# CIRCULATION, HYDROGRAPHY AND PRIMARY PRODUCTION CHARACTERISTICS OF THE SYRIAN MARINE WATERS, NORTHEASTERN MEDITERRANEAN SEA.

Mohammad Hussein [1]*
[1] University of Perpignan - mohammad.hussein@voila.fr

## Abstract
This work describes the oceanographical properties of the Syrian marine water on the basis of two cruises performed during Dec.2006 and Mar.2009 using a 19plus CTD. Analysis of hydrological data from the study area reveals the presence of three water masses in each cruise: Land Water of lower salinity on water depths up to 20m during Dec and Mar, Levantine Surface Water with higher salinity only during Dec, Modified Atlantic Water of lower salinity in the bottom layer during Dec and in the surface layer during Mar, and finally Levantine Intermediate Water at the bottom during Mar. Chlorophyll -a concentration measured varied markedly with depth and season, being 0.05±0.01mg.m-3 during Dec and 0.08±0.01mg.m-3 during Mar. The deep Chl-a maxima, of 0.08mg.m-3 during Dec and 0.1mg.m-3 during Mar, were observed between 50-100m.
*Keywords: Hydrology, Chlorophyll-a, Levantine Basin*

The Syrian marine water is one of the least-known areas of the Eastern Mediterranean sea and much work is needed to cover the gaps. This work describes the oceanographical properties of the Syrian marine water (north-eastern part of the Levantine Sea) on the basis of two hydrographical cruises performed during Dec.2006 and Mar.2009 using a Seabird model 19plus CTD probe. Analysis of hydrological data from the study area reveals the presence of three water masses in each cruise: Land Water of lower salinity on water depths up to 20 m during Dec.2006 and Mar.2009, Levantine Surface Water with higher salinity (39.50-39.75) only during Dec.2006, Modified Atlantic Water of lower salinity (38.89) in the bottom layer during Dec.2006 and in the surface layer during Mar.2009, and finally Levantine Intermediate Water at the bottom during Mar.2009. Stratification was clearer in December compared to March, and cyclones and anticyclones were observed in specific times and locations. Geostrophic velocities, which were found to be directed northward with a maximum of 17 cm/s, revealed that cyclonic eddy (max. 7 cm/s southward at 150 m depth) in the northern area and anticyclonic one (max. 13 cm/s southward at 50 m depth) in the southern area were present. Dissolved oxygen was higher in Mar.2006 (214±4.8 µM) than in Dec.2009 (202±11.5 µM), with the whole water column (down to 300 m depth) being homogenous during Mar.2009, but only the top 125 m, which represent the Levantine Surface Water, were homogenous during Dec.2006 and decreases afterward due to the presence of the Modified Atlantic Water. Chlorophyll-a concentration measured varied markedly with depth and season, being 0.05±0.01 mg.m-3 during Dec.2006 and 0.08±0.01 mg.m-3 during Mar.2009. The deep Chl-a maxima, of 0.08 mg.m-3 during Dec.2006 and 0.1 mg.m-3 during Mar.2009, were observed between 50-100 m water depth. These Chl-a maxima were associated with the cyclonic and anticyclone eddies at 40-75 m and at 80-105 m water depth, respectively. Sea-viewing Wide Field of view Sensor (SeaWiFS) was used to validate the spatial and temporal distribution of chlorophyll-a (Chl-a) concentrations around Latakia (main city of the Syrian coast) during Dec.2006. A significant correlation was found between SeaWiFS and in situ data (r2=0.82). At low Chl-a concentrations (<0.1 mg-3), SeaWiFS estimates were approximately 70% of in situ values, but only 30% at high Chl-a concentrations (>0.1 mg-3). Keywords: Hydrography; Chlorophylls; Dissolved Oxygen; Geostrophic flow.

## References
1 - Zodiatis, G., Theodorou, A. and Demetropoulos, A., 1997. Hydrography and circulation south of Cyprus in late summer 1995 and in spring 1996. *Oceanol. Acta*, 21: 447-458.
2 - Vitayz, 1992. The Syrian-Russian joint exploration mission in the Eastern Mediterranean Feb. 12 Mar. 11, 1992.
3 - Filiz, K and Idil, P., 2005. Circulation, hydrographic and nutrient characteristics of the Cilician Basin, Northeaster Mediterranean Sea. *J. of Marine Systems*, 59: 189– 200.
4 - Benkhelil, J., Bayerly, M., Branchoux, S., Courp, T., Gonthier, E., Hübscher, C., Maillard, A., and Tahchi, E., 2005. La branche orientale de l'arc de Chypre. Morphostructure d'une frontière de plaques d'après les résultats de la campagne BLAC (2003). C. R. *Geoscience*, 337: 1075-1083.