

MID TO LATE HOLOCENE PALEOCEANOGRAPHIC AND PALEOCLIMATE RECORDS IN THE GULF OF SAROS (AEGEAN SEA)



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Introduction

Methods

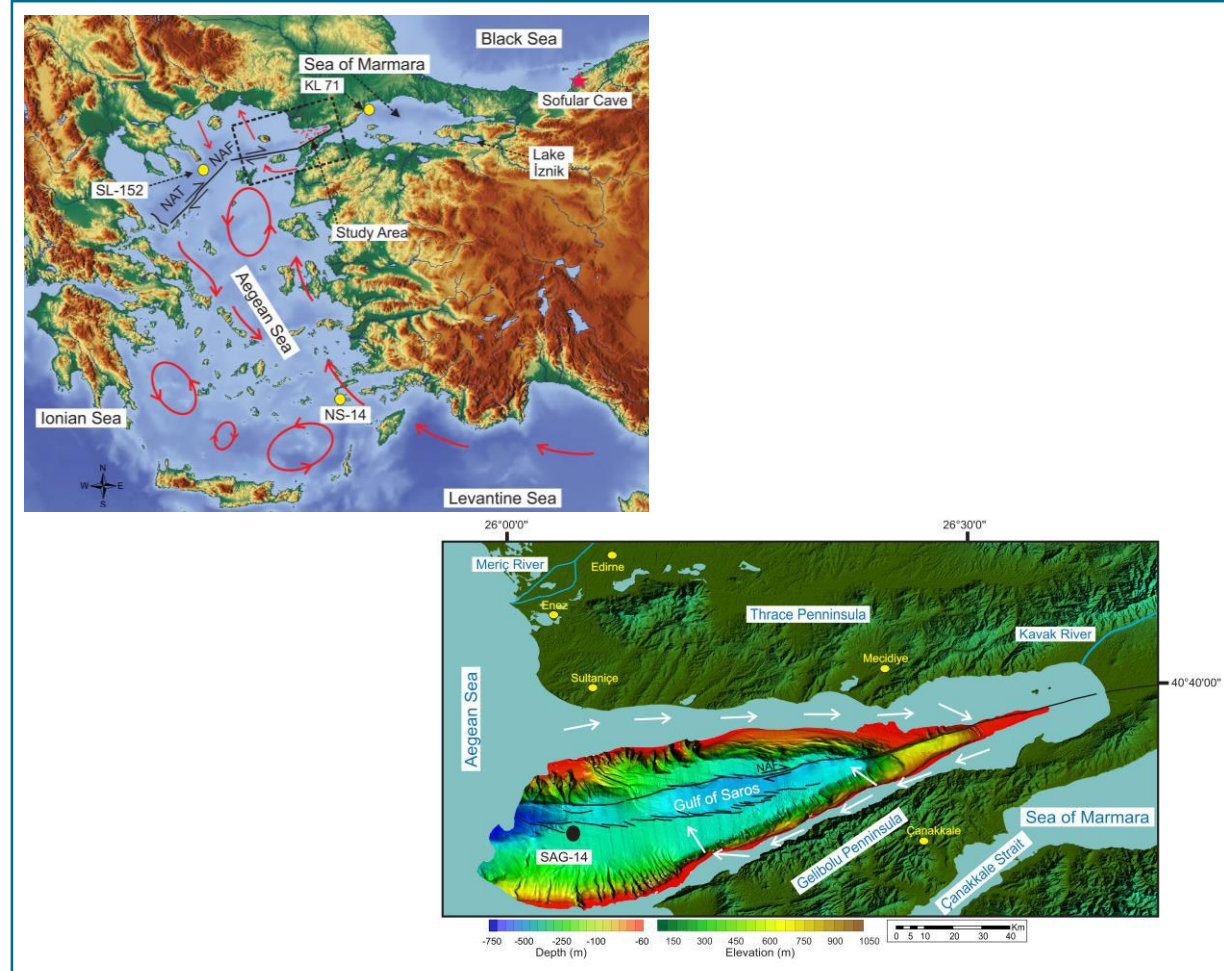
Results

Results

Discussion

Conclusion

The Aegean Sea is in itself particularly sensitive to the effects of climate changes because of the combination of its semi-isolation from the rest of the Mediterranean Sea, the proximity to the Dardanelles Straits that has linked it to the Black Sea, and the abundance of local freshwater inputs. The Gulf of Saros is situated in the northeastern Aegean Sea between Thrace Peninsula and the Gelibolu Peninsula. The special interest in this study to contribute towards the advance of understanding the causes of paleoceanographic variability in the Gulf of Saros in response to climate variability in the Aegean Sea from the middle to late Holocene. For this purpose, the multi-proxy approach is established on the sediment core retrieved from the gulf, allowing us for the identification and characterization of the main climate oscillations and regional changes.



