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## The Paleogene Sedimentary record of the south Depression of Nyima basin in Tibet



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The Bangong-Nujiang suture zone, situated in central Tibet, has experienced a complex tectonic evolution[1] and provides insights to the evolution of the Qinghai-Tibet Plateau[2-4]. We report data from sedimentary rocks in the south depression of Nyima basin in the middle of Bangong -Nujiang suture zone. Data are from Cenozoic continental basins in the hinterland of Qinghai-Tibet Plateau, and include sedimentary facies, provenance analysis and isotopic geochronology.

Based on lithologies, sedimentary structures, fossils, grain size analysis and palaeocurrents, we have identified two types of sedimentary facies: fan delta facies and lacustrine facies in Paleogene strata in the south depression of Nyima basin. Fan delta facies can be further subdivided into fan delta plain, front fan delta and fan-prodelta. Using ripple index and the asymmetry index, ripples of south depression can be divided into current and wave ripple marks. Rose diagrams of paleocurrent data show that the main source of sediment supply to the south depression was to the south. Composition analysis of sandstones show that stable components decline significantly at the expense rather of unstable components that increased from the Niubao to Dingqing Hu formations. The changes are related to tectonic uplift during the Eocene to Oligocene. Qm-F-Lt, Qt-FL diagrams show that sandstone components mainly fall into recycling orogenic fields, which indicate more intense tectonic activity in south depression during the Paleogene. In the south depression, heavy minerals derived from acid, intermediate magmatic rocks account for 14.42%, basic and ultrabasic rocks account for 23.62%, sedimentary rocks account for 60.96%, and metamorphic account for 1% of the total heavy minerals. Based on vertical and horizontal variations of all kinds of heavy minerals, ZTR index, GZi index heavy mineral populations can be subdivided into three distinct phases: unstable segment I, most stable segment II, unstable segment III. Based on U-Pb LA-ICP-MS of detrital zircons, in Paleogene sandstones from the Niubao Formation, four age clusters are recognized: 1800-1900 Ma (peak at 1830 Ma), 750-900 Ma, 240-270 Ma, 100-130 Ma. The provenances of the three older detrital zircon populations was from the Lhasa terrane and thrust belts in the Bangong -Nujiang suture zone to the north, a conclusion

supported by paleocurrent data. The 100-130 Ma age population is related to the subduction of the Bangong -Nujiang oceanic crust and volcanic activity.

*References:*

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