

CISM-1

Cruise Report

R/V UNIVERSITATIS

Bari to **Valona**
21 May to **31 May**
2007

PIC – INTERREG III – Italia-Albania

v 5.4



Unione Europea



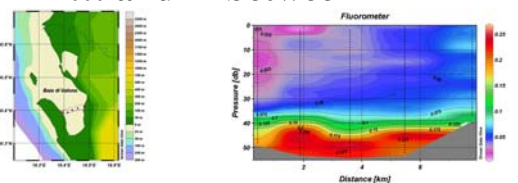
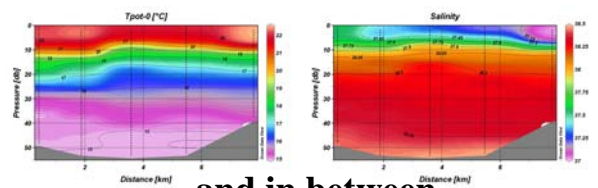
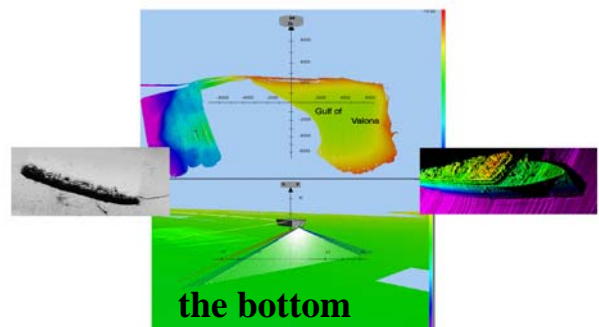
ITALIA



ALBANIA



REGIONE PUGLIA



CISM-1
CRUISE REPORT

Period:	May 21 th – May 31 th , 2007
Area:	South Adriatic Sea: Gulf of Valona (GoV)
Chief Scientist (21-26 May 2007):	Alessandra SAVINI (University of Milano“Bicocca”)
Chief Scientist (26-31 May 2007):	Giorgio BUDILLON (University of Napoli “Parthenope”)
Ship Captain:	Francesco GIANNETTO (S.A.Ri.Med.)
Research Vessel:	R/V UNIVERSITATIS (Co.N.I.S.Ma.)
Principal Investigator:	Angelo TURSI (University of Bari)

The cruise was carried out with R/V UNIVERSITATIS (figure 1), a 45m long ship owned by Co.N.I.S.Ma. and operated by S.A.Ri.Med..

This report describes the operations performed during the first and second leg of the CISM-1 cruise, which were focused on several scientific objectives, as described here after.

1. BACKGROUND AND PURPOSES

The CISM-1 cruise is the first survey of the CISM project aimed to studying, through a multidisciplinary approach, the geological setting and ecosystem conditions of a poorly investigated area of the Adriatic Sea, namely the Gulf of Valona. This area plays a key role to study the complex links between a coastal environment (where a rapid increases in human uses of coastal resources has been observed in the last years) and the open sea.

The explored area, belonging to the northern part of the Hellenides, consists of two distinctive physiographic units: the Gulf of Valona (bounding to the west by the Karaburun peninsula) and the upper part of the Albanian Adriatic margin offshore the Karaburun peninsula. The Gulf of Valona is about 5 miles wide and 10 miles elongated in NS direction; the investigated area incorporates water depths measurements from -20m, along the coastline, down to -54 m in its central part; the offshore margin of the Kalaburun peninsula has been investigated down to -200m of water depth, within 4/5km.

The first leg of the CISM-1 cruise officially started on May 21th 2007 in Bari harbour. Totally 8 people as researchers, students and technicians, coming from 5 universities and research institutes (see Table I), have been involved. We reached the working area (figure 2) at 04:30 on 22th May. The cruise ended officially on May 26th when the second leg of the CISM-1 cruise started, even if during this II leg we employed the night time to increase the geophysical data collection.

The first leg focused on the acquisition of acoustic geophysical data, aimed to provide a detailed bathymetric map of the investigated area and to describe the most prominent sedimentation processes that have been active in recent times along this part of the Albanian margin.

The scientific objectives for the first leg have been:

- (a) to provide a high resolution (at least 1:20.000) seafloor mapping within the investigated part of the Albanian margin (Gulf of Valona and Karaburun peninsula offshore area), by mean of multibeam and side scan sonar devices;
- (b) to provide a dense grid of chirp sonar profiles well resolving the main Holocene-upper Pleistocene sedimentary processes within the Gulf of Valona and in the upper succession of the Adriatic Albanian Margin along the Karaburun peninsula.

The second leg of the CISM-1 cruise officially started on May 26th 2007 after embarked 7 researchers from the port of Valona which have completed the scientific staff already working on board. Totally 15 people as researchers and technicians, coming from 9 universities and research institutes (see Table I), have been involved during the second leg of the CISM-1 cruise.

The second leg of the cruise ended officially on May 31th when the ship entered in port of Valona after 6 days of satisfactory work.

During the second leg simultaneous sampling of both thermohaline and biogeochemical properties, and zooplankton samples as well as the velocity fields have been carried out in order to understand the most important mechanisms governing oceanographic conditions of the Gulf of Valona (GoV) and surrounding areas. Moreover, during this second leg of the CISM-1 cruise we continued the geophysical survey (multibeam, chirp, sparker, and side scan sonar) started during the first leg in order to complete the scheduled program.

The scientific objectives for the second leg of the CISM-1 cruise concern the GoV and surrounding areas:

- (a) to investigate the biochemical, physical and dynamical properties of the water column;
- (b) to investigate the zooplankton communities;
- (c) to complete the high resolution mapping of the sea bottom;
- (d) to collect samples of bottom sediments for biogeochemical analyses.

During all the cruise a variable number (7-10) of students and researchers from Albania institutions visited the ship during the scientific operation each day. Typically the Albanian researchers and students embarked early in the morning and disembarked in the afternoon. During their presence on board they had the opportunity to view the sampling operations interacting with the scientific team. Five different research units operated on board of the R/V UNIVERISTATIS during the CISM-1 cruise:

B1 – Marine Geology (p.i. C. Corselli)

B5 – Plankton (p.i. G. Belmonte)

B6 – Benthos (p.i. P. Maiorano)

B8 – Physical and Biological Oceanography (p.i. G. Spezie)

B9 – Chemical Oceanography (p.i. R. Frache)

During the survey we met several time the “Pilotina DC7”, a 7 m long boat which operated in the GoV collecting ROV and multibeam data in the coastal and shallower area of the GoV. Also the “Mako” boat operated within the investigated area, collecting benthos samples at shallower depths by diver operators.

The CISM-1 cruise was very pleasant and all the scientific team worked in perfect harmony. Despite some delays due to the bad weather conditions we take advantage from the exceptional cooperation of the R/V UNIVERSITATIS crew and the regular functioning of all the instrumentation to improve the planned sampling plan, increasing the CTD casts for the both physical and biochemical activity, and we increase the resolution of the multibeam survey inside the GoV.

On the contrary, we reduced the geophysical survey scheduled for the first and second leg outside of the GoV due both to the need of covering all the GoV with high resolution side scan sonar profiles (strongly reducing the survey speed to keep the instrument safety condition) and to the bad weather conditions met during the second leg. The high resolution side scan sonar survey was provided to perform the selection of the sediment sampling sites, as requested from SariMed, since within the Gulf the official Nautical Chart (*foglio 6016 – litorale di valona – 1:50:000*) used by the ship Captain reports the unsaved condition of the reported area because of mines. The side scan sonar survey provided a whole coverage of the central part of the Gulf in which the scientific staff selected 10 sampling stations lacking any kind of acoustic anomalies suggesting the presence of objects on the seafloor. Anyway we completely cancelled the sampling of bottom sediment with the box corer cause the lack of S.A.Ri.Med. authorization.



Figure 1 – The R/V UNIVERSITATIS.



Figure 2 – The working area

2. SCIENTIFIC-TECHNICAL STAFF

The names and identities of the scientific and technical team and main activity field are given in the Table I for the first and second leg respectively.

	<i>Name</i>	<i>Affiliation</i>	<i>Country</i>	<i>activity</i>	<i>leg</i>
1	Annamaria ANDRESINI	University of Bari	ITALY	Sedimentology	I & II
2	Federica BARGNA	University of Milano "Bicocca"	ITALY	Marine Geology	I & II
3	Giorgio BUDILLON	University of Napoli "Parthenope"	ITALY	Chief Scientist (II Leg) Physical Oceanography	II
4	Francesca CAPPELLETTI	University of Milano "Bicocca"	ITALY	Marine Geology	I & II
5	Arturo DE ALTERIS	University of Napoli "Parthenope"	ITALY	Physical Oceanography	II
6	Andrea Felotti	University of Milano "Bicocca"	ITALY	Marine Geology	I
6	Cristina LAGOMARSINO	University of Genova	ITALY	Chemical Oceanography	II
7	Edmond HAJDERI	University NSBC of Tirana	ALBANIA	Plankton	II
8	Silvio MALLARDI	University of Bari	ITALY	Student	I & II
9	Olga MANGONI	University of Napoli "Federico II"	ITALY	Primary Production	II
10	Milena MENNA	University of Napoli "Parthenope"	ITALY	Physical Oceanography	II
11	Salvatore MOSCATELLO	University of Salento	ITALY	Plankton	II
12	Danilo MORELLI	University of Trieste	ITALY	Marine Geology	I & II
13	Pasquale PACIFICO	CNR - IDPA Milano	ITALY	Benthos	I & II
14	Vincenzo SAGGIOMO	Stazione Zoologica Napoli "A. Dohrn"	ITALY	Primary Production	II
15	Alessandra SAVINI	University of Milano "Bicocca"	ITALY	Chief Scientist (I Leg) Marine Geology	I & II
16	Giuseppe SIENA	S.A.Ri.Med.	ITALY	Instrumentation	I & II

Table I – CISM-1 personnel.

3. SAMPLING AND GEOPHYSICAL DATA COLLECTION

CISM-1 cruise core elements have been:

- geophysical devices:
 - o 50 kHz MBES (MultiBeam EchoSounder) – Reson seabat 8160 (bathymetry and morphology)
 - o 9-11 kHz Geo-Chirp profiling system - Geo Acoustic (high resolution seismo-stratigraphy)
 - o 27-200 kHz SingleBeam EchoSounder (SBES) - Simrad EA400 (Bathymetry)
 - o 100-500 kHz Side Scan Sonar profiling system – Klein 3000 (morphology)
 - o Multi-tip sparker profiling system – Applied GeoAcoustic (seismo-stratigraphy)

- Water sampling and measurements:
 - o CTD (SeaBird Electronics 9/11+) with O₂, Fl, and pH sensors, equipped with 12 position carousel with standard Niskin bottles of 12 liters;
 - o Zooplankton net;

- Sediment sampling:
 - o Box corer (not used cause the lack of authorizations).

The acoustical geophysical data were acquired using the PDS2000 navigation software and the Triton Elics International (TEI) software packages. The integrated system used an IXSEA OCTANS motion Sensor and Gyro and a DGPS Satellite link by Skyfix.

The DGPS data were acquired and processed by the navigation software PDS2000, interfaced with all the equipment working during the cruise to geo-reference all the measured data.

The datum was WGS84 and the Universal Transverse Mercatore projection was chosen for navigation and display, fuse 34 North.

