

CALCITIC CEMENTATION AND DOLOMITIZATION IN ORDOVICIAN CARBONATES – CENTRAL PRECORDILLERA, SAN JUAN, ARGENTINA

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The Arenigian – lower Llanvirnian San Juan Formation (western Argentinian Precordillera) is composed of biogenic limestones, dark micrites and marlstones. Early calcite cements are isopachous and fibrous, with crystal deformation and stylolitization due to later compaction. This non-ferroan calcite shows uniform extinction, faceted and corroded surfaces, and CL from dull orange to non-luminescent. Early cements were formed by neomorphism of aragonite rinds and appear as relictual crystals in pores and fractures. Eogenetic cementation occurred early in the history of carbonates by precipitation from marine water (sea floor - freatic cementation). Late equant calcite is associated with dolomite and appears as a blocky cement filling fractures, dissolution surfaces and almost completely the remnant intraparticle porosity. Late calcite cement is generally non-ferroan, and in comparison with the early calcite, it is characterized by a better CL (orange). Compositional and textural features suggest that late calcite cement was formed under mesogenetic conditions. Three distinctive types of dolostones are recognized: a) dolomite located in the infilling of vertical bioturbations, associated with subaerial features, which is thought to be the result of supratidal replacement; b) massive dolostone in which dolomite appears as randomly oriented large euhedral to subhedral ferroan crystals replacing previous allochems and micrite, and interpreted as the result of interaction between marine and fresh groundwater; and c) linings of dolospar precipitated on the surfaces of stylolite sutures, clearly resulting from deep-burial dolomitization.