



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

Hülya Alçıçek (1) and Frank Wesselingh (2)

(1) Pamukkale University, Department of Geology 20070 Denizli, Turkey (halcicek@pau.edu.tr), (2) NCB Naturalis, 2300 RA, Leiden, the Netherlands (Frank.Wesselingh@ncbnaturalis.nl)

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.