# Phytoplankton ecoregions controlled by hydrographical conditions in NW African upwelling

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The studied zone, focused in the Northwestern African Upwelling (12º - 30º N and 14º - 22º W), including Senegal, Mauritanian, Cape Blanc and Morroco area, represents one of the areas with more primary production and biodiversity in the North Atlantic ocean.

Phytoplankton is one important factor in biogeochemical cycles in the ocean, controlling partly the carbon cycle in the ocean. Moreover, phytoplankton is the base in the food chain which controls the proliferation of different species with interest for the fisheries. Also areas with high phytoplankton concentration can represent an important carbon drain, especially due to microphytoplankton (their bigger size contributes their sinking to deeper layers).

It is important the knowledge of the different kind of phytoplankton present for the definition of ecoregions, controlled by the different hydrographical conditions, and their implication in biogeochemical cycles.

Phytoplankton groups can be classified on the basis of pigment composition, determined by high pressure liquid chromatography (HPLC).
Following NASA classification (SeaHARRE-2, Hooker et al, 2005) can be obtained three groups according to phytoplankton size (microphytoplankton, nanophytoplankton and picophytoplankton). But with CHEMTAX program (Mackey, 1996) it is also possible to determine the phytoplankton functional groups or class abundances. These results can be also compared with satellite data, increasing the information that can be obtain from satellite observation.

With the determination of phytoplankton pigment composition in several oceanic stations near to NW African upwelling, and the application of NASA procedure and CHEMTAX program, it is possible to evaluate the spatial variation in phytoplankton dynamics in the area and to classify and quantify different phytoplankton classes present, observing in this region different phytoplankton populations that it is also related with diverse hydrographical conditions.

References:
Hooker, S.; Heukelem, L.; Thomas, C.; Claustre, H.; Ras, J.; Barlow, R.; Sessions, H.; Schlüter, L.; Perl, J.; Trees, C.; Suart, V.; Head, E.; Clemenston, L.; Fishwick, J.; Llewellyn, C. & Aiken, J. The Second SeaWIFS HPLC Analysis Round-Robin Experiment (SeaHARRE-2) NASA/TM-2005-212785, August 2005
Mackey, M.; Mackey, D.; Higgins, H. & Wright, S. CHEMTAX - a program for estimating class abundances from chemical markers: application to HPLC measurements of phytoplankton. Marine Ecology Progress Series, 1996, 144, 265-283