ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DEPARTMENT
EXPERIMENTAL EVOLUTIONARY BIOLOGY - BES
DEPARTMENT OF EVOLUTIONARY AND EXPERIMENTAL BIOLOGY

PH. D. PROGRAM IN BIODIVERSITY AND EVOLUTION
Prof. Barbara Mantovani
Prof. Francesco Zaccanti

DIPARTIMENTO
CHIMICA "G. CIAMICIAN"
DEPARTMENT OF CHEMISTRY "GIACOMO CIAMICIAN"

Prof. Giuseppe Falini

MARINE SCIENCE GROUP
Stefano Goffredo

present

THE SIREN'S SONG

Listening to Phytoplankton Photosynthesis by Photoacoustics

Zvy **DUBINSKY**

The Mina and Everard Goodman Faculty of Life Sciences

Bar-Ilan University, Israel

There are several established and commonly used methods to estimate the rates of phytoplankton photosynthesis. These include electrode-based oxygen evolution rates, 14C radioisotope tracer incorporation, and variable fluorescence. These methods have inherent problems, such as being labor-intensive, time-consuming, or indirect.

We developed a method based on the measurement of the thermal dissipation of the fraction of light energy absorbed by the cell that is not stored by photochemical processes. That heat energy is determined by means of photoacoustics, using a hydrophone with a piezoelectric sensing element, and laser pulses as the light source. By alternating a series of measurements in the dark with measurements where the cells are illuminated by a saturating background light, the fraction of the laser pulse energy retained in products of photosynthesis is easily determined.

We illustrate the application of this method by determining the effects of photoacclimation, nutrient limitation, and lead poisoning on phytoplankton cultures from different taxa.

March 24, 2010, 17.30 h, Dipartimento di Biologia Evoluzionistica Sperimentale, Via F. Selmi 3, Bologna
AULA MAGNA DI ANTROPOLOGIA

www.CoralWarm.eu
CoralWarm Seminary