MODELLING PRE-HISPANIC SETTLEMENT PATTERNS IN *ALTO DE TOCHE,* COLOMBIA

MODELACIÓN DE PATRONES DE ASENTAMIENTO PREHISPÁNICO EN ALTO DE TOCHE, COLOMBIA

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SUPPLEMENTARY FILES

DOCUMENTOS COMPLEMENTARIOS
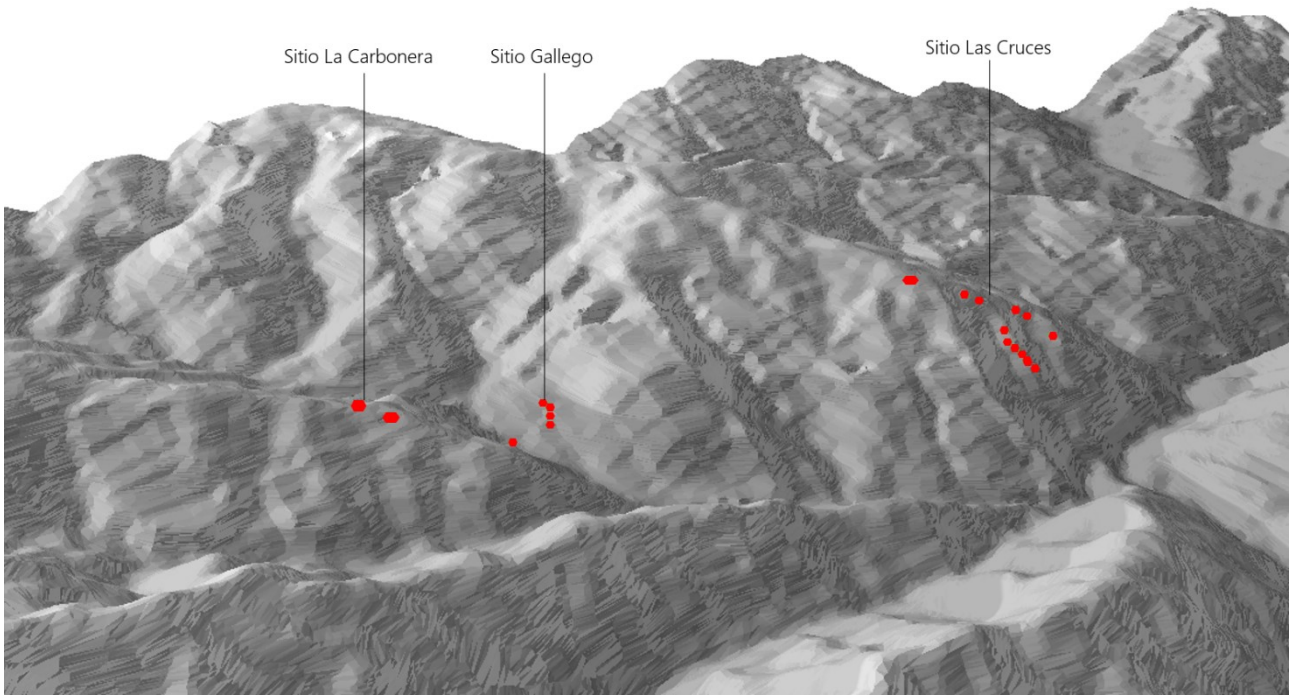
1. Digital Elevation Model

The DEM allowed the approach to the general study area, and drone flight sites were selected in advance. The management of the scales of analysis was fundamental for palaeolandscape understanding. Both in the initial DEM of the sites identified in red (Fig. S1a) and later the terraces identified individually in the DSM of the Esri viewer (Fig. S1b). From this scale, it was essential to interpret the logic of the location of the sites on the ridges of the north side of the Tochecito River valley through diagrams. As explained, patterns of terrace series were detected on the ridges approximately every 300 metres, and the location to the sun at an elevation between 2600 - 2950 MASL (Fig. S3). However, the photogrammetric work was fundamental to detect and dimension the physical conditions of the terraces. In the three sites mentioned, given the differences in altitude levels of up to 350 MASL between the lowest and the highest terrace, it was essential to know its slopes and to determine their characteristics (Fig. S2). Likewise, to define the limits of the terraces, TIN processing made it possible to generate the conditions of the location variables of the sites found. For example, a terrace can have a slope of up to 16%, which allows water evacuation. An essential feature for housing sites.

