

# The geosite of travertine waterfall of El ksiba (Morocco), a heritage to enhancement and preserve

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## INTRODUCTION

The study area preserves a great number of karst geosites, such as ruiniform landscapes, caves and many remarkable reliefs such as cliffs and travertines.

This work concerns the quantitative evaluation of Travertines waterfall of El ksiba, and proposition of the strategies of valorization and protection.

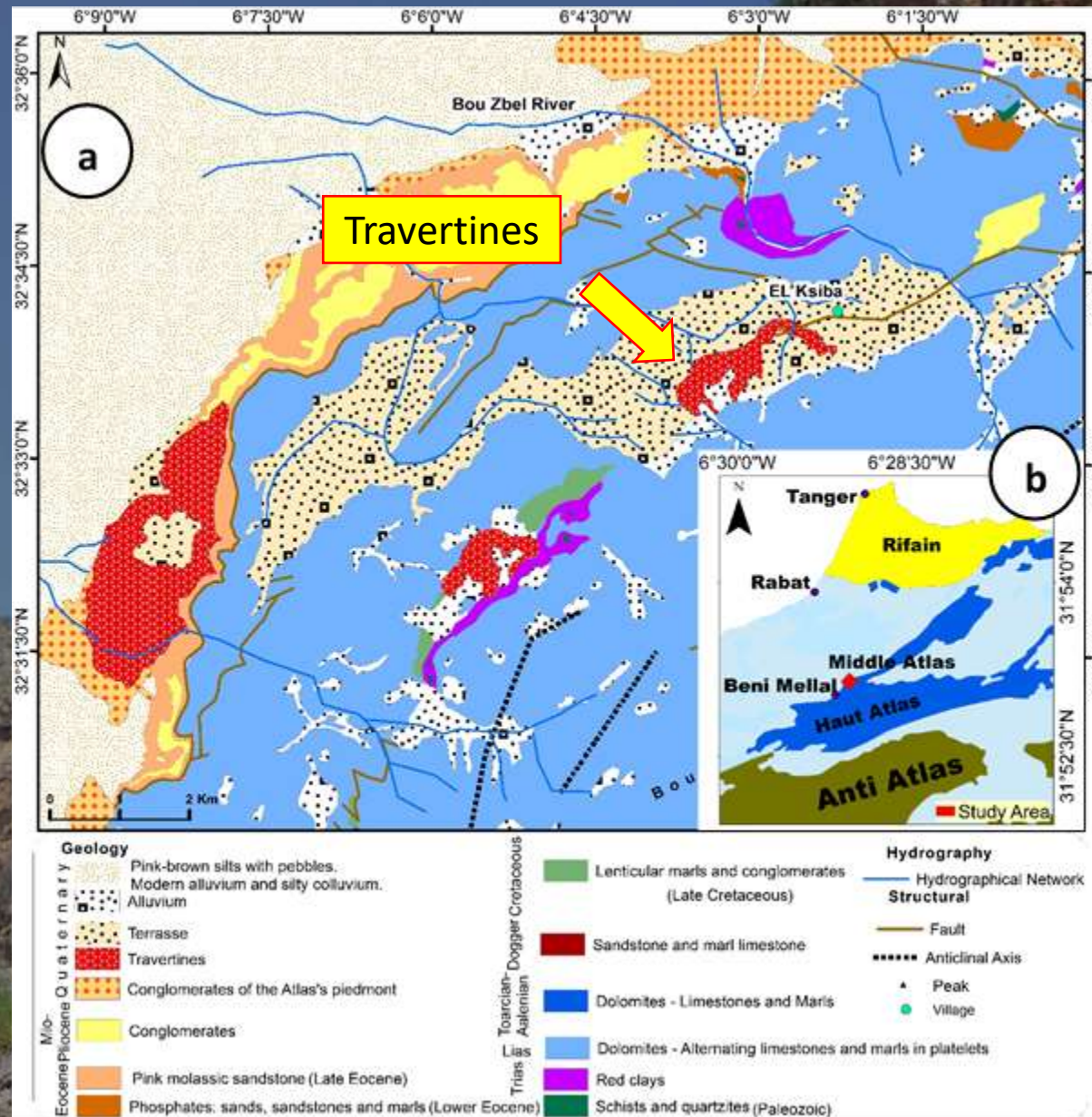
The results reveal the high scientific ( $\simeq 0.88$ ) and aesthetic ( $\simeq 0.88$ ) values. The assessment also shows the high economic value ( $\simeq 0.75$ ) and cultral ( $\simeq 0.81$ ).





