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Reasons for The Development and Demise of An Isolated Carbonate Platform Complex: The Early Miocene (Burdigalian) of The Mut Basin, Southern Turkey

A shallow-marine carbonate platform complex developed over an abandoned delta during the Burdigalian transgression in the north of the Mut Basin (Turkey). The largest platforms (3km wide by 100m thick) grew along the edge of the underlying delta, and platform-size decreased landwards. The deltaic system eventually prograded out over the platforms terminating carbonate production: the landward platforms were directly overlain by fine-grained (offshore) siliciclastics, and the seaward platforms by marls.

The facies and stratal organisation of two of these platforms was studied in detail. During the ‘start-up’ phase muddy coralgal boundstones developed as low-relief biohermal banks with siliciclastics being deposited in the off-bank areas. During the ‘keep-up’ phase the platform top traced sea-level and coralgal and microbial boundstones were deposited with internally mounded and planar geometries, while the seaward margin underwent erosional truncation and clinoform geometries were preserved at the landward margin. During the ‘give-up’ phase rhodalgal debris accumulated on the platform-top and flanks indicating a deepening before carbonate production shut down.

The stratal relationships observed suggest that these platforms developed their initial isolated morphology as a direct response to siliciclastic input, allowing the siliciclastic and carbonate depocentres to be locally partitioned. Additionally the stratigraphic relationships indicate it is likely that the prograding delta system may be the principle cause of carbonate production shut-down and apparent platform drowning.