During the first leg all the geophysical devices have been managed by a single operator, working on shift (8 hours per day). The survey has been performed along NS and NW-SE oriented track lines within the GoV, and along parallel profiles following the isobath alignment off the Karaburun peninsula.

A total of about 350 km² of multibeam echosounder coverage, a dense network of about 2500 km of chirp-sonar profiles and 1500 km of 100/500 kHz of side scan sonar profiles and one multi-tip Sparker profile 10 km long (700J - 1 sec), have been acquired within the GoV and offshore the Karaburun peninsula.

Throughout the second leg of the cruise we got the hydrological measurements (CTD + rosette) collecting physical measurements and samples of the water column at different depths, and samples

of zooplankton (net) during the daylight time; while during the night the ship time was generally devoted to the geophysical sampling using chirp, side scan sonar, and multibeam.

Moreover, during the sailing we collected the surface sea temperature (SST) and salinity (SSS) at the nominal depth of 3 m by ship thermosalinograph SBE as well as the vertical profile of currents by the vessel mounted ADCP (RDI 300 kHz). All the instruments were provided by Co.N.I.S.Ma. – S.A.Ri.Med. with the exception of the zooplankton net and the box corer provide by the University of Salento (B5).

During the second leg of the cruise the primarily activity was then devoted to the study of the water column processes. we have taken most CTD stations in section form chosen the station position on the basis of the bathymetry. Thus we traversed the GoV and its associated flow bands on several perpendicular tracks.

Moreover we select two transects in the northern part in order to investigate the two connections with the open sea. These transects give the “boundary conditions” of the GoV.

Each hydrological cast has been named as follow:

CISM1xnn

where:

CISMI = cruise label (fixed for the whole cruise);

x = type of sampling (form A to G for the casts along the transects, R for net casts);

nn = number of the stations (for the cast along the transects a number grater than 10 indicates a repeated station).

All the operations and the activity diary of this report are referred in local time (LT=GMT+2) instead all the oceanographic and geophysical instrumentations where synchronized to GMT reference time.

4. WEATHER CONDITION

The ship Automatic Weather Station (AWS) was not operating satisfactory during the cruise. In table II are then summarize the weather conditions as observed using the instruments on the bridge.

DATE	TIME	SEA (Direction and Strength)	WIND (Direction [°] and Speed [Knt])
21 May 2007	12:00	calm	Var – 5
22 May 2007	00:00 12:00	NW 3 NW 3	NW – 7/10 NW – 7/10
23 May 2007	00:00 12:00	W 2-3 NNW 2	W – 7 NNW – 6
24 May 2007	00:00 12:00	calm W 2	Var – 2 W – 6
25 May 2007	00:00 12:00	S 2 S 3	S – 8 SSE – 12
26 May 2007	00:00 12:00	SE 2 SE 3	SE – 14 SE – 12
27 May 2007	00:00 12:00	SE 2 SE 3	SE – 20 SE – 30
28 May 2007	00:00 12:00	SE 4 SE 4-5	SE – 20 SE – 40
29 May 2007	00:00 12:00	SSE 2 SSE 2	SSE – 10 SSE – 16
30 May 2007	00:00 12:00	SW 3 – swell SW 3 – swel	SW – 4/6 SW – 4/6
31 May 2007	00:00	calm	Var – 2

Table I – Summary of the weather conditions.

5. ACTIVITY

May 21th

All the participants of the first leg of the CISM-1 cruise were onboard at 11:30. The UNIVERSITATIS vessel left the Bari harbour at 18:30, after several discussion with the S.A.Ri.Med. organization concerning the permission to operate within the GoV and the planned activities.

Within the GoV the official Nautical Chart (*foglio 6016 – Litorale di Valona – 1:50:000, Italian Navy*) used by the ship Captain reports the unsafe conditions of the area because of mines. Therefore, the scientific team asked the permission to deploy the instruments that should have been used in the water column, such as the Side Scan Sonar and the rosette-CTD. The scientific team also proposed to perform a high resolution Side Scan Sonar survey along all the GoV to allow the selection of safe sampling stations to perform the sediment sampling operation.

May 22th

The UNIVERSITATIS vessel reached the working area (fig. 2, Adriatic Albanian margin, offshore the Karaburun peninsula) at 04:30, when we started the multibeam and chirp sonar data acquisition. We also deployed the multi-tip sparker, aimed to collect a sparker profile along the Karaburun peninsula offshore area, but the system didn't work due to the failure of the triggering system, repaired at the end of the planned profile. At 09:30 the UNIVERSITATIS vessel entered into the Valona harbour to meet the Albanian authorities (the Navy, the Coastal Guard and some responsible of the Albanian scientific team involved in the CISM project). At 14:00 the vessel left the Valona harbour and we started the geophysical data acquisition within the GoV along the minimum depths in which the vessel can operate. At 18:45 the Mako boat approached the UNIVERSITATIS vessel to disembark the Albanian personnel which followed the research activities. At 19:00 we restarted the geophysical data acquisition, continuing it all night long with chirp and multibeam within the GoV.

May 23th (Figure 3)

At 07:00 the UNIVERSITATIS stopped the geophysical data acquisition to embark the Albanian students and researchers. At 08:00 we started the geophysical data acquisition (multibeam, chirp sonar and side scan sonar) within the GoV. Several parallel profiles NS oriented were acquired covering the eastern area of the Gulf. At 18:00 we met the Mako boat to disembark the Albanian personnel. At 19:00 we restarted the geophysical data acquisition.

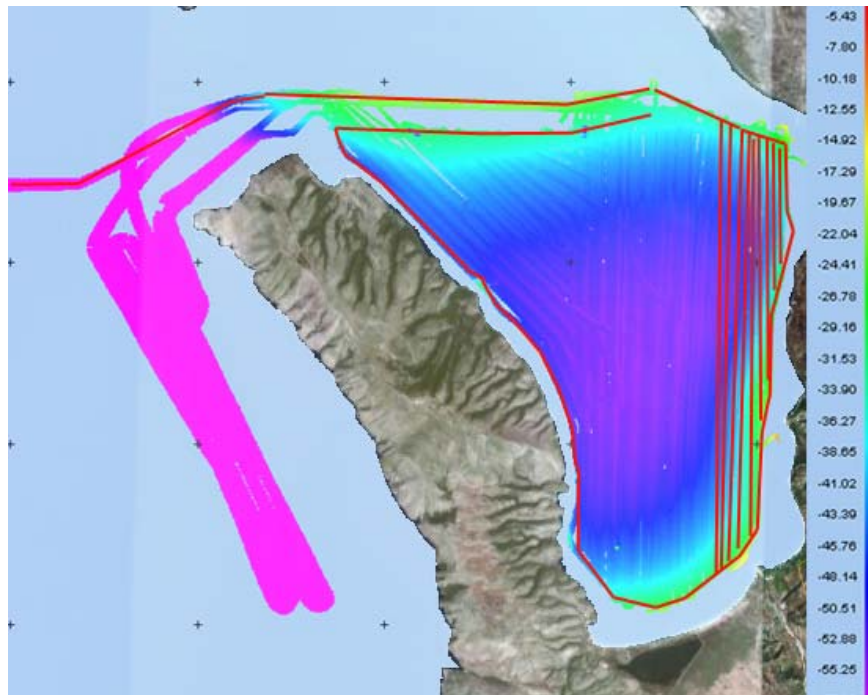


Figure 3 – Geophysical activity of May 22th, red lines indicate the multibeam, chirp and side scan sonar profiles performed on May 22th, base map is composed by the acquired DTM and the Albanian land image.

May 24th (Figure 4)

At 01:00 we interrupted the side scan sonar data acquisition, continuing the geophysical survey using the multibeam and the chirp sonar. At 08:30 we stopped the geophysical data acquisition and entered in the Valona harbour to meet several Albanian authorities to officially celebrate the activity of the CISM project. At 14:30 the UNIVERSITATIS vessel left the Valona harbour and the geophysical data acquisition restarted acquiring multibeam, chirp and side scan sonar data within the central part of the GoV. At 17:50 we stopped the geophysical data acquisition (recovering the side scan sonar on-board) to disembark the Albanian personnel. We restarted all the operations at 18:15.

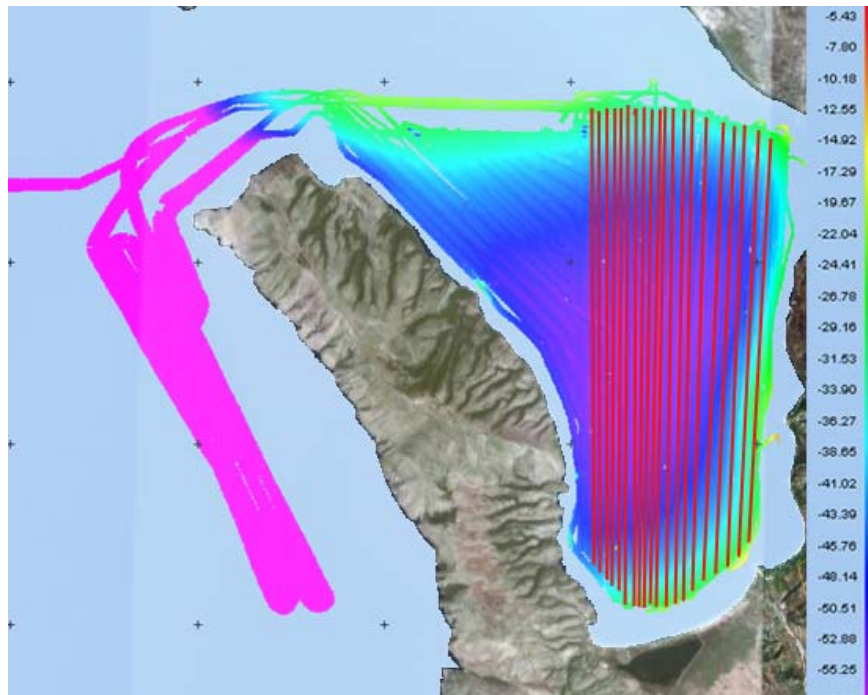


Figure 4 – Geophysical activity of May 23th, red lines indicate the multibeam, chirp and side scan sonar profiles performed on May 23th, base map is composed by the acquired DTM and the Albanian land image.

May 25th (Figure 5)

At 00:30 we interrupted the side scan sonar data acquisition, continuing the geophysical survey using the multibeam and the chirp sonar. At 07:30 we stopped the geophysical data acquisition to embark the Albanian personnel. At 08:30 the geophysical data acquisition restarted acquiring multibeam, chirp and side scan sonar data within the western sector of the GoV. At 13:00 we left the GoV starting to acquire multibeam, chirp sonar and side scan sonar data offshore the Karaburun peninsula. 2 parallel profile were acquired and at 17:50 we came back within the Valona gulf to disembark the Albanian personnel, which left the vessel at 19:15. At 19:45 the geophysical data acquisition restarted acquiring multibeam, chirp and side scan sonar data. At 23:30 we recovered the side scan sonar, after the covering of all the GoV, than we restarted the geophysical data acquisition, continuing it all night long with chirp and multibeam within the GoV, starting to cover the area missing the 100% of multibeam data coverage.

