

SEDIMENTOLOGY OF THE NEOGENE ALMERÍA BASINS: AN ILLUSTRATED GUIDE.

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Tabernas basin

The unconformity at the base of the Quaternary



Photograph 209.- Sub-horizontal, Quaternary conglomerates unconformably overlying upper Tortonian marls, with intercalated sandstones, tilted to the North. Conglomerates are alluvial-fan deposits. The underlying Miocene sediments accumulated in a deep-marine setting (Tabernas Basin. Rambla del “Pueblo Mejicano”).

The upper Tortonian turbidite systems

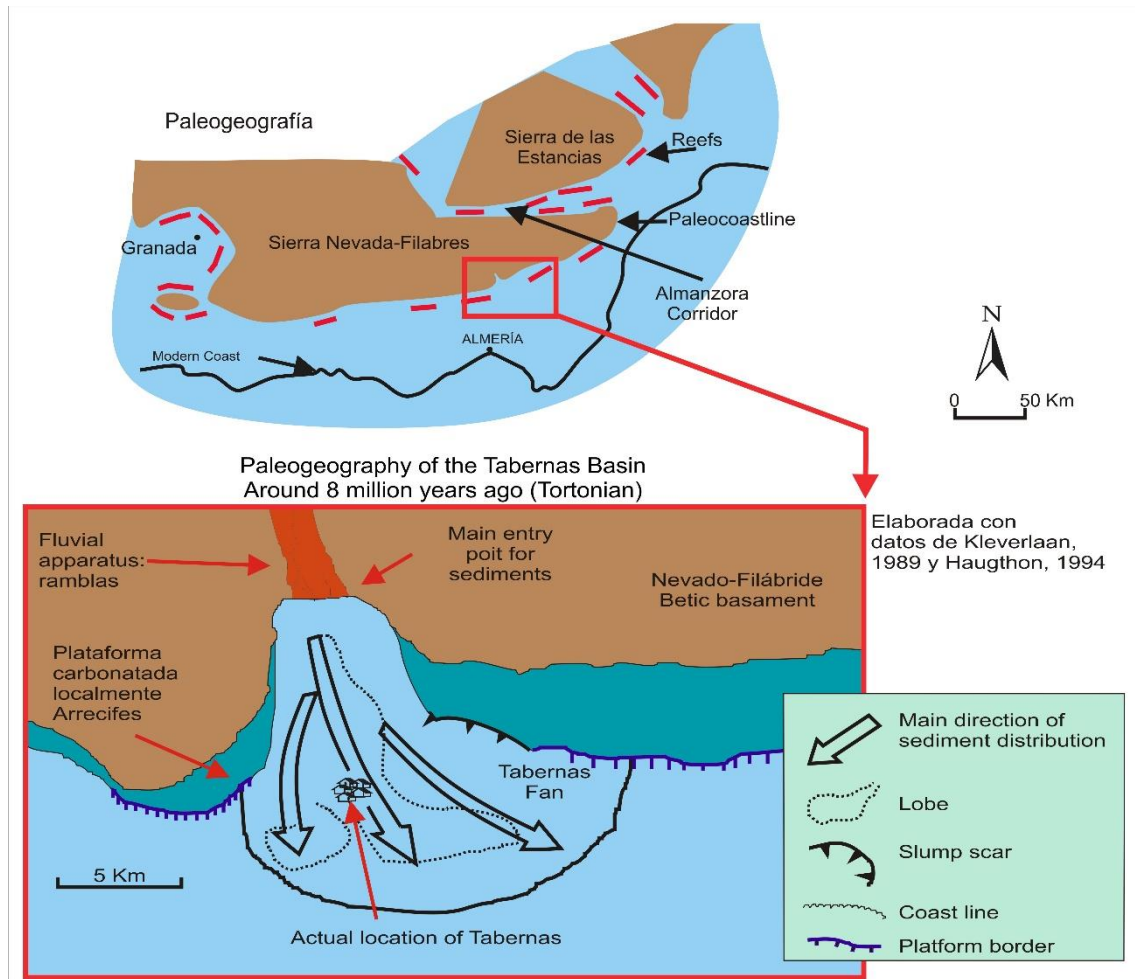


Figure 37. Palaeogeography of the Tabernas Basin around 8 My ago. The Tabernas submarine fan occupied an area of some 100 square kilometres extent. Distinctive elements of the fans such as feeder channels and lobes can be differentiated. The source area of all these sediments is the Sierra de los Filabres, located on the northern margin (after Braga et al. 2003).