Regarding the resulting terrain models, we returned to the scale of the study area to correlate the data on slopes, elevations, and dimensions of the initial sites to replicate them in the conditions of the valleys and ridges of the stream system that build the landscape. As a result, 37 potential settlement sites were obtained that can be visited in the future to plan a more detailed survey. As mentioned, sites such as Pajarito, seen with the naked eye from the Las Cruces site, were confirmed. Also, we confirmed that the terrace's size, elevation, and location are related to their possible activity in the landscape: the smaller ones in series on the ridges may function as surveillance and sightseeing, as well as housing, alternating with funerary use. And the larger ones are always located in the higher areas, related to social gathering sites.
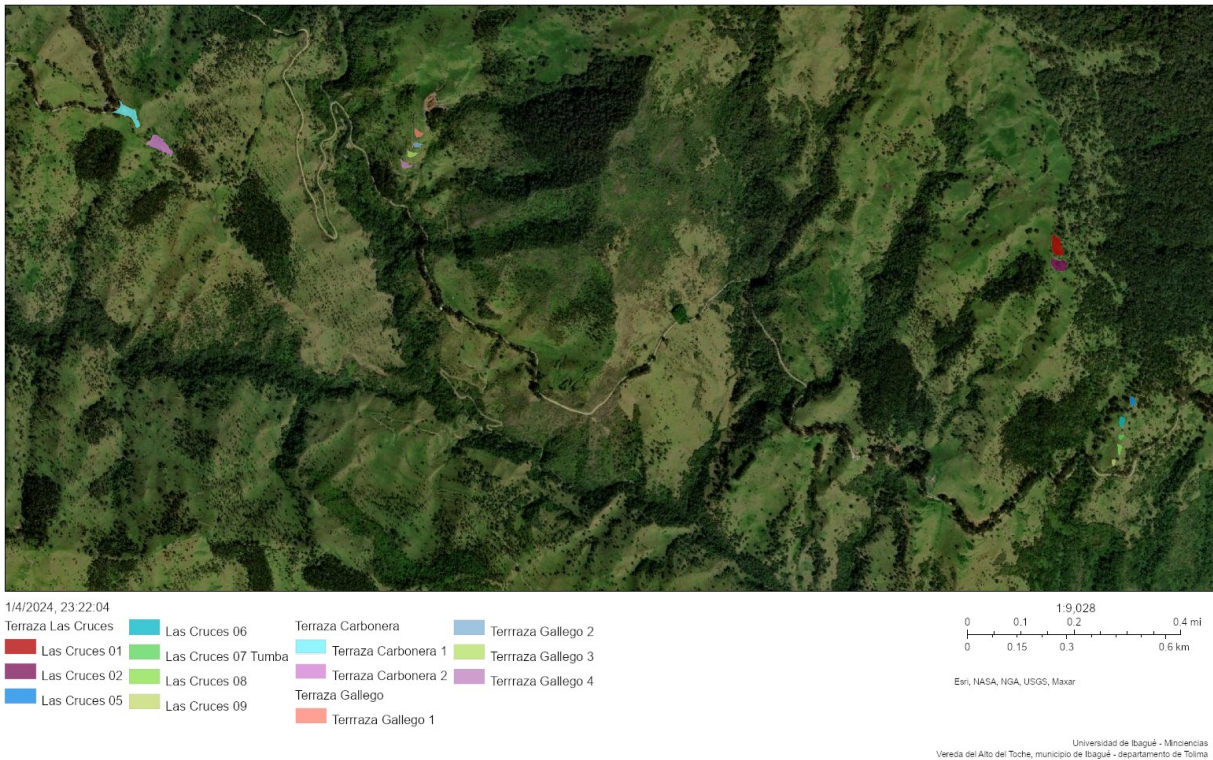
[*] Corresponding author: César Augusto Velandia, cvelandi@ucm.es

