



## **Palaeogeographical and paleoclimatic implications of the Neogene Baklan basin of SW Anatolia (Turkey) and record of new cardiid bivalve fauna**

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The Baklan basin of SW Anatolia (Turkey) contains a prominent record of environmental and climate change dating since the late Miocene. A detailed facies analysis enables us to determine entire Neogene basin-fill representing palaeogeographic changes and sedimentation pattern throughout the basin evolution.

Two major depositional phases were recorded in the basin-fill succession on the basis of sedimentological and geochemical analyses. The lower depositional phase is of a late Miocene age and is divided into two subunits. Subunit-1a represents the onset of alluvial-fan deposition. The negative  $\delta^{18}\text{O}$  ratios (-6.10 ‰ to -4.96 ‰ of distal alluvial fan carbonates indicate fresh water conditions that were sustained by a comparatively warm and semi-arid climate. The overlain Subunit-1b is composed of shallow lake sediments. The  $\delta^{18}\text{O}$  ratios of shallow lake carbonates are very variable (-8.51 ‰ to 2.32 ‰ and indicate the presence of both fresh water as well as increased water residence times possibly accompanied by increasing salinities.

The upper depositional phase is of a Pliocene age and conformably overlies the lower depositional phase. This unit represents deep lake (Subunit-2a) and marginal lake (Subunit-2b) deposits. The  $\delta^{18}\text{O}$  ratios (-2.48 ‰ to 2.95 ‰ of deep lake carbonates are relatively high and the range is low. They represent lacustrine conditions with larger water residence times and saline conditions. These were sustained by a comparatively warm and semiarid climate. Decreased  $\delta^{18}\text{O}$  isotope ratios (-3.45 ‰ to 1.54 ‰ combined with very marginal brackish to freshwater faunas (*Monodacna imryi*) in Subunit 2b indicate low salinities, implying warm and humid conditions.

The bivalve species *Monodacna imryi* from the marginal lake deposits is the hitherto oldest record of the Ponto-Caspian genus *Monodacna*. The record is a corroboration of the role of southwestern in the origin of modern Ponto-Caspian taxa. The presence of different Ponto-Caspian genera in adjacent basins during the Pliocene indicates biogeographic compartmentalization in the Pliocene within southwestern Anatolia.