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Introduction

Methods

Results

Results

Discussion

Conclusion

Sedimentologic Analyses

- Lithostratigraphic study
- MSCL Analysis



Geochemical Analyses

- TOC/TIC analysis
- μ -XRF core analysis
- Biomarker analysis



Dating Analysis

Core ID	Depth (cm)	Dated Material	Radiocarbon yr $\pm 2\sigma$ error	Calibrated ages (yr before 1950 $\pm 2\sigma$ error)
SAG-14	91.5	Globigerina sp. Globorotalia sp. Globigerinoides sp. Orbulina sp.	1642 \pm 34	1118 \pm 179
SAG-14	185.5	Globigerina sp. Globorotalia sp. Globigerinoides sp. Orbulina sp.	3076 \pm 26	2820 \pm 225
SAG-14	293.5	Globigerina sp. Globorotalia sp. Globigerinoides sp. Orbulina sp.	5597 \pm 35	5939 \pm 226

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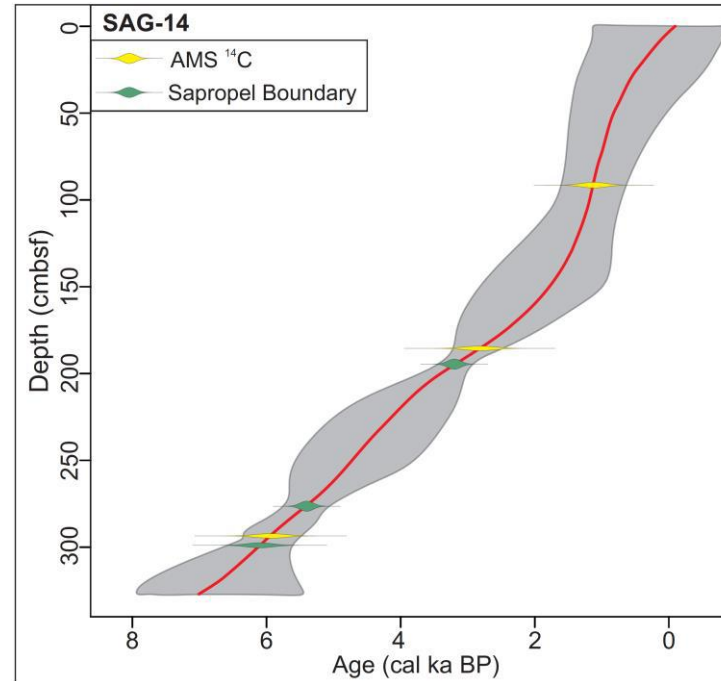
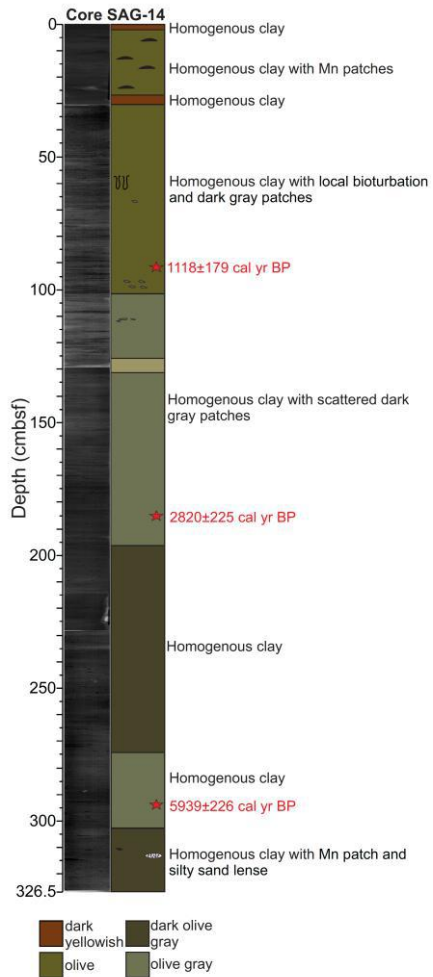
Methods