The outer-fan turbidite sequences

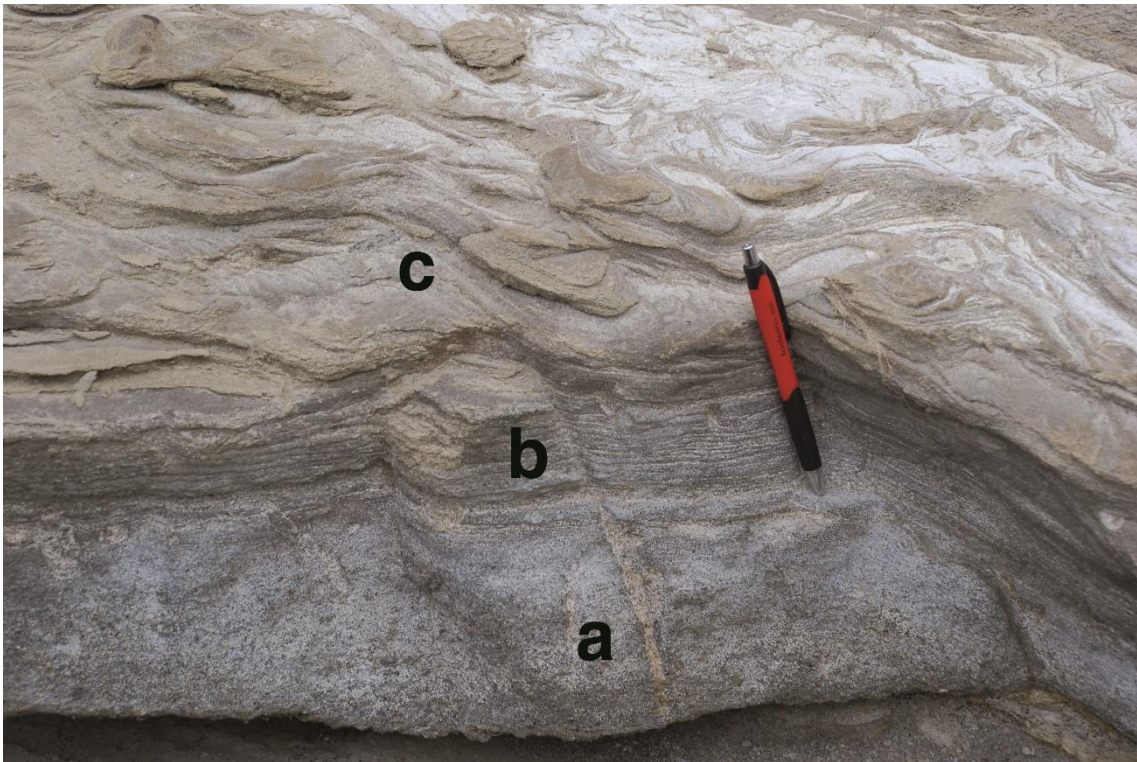
Photograph 210.- Turbiditic sandstone layers intercalated within marls (Tabernas Basin. Rambla del “Pueblo Mejicano”). →



Photograph 211.- Sandstone layers are more resistant to weathering and stand out in the field. Their base is slightly irregular (erosional) (Tabernas Basin. Rambla del “Pueblo Mejicano”).

