**Supplementary Table 2: Micromorphological description of thin sections from Abrigo El Molino.**

(Key: TS − thin section; pt.-partly; voids as bu − burrows, cha − channels, pl − planes, cpv − complex packing voids, spv − simple packing voids, vu − vughs; Rdp − coarse/fine related distribution pattern (c/f-limit at 10 µm) including mon − monic, clp/ssp/op − close/single space/open porphyric; Ms − microstructure including chan − channel, gra − granular, lent − lenticular, ma − massive, pla − platy, spo − spongy, sg − single grain, sub − subangular blocky, vug − vughy; Por − porosity classified as 1 − very low, 2 − low, 3 − moderately high, 4 − high). The micromass was light grey and dotted and showed a crystallitic b-fabric in all thin sections, except of TS 14.1 to 14.3, where no micromass was observed.

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| **Level** | **Layer** | **TS** | **Major components and properties of the coarse fraction 1)** | **Rdp** | **Voids** | **Ms** | **Por** | **Pedofeatures** |
| 1 | A | AM2 | Many poorly sorted subangular to subrounded dolostone gravel; dolostone (subrounded), quartz (angular to subrounded), mica, feldspar as sand and silt | Clp to ssp | Cpv, vu, bu, cha | Sub, pt. gra | 4 | Incomplete infillings and coatings of needle-fiber calcite; micrite in hypocoatings and typical nodules and coatings on gravel; few well-rounded, dense mineral aggregates |
| 1/2 | B/C | AM5 | Few mostly fine subangular to subrounded dolostone gravel; sand and silt as above | Clp to ssp | Cpv, cha, bu; | Sub, pt. chan | 3 | Calcite pedofeatures similar to above |
| 2 | C | AM6.1 | Few mostly fine subangular to subrounded dolostone gravel; sand and silt as above | Clp to ssp | Cpv, cha, bu, vu | Sub, gra, chan, spo | 4 | Calcite pedofeatures similar to above but less in number; few well-rounded, dense mineral aggregates, passage features |
| 2 | C | AM6.2 | No clear change in composition to above | Clp to ssp | Vu, cha, bu, cpv | Sub, gra, chan, spo | 4 | Calcite pedofeatures as above, few well-rounded, dense mineral aggregates, passage features |
| 2 | C | AM7.1 | Gravel, sand and silt as above; very few black fragments of organic matter | Clp to ssp | Vu, cha, bu, cpv | Vug, sub, spo, ma | 3-4 | Calcite pedofeatures as above, few passage features |
| 2 | C | AM7.2 | Gravel, sand and silt as above | Clp to ssp | Vu, bu, cha, cpv | Vug, sub | 3-4 | Calcite pedofeatures as above |
| 2 | D | AM8 | No clear change in composition to above | Clp to ssp | Vu, cpv, bu, cha | Vug, sub | 3 | Less calcite infillings and nodules than above, wasp burrows |
| 2/3 | D/E | AM9 | No clear change in composition to above | Clp to ssp | Vu, bu, cha, cpv | Vug, gra | 3 | Few calcite infillings and nodules, very few well-rounded dense mineral aggregates, few passage features |
| 3 | E | AM10 | Very few gravel otherwise as above | Clp to ssp | Vu, bu, cha, cpv | Vug, gra (lent) | 3 | Calcite pedofeatures as above, wasp burrows, passage features |
| 3 | E/G | AM11 | No clear change in composition to above, but charcoal, small pieces of bone, flint | Clp to ssp | Vu, cpv, bu, pl | Lent, pla, vug | 3 | Few calcite infillings and nodules, passage features |
| 3 | G | AM12 | No clear change in composition to above, charcoal, small pieces of bone | Clp to ssp | Vu, cpv, bu, pl | Lent, pla, vug | 3 | Similar to above |
| 3 | G | AM13.1 | No clear change in composition to above, much charcoal, small pieces of bone | Clp to ssp | Vu, cpv, bu, pl | Vug, lent, pla | 3 | Similar to above |
| **Level** | **Layer** | **TS** | **Major components and properties of the coarse fraction 1)** | **Rdp** | **Voids** | **Ms** | **Por** | **Pedofeatures** |
| 3 | G | AM13.2 | No clear change in composition to above, much charcoal, small pieces of bone | Clp to ssp | Vu, cpv, bu, pl | Vug, lent, pla | 3 | Similar to above |
| 3 | G | AM14.1 | Few gravel, sand and silt as above; few pieces of charcoal | Ssp to op | Vu, cpv, cha, pl | Vug, pla, lent | 3 | Very few calcite infillings and nodules, wasp burrow |
| 3 | G | AM14.2 | No clear change in composition to above, very few charcoal | Ssp to op | Vu, cpv, cha, pl | Vug, pla, lent | 3 | Very few calcite infillings and nodules, wasp burrows, passage features |
|  | K | AM15.1 upper | Few dolostone gravel, sand and silt as above | Ssp to op | Vu, cpv | Ma (pla, lent) | 2 | None |
|  |  | AM15.1 lower | Many dolostone gravel; many well rounded and often spherical coarse sand grains of dolostone, quartz, granite | Mo | Spv | Sg | 2 | None |
|  | K | AM15.2 | Few poorly sorted subrounded dolostone gravel; dolostone (subrounded), quartz (angular to subrounded), mica, feldspar as sand and silt | Ssp to op | Vu, bu, cha | Ma, vug (pla, lent) | 1 | Few typical manganese oxide (Mn) nodules |
|  | L | AM16.1 | No major change in composition | Ssp to op | Vu, pl | Ma, pla | 1 | Very few typical calcite nodules, few typical Mn nodules |
|  | L | AM16.2 upper | Similar to above | Ssp to op | Vu, pl | Ma, pla | 1 | As above |
|  | M | AM16.2 lower | Lower part: less gravel, otherwise similar to above | Ssp to op | Vu, pl | Ma, pla | 2 | Few typical Fe/Mn -nodules |
|  | N | AM17.1, upper | Few to very few subangular to well-rounded dolostone gravel, sand and silt like above | Mo | Spv | Sg | 2-3 | None |
|  | O | AM17.1, middle | Central part: Fining upward sequence of sands and silt with very few fine gravel (dolostone), mica-rich microlayers at the top, clear parallel orientation of mica grains | Mo | Spv | Sg | 2-3 | None |
|  | O | AM17.1, lower | Lower part: Subhorizontally and parallel bedded sand and silt | Mo | Spv | Sg | 2-3 | None |
|  | O | AM17.2 | Sandy or silt laminae of carbonates, quartz, mica and feldspar with mica-rich parts and oblique stratification | Mo | Spv | Sg | 2-3 | None |
|  | O | AM17.3 | Similar to above, but showing flame structures of comparatively fine (coarse silt) grains | Mo | Spv | Sg | 2-3 | None |