(a)

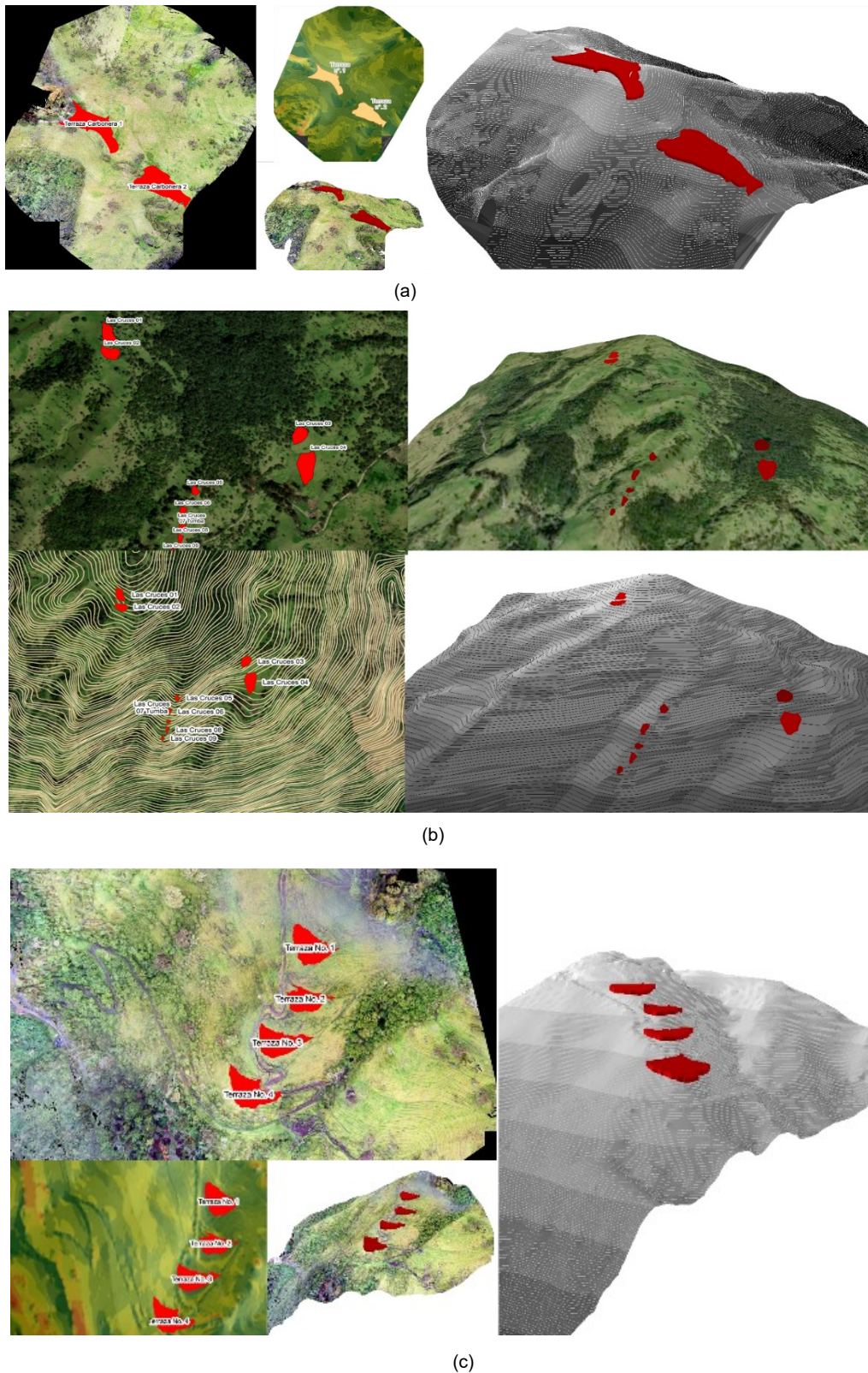Mapa Sitio denominado Alto del Toche

(b)