Photograph 212.- Sandstone layers exhibit the typical turbidite Bouma sequence, with a coarser, normal-graded lower interval (a), followed by a parallel-laminated interval (b) cap by a cross-laminated interval (c) (Tabernas Basin. Rambla del “Pueblo Mejicano”).

→



Photograph 213.- The upper interval (c) is usually microfolded (it shows a convolute lamination) (Tabernas Basin. Rambla del “Pueblo Mejicano”).



Photograph 214.- Scouring and filling structures, such as flute casts, occur at the base of some turbidite layers (Tabernas Basin. Rambla del “Pueblo Mejicano”).

The deformation structures in the turbidite layers

Photograph 215.- Some peculiar deformation structures occurring in some thick sandstone layers are the pseudo-mud cracks. They probably are due to syndimentary liquefaction. They appear at the top of the sandstone beds (Tabernas Basin. Rambla del “Pueblo Mejicano”). →



Photograph 216.- Close view showing sediment vertical banding at the “pseudo-mud crack” borders (Tabernas Basin. Rambla del “Pueblo Mejicano”).

The submarine channels



Photograph 217.- Scour and fill structures very typical in submarine channels (Tabernas Basin. Bar Alfaro).



Photograph 218.- Coarse-grained conglomerate, with blocks up to boulder in size, at the base of a submarine channel (Tabernas Basin. Bar Alfaro).

The slumpings



Photograph 219.- Very large slump fold (Tabernas Basin. Rambla de Tabernas).



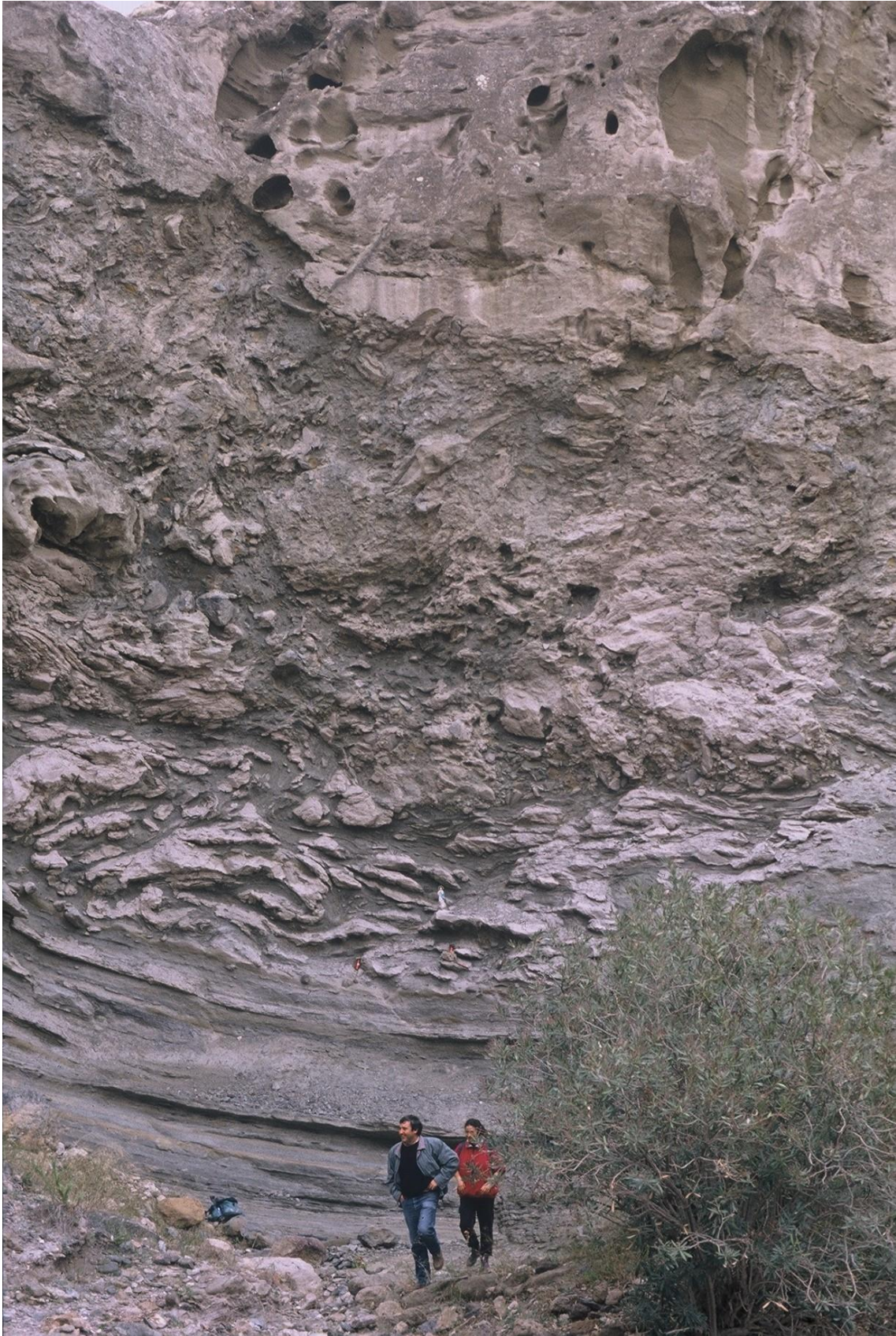
Photograph 220.- Small slump fold (Tabernas Basin. Rambla del “Pueblo Mejicano”).

