

# EMCOL (EASTERN MEDITERRANEAN CENTRE FOR OCEANOGRAPHY AND LIMNOLOGY): A NEW EUROPEAN RESEARCH CENTRE FOR NATURAL HAZARDS AND ENVIRONMENTAL CHANGE STUDIES

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## Abstract

EMCOL is a new research centre at Istanbul Technical University, housing a group of earth scientists and state-of-the-art laboratory and field infrastructure in the fields of natural hazards and environmental changes in marine and lake basins. It is specialized in high-resolution core analysis for the stratigraphic records of paleoclimatic and paleoceanographic changes, and engaged in various geological and geophysical surveys in marine and lake basins. EMCOL is interested in carrying out with other groups international collaborative projects in the Eastern Mediterranean region.

*Keywords : Eastern Mediterranean, Paleoceanography, Geochemistry, Geophysics, Global Change.*

EMCOL (Eastern Mediterranean Centre for Oceanography and Limnology) at Istanbul Technical University is established with the following objectives:

1. To set up state-of-the-art laboratory and field infrastructure that will be used extensively in marine and lake studies, including *natural hazards and environmental changes*, so that the output will be comparable with that from European, American, and other worldwide centres of excellence,
2. To develop highly qualified first- and second-generation researchers in interdisciplinary marine and lake studies at ITU, covering a wide range of the fields such as under water earthquake geology, tsunamis, submarine land slides, floods, climate change and environmental pollution, and
3. To enhance interactions in projects and idea exchanges between ITU researchers and those in the EU countries. EMCOL is presently being supported by 3-year EC FP6 SSA-2 project (Contract No. 17490). It has started serving the needs of researchers working in the Eastern Mediterranean regions in the areas of Natural hazards and environmental changes, involving imaging of sea and lake sediments and analyzing important proxies in sediment cores. With the EMCOL facilities it is now possible to map active faults and submarine landslides, determine high resolution records of past earthquakes and tsunamis that are essential for earthquake and tsunami risk assessment. The same facilities can also be used for determination of the high resolution sediment records of sea-level, climate and ecological changes. The EMCOL's laboratories and field facilities include:

1. Core Analyses Laboratory housing: (i) ITRAX Core scanner for sub-mm-scale resolution XRF multi-element analyses, digital X-ray radiography and color scanning of cores (Figs. 1 and 2), (ii) MSCL core logger with gamma-ray density, magnetic susceptibility, p-wave and electrical resistivity sensors.



Fig. 1. EMCOL's ITRAX core scanner does XRF analysis, digital radiography and colour scanning of sediment cores at sub-mm scale resolution.

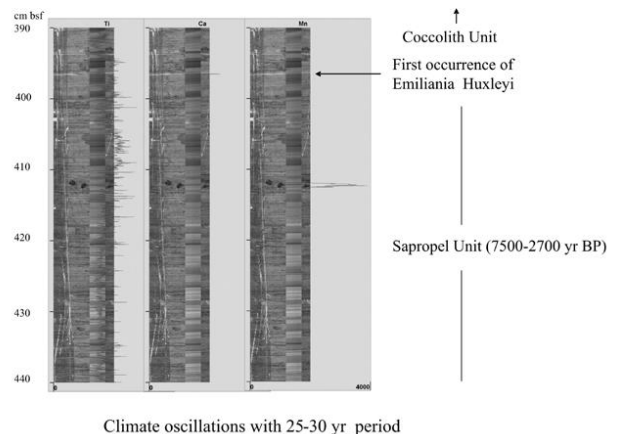


Fig. 2. ITRAX analysis of a core from the Black Sea showing climatic variations of 25-30 year period.

2. Sedimentology Laboratory, with laser grain size analyzer and mechanical sifter, smear slide preparation and optical microscopy.
  3. Geochemistry Laboratory with TOC/TIC analyzer (total organic and inorganic carbon analyses) and fossil separation facility for isotope analyses.
  4. Wet Core laboratory for sample description, digital photography, geomechanical tests, discrete sampling, and wet-sieving for microfossils.
  5. Cold Core Storage Room for storing and archiving sediment cores at 4°C.
  6. Field Equipment Storage facility with sub-bottom profiler (chirp-type), a platform with Uwitec tripod for lake coring and sediment sampling, 6 m boat with engine, various corers, such as submersible vibrocorer, piston corer, Kajak corers, Livingstone piston corer, grab, and equipment for shoreline drilling.
- In addition to the EMCOL facilities, Sample Preparation, GIS, Remote Sensing and Tree Ring laboratories of the Eurasian Institute of Earth Sciences will be available for research projects. EMCOL has already started carrying out its own research projects and collaborative research projects with European and American research groups. All developments on the EMCOL can be followed on its web-site (<http://www.emcol.itu.edu.tr>), concerning the laboratories, equipment and training courses and employment opportunities for young scientists.