



## **Environmental record in detrital cave sediments in the Botovskaya and Dolganskaya Jama caves (Russian Federation)**

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The Botovskaya Cave, developed in the Angarsko-Lensky Plateau ca 700 km N of Irkutsk, is an example of a horizontal two-dimensional maze with a total length of explored passages exceeding 60 km. The cave system is located 310 m above local stream levels. The detrital cave fills differ in both mineral magnetic and mineralogical parameters. The sediments are of two types: the older, basal sands showing low MS and radioactivity values are derived from weathered bedrock sandstone. The sediments were transported by horizontally running water when the surrounding valleys were shallow and local streams could enter the horizontal cave system - probably during the Tertiary. The overlying cave sediments dominating by clay and clay/sand reveal higher MS and radioactivity values and were transported vertically by precipitation waters from the surface above the cave to the cave passages during the Pleistocene.

The Botovskaya Cave sediments underwent several periods of erosion and deposition. The last erosion event is dated by radiometric and paleomagnetic age of the flowstone preserved as a relic on the limestone wall 1.5 m above modern-day sedimentary fill of the cave passage. The flowstone was originally deposited on the top of cave sediments, which were later eroded by running water. The flowstone is older than 350 ka based on Th/U dating and it reveals a normal paleomagnetic polarity (probably younger than 780 ka). The later erosion was triggered by extremely heavy precipitation period. Water entered the cave passages through the swallow holes and fissures in the surface above the cave.

The Dolganskaya Jama and the Delfin caves are located in the NW part of the Malo-Amalatskej Vpadiny Valley (ca 300 km E of the Lake Baikal). Cave detrital sediments,

exposed in two sections preserved 120 and 36 m bellow the surface, were examined for their magnetic fabric and heavy mineral content. The sediments were transported to the cave by local streams and comprise a stable heavy mineral assemblage indicating possible great age of the deposits. The anisotropy of magnetic susceptibility together with sedimentary structure examinations reveal post-depositional microkryoturbation of sediments caused by low temperature during a permafrost development. These structures found 120 m deep in the cave document annual surface temperature bellow minus 4°C.

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