The sismites



Photograph 221.- A very distinctive and continuous sismite bed, known as Gordo Megabed, outcrops at the top of the Cerro Alfaro, which can be seen at the distance (Tabernas basin. Bar Alfaro).

Photograph 222.- “Gordo Megabed”. The lower part of the sismite layer is an intraformational breccia. The upper part corresponds to a thick turbidite deposit (Tabernas Basin. Rambla Cerro Alfaro). →



Photograph 223.- Close view of the intraformational breccia (Tabernas Basin. Rambla Cerro Alfaro). →



Photograph 224.- Most of the breccia clasts are pieces of slump folds, some of them of considerable size. Some basement (Alpujárride and Nevado-Filábride) blocks are also identified (Tabernas Basin. Rambla Cerro Alfaro).



Photograph 225.- Sismite bed intercalated within submarine-fan and hemipelagic sediments (turbiditic sands and marls) (Tabernas Basin. Rambla del “Pueblo Mejicano”).



Photograph 226.- Close view of the intraformational breccia exhibiting some very irregularly-shaped clasts (Tabernas Basin. Rambla del “Pueblo Mejicano”).

The travertines from Las Salinas



Photograph 227.- Cascade travertines covering the bad-land (Tabernas Basin, Las Salinas).



Photograph 228.- Emission zone. Arrows point to the fracture (F) where emission points locate and from which calcium carbonate-rich and salt-rich fluids escape (Tabernas Basin, Las Salinas).



Photograph 229.- At some places the calcareous travertine wall is completely vertical (Tabernas Basin. Las Salinas).



Photograph 230.- Ephimerous, salt (halite) crusts, irregularly distributed, formed temporally on top the calcareous travertine, turning the area into a “snowy landscape” (Tabernas Basin. Las Salinas).



Photograph 231.- The travertines are internally laminated (Tabernas Basin. Las Salinas).

RECOMMENDED ITINERARY:

Itinerary 11.- Rambla del “Pueblo Mejicano”-Bar Alfaro-Las Salinas

To be done on foot.

Main subjects: Tortonian turbidites, slumpings and sismites. Present-day travertines.

Duration: half a day.

Location map



Stop 1.- Rambla del “Pueblo Mejicano” (a-b-c):

Main features: (a) 210, 211, 212, 213, 214, 225 y 226; (b) 215 y 216; (c) 209, 219 and 220.

Stop 2.- Bar Alfaro:

Main features: 217 and 218.

Stop 3.- Las Salinas:

Main features: 227, 228, 229, 230 and 231.