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Seasonal benthic foraminifera response to the complex physicochemical conditions of the semi-enclosed Thermaikos Gulf (NW Aegean Sea)

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Benthic foraminiferal assemblages were analysed to determine their seasonal variation and evaluate the effects of environmental factors on their density, species composition and distribution, in the semi-enclosed Thermaikos Gulf, in the NW part of the Aegean Sea. Three major rivers, two minor ones and several ephemeral streams flow into the shallow Thermaikos basin, discharging annually tonnes of sediment, forming a submarine delta on the west part of the gulf and causing the constant occurrence of dissolved solids in the water column. During the high precipitation period (January-May), the fresh water intrusion extends to the major part of the gulf (surface salinities <25), while during the whole year more saline waters from the northern Aegean flow towards the northeast, entering the gulf.

Changes in the foraminiferal abundance and composition was explored during a twelve-month monitoring, compared to a multi-parameter environmental dataset (temperature, salinity, pH and nutrients), metal content and organic carbon. Sampling of the top 2cm of the surface sediment was carried out on a monthly basis (January-December 2016) at one station (S1), and at 5 stations (S1-S5) during winter (February), spring (April), summer (July) and autumn (October), located in Thessaloniki Bay (inner part of the Thermaikos Gulf). During late spring-summer (April to August), foraminiferal densities and relative percentages of the living specimens displayed the highest values, while high diversities (Shannon-Wiener index) were observed during winter. The different samples investigated seasonally present a variability, with respect to both abiotic parameters and the foraminiferal assemblage. The main part of the gulf (muddy bottom - max depth 23 m) is dominated mainly by *Bulimina* spp., *Bolivina* spp., *Uvigerina* spp. and various species of agglutinated foraminifera, such as *Textularia bocki*, *Eggereloides scaber*, and *Reophax* spp. Samples from the western part of the gulf (sandy bottom - max depth 3 m) were characterized by a more diversified assemblage also including miliolids and a variety of small, epiphytic rotaliid taxa.

The exceptional environmental conditions that prevail in the environments of the inner Thermaikos Gulf, are reflected in foraminiferal composition, making it an ideal laboratory for the

study of the microfauna in response to a combination of stressful parameters in a natural physiochemically complex environment.