Sediment routing systems to the Atlantic rifted margin of the Guiana Shield

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Résumé

Sediment routing systems of cratonic domains have not been studied extensively because their relief and erosion rates are very low, although their vast dimensions allowed them to contribute to a significant proportion of the sediments exported to the global ocean. To gain further insights into the behaviour of cratonic sediment routing systems at geological time scales, we investigated the Guiana Shield and its Atlantic rifted margin (i.e., the Guiana-Suriname and Foz do Amazonas Basins, northern South America) over the Meso-Cenozoic with an emphasis on paleoenvironment and accumulation histories of the offshore sediments. We show that the basins of the Guiana Shield rifted margin record (1) periods of very low siliciclastic supply concomitant with the development of carbonate platforms, alternating with (2) phases of higher siliciclastic supply associated with sand dominated clastic deposits and turbidites. Low siliciclastic supplies reflect either very limited rift-related relief growth and erosion such as during the Central Atlantic rifting in the Late Jurassic or intense lateritic weathering of the cratonic source area during Paleogene-Miocene climate optima. Higher siliciclastic supplies correspond either to (1) periods of rapid rift-related relief growth and erosion such as during the Equatorial Atlantic rifting (Early Cretaceous), (2) periods of drainage reorganization over a steadily eroding cratonic domain (Late Cretaceous) or (3) periods of tapping of sediments stored in the Andean retro-foreland basins via the present-day Orinoco and Amazon rivers (Plio-Pleistocene).

Mots-Clés: Sediment routing systems, Equatorial Atlantic Rift, Rifted margin basins

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