**Figure S1.** Digital Elevation Model: a) location of 3 documented sites. Source: Authors from
https://search.earthdata.nasa.gov/. https://search.earthdata.nasa.gov/https://search.earthdata.nasa.gov/;
b) Map of terraces in study area of Alto de Toche. Source: Authors from Geoserver Web Map Service-Esri.
https://unibague.maps.arcgis.com/apps/webappviewer/index.html?id=9e48026546654de0bd834cee6fb38b83
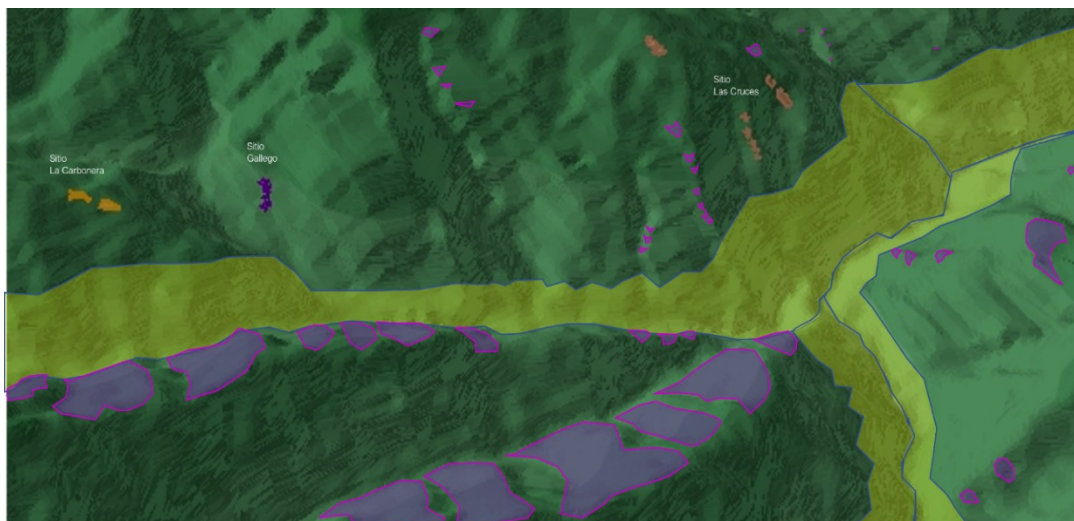
2. Sites and Terraces

(a)

(b)

(c)

Figure S2: Terraces identified by TIN processing: a) *La Carbonera* site. b) *Las Cruces* site. c) the *Gallego* site.

