. A tri-octahedral saponite is common in samples of the Arabian Sea but not common in both the Bengal Fan and the Gulf of Mexico. All of chlorite belong to a tri-octahedral Fe-Mg-Al - type. Geochemical parameters by XRF analysis suggest the paleo-events such as changes in environment and oceanography from the Neogene to Recent time.