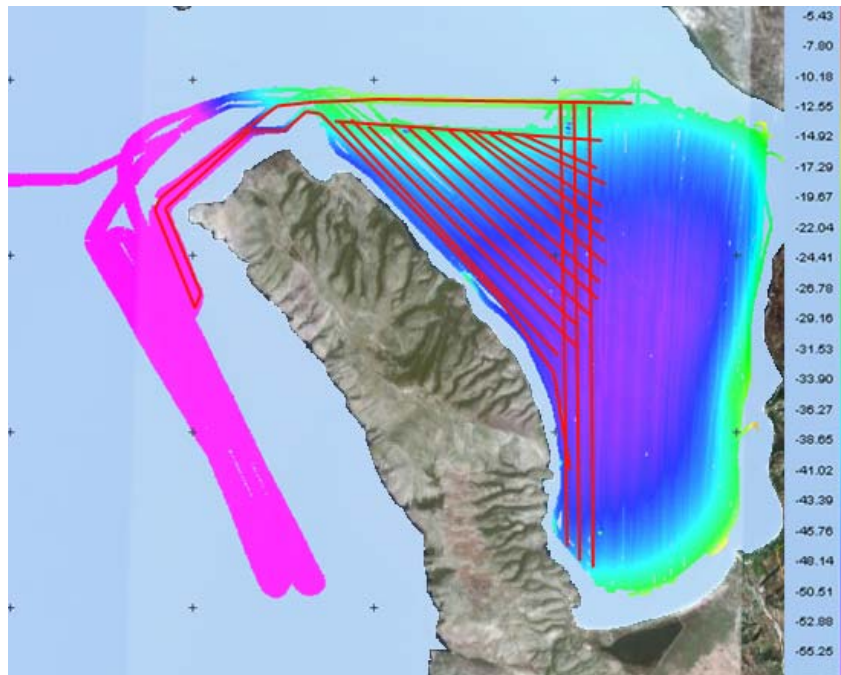


Figure 5 – Geophysical activity of May 25th, red lines indicate the multibeam, chirp and side scan sonar profiles performed on May 25th, base map is composed by the acquired DTM and the Albanian land image.

May 26th (Figure 6)

At 08:00 the vessel reached the area close to the Valona harbour to embark the Albanian personnel and the II leg scientific team (see Table I).

The field operation of the II leg started two hours later the departure from the port of Valona when we collected the first CTD section (namely section “C”) crossing the deeper part of the GoV along the west-east direction. The sampling operation was stopped in the afternoon to disembark the Albanian representative and for the scheduled visit of the Italian Consul (cancelled later) and the restarted two hours later (18:00).

The first three net samplings were performed in the southern part of the GoV (stations R1, R2, and R3) along the section “A” and, after that, the geophysical survey started.

After the dinner all the scientific team met to organize the field operation for the next day. In order to have a synoptic view of the oceanographic condition we decided to make a “quick” sampling collecting data only with the CTD along several transects located in the key areas of the GoV. Moreover we decided to make a high resolution survey with the Side Scan Sonar to identify the area to be sampled with the box corer.

The meteorological conditions were favourable except for a strong wind (gusts 30 knots) blowing a few hours in the afternoon from south-east.

During the night the scientific activity was devoted to the geophysical activity, after the high resolution survey, the operations continued all night long with chirp and multibeam in the area off the GoV.

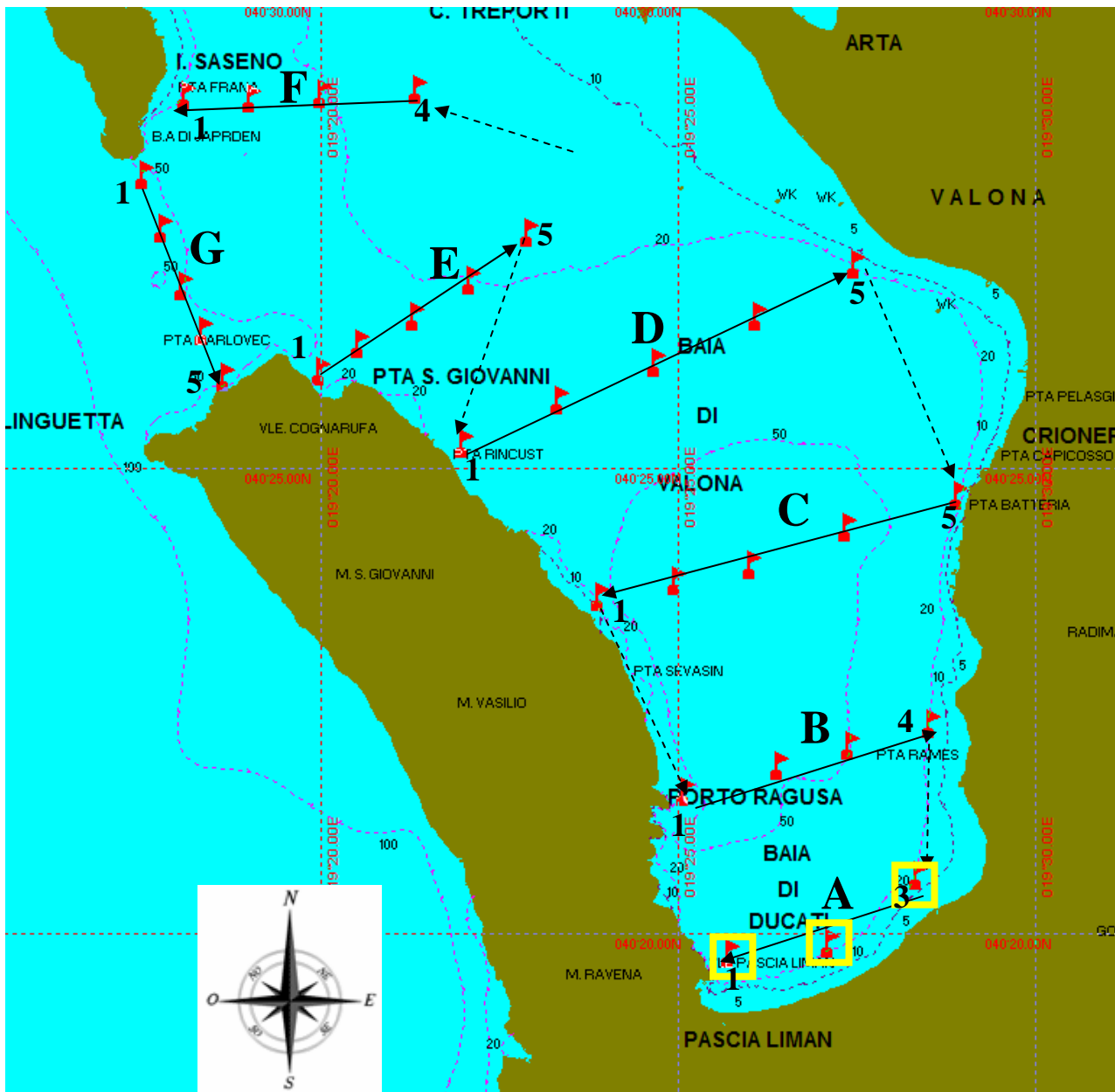


Figure 6 – Hydrological activity of May 26th and 27th, yellow flags indicate the net sampling performed on May 26th, red flags indicate the CTD casts performed synoptically on May 27th. Section “C” was already sampled on May 26th.

May 27th (Figure 6)

After the embarkation of the Albanian researchers and students (07:30), we started the sampling activity at the station “F4” (09:00) and we followed the path indicates in Figure 1. As scheduled we performed a synoptic CTD sampling. Occasional water samples where collected without modify the operation time schedule. Between section “D” and “C” the Albanian personnel disembarked (16:00).

Section “C”, already sampled the day before, was repeated in order have information on the short time variability of the water column. We finished the hydrographic activity at section “A” (21:00) in the southern part of the GoV.

The scientific activity continued with the geophysical survey in the GoV being impracticable the area outside due to the bad sea state conditions.

During all the day a strong wind has blown from south-southwest with repeated wind gust over 40 knots.

May 28th (Figure 7)

During the first hour of the day we spent 3 hours to collect zooplankton samples (close to stations C2, and C3) taking advantage of a short period of favourable wind conditions. The geophysical survey restart until the disembark of Siena and Savini (7:00) for the installation of a multibeam system on the boat “Pilotina DC7”. After the embarkation of the Albanian researchers and students (08:30), we moved slowly to station A2, the weather conditions change abruptly: rain and wind gusts of 45 knots prevent any activity. A crew member get sick and he disembarked together with the first official.

We started the sampling activity (10:30) on station A2 and we continued the scheduled activity on station B4, B2, and B1. At 16:00 we disembark the Albanian researchers and students and we started the geophysical survey inside the GoV.

The zooplankton sampling started at station R5 along transect B (18:30).

Siena comes back on board at 19:00, and the sampling activity stopped at 23:00.

May 29th (Figure 8)

After the embarkation of the Albanian researchers and students (08:30), we started the hydrological sampling on station C5 (08:30). The geophysical survey (sparker) started at 15:30 along a west-east line. The net sampling started at 18:00, the activity stopped at 23:00 when we anchored close to the port of Valona.

During all the day the wind has blown from west (15-25 knots), during the evening the weather conditions get better.

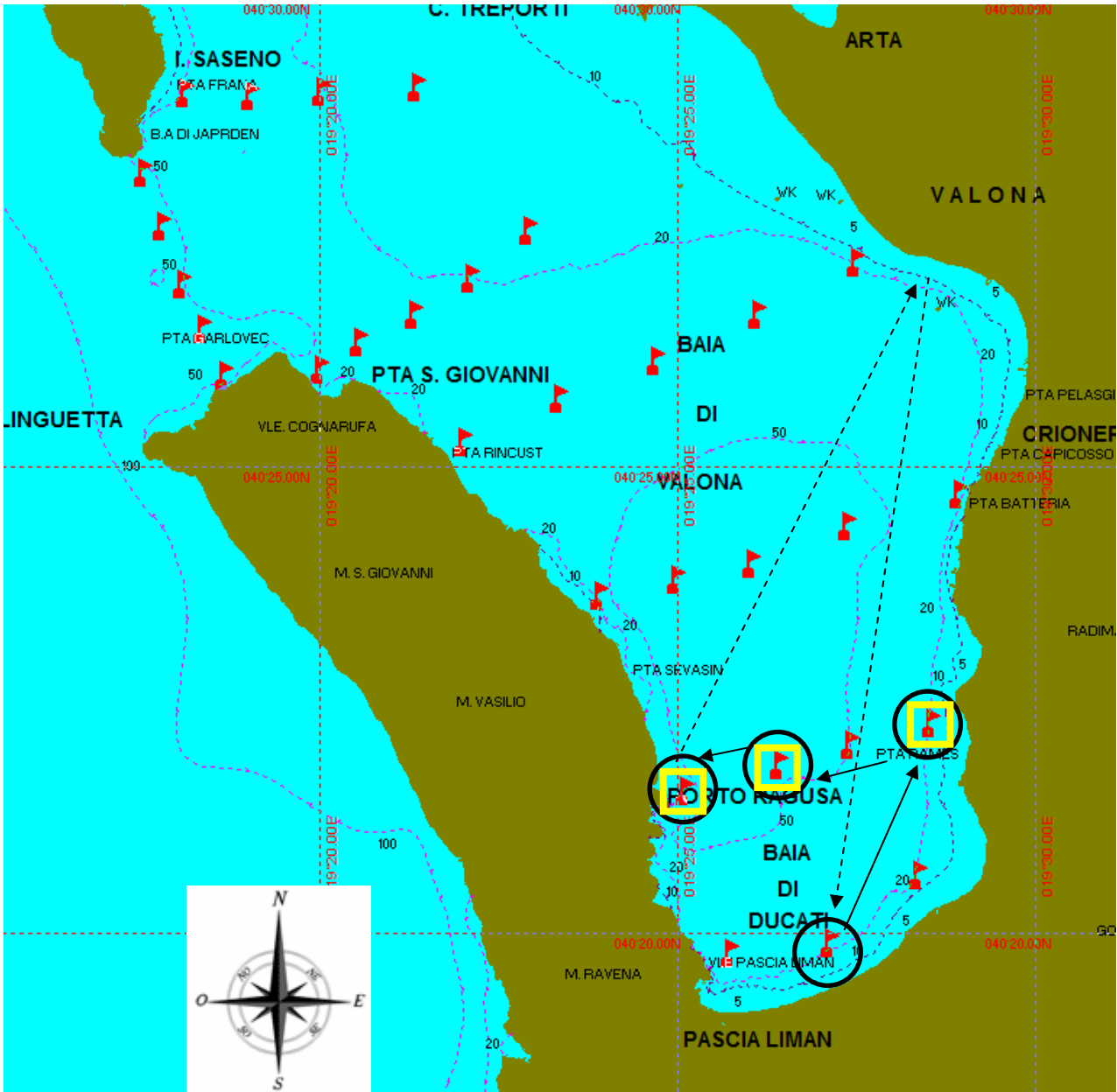


Figure 7 – Hydrological activity of May 28th, black circle indicates the stations sampled for the physical and biochemical study; yellow square indicates the stations sampled with the zooplankton net.

