attenuated. However, different degrees of slope attenuation could be obtained with different algorithms, while the minimum attenuation was obtained with the H algorithm. (4) In practical slope calculation, the EY algorithm was preferred if the slope calculation accuracy was focused, while the H algorithm could be utilized if the slope reduction was considered in low-resolution DEM-based calculation. The research results were of great significance for slope algorithm selection at different resolutions and slope accuracy evaluation under different resolutions. Moreover, they provided more accurate slope data for geoscience models.

Key words: slope; algorithm; DEM resolution; error; slope attenuation

金沙江奔子栏—巧家河段的主要堰塞湖

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金沙江干流展布受控于青藏高原东南缘的地质构造。沿川滇菱形断块西侧金沙江大断裂南流的金沙江,受断块南部楚雄—元谋隆起的阻挡,在石鼓附近折向东流,形成“长江第一湾”。位于金沙江断裂以西的澜沧江和怒江,因未受川滇菱形断块的影响,一直南流经东南亚入海。金沙江奔子栏—巧家河段的堰塞湖,自下游到上游主要有巧家湖、龙街湖、昔格达湖、涛源湖、大具湖、石鼓湖和奔子栏湖等。这些堰塞湖沉积均为大型河流的过水湖快速沉积,沉积相的最大特点是:粒度均一的厚层—巨厚层河湖相沉积,组成台地顶面的拔河高度多大于数十米,昔格达组拉鲊剖面拔河高度最大,可达 410 m。巨厚的湖相沉积有的紧邻河岸,直抵现代河床;有的由于后期侵蚀,出露下伏基岩。除孢子花粉外,几无其他化石,至今未发现哺乳动物化石。根据可信度较高的上覆风成沉积物和昔格达组底部砂层宇生核素 10Be—26Al 埋藏年龄,金沙江奔子栏—巧家河段堰塞湖沉积物年龄上限为晚更新世,下限为早更新世晚期。第四纪以来的构造运动,特别是 0.8 Ma 以来的昆黄、共和运动,导致青藏高原东南缘的横断山脉快速隆升和冰冻圈形成,促进了堰塞湖的形成和溃决。考虑到冰冻圈出现的影响,金沙江奔子栏—巧家河段堰塞湖可能形成于 0.8 Ma(昆黄运动)以后,沉积物年龄为中—晚更新世。

详见本期《金沙江折向东流的地质背景、古堰塞湖沉积、第四纪河流演化》一文。