Archaean clastic sedimentation, Rio das Velhas Greenstone Belt, Quadrilátero Ferrífero, Minas Gerais State, Brazil

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The Rio das Velhas Greenstone Belt encompasses komatiites, basalts, dacites, volcanoclastic rocks, iron formation, chert, graywackes-argilites, sandstones and conglomerates. The Bem-Te-Vi and São Vicente Faults separate two greenstone sedimentary sequences. A northern, greenschist-facies metaturbidite sequence is associated with volcanic rocks and grades to deep-sea pelites and iron formation. Continent-inward gradation is indicated by shallow-water to coastal, interbedded sandstone-argilite. Turbidites have rare-earth-elements patterns similar to dacites. Subaerial terrigenous associations overlie this sequence.

Turbiditic graywacke and argilites dominate the southern, greenschist to amphibolite-facies sequence. It is carbonate-rich with interbedded calc-silicate rocks and minor iron formation, sandstone, amphibolite and polymitic conglomerate, containing dacitic and trondhjemitic pebbles. The turbidites grade to rhythmic sandstone-siltite and sandstone successions. This association is interpreted as deep-sea, turbiditic current deposits grading progressively to a coastal environment influenced by tidal processes with coastal-eolian dunes. Two rare-earth-element patterns are recognized, one similar to dacites and another typical of granites. These differences, coupled with varied structural directions indicate two distinct basins. The northern basin is to have been related to submarine, mafic plains associated with island arc, volcanically-derived sediments. The southern basin represents a stable continental margin derived from volcanic and granitic sources. These sediments may be younger and belong to another greenstone sequence.