



CLIOTOP into the future

Building scenarios for oceanic ecosystems in the XXI Century

*CLIOTOP mid-term workshop,
UNESCO, Paris, 8-11 February 2010*



CLIOTOP (<http://web.pml.ac.uk/globec/structure/regional/cliotop/cliotop.htm>) is a 10-year scientific Programme which has been operating since 2005 as a **GLOBEC** Core Programme and which will operate for the next five years under the **IMBER** Programme, the two IOC/SCOR/IGBP sponsored Programmes focusing on marine ecosystems.

CLIOTOP addresses some of the contemporary challenges raised by global changes in Oceanic Earth Systems such as climate change, ocean acidification, overfishing, biodiversity threats and erosion, globalization of fish markets, international governance of the sea, etc... In particular, CLIOTOP focuses on oceanic top predators within their ecosystems and is based on a worldwide comparative approach among regions, oceans and species. It requires a substantive international collaborative effort to identify, characterise, monitor and model the key processes involved in the dynamics of oceanic ecosystems in a context of both climate variability and change and intensive fishing of top predators. The goal is to improve knowledge and to develop a reliable predictive capacity combining observation and modelling for single species and ecosystem dynamics at short, medium and long term scales.

The implementation of CLIOTOP has been defined along two successive 5-year phases. The first phase will end at the end of 2009, synchronously with GLOBEC ending. **The second and final implementation phase (2010-2014) will be planned during the CLIOTOP "Mid-Term Workshop" which will be held 8-11 February 2010 in UNESCO in Paris.** During the workshop, the major future axes of the Programme will be updated and the implementation plan for the second phase of the Programme will be drafted as an addendum to the CLIOTOP Science Plan (http://web.pml.ac.uk/globec/structure/regional/cliotop/cliotop_science_plan.pdf).

The workshop will focus on defining the strategy to efficiently build scenarios for oceanic ecosystems evolution under anthropogenic and natural forcing in the XXI Century in support to International governance. Recognizing that oceanic ecosystems and associated artisanal and industrial fisheries have global drivers such as climate changes, global fish markets and

international legal frameworks, one of the major goals of CLIOTOP during its second phase will be to establish formal partnerships with oceanic RFMOs (tuna commissions, whaling commission, ...) to provide them with useful science and products to help going toward an **integrated ecosystem approach to oceanic fisheries at the global scale**, taking example of the linkages between scientists and international policy makers that IPCC managed to put into effect for climate change.

In this perspective, further to the research activities on oceanic top predators conducted in the Working Groups, the CLIOTOP Scientific Steering Committee will propose to the discussion during the workshop that the second phase of CLIOTOP be oriented toward the development of specific **“scientific products”** to help the implementation of an ecosystem approach to oceanic fisheries and the conservation of emblematic top predator species at the global scale. This would include the development of:

- the **CLIOTOP-MDST** (*Model and Data Sharing Tool* gathering global data sets of different type and model outputs at the global scale and displaying them through a single web interface to stimulate comparative analysis),
- the **CLIOTOP-MAAS** (*Mid-trophic Automatic Acoustic Sampler* to deploy large scale arrays of autonomous drifting acoustic recorders),
- the **CLIOTOP-ESM** (*Earth System Modelling* framework coupling models from physics to fish to markets),
- the **CLIOTOP-SEE** (*Scenarios of Ecosystem Evolution* from short- to long-term including food security issues associated to oceanic fisheries and conservation of charismatic top predator species),
- the **CLIOTOP-SIP** (*Synthetic Indicator Panel* integrating data and model outputs for an ecosystem approach to oceanic fisheries in a climate change perspective)

Summarising and synthesizing the current activities and achievements of CLIOTOP as well as defining and specifying the new general directions of the Programme will constitute the main objectives of the mid-term workshop. Two major outputs are expected:

- the **implementation plan** for the second phase of CLIOTOP will be written and published in the IMBER Report Series as an addendum to the CLIOTOP Science Plan,
- a **position paper** in a high impact factor journal synthesising and publicising the new scientific directions of the CLIOTOP Programme.

The workshop is open to the community in a wide sense, including scientists and representatives of major scientific groups working on top predators and oceanic ecosystems, policy makers, RFMOs, NGOs, potential funders.

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