# STRATIGRAPHIC INTERPRETATION OF EL JAMON RIDGE, MURCIA PROVINCE, SOUTHEASTERN SPAIN

Tom Olszewski
Department of Geology
Franklin and Marshall College
Lancaster, Pennsylvania 17604

The locality under study is El Jamón, a long ridge in Murcia province in southeastern Spain. It is 2 km west and 4 km north of the town of Fortuna and overlooks the Cortado de las Peñas. 1.5 km due east of the ridge is Sierra del Baño, a large outcrop of the local Mesozoic basement. Across the valley to the west lies 'Desastre Reef' which was thoroughly explored and described by Santisteban (1980).

The sediments of El Jamón were originally thought to have accumulated on reef slopes dropping away from the extensive Desastre Reef. This impression was reinforced by the 10 to 15° slope of the beds away from the large reef. Closer exploration revealed a more complex situation than was previously assumed. The area was the site of a Miocene sea cliff which was the source for thick conglomerates which have some unusual sedimentary relationships to the well-preserved in-place coral reefs in the area. Although a large area was surveyed the interpretation is most effective along the ridge face where both lateral and vertical changes in lithology could be observed (Figure 1-Each descriptive zone will be referenced by a letter).

A.) The very southern end of the ridge is one of the few exposures of what is presumed to be basal breccia although a contact with underlying Mesozoic basement rocks is not exposed. This unit is poorly sorted but well-imbricated with clasts dipping in a generally southern direction. Initial interpretation of the composition of the clasts was that they were pieces of carbonate basement but thin-section studies suggest that they are actually Miocene beachrock. Upward from this bottom-most bed a series of sands were exposed. The most peculiar characteristic of these was a conspicuous lack of any coral (in situ or otherwise).

B.) Farther north (Figure 1), layers of bioclastic sands and silts were found containing in situ, mollusc-bored, massive heads of Tarbellastraea sp. coral. This is the first appearance of in-place coral and its morphology seems to indicate a high-energy, subtidal environment. Above this bed are interbedded bioclastic (primarily red coralline algae [RCA] fragments) sands and reef layers. Corals are limited to Tarbellastraea sp. and Porites sp. in shrub or tabular morphologies.

C.) Stratigraphic section IV was taken through a series of RCA-rich sands interbedded with exceptionally well-preserved reef sequences. In this area at least five coral layers overlying sand layers occur in sequence. It is also noteworthy that the lowest level of all these coral beds invariably contains Tarbellastraea sp. alone or in association with Porites sp. This is an exception to the assertion of Martín et al. (1989) that Tethyan reefs of this time are always initiated by Porites sp. settlement.

D.) Between this area and section IV sands become more important volumetrically, but this is only for a short distance. At D.) there is a long distance of interlayered massive sands and thick conglomerates. The conglomerates preserve channels and what interpretted as prograding delta foreset beds. At E.) there is an unusual association of in-place branching Porites sp. reef which can be seen directly on top of or directly underneath typical conglomerate beds.

F.) The underlying basement unconformity rises and becomes exposed. The interpreted paleo-topography of this section is a sea cliff which provided the relief necessary for the production of limestone conglomerates. Above exposures of the angular unconformity lie what have been interpreted as a series of beds which indicate deeper water environments up the section.

The final interpretation at El Jamón is that a paleo-sea cliff disrupted the sequence of strata predicted by Walther's Law; it caused a halt in transgression and allowed thick vertically building sequences to be deposited while preventing these from having a lateral shoreward building component. As soon as sea level rose high enough to overcome the topographic rise, transgression continued.

The high relief of the Mesozoic basement provided the environmental energy and large clasts necessary to build a prograding, submarine delta. The coral-sand-conglomerate cycles which seem to start every few hundred years (based on growth rates of modern corals and thicknesses of in situ reef beds) can be explained if the corals are growing on the side edge of a delta, the channel of which migrates back and forth. When the stream is depositing material on the other side of the delta, corals have the opportunity to grow. When it shifts to the area transected by El Jamón, conglomerates are deposited and reef growth is impossible.

The final goal of this project is to examine data provided by preserved Foraminifera. Paleoecologic information based on taxonomic identification is valuable and can distiguish between microenvironments in shallow-water carbonate facies such as these. Another source of environmental information is the taphonomic state of the preserved forams. In thin section, the easiest measures of micro-taphonomy to obtain are 1) the percentage of tests filled with sediment versus those which are empty and 2) size-frequency data for a given bed. Preliminary investigations indicate that some sand beds which underly Tarbellastraea sp. layers have a significantly higher percentage of filled foraminiferal tests than other layers which have roughly equal numbers of filled and unfilled tests. This kind of data can yield information about environmental energy and/or rate of deposition. By establishing standardized "taphonomic grades" reference on the basis of percentages of filled foraminiferal tests from a given unit it should be possible to better describe beds in terms of environmental energy and rate of sedimentary deposition. Both of these factors increase the breakage of forams which, in turn, is reflected in the number of filled tests.

