

RELATIVE MODIFICATION, A NEW METHOD FOR MONITORING SEA WATER QUALITY

Ahmet Demirak¹*, Ahmet Balcı¹ and Mehmet Tüfekçi²

¹ Mugla University, Department of Chemistry, 48000 Mugla, Turkey - ademirak@yahoo.com

² Karadeniz Technical University, Department of Chemistry, 61080 Trabzon, Turkey

Abstract

Records of long term (seasonally) monitoring of the ambient water dissolved oxygen (DO) concentrations, secchi depth (Sd) and biological oxygen demand (BOD) values were generated to assess sea water quality of Güllük Bay. Modifications in the coastal stations water quality were assessed as the difference between the magnitude of a specific parameter recorded at coastal station and the concurrently recorded value of the parameter at the reference station, relative to the mean value at the reference station. There is a clear difference in parameters among coastal stations and reference stations. This difference can be related to the distance of a given location from human activities.

Keywords : Coastal Waters, Monitoring.

Introduction

Güllük Bay is potentially important area in terms of marine product within the Aegean Sea. The various materials in the Bay of Güllük are sources of pollution [1].

Materials and Methods

Sea water samples were collected from seven coastal and three reference stations in the Güllük Bay (Figure 1). All analysis have done to reference methods. Relative Modification (RM) is defined as: $RM = (C_c - C_r) / M_r$, [2].

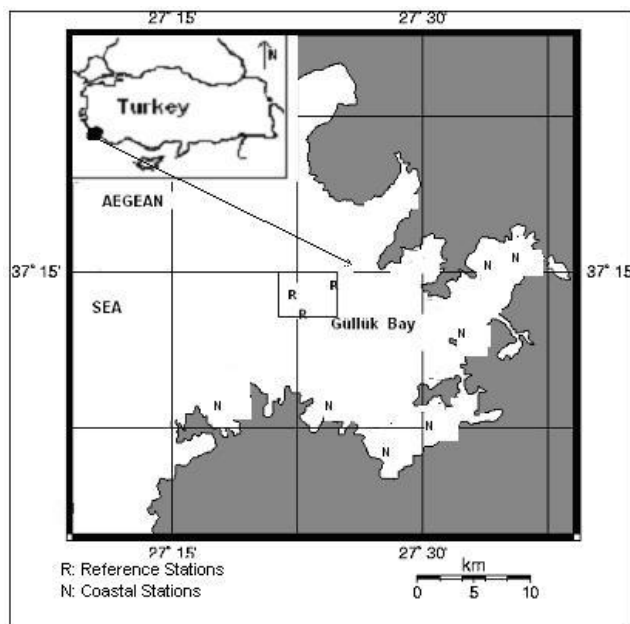


Fig. 1. Sampling stations in the Güllük Bay.

Results and Discussion

Mean RM values are the same all study period. This values show that differences in BOD are the same between coastal areas and reference areas in the summer and winter. This displacement can be explained that coastal municipalities may provide adequate services in Güllük coast areas. Naturally occurring organic matter is present in low concentrations and consequently its oxidation gives rise to low BOD values (<1-2 mg/l) [3]. Although the threshold value of BOD indicating pollution varies with effluent characteristics and environment, we have assumed BOD higher than 2 mg/l as indicative of pollution, considering the vast ecologically sensitive areas of Güllük Bay. The values of BOD on August and June in coastal stations of Güllük Bay are higher than 2 mg/l.

Low levels of secchi depth over long periods can greatly diminish the health and productivity of the marine ecosystem [4]. In this study, secchi depth levels varied among coastal stations and reference stations. But RM values of secchi depth are the same all the period. This situation exhibits a homogeneous distribution at the coastal stations as well as those on the

open sea.

Dissolved oxygen concentrations in surface waters are influenced by several factors. DO results are considered by many as difficult to interpret [5]. In this study, dissolved oxygen concentration at the coastal stations displayed pattern of seasonal variability dissimilar to the pattern displayed in the reference waters.

Conclusions

Temporal changes observed for most variables, including those more evidently effected by human activities, followed typical seasonal patterns, characterizing also the Reference site. Behaviours of water parameters in coastal areas can be explained clearly by this method (Relative Modification).

References

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