

Table S1. Summary of micromorphological properties of each sample.

Sample	Aggregates	Voids	Microstructure	Coarse components	Fine material	b-fabric
<i>Canal A - 1</i>	common granular, frequent centimetric subangular blocky	common planar voids, vesicles, channels and vughs; rare chambers	granular to subangular blocky	common subrounded heterometric carbonate rocks fragments and quartz, very few subrounded igneous minerals; weakly weathered carbonate rock fragments (lithorelicts)	yellowish brown	crystallitic
<i>Canal A - 2</i>	few unseparated granular, common centimetric unseparated subangular blocky	few planar voids, vesicles, channels and vughs; rare chambers	massive	common subrounded heterometric carbonate rocks fragments and quartz, very few subrounded igneous minerals; weakly weathered carbonate rock fragments (lithorelicts)	yellowish brown	crystallitic
<i>Canal A - 3</i>	common centimetric heterometric unseparated subangular blocky	few planar voids, vesicles, channels and vughs; rare chambers	massive	common subrounded heterometric carbonate rocks fragments and quartz, rare strongly weathered sandstone fragments	greyish brown	crystallitic
<i>Canal C - top</i>	dominant angular to subangular blocky with weak separation and high pedality and accommodation	common planar voids, vesicles and vughs; rare chambers	subangular blocky	common subrounded heterometric carbonate rocks fragments and quartz, very few subrounded igneous minerals; weakly weathered carbonate rock (lithorelicts)	yellowish brown	yellowish crystallitic; darker, undifferentiated or granostriated associated to igneous minerals
<i>Canal C - bottom</i>	dominant angular to subangular blocky with weak separation and high pedality and accommodation	common planar voids, vesicles and vughs; rare chambers	subangular blocky	common subrounded heterometric carbonate rocks fragments and quartz, very few subrounded igneous minerals; weakly weathered carbonate rock (lithorelicts)	yellowish brown	yellowish crystallitic; darker, undifferentiated or granostriated associated to igneous minerals
<i>Canal 2 - bottom</i>	dominant unseparated subangular blocky	few planar voids and vughs	massive	rare carbonate rock fragments, quartz and igneous minerals	brown	crystallitic
<i>STR41 - top A</i>	common centimetric subangular blocky	common planar voids, vughs, chambers and vesicles; rare channels	massive to subangular blocky	common heterometric angular quartz and carbonate rock fragments, moderately weathered; common igneous minerals	brown	undifferentiated to crystallitic
<i>STR41 - top B</i>	common granular; few, locally common centimetric subangular blocky	common construction and planar voids, vughs and channels; rare chambers and vesicles	massive to granular, locally subangular blocky	common heterometric angular quartz and carbonate rock fragments, moderately weathered; common igneous minerals	brown	undifferentiated to crystallitic
<i>STR41 - bottom</i>	dominant subangular blocky with high accommodation and moderate pedality (dominant platy in the upper level)	common vughs, channels, chambers and vesicles (common horizontal planar voids in the upper level)	massive to subangular blocky (platy in the upper level)	frequent heterometric angular quartz and carbonate rock fragments, moderately weathered; rare igneous minerals	yellowish brown	crystallitic, locally striated
<i>B266</i>	dominant subangular blocky with high accommodation and moderate pedality	frequent channels, chambers, vesicles and vughs	subangular blocky	few angular quartz; rare carbonate rock fragments and igneous minerals	reddish brown	undifferentiated to granostriated, locally crystallitic
<i>B267</i>	dominant subangular blocky with high accommodation and moderate pedality	frequent channels, chambers, vesicles and vughs	subangular blocky	few angular quartz; rare carbonate rock fragments and igneous minerals	yellowish brown	undifferentiated to granostriated, locally crystallitic
<i>B271</i>	common millimetric granular; frequent centimetric subangular blocky with high accommodation	frequent channels, planar voids, chambers, vesicles and vughs	granular	few angular quartz; rare carbonate rock fragments and igneous minerals	reddish brown	undifferentiated to granostriated, locally crystallitic
<i>Bedrock (crusta)</i>	dominant rounded blocky	frequent construction voids, few	massive	few rounded carbonate rock fragments	yellowish brown	crystallitic