## Study Area

Figure 1. Geological map of study area





## Materials and Methods

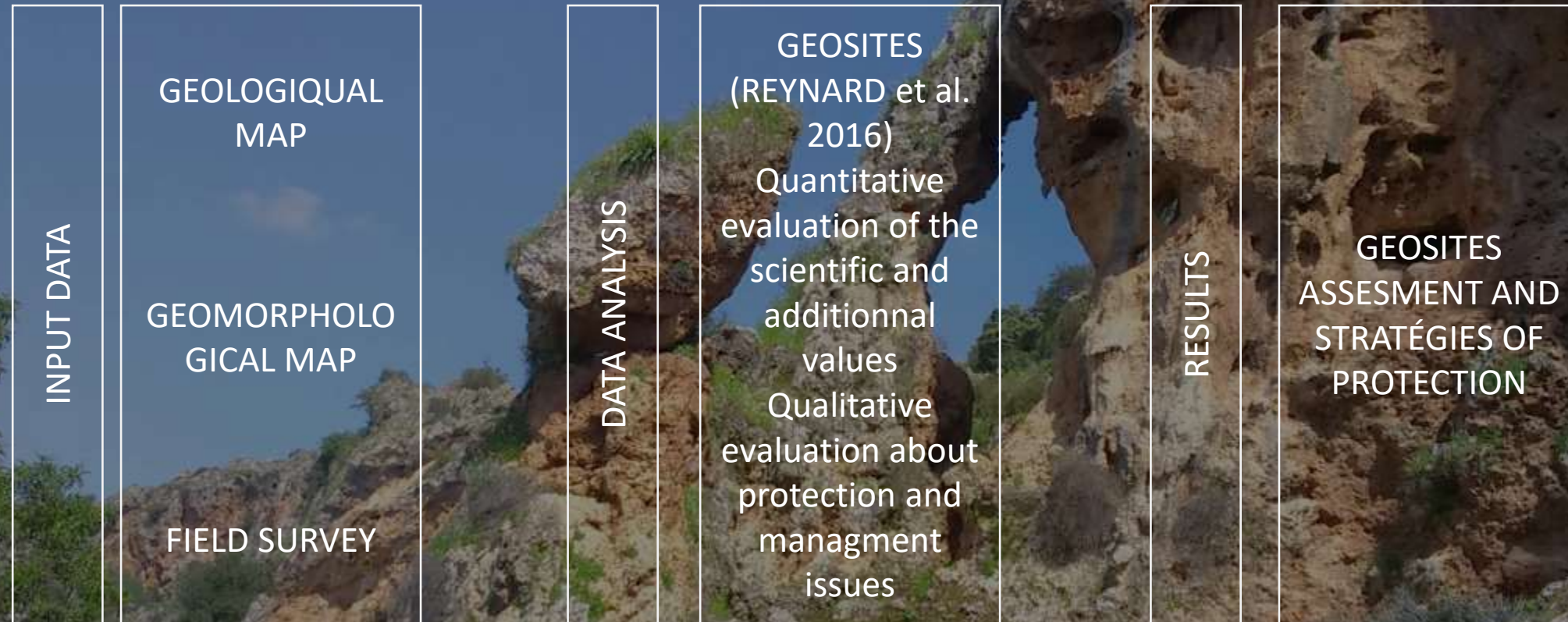


Figure 2. Research methodology flow chart

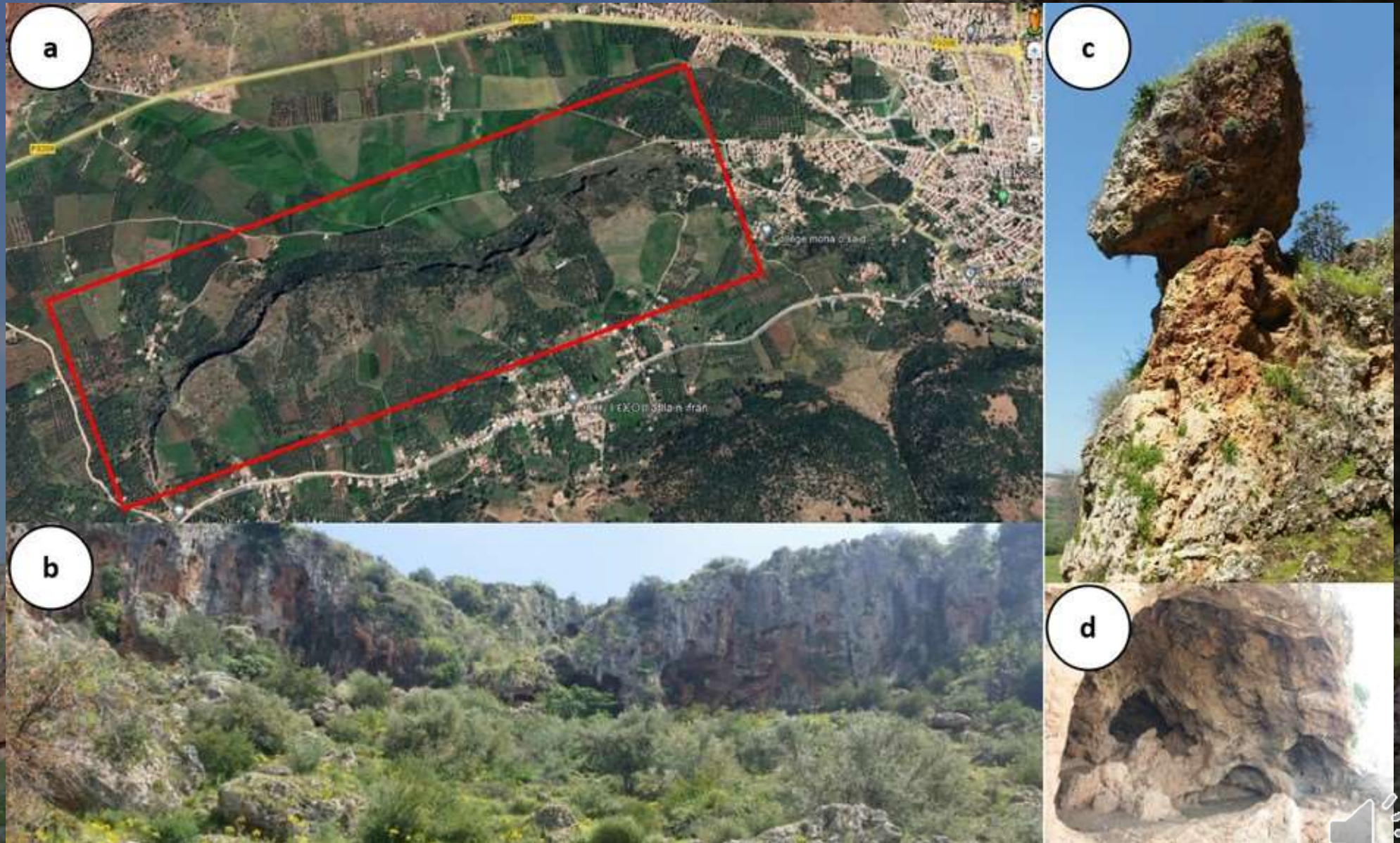




## RESULTS

Figure 3.

Travertines of El  
ksiba: (a) area  
occupied by  
travertines (google  
earth image,  
october 20, 2022);  
(b) view on the  
travertines; (c)  
ruiniforms  
landscapes; (d) the  
Hyena Cave.





RESULTS

Table 1. Quantitative assessment of the scientific and additional value of El ksiba’s Travertine.

Code	Name	Scientific value					Additional value				
		Int	Rep	Rar	Pal	Sc V	Ecol	Aes	Cul	Eco	Ad V
ELKhyd001	the Hyena Cave	1	0.75	1	0.75	0.88	0.75	0.75	0.75	0.75	0.75
ELKkar002	Spring	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
ELKhyd003	Panoramic view	1	1	0.75	1	0.94	1	1	1	0.75	0.94
ELKkar004	ruiniforms landscapes	0.75	1	1	1	0.94	0.75	1	0.75	0.75	0.812
Travertine Value		0.75	0.88	0.75	0.63	0.88	0.81	0.88	0.81	0.75	0.81





## CONCLUSION

The quantitative evaluation shows that the travertines of El ksiba have an important scientific value (0.88); it presents an open-air museum rich in paleontological, speleological and paleoclimatic data which helps us to reconstruct the old environment.

We proposed to popularize this geological phenomena by the Geoeducation.

Geotourism appears as the main component of the socio-economic development of the region, it aims to promote its geological and geomorphological wealth. It contributes to socio-economic development through the creation of new income-generating activities (ecological guest houses, traditional handicrafts, local natural products,...).