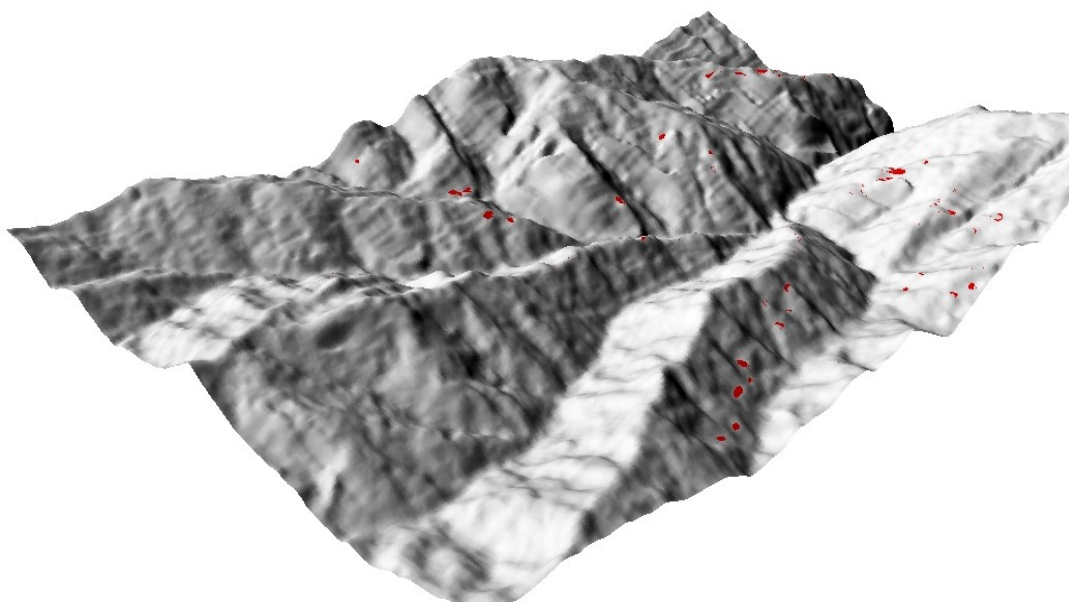## 3. Diagrams

(a)