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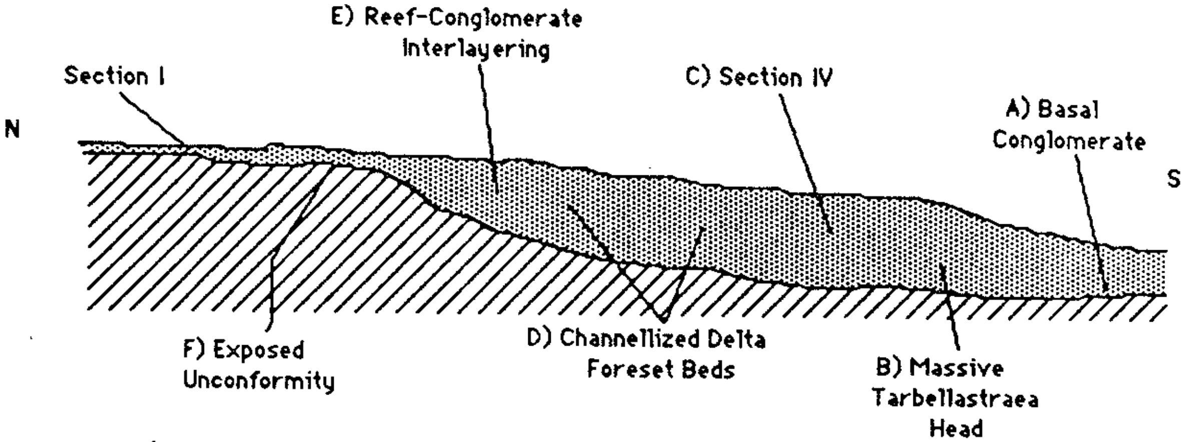


Figure 1 -Diagrammatic Cross-section of El Jamón Ridge

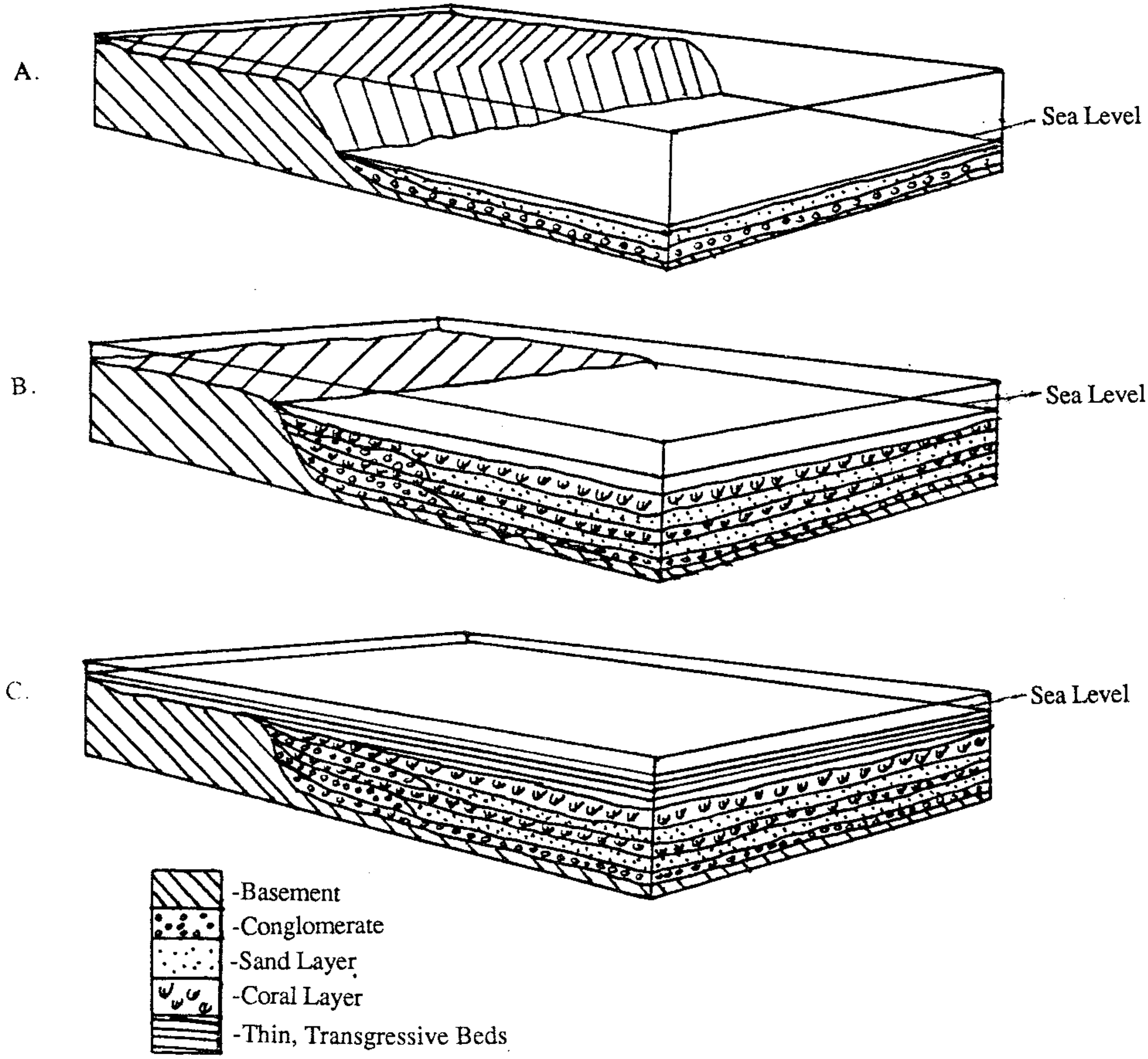


Figure 2-Schematic representation of the Miocene history of El Jamón. A-Transgressive sea has just reached the ancient sea cliff. B-Development of vertical section of conglomerates and corals. C-Sea overcomes cliff and starts to lay down thinner beds.