INTRODUCTION

We present geochemical proxy data, bulk radiocarbon (14C) ages, and compound-specific 13C ages of terrestrially biomarker molecules from core-top samples collected along sample transects and study areas to assess the hydrologic inputs from different climatic hinterlands surrounding the Black Sea. The sample locations derive terrigenous input from different climatic hinterlands (Figure 2).

STUDY AREA

The Black Sea receives an annual runoff of 350 km³/a. This runoff is mainly discharged by the Danube River (25 km³/a) and the Dniester River (350 km³/a). The Danube River is the main tributary, draining 2000 km²/a, and supplies enormous amounts of terrigenous organic matter to the Black Sea. The Dniester River discharges 613 km³/a and the Azov Sea discharge amounts to 42 km³/a. The Azov Sea (Figure 3) and the Kerch Strait/ Kuban & Don River amount for 6% km³/a.

PROXIES

C/N ratio: elemental ratio C/N = 1.2

Brackish and Inland Terrestrial Index (BIT Index)

GC/MS data for the Danube River St. Gheorghe branch transect.

Figure 1: Study area with core locations on transects in front of major rivers draining the Black Sea from different hinterland regimes.

DISCUSSION & CONCLUSION

PROXY DATA

- n-alkanes show typical odd-over-even predominance (OEP)
- average chain length of the n-alkanes indicates terrigenous C3 plant origin for all samples
- STIC value of the n-C23-C25 alkanes indicates C2 plant origin of leaf waxes for core GeoB11982
- BIT Index values decrease with increasing distance from land
- C/N ratios vary between 7 and 10: generally high terrigenous input (defined by low molecular nitrogen)
- CPI values are higher in Western Black Sea transects than phytoplankton communities (oil-seepage) contamination in the Eastern Black Sea?

MOLECULAR AGE RELATIONSHIPS

- long-chain n-fatty acids show increasing ages with increasing chain length and higher resistance to degradation
- long-chain n-fatty acids are older than long-chain n-fatty acids
- good age agreement between n-C22-C25 fatty acid and bulk organic carbon (TOC)
- TOC ages are decreasing with increasing distance from land

TIME-SCALES OF TERRIGENOUS ORGANIC MATTER TRANSPORT

- pre-aging on land reflected by the old TOC and biomarker C18 ages
- different residence times/reservoir ages for the different hinterlands: Danube River input oldest – highest soil reservoir ages; Dniester River input youngest

ACKNOWLEDGEMENTS

This study is still in progress...please ask!