May 30th (Figure 9)

After the embarkation of the Albanian researchers and students (08:00), and the disembark of Siena (which operated on board of the “PilotinaDC7”), we started the hydrological sampling on last

station D3 (09:00) of the biochemical survey. The scientific operation where stopped afterwards for the visit of Captain *Musolino* and Captain *Bektash Petoshati* of the Italian and Albanian Navy respectively. During the two hours long meeting, an Albanian television troupe makes a number of interview with the researchers and filmed some scientific operations.

The geophysical survey (multibeam) started at 12:30 performing some lines inside the GoV.

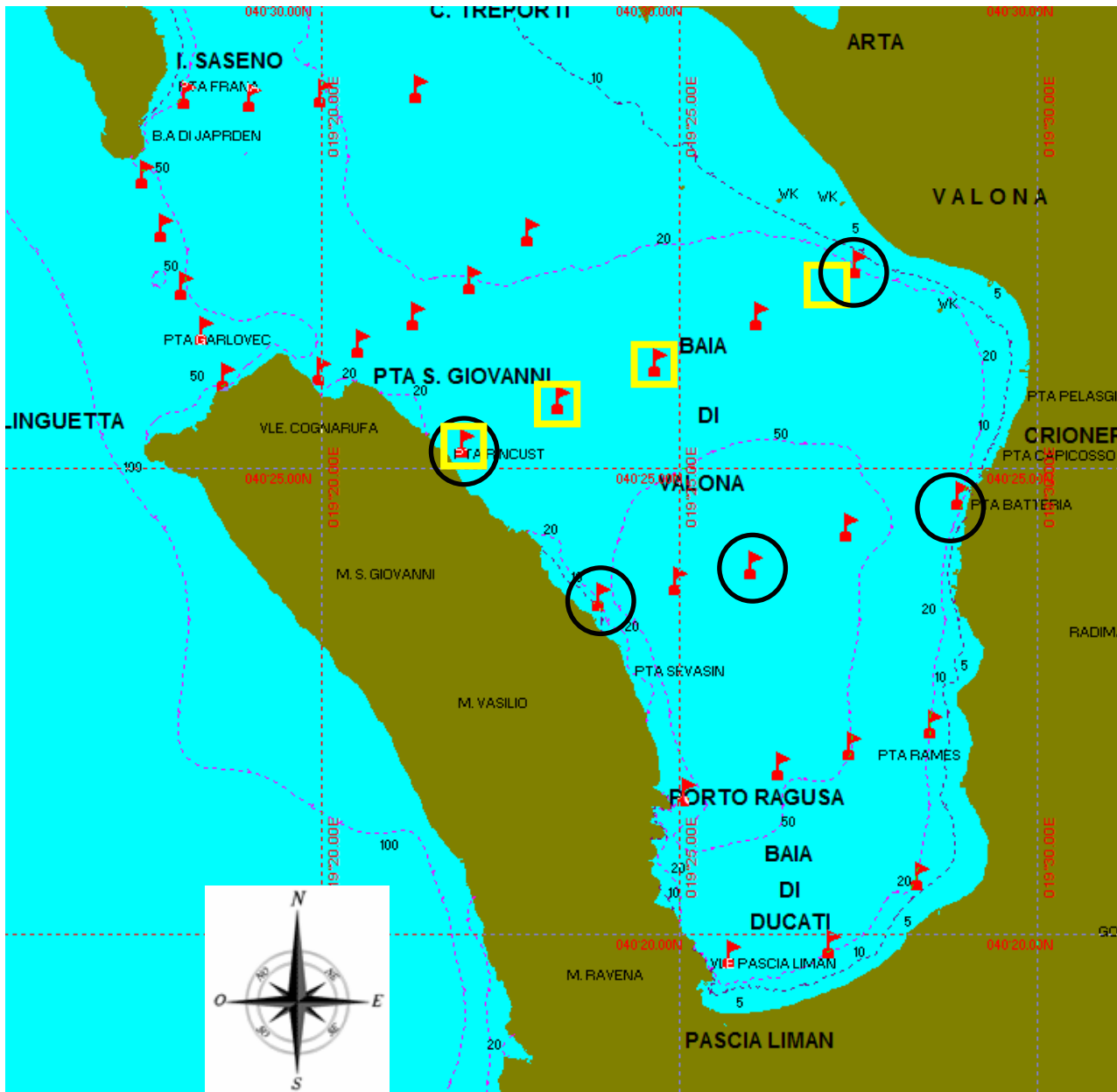


Figure 8 – Hydrological activity of May 29th, black circle indicates the stations sampled for the physical and biochemical study; yellow square indicates the stations sampled with the zooplankton net.

As scheduled, two researchers (Mangoni and Saggiomo) disembark at 15:00 together with the Albanian researchers and students, and the geophysical survey restarted outside the GoV in order to complete the multibeam investigation of this area scheduled during the first leg.

Along the route coming back to Valona, we collect the last three samples of zooplankton on stations R14, R15 located the deeper entrance of the GoV, and R16. The net sampling started at 20:15, and the scientific activity stopped at 23:15 when we anchored close to the port of Valona.

During the evening all the researchers met for the last scientific briefing.

All the day was characterized by favourable weather and sea conditions.

May 31th (Figure 9)

After the embarkation of the Albanian researchers and students (7:45) we met the “Pilotina DC7” to embark Siena and the scientific instrumentation (multibeam system). Then we moved to the last zooplankton sampling (R17) in southern part of the GoV.

The geophysical survey (multibeam and chirp sonar data) started at 10:00 when the ship moved toward the working area located outside the GoV.

The scientific activity ended at 14:30 when the UNIVERSITATIS anchored in front of the port of Valona.

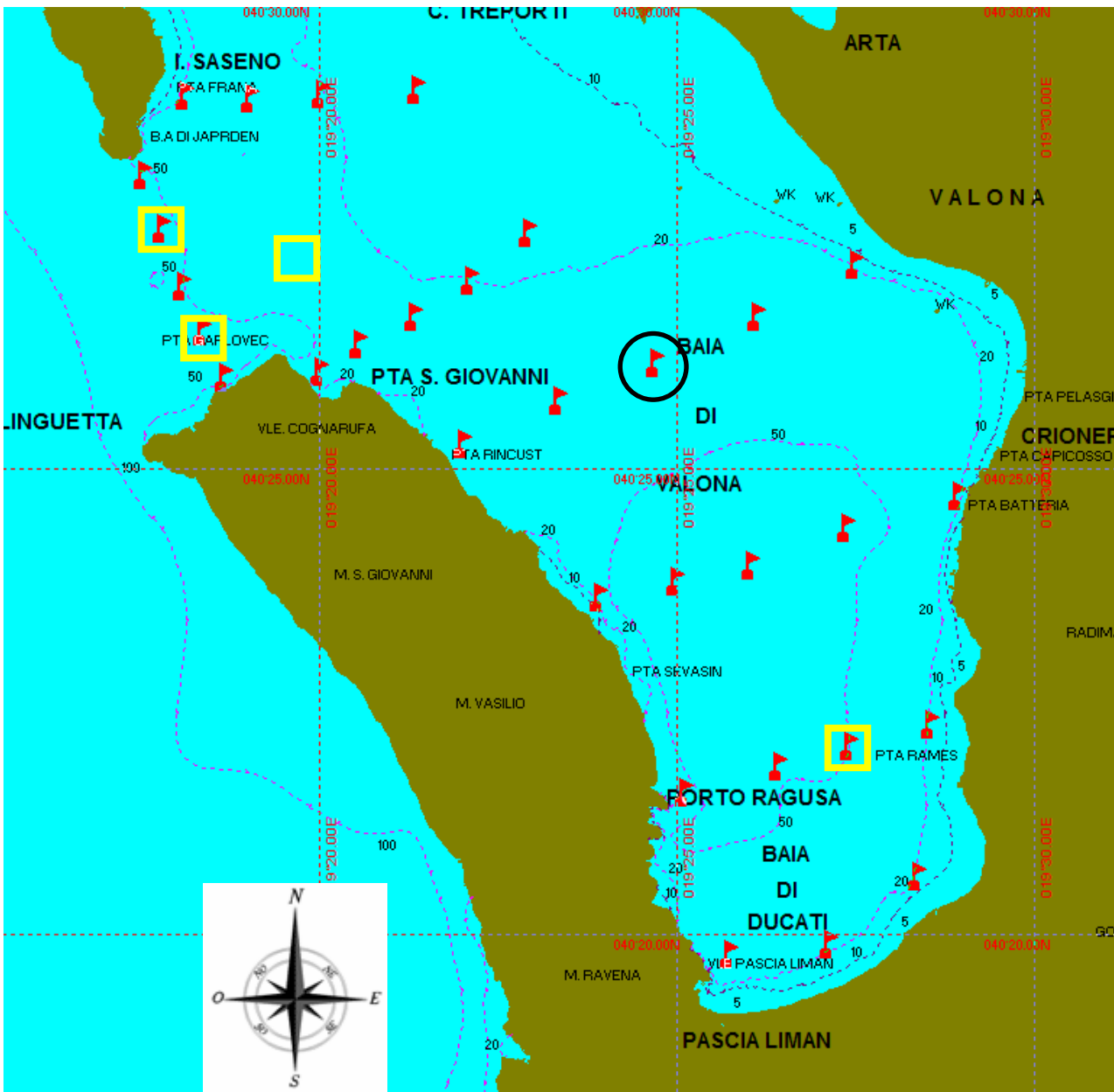


Figure 9 – Hydrological activity of May 30th and 31th, black circle indicates the stations sampled for the physical and biochemical study; yellow square indicates the stations sampled with the zooplankton net.

