ID39- HIGH FREQUENCY PCO2 MONITORING IN THE MEDITERRANEAN COASTAL WATERS.

MAITE BÁEZ-HERNÁNDEZ[170], MELCHOR GONZÁLEZ-DÁVILA[171], J. MAGDALENA SANTANA-CASIANO[169], MARC NOGUERAS[222], JOAQUÍN DEL RÍO[182]

Abstract –Monitoring the Air-Sea pCO2 variability in the coastal areas is a priority due to the effect of the biological and biogeochemistry process on this process. The Northwestern Mediterranean Sea is an oligotrophic area in a semi-closed basin, therefore the changes on the surface waters properties take place faster than in other seas. This work focuses in the establishment of a pCO2 monitor system and other related sensors at the OBSEA surface buoy.

Keywords –Air-Sea pCO2, Development, OBSEA, Surface buoy, pCO2.

I. INTRODUCCTION

The ocean waters had absorbed approximately 30% of anthropogenic CO2 emissions [1]. This processes contributed to the global carbon cycle, changing the ocean chemistry. The coastal areas play an important role on this system due to the physics and biogeochemistry processes can resist or amplify the effect of the increased CO2 partial pressure.

The Mediterranean Sea is a semi-closed basin [2] with a surface ocean circulation of Atlantic water which produce baroclinic instability and eddies. The biogeochemistry studies shown high variations on distribution and concentrations of nutrient in surface waters, even so is generally considered an oligotrophic area [3].

Due to its structure, processes occurring on a global scale can be approximated to smaller time and space scales. The aims of this study are:

1. Characterizing the carbon system in the Northwestern Mediterranean Sea and the Temporal evolution of the Air-Sea fluxes
2. Evaluate the effects of nearness coast areas on the Air-Sea pCO2.
3. Estimate the inter-annual, seasonal and diary variations on the partial pressure of CO2 and the processed that control it.

II. METHODOLOGY

The OBSEA seafloor observatory was selected for deployment the Battelle pCO2 sensors in order to monitorize this area. A coastal site has been selected in order to consider the advantages of the remote and real time control.

Connected to the main buoy of the OBSEA platform, a structured with the 3 systems was installed (FIG. 1).

1. Autonomous Battelle Seaology pCO2 Monitoring System. Provides time series measurements of ocean and atmospheric carbon dioxide and air-sea exchange. This equipment is set to provide values each 3 hours (00, 03, 06…) (Fig.2).
2. Oxygen Optode 4835, measuring the oxygen concentration and air saturation each 30 seconds (Fig.3).
3. Sea-Bird Microcat to determinate the sea surface temperature and salinity with a 10 seconds interval measure (Fig.4).

The data for all the equipment is receive in real time and every last data is published at the OBSEA web (http://www.upc.edu/cdsarti/OBSEA/data/co2.php). In order to study the carbonate system variables, discrete samples for total Alkalinity and total dissolved inorganic carbon measurements will be collected.

Figure 1. OBSEA buoy and the Systems Structure after the deployment on 28th of June 2016.

REFERENCES

[1] Sabine C.L., Feely R.A., Gruber N., Key R.M., Lee K., Bullister J.L., Wanninkhof R., Wong C.S., Wallace D.W.R., Tilbrook B., Millero F.J., Peng T.H., Kozyr A., Ono T., Rios A.F. "The oceanic sink for antropogenic CO2", Science, vol. 305, pp. 367-371, 2004.

[2] Copin-Montégut C. "Alkalinity and Carbon Budget in the Mediterranean Sea", Global Biogeochemical Cycles, vol. 77, pp. 915-

