



## **Neogene sedimentary history of the Inner Cilicia Basin, eastern Mediterranean: a contribution to the TopoEurope VAMP project**

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The Vertical Anatolian Movements Project (VAMP) addresses the Neogene uplift of the Taurides and the Central Anatolian Plateau. While terrestrial studies are focused on erosion in the sediment source area and deposition within the Turkish landmass, our marine work is focused to provide a history of deposition in one of the ultimate sinks: the eastern Mediterranean. In particular, we are mapping the distribution in space and time of sediment deposited from the Göksu River into the Cilicia Basin. In 2008 we collected ~2000 km of high-resolution marine multi-channel seismic reflection profiles radiating out from the present-day mouth of the Göksu River across the basin. The Göksu River delta is located on a narrow shelf at the junction of the Inner and Outer Cilicia Basins. The Inner Cilicia Basin consists of a 40 km-wide shelf linking to the onshore Adana Basin and a slope down to the deeper water (~ 1 km) of the Outer Cilicia Basin. The shelf is built out of a >2.5 km-thick sequence of Pliocene-Quaternary sediment overlying Messinian evaporites or older Miocene sediments. The evaporites have been mobilised to move down slope during the Pliocene-Quaternary so that the shelf is located above an extensional fault fan, complemented by a salt-cored fold/thrust belt in deeper water (see poster by Piercey et al., this meeting).

The 2008 seismic reflection profiles show that the western margin of the Inner Cilicia Basin seaward of the mouth of the Göksu River is constructed by numerous vertically stacked and east-prograded delta successions. Detailed mapping in this region revealed that the sediment input from the Göksu River can be readily distinguished from the larger influxes from the coalescing Tarsus, Seyhan and Ceyhan Rivers to the north. The bases of major delta packages supplied by the Göksu River are marked by strong reflections, defining shelf-crossing unconformities, which can be correlated across the Inner Cilicia Basin. Industry exploration wells in the Inner Cilicia and Adana basins allow us to tie our seismic interpretation to known stratigraphies. For example, we can confidently correlate our Units 1, 2 and 3 with Pliocene-Quaternary, Messinian and pre-Messinian Miocene successions. Linear extrapolations using constant rate of sedimentation in the deepest portion of the Inner Cilicia Basin allows a tentative chronology to be established for the major prograded delta successions. Subsidence of the Göksu River delta is recognised, and can be timed from, deeply-buried topset/foreset transitions. We correlate the Pliocene-Quaternary sequence across the basin to derive sediment volumes deposited through time. In the Inner Cilicia Basin, we have also to separate the contributions of the Göksu River from those of the Seyhan and Ceyhan Rivers. Initial estimates of the Göksu River contributions are given.

Determining the Miocene depositional history is more challenging because of the impacts of superficial evaporite mobility, the complex basement-related compressional history and the consequent difficulty of imaging pre-Messinian sequences. Initial ideas on the Miocene story will be presented.