



The final stage of Lycian nappe emplacement in SW Anatolia (Turkey) constrained by late Early Miocene syn-orogenic sedimentation

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The Western Taurides, broadly known as the Lycian Nappes, form one of the most prominent geological structures of southwestern Anatolia. The Lycian nappes were emplaced from NW to SE during closure of northern Neotethys in the latest Cretaceous to Miocene time interval. The tectonosedimentary evolutions of Miocene peripheral foreland basins of southwestern Anatolia are directly related to subsequent thrust events that build the Tauride Orogen. The Tertiary syn-orogenic sediments deposited and preserved in the Western Taurides provide reliable estimates of the shortening, thickening and uplifting history of the orogenic belt. The coastal alluvial-fan to shallow-marine sedimentary succession in the Acýpayam region constrains the latest eastward advance of the Lycian Nappes in late Early Miocene times. This study concerns the description and interpretation of the various depositional systems of the Acýpayam succession that characterize and exemplify the late-stage sedimentation pattern for an orogeny. Sedimentation started in Burdigalian time and is represented by coarse-grained alluvial fan deposits which unconformably rest on a Mesozoic ophiolitic basement. These early-stage deposits are rich in ophiolite clasts derived from the basement and are attributed to an incipient stage of nappe advance. This fining-upward sequence passes into fan-deltaic sediments that show an upward increase of limestone clasts derived from the advancing nappe pile. During the Late Burdigalian-Early Langhian, the fan-delta deposition is terminated by a marine invasion. This transgression is characterized by peat-forming coastal mires which overly both coarse-clastic fan delta sediments and basement rocks. The alluvial to shallow-marine succession is ~450 m thick and palaeocurrent data obtained from the coarse-clastic units suggest prevailing drainage to the south-to-southeast. The presence of shallow-water fines and

reefal-carbonate facies further confirms the marine transgression. This marine inundation stretches all over the Tauride Belt and is thought to represent the drowning phase of a broad flexurally subsiding basin that formed due loading of the advancing nappe stack. The syn-orogenic sedimentation in Acýpayam area ended with deposition of reefal limestones by the end of Early Langhian. This age confines the latest advance of the Lycian Nappes in this area, since the syn-orogenic succession has not been overthrust by later nappe emplacement events. During the Vallesian (Tortonian) - Pliocene period graben-type basins were established in the region; and the Lower Miocene foredeep sequence became dissected by nappe-front parallel extensional normal faults.