6. SEQUENCE OF KEY EVENTS (IN LOCAL TIME = GMT + 2)

- 21 May** 11:30 Bari - Embarking of Italian researchers..
 14.00 First scientific meeting for the I leg: overview of the cruise plan, activities, role of researchers, and operational procedures.
 09:30 Meeting with SariMed to plan the survey activity and request the authorization to work within the Valona Gulf.
 18:30 Departure from Bari harbour to reach the Valona gulf working area.
- 22 May** 04:30 Karaburun peninsula offshore area: Start geophysical survey by means of multibeam, chirp and multi-tip sparker devices. Due to the failure of the sparker triggering system the sparker profile was not acquired.
 09.30 Arrive in the Valona harbour to meet some Albanian authorities (the Navy, the Coastal Guard and some Albanian researchers involved in the CISM project).
 14:00 Departure from Valona harbour and start of geophysical survey (multibeam and chirp)
 18:45 Disembark of Albanian researchers and students
 19:00 Start geophysical survey by multibeam and chirp, continuing all night long.
- 23 May** 07:00 Valona gulf: stop the geophysical survey to embark Albanian researchers and students
 08.00 Start geophysical survey by multibeam, chirp and side scan sonar.
 18:00 Disembark of Albanian researchers and students
 19:00 Start geophysical survey by multibeam, chirp and side scan sonar
- 24 May** 01:00 Stop of side scan sonar acquisition, continuing to acquire multibeam and chirp sonar data all night long.
 08.30 Valona gulf: stop the geophysical survey to enter in the Valona harbour to officially celebrate the activities of the CISM project.
 14:30 Departure from Valona harbour and start of geophysical data acquisition (multibeam, chirp sonar and side scan sonar data).
 17:50 Stop the geophysical survey to disembark the Albanian researchers and students
 18:15 Start geophysical data acquisition (multibeam, chirp and side scan sonar)
- 25 May** 00:30 Stop of side scan sonar acquisition, continuing to acquire multibeam and chirp sonar data all night long.
 07.30 Valona gulf: stop the geophysical survey to embark the Albanian personnel.
 08:30 Start of geophysical data acquisition (multibeam, chirp sonar and side scan sonar data).
 13:00 Start of geophysical data acquisition offshore the Karaburun peninsula
 17:50 Stop the geophysical survey within the offshore area to reach the Valona harbour area to disembark the Albanian researchers and students.
 19:15 Stop the geophysical survey within the GoV to disembark the Albanian personnel.
 19:45 Start geophysical data acquisition (multibeam, chirp and side scan sonar)
 23:30 Recovering of the side scan sonar system, continuing to acquire multibeam and chirp sonar data within the gulf all night long.

26 May 08:30 Valona - Embarking of the II-leg Italian researchers and Albanian researchers and students.
09:00 All onboard.
09:30 Geophysical survey (multibeam and chirp sonar)
10:00 First scientific meeting for the II leg: overview of the cruise plan, activities, role of researchers, and operational procedures.
12:15 Start sampling transect "C" on station C01: CTD and Rosette check.
16:30 End sampling transect "C" on station C05.
17:00 Disembark of Albanian researchers and students
18:00 Net sampling
21:30 Start geophysical survey, acquiring one side scan sonar profile within the gulf at very high resolution (25 – 50 – 100m of lateral range) along a central NS oriented track line.

27 May 07:00 End geophysical survey
07:30 Valona - Embarking of Albanian researchers and students
08:30 All onboard
09:30 Start hydrographic survey on station F4
16:00 Disembark of Albanian researchers and students
20:30 End of hydrographic survey on station A1
21:00 Start geophysical survey
21:30 Scientific meeting, operation schedule for the following day

28 May 00:15 Stop geophysical survey
00:30 Start net sampling on station R4
03:15 End net sampling
08:30 Valona - Embarking of Albanian researchers and students
10:00 Disembark 2 people of the crew
10:30 Start hydrological survey on station A2
15:30 Stop of hydrological activity
16:30 Disembark of Albanian researchers and students
16:45 Start geophysical activity
18:30 Start zooplankton sampling on station R5
21:30 Scientific meeting, operation schedule for the following day
22:45 Stop zooplankton sampling on station R07
23:00 Anchored close to the port of Valona

29 May 07:15 Valona - Embarking of Albanian researchers and students.
08:30 Start hydrological sampling on station C5
15:30 End hydrological sampling
15:45 Start geophysical activity (sparker)
18:15 Start zooplankton sampling
21:30 Scientific meeting, operation schedule for the following day
23:00 Anchored close to the port of Valona

30 May 07:45 Valona - Embarking of Albanian researchers and students
08:30 Start sampling on station D3
10:00 Visit of Italian and Albanian navy representatives
12:30 Start geophysical sampling

14:45 Stop of geophysical sampling
15:00 Disembark of Albanian researchers and students and two Italian researchers
(Mangoni and Saggiomo)
15:30 Restart of geophysical sampling
20:00 End geophysical survey
20:15 Start zooplankton sampling
23:15 Anchored close to the port of Valona

31 May

07:45 Valona - Embarking of Albanian researchers and students.
08:15 Commuting with DC7 (for instruments embarking)
09:15 Start sampling on station R16
10:00 Start geophysical sampling
13:00 Stop of geophysical sampling
14:00 Port of Valona, end of the scientific activities

7 RESEARCH "BLOCKS"

CISM-1 cruise activities may be segmented into research blocks, in the following a brief description of the activity concerning each research unit is reported.

B1 (C. CORSELLI)

MARINE GEOLOGY

Alessandra Savini⁽¹⁾, Federica Bargna⁽¹⁾, Francesca Cappelletti⁽¹⁾, Andrea Felotti⁽¹⁾, Danilo Morelli⁽²⁾, Annamaria Andresini⁽³⁾

⁽¹⁾Università di Milano "Bicocca", Dipartimento di Scienze Geologiche e Geotecnologie, Milano - Italy

⁽²⁾Università di Trieste, Dipartimento di Scienze Geologiche, Ambientali e Marine. Trieste, Italy

⁽³⁾Università di Bari, Dipartimento di Geologia e Geofisica. Bari, Italy

During the Cruise we collected morphobathymetric data by the use of multibeam echosounder and the shallow sismostratigraphy using a chirp sonar. Both the survey were carried out follow straight line at 6/7 Kn, The data were primarily collected around the GoV to check the minimum depth at which the vessel can operate, since the shallower area were acquired by the DC7 boat, equipped with a shallow water multibeam system.

The multibeam and the high resolution seismostratigraphic survey was carried out covering all the whole GoV from -20m down to -55 m of water depth and along the upper part of the Albanian margin offshore the Karaburun peninsula, from -100m down to -300m of water depths. A total of 350 km² of multibeam coverage has been reached and more than 2500 km of chirp profiles (NS and NW-SE oriented and less than 200m spaced) have been collected.

The side scan sonar system has been employed to map all the central part of the GoV, and a part of the Linguetta Cape and Karaburun peninsula offshore area. The side scan sonar survey was carried out follow straight line at 3/4 Kn, less than 400m spaced. Within the gulf several side scan sonar range setting (50-100-150-200m) have been employed according to the different bathymetric range of survey and to the acoustic target detected on the seafloor. In particular one central track line at 50m and 100m of range has been acquired to allow the selection of safe sediment sampling sites, without any kind of acoustic anomalies suggesting the presence of objects on the seafloor. Offshore the Karaburun peninsula, few profiles (150-200-300m of range) have been acquired, 300m spaced and reaching not more than -110m of water depth. Unfortunately the starboard channel of the side

scan sonar system didn't work well over 150m of range, so that the overlap between adjacent profiles has been increased for the starboard side (increasing the necessary time to cover all the area of interest).

The multi-tip sparker data acquisition failed during the first day of data acquisition, but after the repair of the triggering system, we were able to acquire a 10km long profile, WSW-ENE oriented within the GoV in its northern sector.

All the data provided by the geophysical devices were recorded as digital raw format. They were recorded on HD on the same computer connected with the deck unit system. The data will be processed in the department of Geological Sciences and Geotechnologies of Milano-Bicocca University using proper software packages.

It is worth to note that the use of such geophysical devices to map the seafloor within the investigated area, allowed to recognize within the GoV and offshore Punta Linguetta, several acoustic signals clearly showing the presence of shipwrecks. In particular we were able to recognize the "Nave ospedaliera Po" within the Gulf, well mapped by the side scan sonar system and by the shallow water multibeam system used by the "Pilotina DC7" boat. Offshore Punta Linguetta, at least 3 different shipwrecks were recognized, one of which is located in the same position where the DIE (Delegazione Italiana Esperti) operators discovered the "Regina Margherita" vessel in 2005 (Cesare Balzi, personal communication).

B5 (G. BELMONTE)

PLANKTON

Edmond Hajderi^(1,2), Salvatore Moscatello⁽¹⁾

⁽¹⁾ *Laboratory of Zoogeography and Fauna, Department of Biological and Environmental Sciences and Technologies, University of Salento – Lecce, Italy*

⁽²⁾ *University of Tirana NSBC - Albania*

A partial replacement of Italian and Albanian scientific people occurred on 26 May 2007 and the second leg of activities in the Gulf of Vlorë started on board of the oceanographic ship R/V UNIVERSITATIS. Particularly, the researches on physical, chemical and biological oceanography started together with the relevant sampling activities. With regard to plankton sampling, 16 sampling stations were specified, whose 13 distributed along W-E transects within the Gulf of Vlorë (A, B, C, D) and 3 located outdoor along a transect (G) in the Straits of Mezokanal that separates Sazan Island from Karaburun Peninsula, in order to assess the eventual differences of planktonic assemblages along the confinement gradient outside-inside the Gulf of Vlorë. At each

station water samples for micro-zooplankton, phyto-plankton and pico-plankton were collected at two depths (2 m below the surface and 2 m above the bottom) using a multi sampler “Rosette” equipped with twelve 12 l Niskin bottles. At the same time, vertical profiles of temperature, salinity, oxygen and fluorescence were drawn by using a multi parametric probe (CTD). Pico-plankton samples (100 ml) were fixed *in situ* with neutralised (pH 7.3) formaldehyde (2 ml), and then stored in the refrigerator at 4°C. Phyto-plankton samples (1000 ml) were fixed *in situ* with Lugol solution (4 ml) and then stored in a fresh and dark place. Micro-zooplankton samples were obtained by filtering, *in situ*, 10 l of sea-water through a 10 µm sieve. The retained material was preserved with a neutralised (pH 7.3) formaldehyde solution to a final dilution of 1.6%. From 18.00 to 22.00 hours, in the same stations selected to elaborate vertical profiles of physical oceanography and to collect pico-, phyto- e micro-zooplankton samples, characterised by a bathymetry not inferior to 30 m, the meso-zooplankton was collected by replicated vertical towing (n=3) with a WP2 net (200 µm mesh sized) equipped with a fluximeter. Meso-zooplankton samples were preserved, *in situ*, in neutralised (pH 7.3) formalin 4% solution.

