Contract Number: N000141512459

Title: Circulation and water mass properties in the Northeastern Levantine

Major Goals:

The main goals of this project are to measure the currents and water mass properties in the northeastern areas of the Levantine Basin (Mediterranean Sea) and to study the complex circulation features governing the dynamics near the coast and in the open sea. It is proposed to use low-cost satellite-tracked drifters to measure currents in the near-surface mixed-layer as well as floats and gliders to measure subsurface currents and profiles of physical and biogeochemical parameters. The monitoring of the circulation and water mass properties in the northeastern Levantine (NEL), with main focus on the area between Cyprus, Lebanon and Syria, is planned for a full year in order to investigate seasonal variability. In this region, mesoscale and sub-basin scale eddies are predominant, and strongly interact with a persistent coastal current. The in-situ observations will be interpreted in concert with the distribution of tracers (sea surface temperature, chlorophyll), and altimetry data obtained from satellites. Numerical simulations with a high resolution model in which deep profiles of temperature and salinity from floats and gliders are assimilated will be used to fine tune the observational array and to interpret the local dynamics. The impact of the assimilation in forecasting mode will also be assessed.

Accomplishments Under Goals:

The following activities were performed during the reporting period. They essentially concern administrative and technical preparation and planning work for the sea-going activities scheduled to start in late summer 2016.

A collaborative agreement between OGS and the University of Cyprus (UCY) was signed in December 2015. This agreement details the activities of UCY in the CINEL (Circulation and water mass properties in the Northeastern Levantine) project. In particular, UCY will:

* deploy, pilot and recover ocean gliders from Cyprus;
* deploy some surface drifters and profiling floats in Cyprus waters;
* carry all the numerical studies with the high resolution POM model.

On 17 December 2015 a kick-off meeting was organized at OGS (Trieste, Italy) to plan the CINEL activities, in particular the operations at sea involving gliders, floats and drifters. Dr. Daniel Hayes (UCY) and Dr. Yechezkel Gildor (Hebrew University of Jerusalem - HUJ) participated in this meeting, in addition to OGS personnel.

Due to administrative delays (for the acceptance of the project by OGS, for the procurement of instruments, etc.), it was decided to postpone the main CINEL activities by about 6 months and to start the sea-going operations in late summer 2016. Consequently, a one-year no-cost extension of the CINEL project was officially requested. This extension was accepted by ONR, extending the period of the project to 31 December 2017.

A memorandum of understanding (MOU) was written between OGS, UCY and HUJ. It will be signed by the parties by July 2016. The MOU details the contribution of each institute in the deployment/recovery of the instruments at sea and the policy for data exchange. The authorizations to operate in Cyprus waters were submitted to the Cypriot Foreign Ministry via the Italian Embassy.

The administrative procedures to buy drifters and floats was accomplished. The instruments will be delivered to OGS or directly to Cyprus/Israel in July 2016.

The OGS Seaglider that will be used for the CINEL project was tested in the Gulf of Trieste in May 2016 (with the glider and basestation firmwares updated). The glider data flow chain at OGS (glider - satellite - basestation - computational server - web server) was checked during the experiment. Due to the new version of the firmwares some script modifications were needed; they will be completed by July-August 2016. The data flow chain will be checked again before sending the instrument to Cyprus.

Training Opportunities:

Nothing to Report

Results Dissemination

Nothing to Report

Plans Next Reporting Period

Due to administrative delays, the CINEL schedule and corresponding milestones and deliverables have been postponed by approximately 6 months. In short, the new schedule is as follows:

July.-August 2015: Glider preparation and testing. Shipment of the drifters and floats to Cyprus and Israel. Shipment of the OGS Seaglider to Cyprus.

August-September 2016: Initial broad scale glider survey.

September-October 2016: Drifter, float and glider deployments for summer/fall experiment.

November-December 2016: Data processing. Analysis of the results for the initial survey and summer/fall experiment.

January-February 2017: Drifter and glider deployments for winter experiment.

March-April 2017: Numerical simulations validated/compared with the observations.

May-December 2017: Analysis of the results.

Honors and Awards

Protocol Activity Status

Distribution Statement:

Approved for public release; distribution is unlimited.

Participants

No graphs or additional materials are available for this reporting period since the CINEL scientific activities will start in summer 2016.