



## Monitoring and Control of Human Effects on the Water Quality in Special Environment Protection Areas (SEPA), Fethiye-Gocek Measurements in Turkey

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Fethiye-Göcek region, the unique marine area having numerous calm bays for safe and enjoyable navigation, sailing and yachting is one of those Specially Protected Areas in Turkey. Göcek Bay, which has a remarkable tourism potential has became one of the most important destinations of the both Turkish and International blue voyagers. The bays of Göcek are used by significant number of yachts during summer season (May-September). Göcek Bay is the nearest bay having marinas for serving those yachts using the nearby bays. The increase in tourism capacity resulted in increase in economical activities as well as environmental problems. The pollution level of the area is affected by the uncontrolled waste disposals from the yachts, the circulation pattern and ecological characteristics of the area. In a previously conducted study, in order to develop proper management strategies, the number of yachts using Göcek Bay area has been determined.

The research project involves the development of state-of-the-art remote sensing tools that will be used in the operational monitoring of the ecosystem and was funded by the Turkish Governmental Agency EPASA and the Middle East Technical University, Ankara.

There are two general objectives of the project; (i) the development of an operational environmental surveillance system that makes regular use of optical remote sensing images backed with regularly collected in-situ ground truth data (ii) to characterize the chemical nature of the pollutants through in-situ measurements and design and build a water collection, treatment and discharge system for the domestic and bilge waters of the boats.

Seawater samples were collected at 3 locations representing different pollution levels in Göcek Bay. One of the locations is in open sea which represents low pollution level (almost clean water). The concentrations of the measured parameters in seawater are below the limit values indicated in Water Pollution and Control Regulation and relatively high concentration of Total Kjeldahl Nitrogen at one location indicate that yacht traffic around that particular location is high. Fecal Coliform concentrations are compared with the mandatory and guide limit values listed in Bathing Water Directive (76/160/AB). Results show that even though fecal coliform (FC) concentrations are below mandatory values, FC concentrations are high above the guide values. This suggests that untreated and uncontrolled dirty water discharged from yachts threaten the biological and chemical integrity of seawater in Göcek Bay area. Results of the analysis of bilge water samples also indicate that high concentrations of Chemical Oxygen Demand (COD), Oil and Grease and hydrocarbons would deteriorate the seawater quality if bilge water is not treated. Results of this preliminary study suggest that yachts with increasing numbers every year in Göcek Bay an attractive bay will continue to threaten seawater quality if necessary measures are not taken.

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