B8 (G. SPEZIE)

PHYSICAL AND BIOLOGICAL OCEANOGRAPHY

B8.1 PHYSICAL OCEANOGRAPHY

Giorgio Budillon⁽¹⁾, Arturo De Alteris⁽¹⁾, Milena Menna⁽¹⁾, Giuseppe Siena⁽²⁾

⁽¹⁾*Università di Napoli “Parthenope” – Dipartimento di Scienze per l’Ambiente - Italy*

⁽²⁾*Consorzio Nazionale Interuniversitario per le Scienze del Mare – Italy*

Profiles of temperature, salinity, fluorescence, dissolved oxygen, and water samples were obtained using equipment provided by CoNISMa and by University of Naples Parthenope (Dipartimento di Scienze per l’Ambiente – DiSAM). The basic package consisted of a Sea-bird Electronics SBE911+ CTD system fitted with a couple of pumped conductivity-temperature sensor, a SBE YSI dissolved oxygen sensor. A fluorometer, pH and altimeter were also installed.

Data were acquired at the maximum frequency (24 Hz) using a PC running Windows XP and Sea-Bird’s Seasave version 5.30a for Windows software. Preliminary post-processing was carried out using batch files and scripts prepared by DiSAM to provide a variety of CTD products to the CISM-1 science party. The processed data was copied to a backup disk drive, plots and logs of each cast were available for the scientific teams within few minutes after the conclusion of a station (plots, files, and tables).

All profiles were planned to reach within 1-2 m of the bottom. Water samples were collected using a 12-position SeaBird Electronics Carousel sampler with 12 liter water sample bottles.

Cast procedure: the CTD-Rosette system was started few minutes before the ship settled on station. The CTD was lowered to a depth of approximately 5 meters where it was allowed to soak until the pump turned on, then for a further period until the oxygen sensor signal stabilized. The soak generally required approximately few minutes. The CTD was returned to the surface, the surface readings recorded on the station log sheet, and the cast begun. At the request of the operator, the winch payout and hauling rate was about 1.0 m/s from the surface to close the bottom. On approaching the bottom, the winch was slowed to 0.5 m/s, or less.

During the up cast a number of bottles were closed to collect samples for the other groups.

Vertical and horizontal distribution of the measured parameters were made on board in real time and made available for the other research units (see Appendix A).

Ongoing data of temperature and salinity at the sea surface were collected using the ship SBE thermosalinograph.

The vertical profile of the marine current were collected using the vessel mounted ADCP (RDI 300 kHz)

B 8.2 PRIMARY PRODUCTION PROCESSES

Vincenzo Saggiomo⁽¹⁾, Olga Mangoni⁽²⁾

⁽¹⁾ Area Gestione Ambiente e Ecologia Costiera - Stazione Zoologica "A.Dohrn" (SZN), Napoli – Italy

⁽²⁾ Università degli Studi di Napoli "Federico II", Dipartimento delle Scienze Biologiche - Napoli – Italy

The aim of the research group was to study primary production processes in different size fractions (>20 µm micro-, 20-2 µm nano-, <2 µm pico-) of phytoplankton assemblages. The field activity was centered on the measurements of in situ simulated ¹⁴C primary production, phytoplankton biomass, HPLC pigment spectra and POC. In addition, the continuous measurements of incident irradiance PAR (mean values over five minutes interval) as well as underwater profile of PAR in the sampling stations (until 0,13% of incident irradiance) were performed by means of a data logger LI-COR 1400 equipped with reference surface and underwater 2π sensors.

Sampling strategy, covering the entire area of Valona Bay, was prepared to meet the necessities of different research groups.

For the measurement of primary production and photosynthetic pigments, sampling depths were selected on the basis of vertical profiles of fluorescence, temperature and salinity to the depth of 0.13 % of incident irradiance.

Size fractionated primary production was measured on board, in simulated in situ conditions. Each sample, collected at selected depths, enclosed in polycarbonate bottle screened with neutral screens (to produce the same irradiance levels of sampling depth), was incubated with 1 ml (10 μ Ci) of $\text{NaH}^{14}\text{CO}_3$ for 4-6 hours on deck in a tank with running surface sea water for samples collected in the surface layer (0-5m) and two temperature-controlled incubators. Ten liters of seawater were drawn from each Niskin bottle and subsamples were distributed for the different analyses after careful mixing. The filtrations for the determination of size fractionated Chla and HPLC pigments spectra and of POC were performed, as soon as possible, and the filters were immediately stored in cryo-vials at -80 °C in liquid nitrogen until the laboratory analysis. Vacuum was <0.2 atm for all filtration procedures.

B9 (R. FRACHE)

CHEMICAL OCEANOGRAPHY

Cristina Lagomarsino⁽¹⁾

⁽¹⁾ Università di Genova, Dipartimento di Chimica e Chimica Industriale, Genova - Italy

During the oceanographic cruise samples of sea-water were collected in different sampling station in the Vlora Bay. This sampling was carried out for the determination of nutrients in sea-water and heavy metals in particulate matter.

At each sampling station the water samples were collected at different depths, selected on the basis of the main physical property of water column (i.e. temperature, salinity, etc.), determined by CTD profiles.

In particular, about water sampling for nutrient analysis, at the moment of the sampling ~ 50 ml of sea-water were filtered by means of a syringe connected to a glass fibre filter. This sample was collected into a polyethylene container and stored at -20°C. Nutrient determination will be carried out (in laboratory) by means of colorimetric methods, using an autoanalyser.

About particulate matter collection, at each sampling site 2 l of sea-water were collected in a polyethylene bottle; the water was filtered by means of a filtration apparatus and particulate matter

was collected on a polycarbonate filter (size pore = 0.45 μm). The whole filtration system is made of plastic to avoid contamination by metallic parts. After the filtration process, the filter was put into a plastic container and stored at -20°C . The analysis of particulate matter for determination of heavy metals will be carried out (in laboratory) by means of inductively coupled plasma - atomic emission spectrometry.

ACKNOWLEDGEMENTS & COMMENTS:

It has been really a good cruise. The R/V UNIVERSITATIS revealed an efficient ship, staffed with a fine group of capable and congenial people, across the whole spectrum.

The ship Automatic Weather Station for the measure of the meteorological parameters measures at present only the speed and direction of the wind, while it is crucial for any oceanographic activity have a complete meteorological data set.

The interface to connect directly the GPS to the CTD deck unit is still unavailable, and the CTD operator must insert manually the coordinate making higher the risk of mistakes.

Moreover the hydrological winch (used during the cruise for the net sampling) and frame controls must be accessible at the same position, this is not possible yet and the operator is forced to change his position during the instrument deployment and recovering.

The only disappointment concerns the cancellation of the box corer activity for the collection of the sediment samples, such decision hardly penalized the marine geology (B1), benthos (B6), plankton (B5), and chemical oceanography (B9) research units.

Our personal appreciation goes to Captain Francesco Giannetto (S.A.Ri.Med.) for his capability, flexibility and competence, and to the crew who greatly improved and make easy the cruise activities.

A special and warm thank to the “tireless” Giuseppe (Peppe) Siena, always present during all the sampling activities.

UNIVERSITATIS, May 31^h 2007

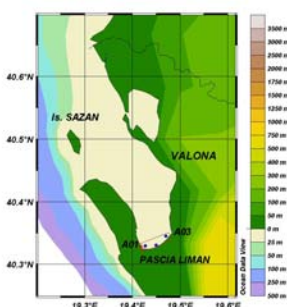
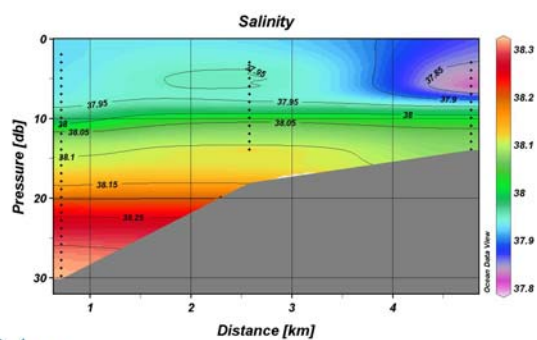
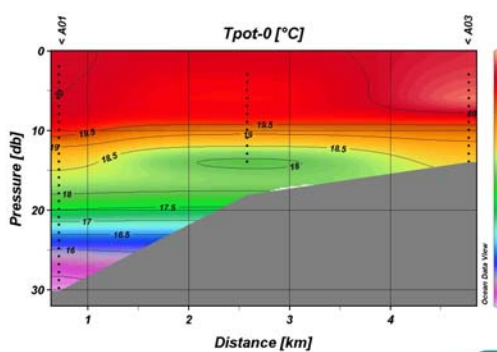
Giorgio Budillon

Alessandra Savini

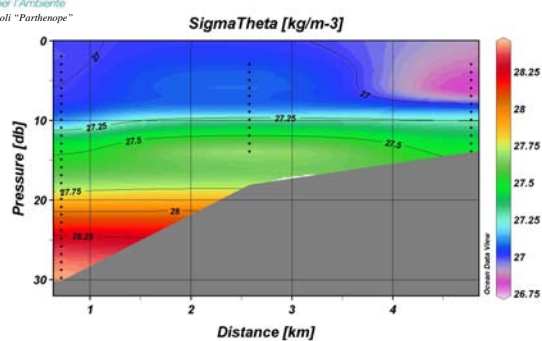
APPENDIX A

In this appendix the vertical and horizontal distributions of some physical and chemical parameters is reported. Data have been processed on board by the R.U. B8 of the “Dipartimento di Scienze per l’Ambiente - DiSAM” of the University of Napoli “PARTHENOPE”.

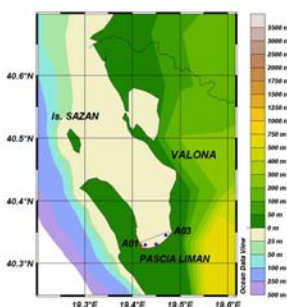
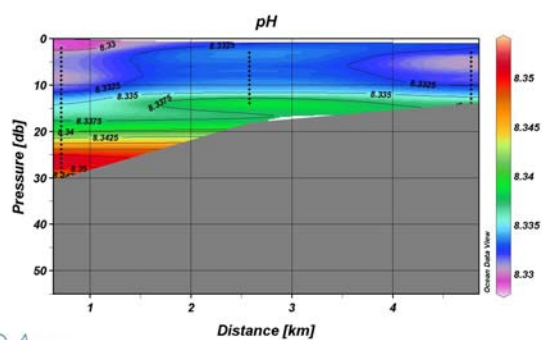
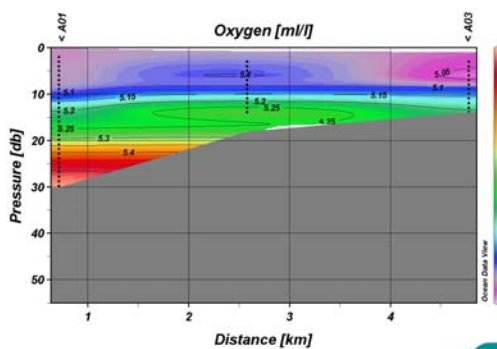
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT A



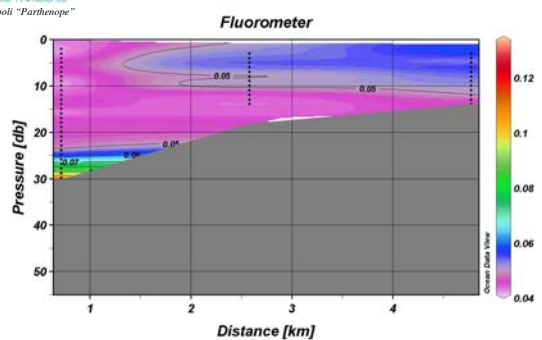
DiSAm
 Dipartimento di Scienze per l'Ambiente
 Università degli Studi di Napoli "Parthenope"



