

SEDIMENTOLOGY AND SEQUENCE STRATIGRAPHY OF A NEOCOMIAN MIXED CARBONATE - SILICICLASTIC RAMP: NEUQUÉN BASIN, ARGENTINA.

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Facies analysis of the upper member of the Agrio Formation (Hauterivian - Barremian) in central Neuquén Basin allowed the definition of an open marine ramp, characterized by fine-grained sediments of basinal to outer ramp settings, with subordinated mid to inner ramp silts, carbonate sands and buildups. Fine-grained facies accumulated below the storm-wave base, poor oxygenation of the substrate, and alternating conditions of clastic input and carbonate production. Carbonate sands and biolites, siltstones and heterolithic intervals, may have accumulated under more oxygenated and moderate energy conditions, with evidence of distal orbital flows. An oxygenation curve, traced from the combined analysis of ichnofacies and sedimentary facies, shows that ichnofossil diversity is controlled not only by the oxygenation of the substrate, but also by its quality and even kinetic energy conditions. Five stratigraphic sections were defined and grouped in three depositional sequences related to third order cycles. Each sequence is characterized by a basal TST followed by a HST. The TSTs are thick and show an aggradational stacking of outer ramp to basinal deposits. HSTs are composed of shallower deposits showing either a strong progradational arrangement or a shallowing up sub-horizontal stratal pattern. The HST stacking indicates low rates of accommodation/siliciclastic input or accommodation/carbonate production. High frequency cycles are identified in HSTs. In these cycles, transgressive periods, characterized by anoxic conditions and saturated substrates, vertically pass into shorter highstands represented by more oxygenated and looser substrates in which benthic organisms spread, supplying significant volumes of carbonate sand.