



陈孝红,程龙. 青藏高原东部牙着库河流阶地研究[J]. 地质学报, 2008, 82(2): 269-280

青藏高原东部牙着库河流阶地研究 [点此下载全文](#)

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基金项目: 本文为国家自然科学基金项目(编号40601012)资助的成果.

DOI:

摘要点击次数: 381

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摘要:

构造运动和气候变化是制约内陆地区河流阶地发育的两个关键因素,而不同地区的河流对它们的响应方式多种多样.研究区海子山位于青藏高原东部的沙鲁里山中段,在第四纪期间经历了大幅度构造抬升及第四纪冰川作用.海子山北缘牙着库河谷保留着6级河流阶地,南缘稻城河谷完好地保留着第四纪冰川作用遗迹.本研究运用电子自旋共振技术对牙着库4级高阶地(第3~第6级)的砾石层及稻城河谷的第四纪冰川沉积物进行了测年,并对这4级阶地的形成过程进行了分析.结果表明,牙着库3~6级阶地基座及相应的砾石层均形成于冰消期,分别与深海氧同位素2、6、12、16阶段晚期相对应.待气候进一步变暖而逐渐进入间冰期,海子山冰川消融殆尽,下伏地壳负荷锐减,构造抬升效应的释放结合冰川均衡抬升使得牙着库河谷梯度增大,而同期的河流沉积物通量较小,结果导致流水切割前期加积的沉积物及其下伏基座形成一级新的河流阶地.牙着库河谷自深海氧同位素16阶段后期以来的平均下切速率为0.43 mm/a左右,小于海子山的平均抬升速率2 mm/a,与“河谷下切速率不大于山地抬升速率”一致.

关键词: [河流阶地](#) [构造抬升](#) [气候变化](#) [牙着库](#) [海子山](#)

Influences of Tectonic Uplift and Climate Changes on the Yazheku River Terraces in the Eastern Tibetan Plateau [Download Fulltext](#)

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Abstract:

Tectonic uplift and climate change are two key factors in controlling the development of river terraces in hinterlands. Rivers in different areas, however, correspond to them in various ways. The Haizi Shan, located in the central Shaluli Mountain, eastern Tibetan Plateau, experienced tectonic uplift of great amplitude and extensive glaciation during the Quaternary. Six order river terraces have been preserved on both bands of the Yazheku River in the northern margin of the Haizi Shan, while to the south are glacial sediments in the Daocheng River valley in the southern Haizi Shan. Electron Spin Resonance (ESR) was applied to date the sediments of the 4 higher terraces (T3-T6, from the lower to higher order) and the glacial sediments in the Daocheng River valley. The evolution process of the 4 terraces was analyzed on the basis of the dating results and the geomorphological and sedimentological characteristics of the terraces. The strath formation and sediment aggradation of the 4 terraces occurred during the period of glacier melting, which corresponds to the late period of deep-sea oxygen isotopic stages 2, 6, 12, and 16. With climate getting warmer, glaciers on the Haizi Shan gradually melted and disappeared eventually after climate turned into interglacial condition. As a result, the loading of the underlying crust dramatically decreased, which led to tectonic uplift and the deglaciation-induced isostatic uplift of the underlying crust. Accordingly, the longitudinal profile of the Yazheku River steepened, together with increased water supply resulting from the strengthened Indian monsoon precipitation, the stream power highly increased. Lesser amount of contemporary river sediment resulted in that previously deposited sediment and underlying basement were incised, thus forming a new terrace. The incision ratio of the Yazheku River was -0.43 mm/a since late deep-sea isotope stage 16, less than the uplifting ratio (2 mm/a) of the Haizi Shan, which is consistent with the conclusion that the incision ratio is no more than the uplifting ratio.

Keywords: [river terrace](#) [tectonic uplift](#) [climate change](#) [Yazheku](#) [Haizi Shan](#)

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