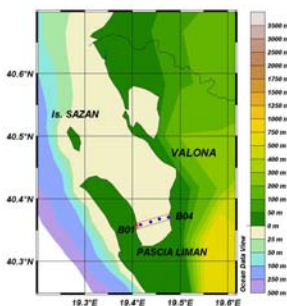
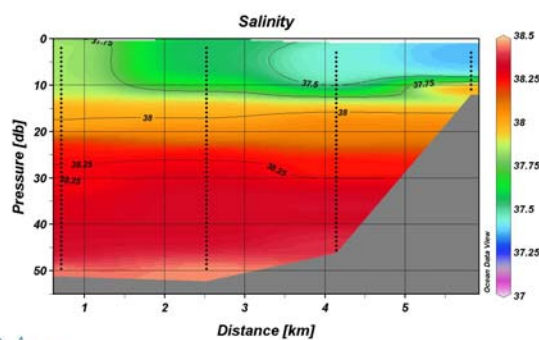
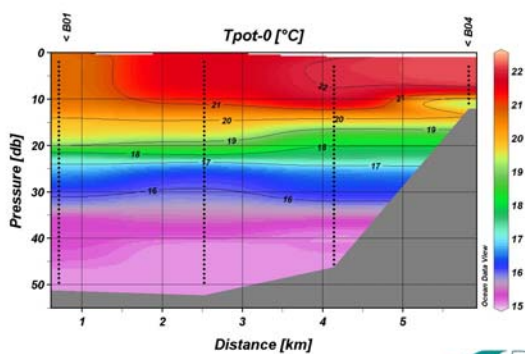
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT A



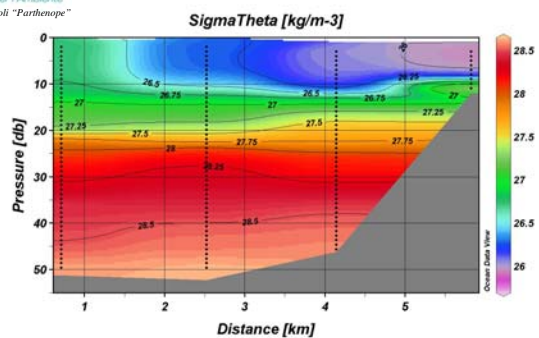
DiSAm
 Dipartimento di Scienze per l'Ambiente
 Università degli Studi di Napoli "Parthenope"



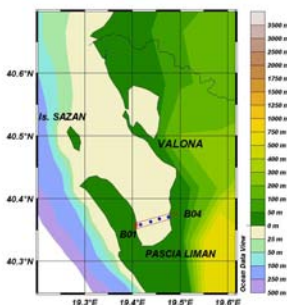
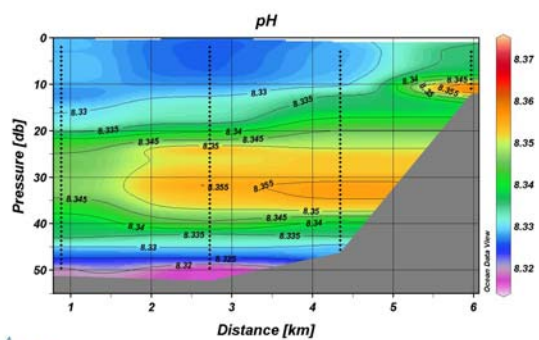
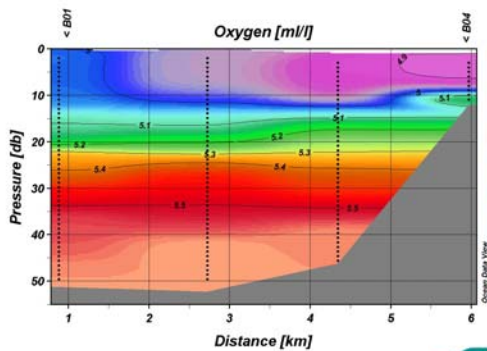
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT B



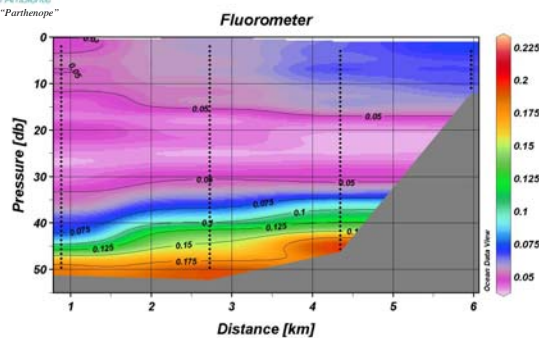
DISAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



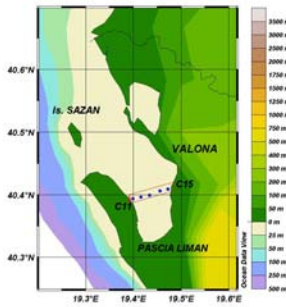
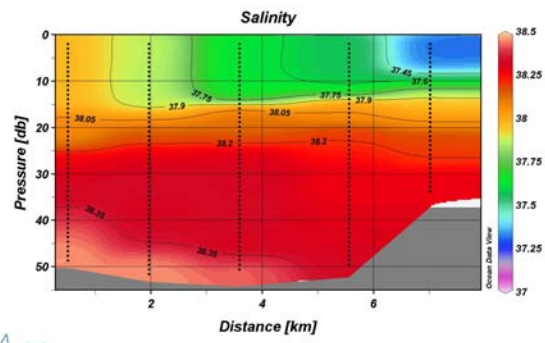
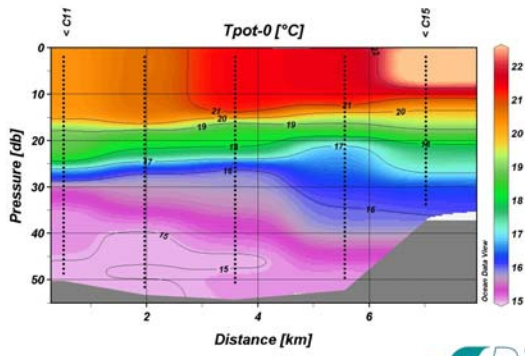
CRUISE CISM1 Albania MAY 27 2007- TRANSECT B



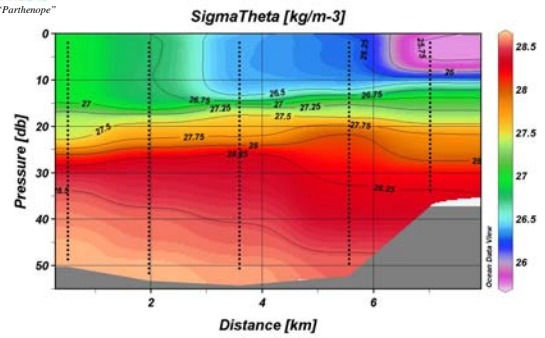
DISAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



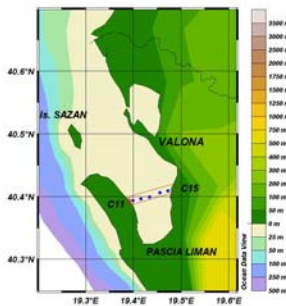
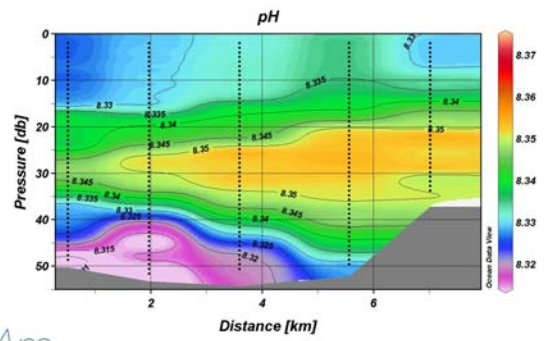
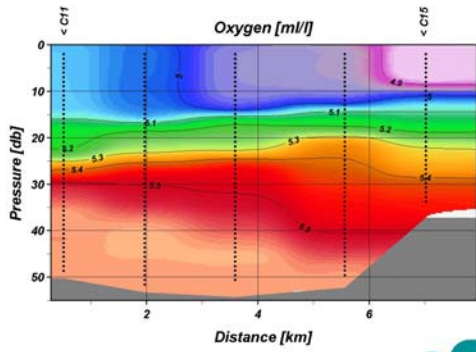
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT C



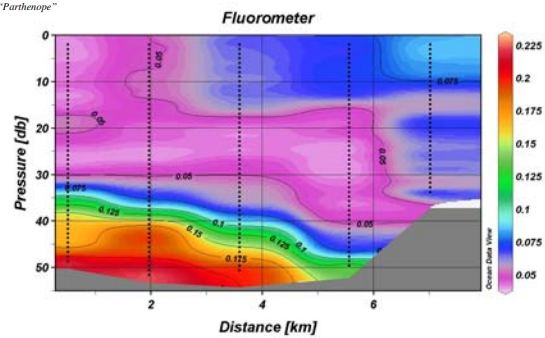
DiSAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



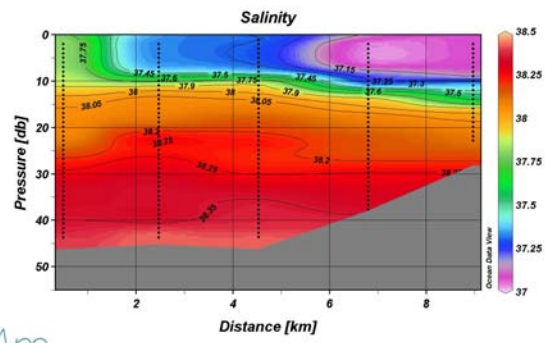
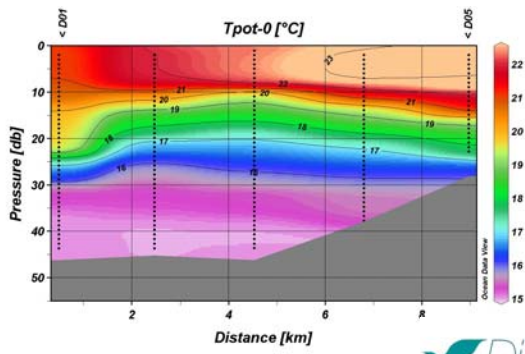
CRUISE CISM1 Albania MAY 27 2007- TRANSECT C



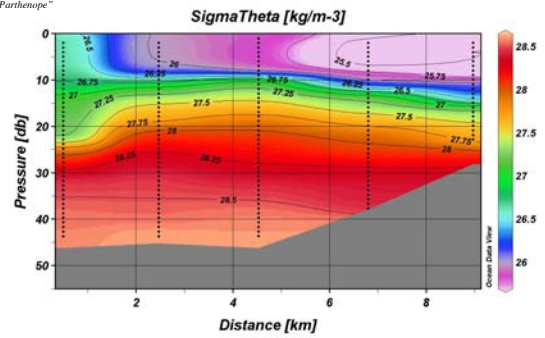
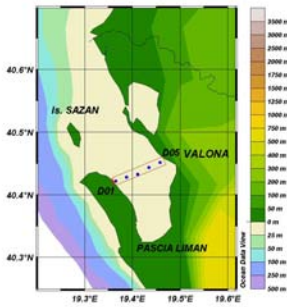
DiSAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