Results

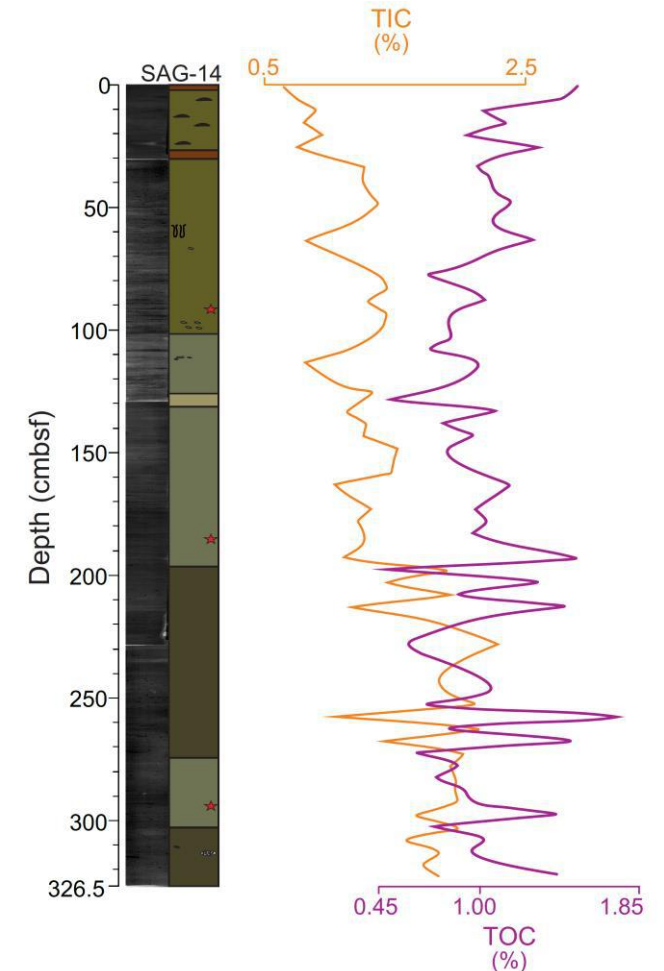
Results

Discussion

Conclusion



The age-depth models of the studied core SAG-14 is constructed by a Non-Bayesian model (Blaauw, 2010) based on the radiocarbon dates collected from the core and the TOC data set providing us the information about the presence of two different sapropel layers.



