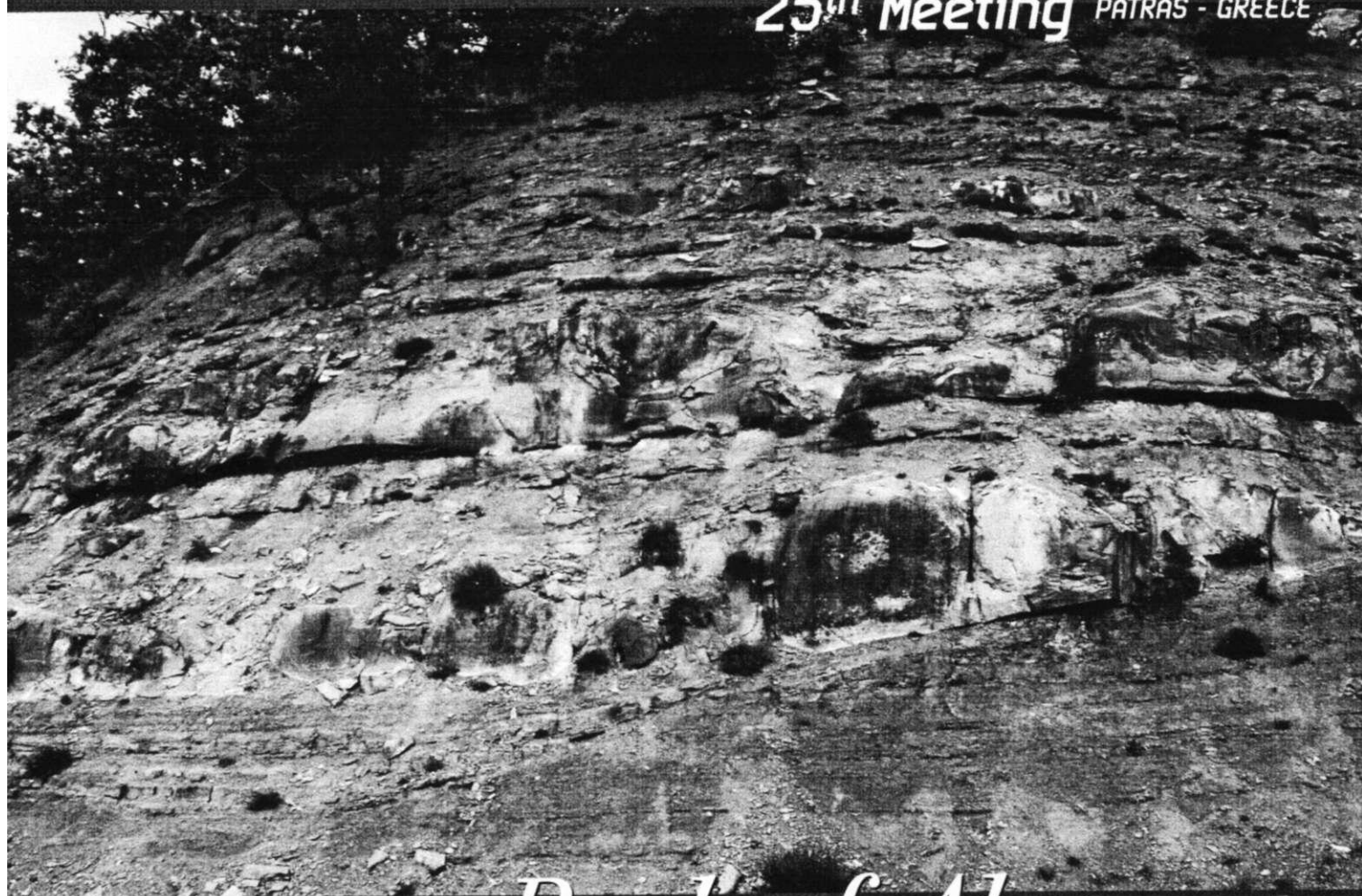




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The stacked shallow coarse-grained mouth bar - type deltas in Promina Formation: A Late Eocene prograding succession in Bribir area, Northern Dalmatia, Croatia

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The Promina Formation in northern Dalmatia is a foreland basin fill of calciclastic deposits of late Middle Eocene to Early Oligocene age, approximately 2000 m thick, with a prominent shallowing-upward trend from distal shelf facies to alluvial facies. The Promina Fm. overlies conformably the Late Lutetian so-called Flysch Formation and covers unconformably the Cretaceous and Palaeogene platform carbonates in the central part of the region.

The focus is on the about 90 m thick shallow coarse-grained mouth bar-type deltas complex (Nemec, 1990) in the upper part of about 260 m thick succession near the old historical town of Bribir on southeastern margin of Promina Fm.

Deltas complex consists of isolated sheet-like conglomerate bodies both underlain and overlain by finer grained (mostly sandstone) beds. Conglomerate sheets are laterally very extensive (500-1000 m in strike direction) and 8-10 m thick. They are composed of mouth bar and beachface facies associations (delta front) whereas sandstone beds have prodelta and shoreface facies characteristics. The sandstone beds and conglomerate sheets stacked upon one another form 6 recognizable coarsening-upward cyclothems.

The shoreface sandstones at the base of the lowest cyclothems are in gradational and conformable contact with the lower part of succession: siltstones

and mudstones deposits with the typical features of offshore transitional zone and outer shelf. This relatively gradational contact separating highstand normal regressive deposits below from forced regressive deposit above can be interpreted as a basal surface of forced regression *sensu* (Hunt and Tucker, 1992).

The basal surface of conglomerate sheet (delta front) in the lowest cyclothems is sharp and slightly erosive but conformable with underlying sandstone beds (prodelta) and is interpreted as a within-trend forced regressive surface of forced regressive delta (*sensu*) (Catuneanu, 2006).

The remaining 5 cyclothems can be attributed to a series of minor relative sea-level rises followed by normal regressions (parasequences) or even to autocyclic shifting of mouth bar lobes - the both possibilities can be realized during lowstand normal regression.

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