	Developing a real time "smart" monitoring system of water quality near marine infrastructures that integrates stationary multi-spectral camera/s, bio-molecular indicators and continuous *in situ* measurements in the water

Aim

Develop an operational system (prototype) for real time monitoring of water quality at marine infrastructure sites that will provide tools for long term analysis of marine water quality and for alarming conditions (e.g. algae blooms, oil spills etc.). State of the art image processing techniques, multispectral sensors, molecular-biological indicators and advanced water analysis techniques will be utilized for developing a "smart" decision making software that is based on geo-information.

Research Objectives

➤ Measure the spectral signature of water quality indicators, develop algorithms to quantify them using in-situ measurements (spectral & water analysis) and define the most suitable spectral wavelength for the multispectral cameras.

➤ Develop image processing procedures to correct and analyze oblique multispectral images,

➤ Develop bio-molecular quantitative indicator for quick detection of pollutants (e.g. toxic molecules, metals, petroleum hydrocarbons etc.) and study their covariance with the developed spectral water quality indicators.

➤ Develop a real time GIS base application to integrate all the data, apply algorithms and produce water quality and other critical parameters maps for the end-user,

➤ Test the developed monitoring prototype on a marine infrastructure (desalination / power plant / other "hot spot" site).

Research partners

Prof. Maxim Shoshani – Technion Haifa (http://cee.technion.ac.il/eng/)

Dr. Tamar Lotan – University of Haifa (http://marsci.haifa.ac.il/)

Prof. Barak Herut, Dr. Gideon Tibor (coordinator) – IOLR (www.ocean.org.il)

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