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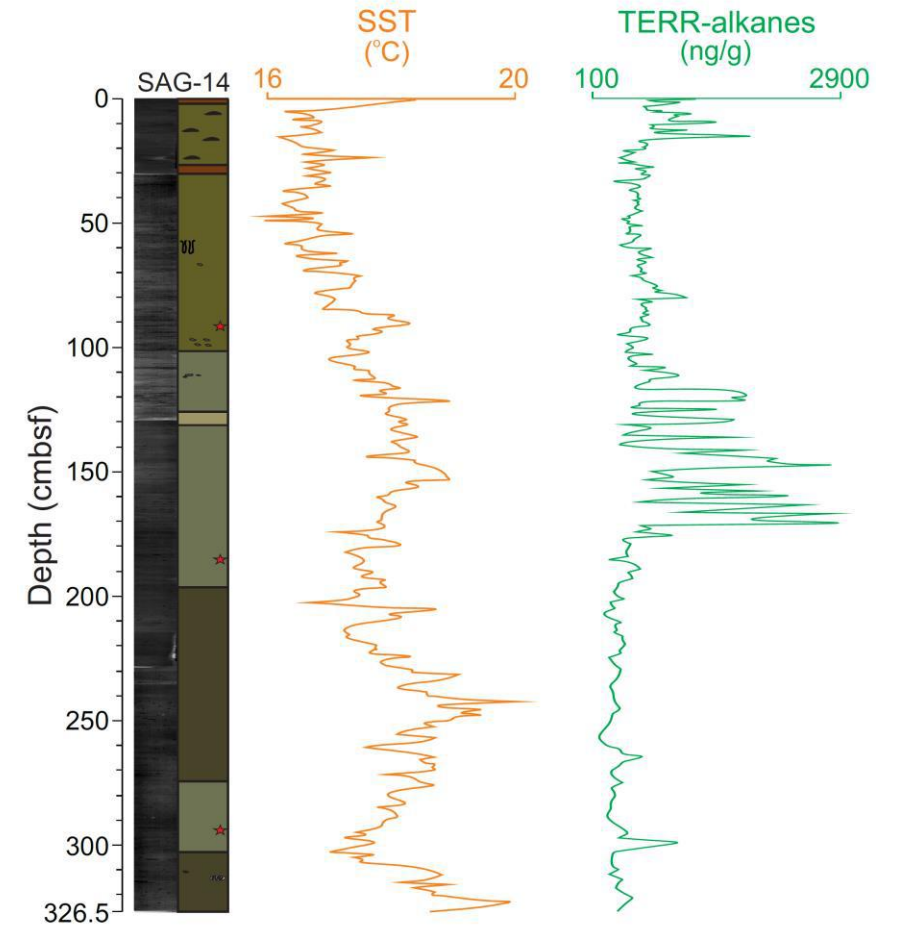
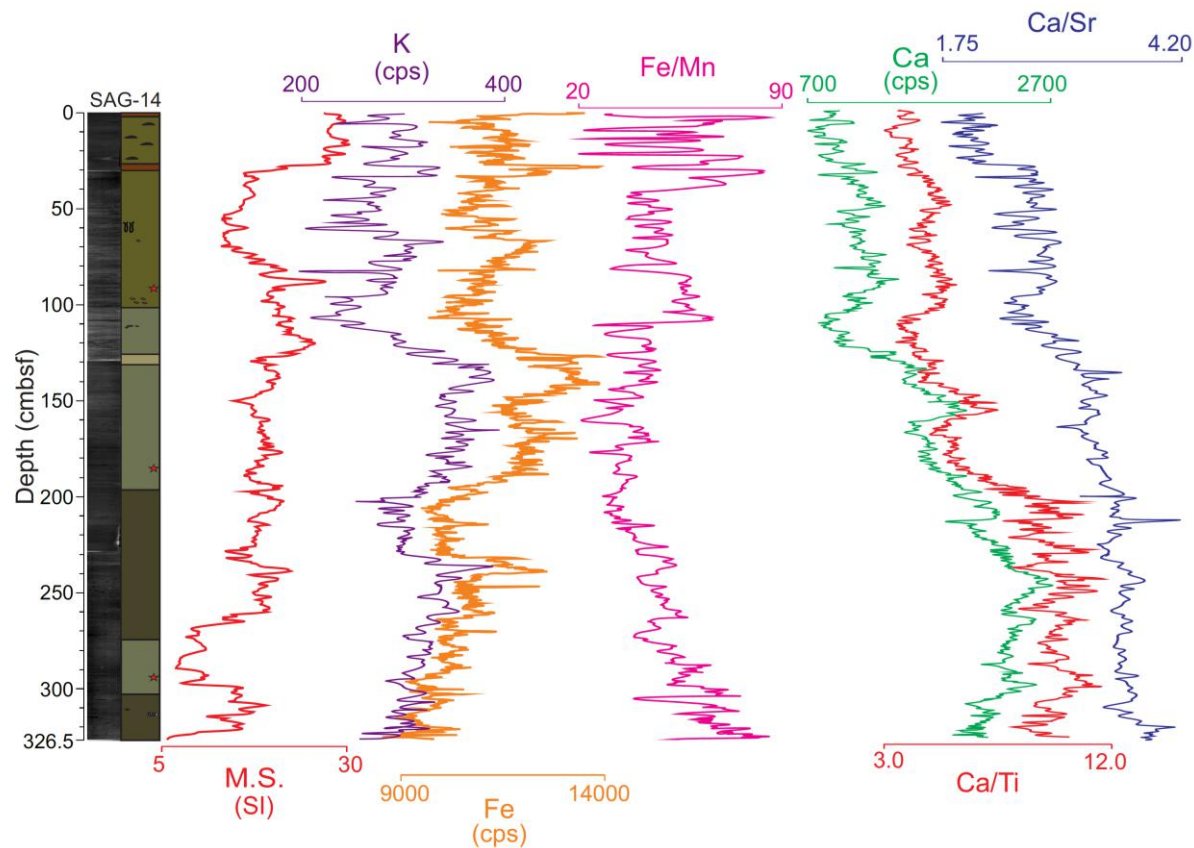
Methods