channels and chambers

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<i>Sample</i>	Organic and anthropogenic components	Bioturbation pedofeatures	Calcite-bearing pedofeatures	Other pedofeatures
<i>Canal A - 1</i>	frequent microcharcoals and shell fragments	-	few coatings (rare pendants) and hypocoatings around voids and grains; rare incomplete infillings; rare centimetric typical and geodic nodules, weakly weathered; rare clustered acicular crystals	very few reddish brown pedorelicts rich in igneous minerals; rare yellowish-brown concentric iron oxide nodules with irregular margins
<i>Canal A - 2</i>	common microcharcoals and rare shell fragments	-	common coatings (rare pendants) and hypocoatings around voids and grains; frequent impregnations; very few incomplete infillings; very few centimetric typical nodules with irregular margins; rare clustered acicular crystals	few clustered reddish brown pedorelicts rich in igneous minerals
<i>Canal A - 3</i>	few microcharcoals and organic pigment impregnations	-	common coatings (rare pendants) and hypocoatings around voids and grains; common impregnations; very few incomplete infillings; very few centimetric typical nodules with irregular margins; rare clustered acicular crystals	very few clustered yellowish brown pedorelicts rich in igneous minerals
<i>Canal C - top</i>	rare microcharcoals and shell fragments	rare ellipsoidal faecal pellets in voids	few coatings around voids and grains; rare incomplete infillings; rare millimetric typical and geodic nodules, weakly weathered	-
<i>Canal C - bottom</i>	rare microcharcoals and shell fragments	rare ellipsoidal faecal pellets in voids; compaction hypocoatings in channels (passage features)	frequent coatings and hypocoatings around voids and grains; very few incomplete infillings; very few centimetric typical and geodic nodules, weakly weathered; rare clustered acicular crystals	rare fragmented clay coatings (papulae)
<i>Canal 2 - bottom</i>	few, locally abundant microcharcoals	-	common impregnations; few infillings and rounded nodules	dominant horizontal sub-millimetric to centimetric laminations
<i>STR41 - top A</i>	common microcharcoals, partially burnt bone fragments, unburned plant material; rare concentrations of sometimes vitrified phytoliths	-	rare coatings and impregnations; rare moderately weathered nodules; rare pseudomorphic oxalate aggregates	-
<i>STR41 - top B</i>	common microcharcoals and rare shell fragments	-	frequent coatings and hypocoatings around voids and grains; frequent impregnations and infillings; few typical nodules; rare alteromorphic oxalate nodules	rare yellow microlaminated, strongly birefringent clay coatings on carbonate rock fragments
<i>STR41 - bottom</i>	rare microcharcoals and shell fragments	ovoid faecal pellets and compaction hypocoatings in channels (passage features)	frequent coatings and hypocoatings around voids and grains; few impregnations and infillings; very few typical nodules; rare druses	few subrounded dark brown pedorelicts rich in amorphous organic matter and microcharcoals with external compression hypocoatings
<i>B266</i>	very few microcharcoals; rare shell fragments	rare ellipsoidal faecal pellets in voids	few coatings, incomplete infillings and impregnations; very few typical and geodic millimetric nodules	rare amorphous iron oxides nodules and impregnations; rare pedorelicts similar to the groundmass
<i>B267</i>	few microcharcoals; rare shell fragments	rare ellipsoidal faecal pellets in voids	frequent impregnations; very few coatings and incomplete infillings; very few typical and geodic millimetric nodules	rare amorphous iron oxides nodules and impregnations; rare reddish pedorelicts rich in organic material
<i>B271</i>	Very few microcharcoals	rare ellipsoidal faecal pellets in voids	few coatings and hypocoatings	-
<i>Bedrock (crusta)</i>	-	-	few rounded nodules; dominant coatings and infillings superimposed on each other	rare fine silty-loamy pedorelicts rich in organic matter, microcharcoal and igneous minerals; fine stromatolite-like laminations