CONTINENTAL-SCALE CONTROLS OF CRATONIC STRATIGRAPHIC SEQUENCES IN THE PARANÁ BASIN

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Subsidence and sedimentation in the Paraná Basin started during Late Ordovician time and proceeded up to the Late Cretaceous, defining a framework of six basin-scale unconformity-bounded stratigraphic sequences; each one of them spanning a range of time of some tens of million years. Three of them document Paleozoic transgressive-regressive cycles of sedimentation related to oscilations of relative sea level, and the others comprise Mesozoic non-marine sedimentary packages with associated igneous rocks.Continental-scale subsidence analysis revealed a tight correlation in time between the known Paleozoic orogenic cycles of southwestern Gondwana´s active border and periods of accellerated subsidence in the Paraná Basin. The proper origin of this interior basin was interpreted to be a consequence of Late Ordovician transtensional reactivation of pre-existing weakness zones under the compressional stress field of the Ocloyic (Taconian) Orogeny. Subsidence plots revealed that the Early Devonian (Precordilleran or Tardi-Caledonian Orogeny) and the Late Permian (Sanrafaelic or Tardi-Hercynian Orogeny) were times when intracratonic subsidence rates again increased remarkably.An integrated analysis of the sedimentary record of the Paraná Basin, considering Paleozoic eustatic variations of the sea level and the periods of accellerated subsidence in a series of correlative southwestern Gondwana´s basins, led to the conclusion that the stratigraphic cyclicity observed in the Paraná Basin was ultimately defined by its subsidence (tectonic) history.