(b)
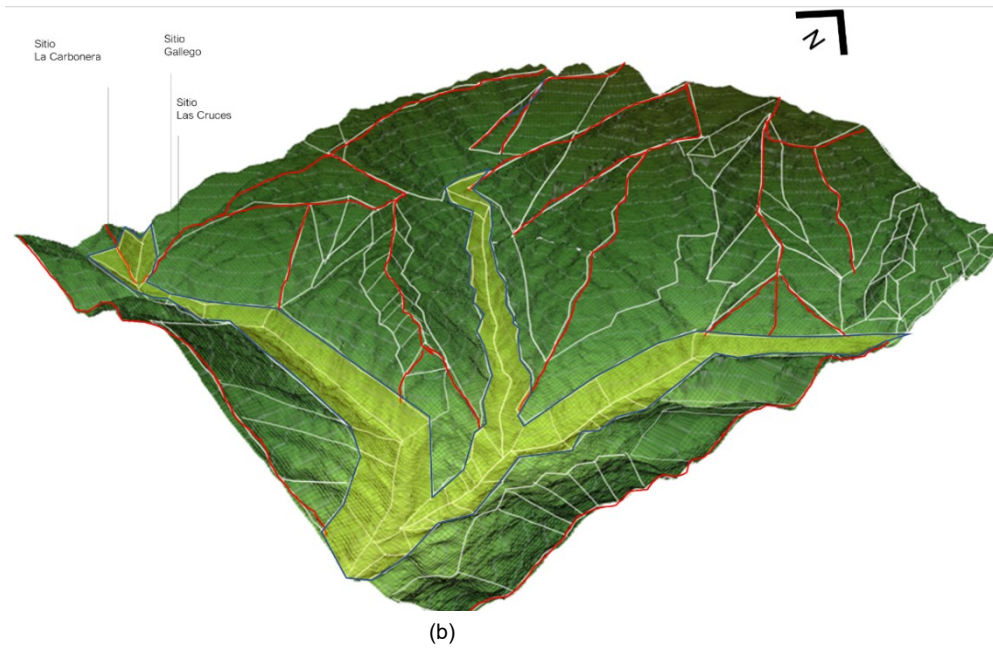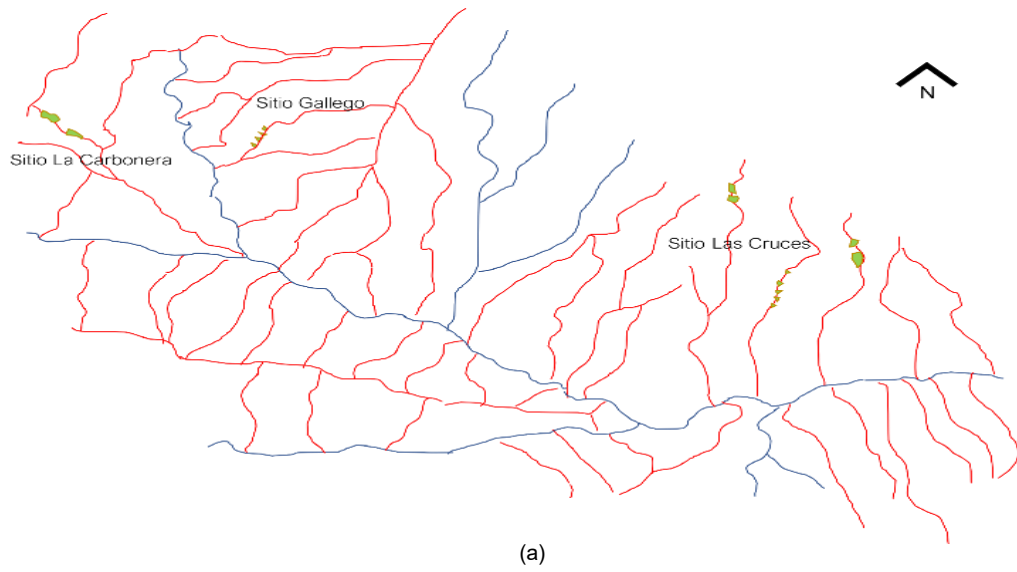
Figure S3: Diagrams: a) Ridges system (in red), terraces (in green), and streams (in blue) of *Alto de Toche* study area. b) Interpretation of the physiographic forms of *Alto de Toche*.
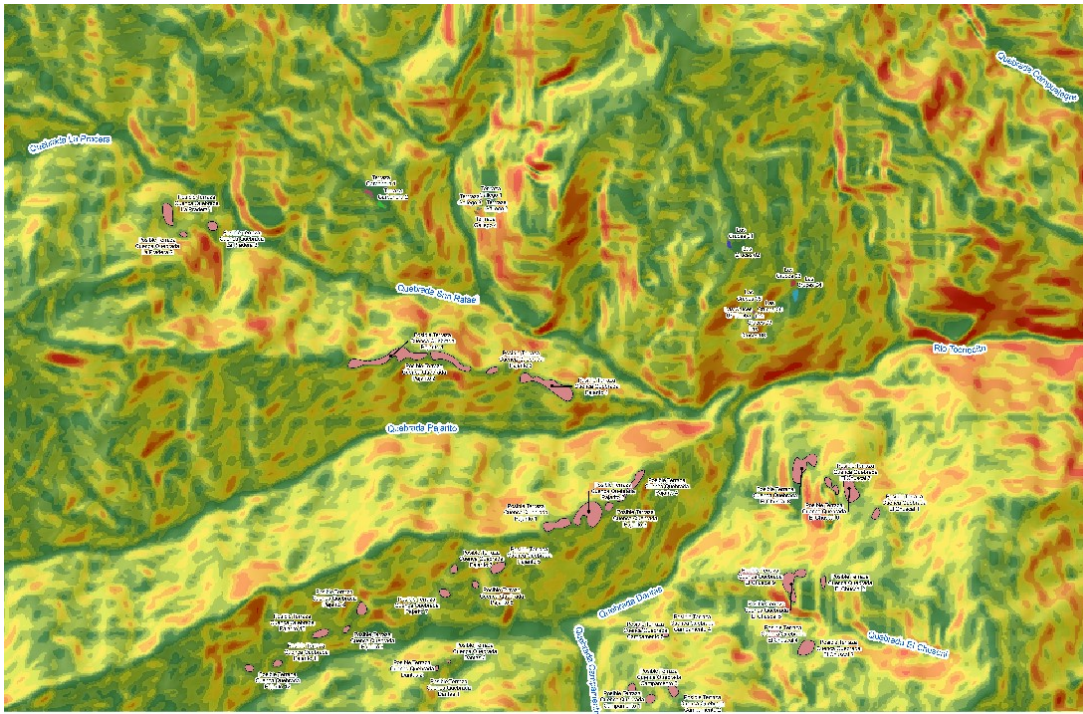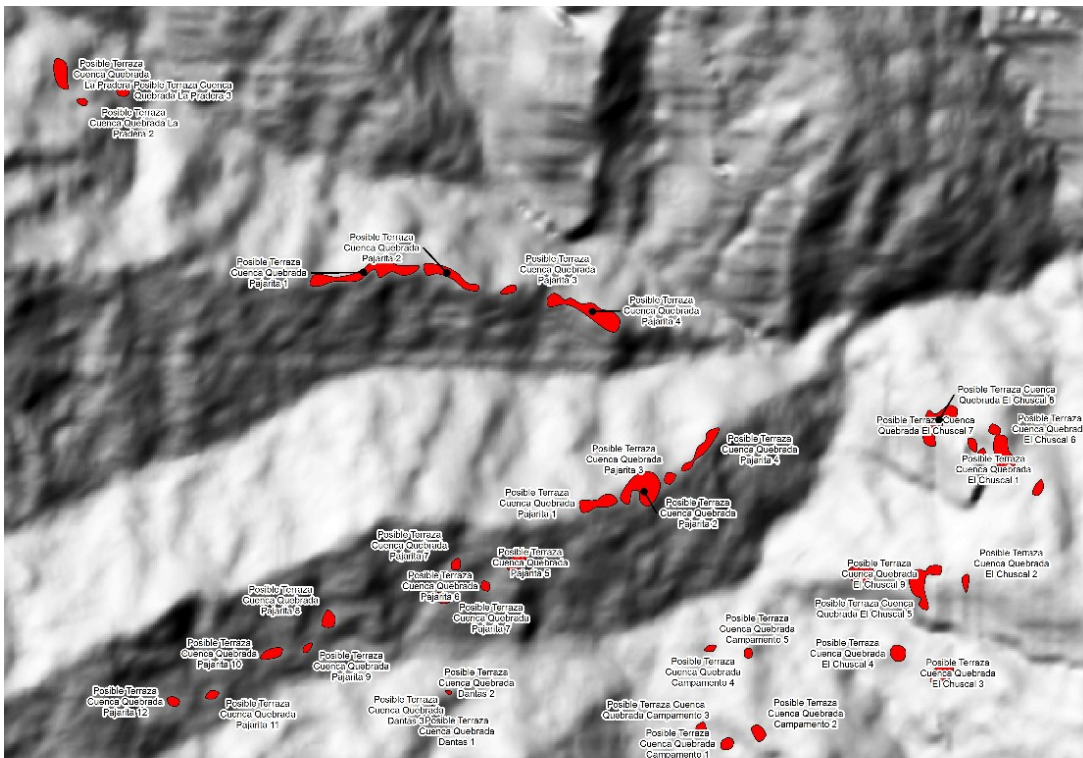
4. Resulting Terrain Models

(a)

(b)

Figure S4: a) Schematic preview of possible occupation sites (in purple) in *Alto de Toche* ridges. b) Resulting terrain model of projected settlements. Source: Authors from Esri Geoserver Web Map Service. https://unibague.maps.arcgis.com/apps/webappviewer/index.html?id=9e48026546654de0bd834cee6fb38b8 3

(a)

(b)

Figure S5: Resulting terrain model of 37 projected settlements: a) Slope view. b) Hillshade view. Source: Authors from Esri Geoserver Web Map Service.
https://unibague.maps.arcgis.com/apps/webappviewer/index.html?id=9e48026546654de0bd834cee6fb38b83