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Paleodrainge Evolution and Sedimentation of the Southern Pelotas Basin

The dynamic of sediment yield of the southern Pelotas Basin is complex and was characterized by a nonlinear interaction of processes that included basement composition, tectonic framework, climatic oscillations, geomorphology, physical and chemical processes. In order to understand the distribution in time of the sediments three paleogeographic maps were built. Sedimentary records and tectonic framework indicators were used to constrain the paleodrainage maps and the variations in the sediment influx into the southern basin. The paleodrainage evolution of the southern Pelotas Basin can be characterized by three different stages: Phase I (Jurassic) - characterized by high rift shoulders with less sediment influx than accommodation space. During this stage, the area of the south basin was 168,020 km² with a perimeter of 1,877.33 km, and a sediment influx (including the volcanics) of 59,747.92 * 10³ km³. Phase II (Cretaceous to Paleogene) - characterized by a tectonic framework that includes the intermediate conditions of rifting and the drift phase. During this period was recorded a very high sedimentation influx. The basin area was 298,490 km² with a perimeter of 2,282.27 km and a sediment input of 106,143.04 * 10³ km³. Phase III (Miocene to Present) - characterized by the final stage of construction of the southern Pelotas Basin, comprising large climatic changes and sea level oscillations. During this phase the south basin area was 427.270 km² with a perimeter of 3,591.84 km, and a high sedimentary influx, totalizing a volume of 51,937.21 * 10³ km³.