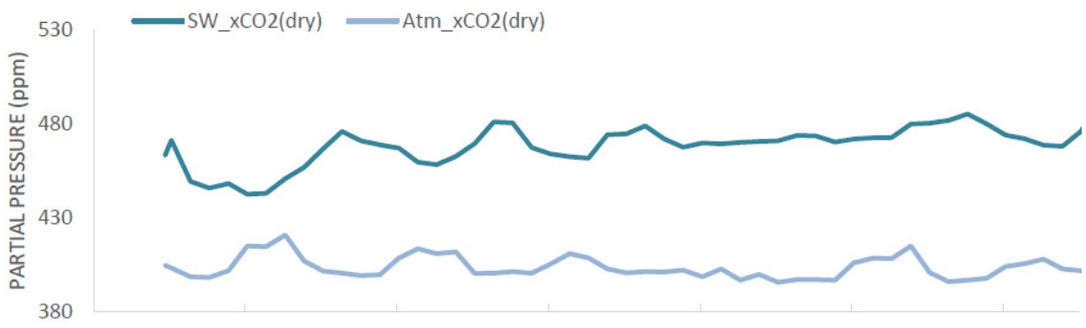

Figure 2. Data collected from the CO2 Monitor System 29/06 – 5/07

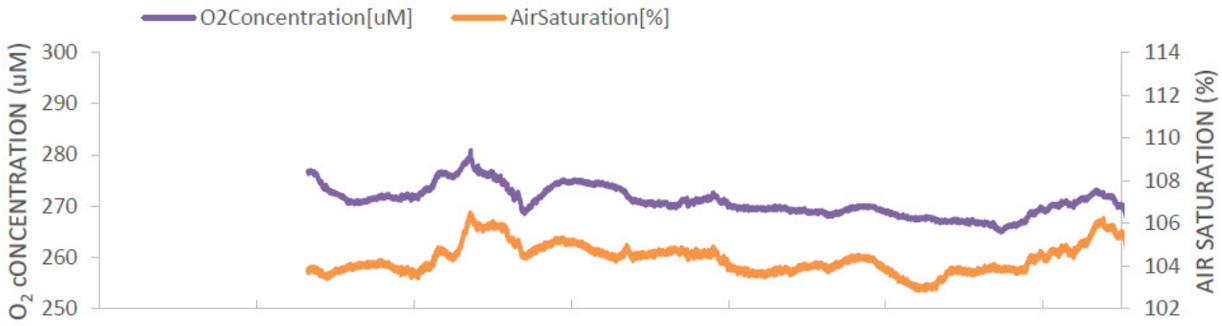

Figure 3. Data collected from the Oxygen Optode 30/06 – 5/07

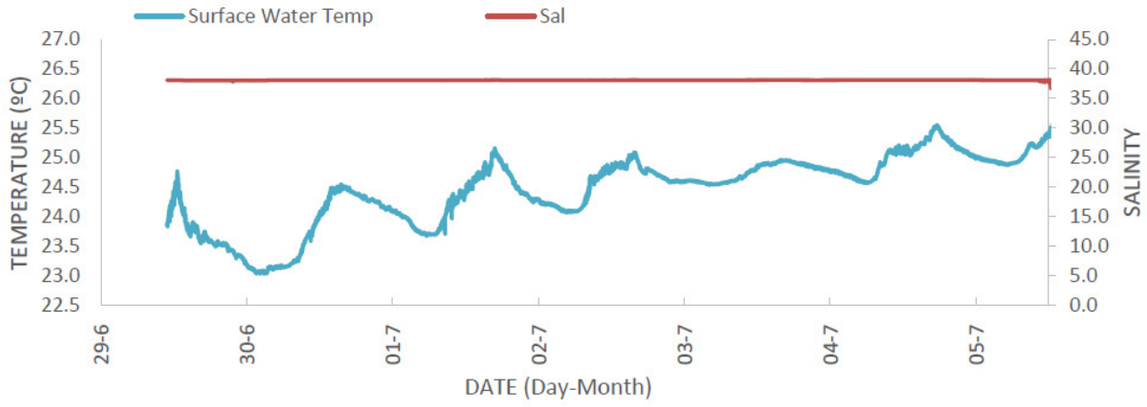

Figure 4. Data collected from the Microcat 29/06 – 5/07

ID40- NOISE AND BIOLOGICAL SOUNDS: ARCTIC SOUNDSCAPES DURING THE 2013 AND 2014 SEASONS

MIKE VAN DER SCHAAR[134], ANJA JOHANSEN HAUGERUD[189], JÜRGEN WEISSENBERGER[190], MICHEL ANDRE[133]

Statoil deployed three acoustic recorders from fall 2013 to fall 2014 in the Arctic region as part of a broad scientific campaign. One recorder was installed in the Barents Sea southeast of Spitsbergen. Two other recorders were installed in the Greenland Sea north-east of Greenland. All recorders were operating at a duty cycle of 2 minutes on and 30 minutes off, sampling at 39062 Hz and recording in 24 bits. This presentation will report the acoustic analysis done on the data using SONS-DCL, comparing the results between the different locations and putting emphasis on the differences in received sound levels mostly due to ice movement, anthropogenic sources and the presence of cetaceans in the different seasons. For the Greenland Sea data, an overview will be presented of the relationship between received levels and distance of a detected seismic survey. As for the animal presence it was found to be minimal during the summer months, although sperm whales where present all year round and some fin whale calls were received in early summer as well. Bearded seal presence was very seasonal from around April to June both at Spitsbergen and Greenland. Bowhead whale presence at Greenland was especially strong during the winter, with possible humpback presence at Spitsbergen. But no attempt was made to distinguish humpback and bowhead whale calls. At Spitsbergen belugas or narwhals were present; at the Greenland recorders there were fewer dolphin signals, and those found were most likely from white beaked dolphins. A number of unidentified acoustic events were detected as well. These data will be shown here, but are also available for playback from a dedicated website.