

Marine Sedimentation of the Fly River, Papua New Guinea

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Clinofolds, sigmoidal-shaped deposits on the continental shelf, have been recognized as the basic building blocks of continental margin morphology. Clinofolds are found on many margins both in the ancient record and modern environment, and high-rates of sediment supply make them common in wet tropical environments. Even though clinofolds are observed throughout the world, the sedimentary processes that lead to the formation of these deposits are still unclear. The proposed research will address the question: What sedimentary processes operate on a continental margin with an actively accreting clinofold? Wet tropical environments supply more than 60% of the particulates transported to the global ocean and by studying the contemporary evolution of the clinofold deposit in the Gulf of Papua, Papua New Guinea, this research will maximize the global significance of the results, and enhance our understanding of the geologic record. Preliminary results suggest that sediment transport by fluid mud is responsible for the relatively high accumulation rates observed on the foreset of the Gulf of Papua clinofold, leading to the observed geometry of the deposit. In addition, subaqueous channels on the topset and foreset of the clinofold have been documented, and data shows that these channels participate in sediment transfer from the Fly River estuary to the clinofold. Naturally occurring radioisotopes, x-radiography, grain-size analysis, and thin-section studies of sedimentary fabric will be correlated with physical oceanographic parameters such as wave intensity and currents to associate deposits in the Gulf of Papua with the processes that create them.