Results

Results

Discussion

Conclusion



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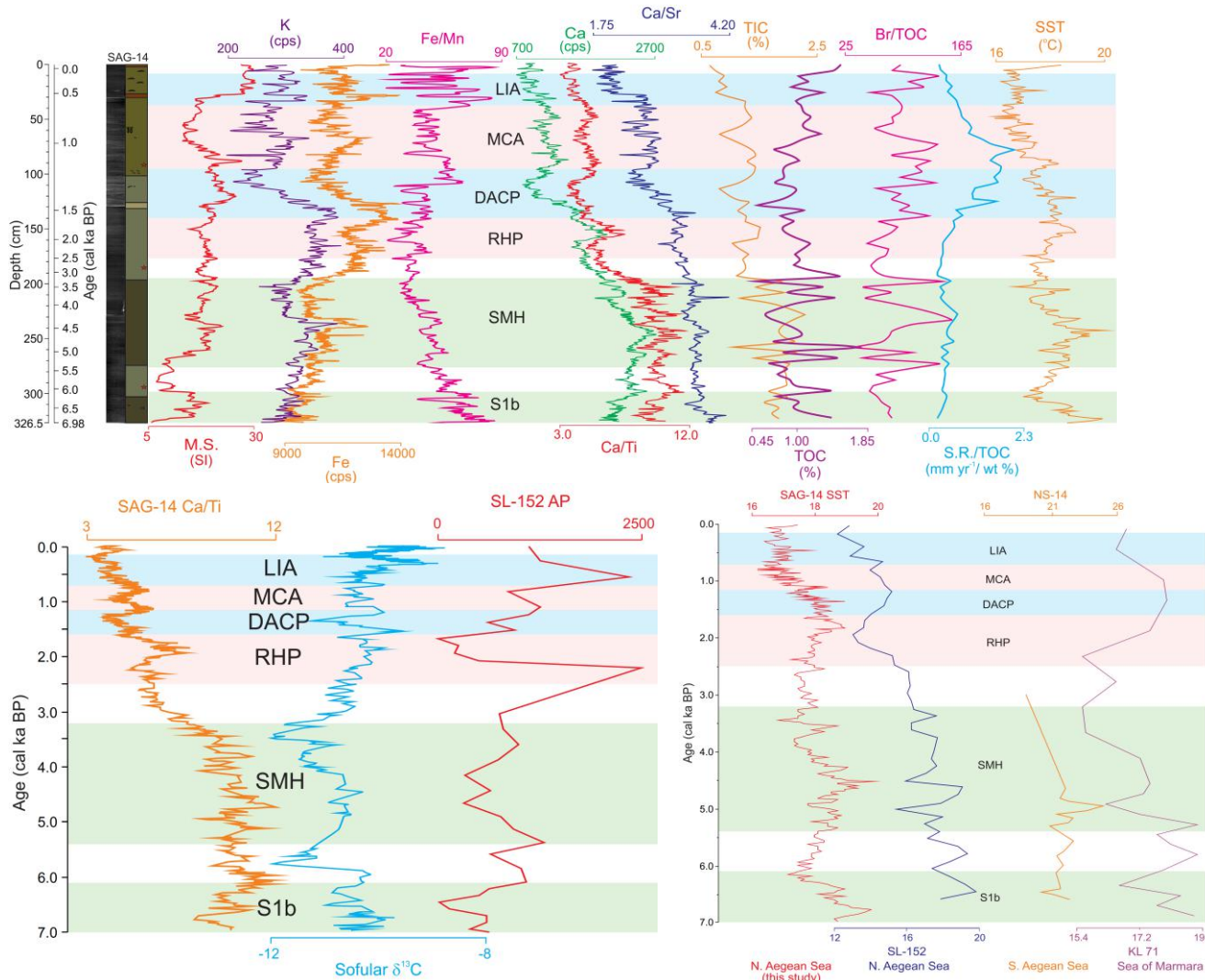
Methods

Results

Results

Discussion

Conclusion



In core SAG-14, several paleoclimatic events are observed that happened in middle and late Holocene. Therefore, this data set reveals the climatic evolution of the Gulf of Saros. These observations on the core are correlated with Sofular cave carbon isotope data due to its proximity and North Aegean Arboreal Pollen data set (SL-152). Besides, the SST record of the gulf compares with the SST values from Aegean Sea (SL-152 and NS-14) and the Sea of Marmara (KL 71). The similarities also vindicate the accuracy of the determined paleoclimatic events in the gulf.

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Introduction

Methods

Results

Results

Discussion

Conclusion

- In this study, major climatic events that occurred in the middle and late Holocene have been detected and described by using sediment core and multi-parameter proxies (MSCL, μ -XRF, TOC/TIC and biomarker analyses).
- These paleoclimatic events are the S1b sapropel (6,9-6.1 cal ka BP) the Mid-Holocene sapropel (5.4-3.2 cal ka BP), the Roman Human Period (2.5-1.65 cal ka BP), the Dark Ages Cold Period (1.65-1.150 cal ka BP), the Medieval Climate Anomaly (1.150-0.67 cal ka BP), the Little Ice Age (0.67-0.15 cal ka BP).
- These climatic periods were observed in the Gulf of Saros that have been determined by Sofular cave carbon isotope data and SL-152 AP collected from the North Aegean Sea correlations as well as the comparison of the SST record with the other SST records from the Aegean Sea and the Sea of Marmara.