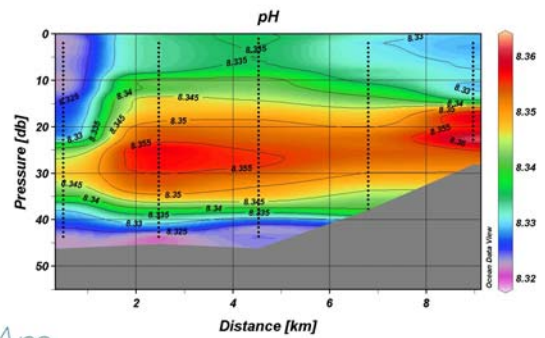
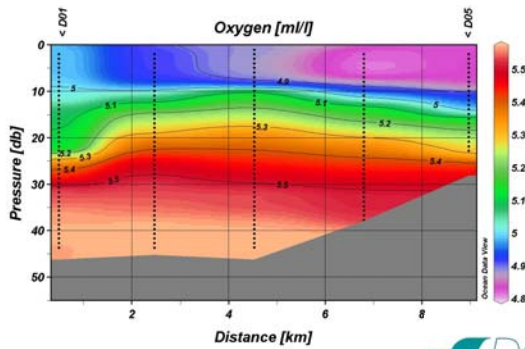
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT D



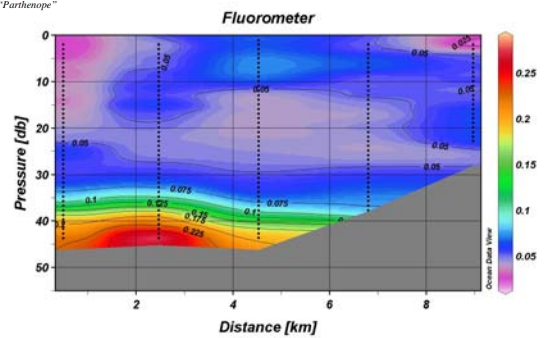
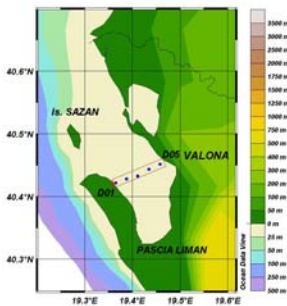
DiSAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



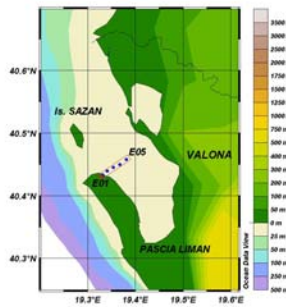
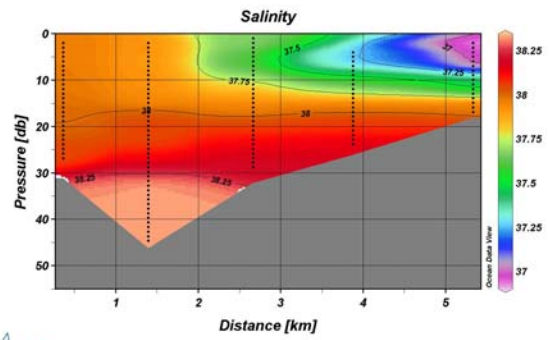
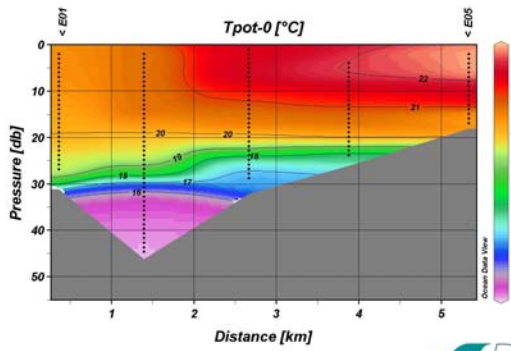
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT D



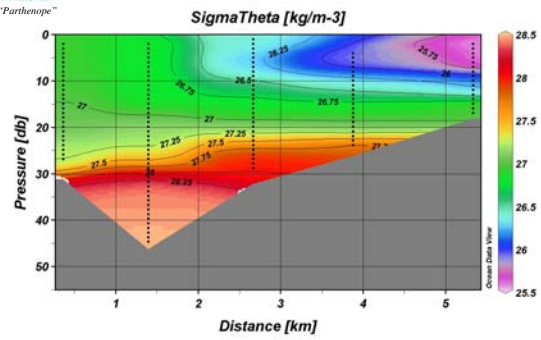
DiSAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



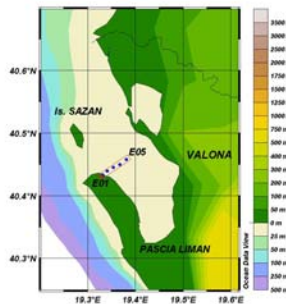
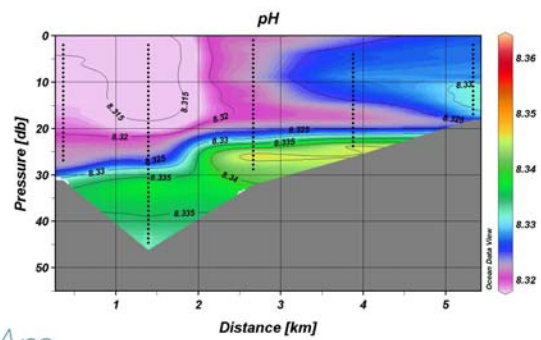
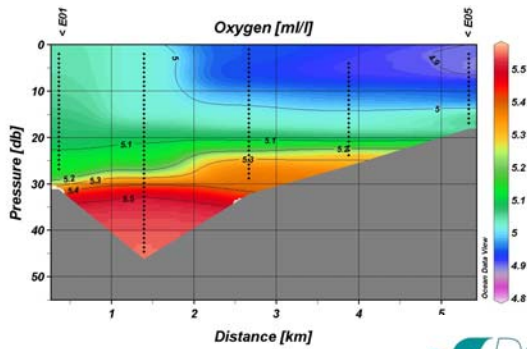
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT E



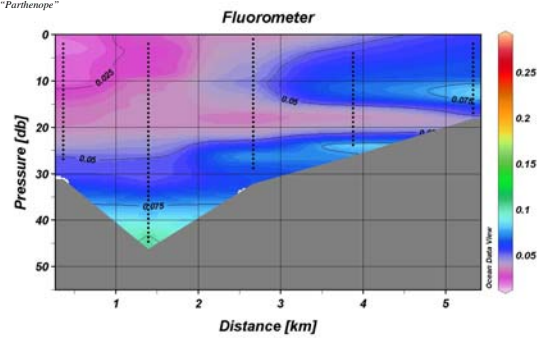
DISAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



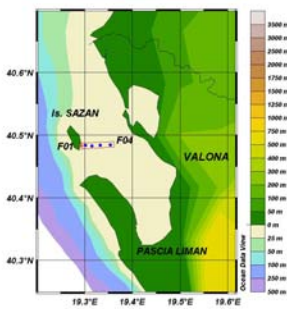
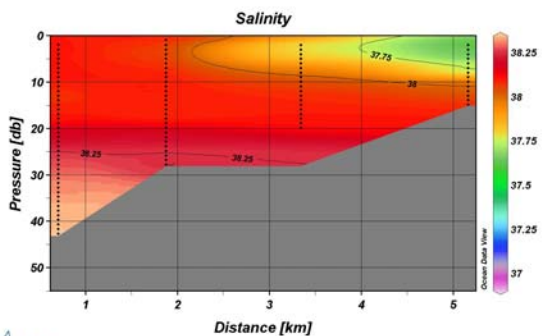
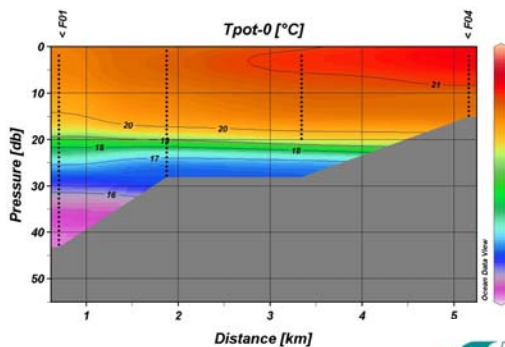
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT E



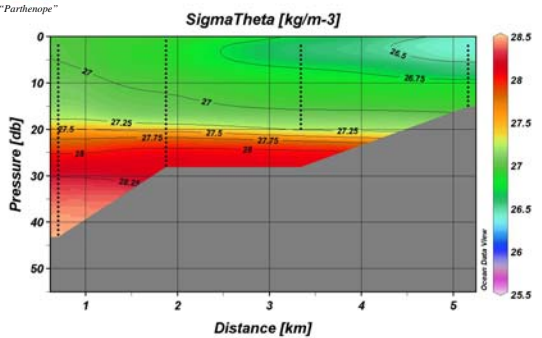
DISAm
Dipartimento di Scienze per l'Ambiente
Università degli Studi di Napoli "Parthenope"



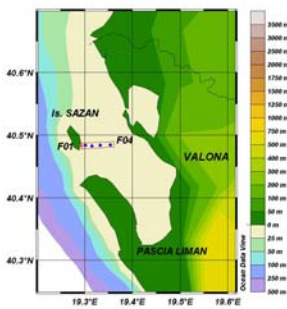
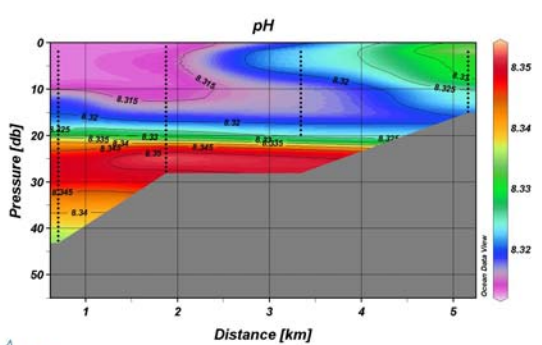
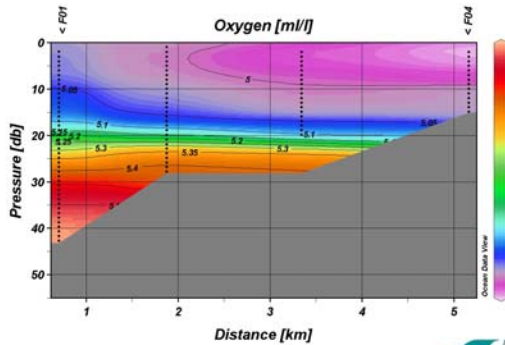
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT F



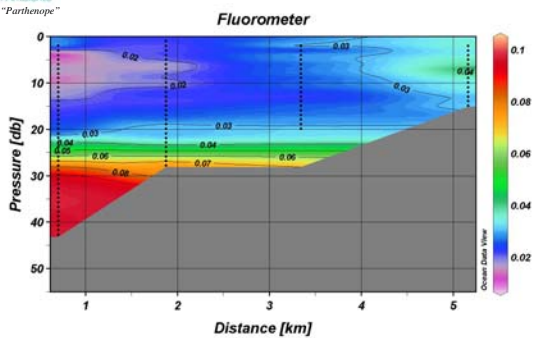
DiSAM
 Dipartimento di Scienze per l'Ambiente
 Università degli Studi di Napoli "Parthenope"



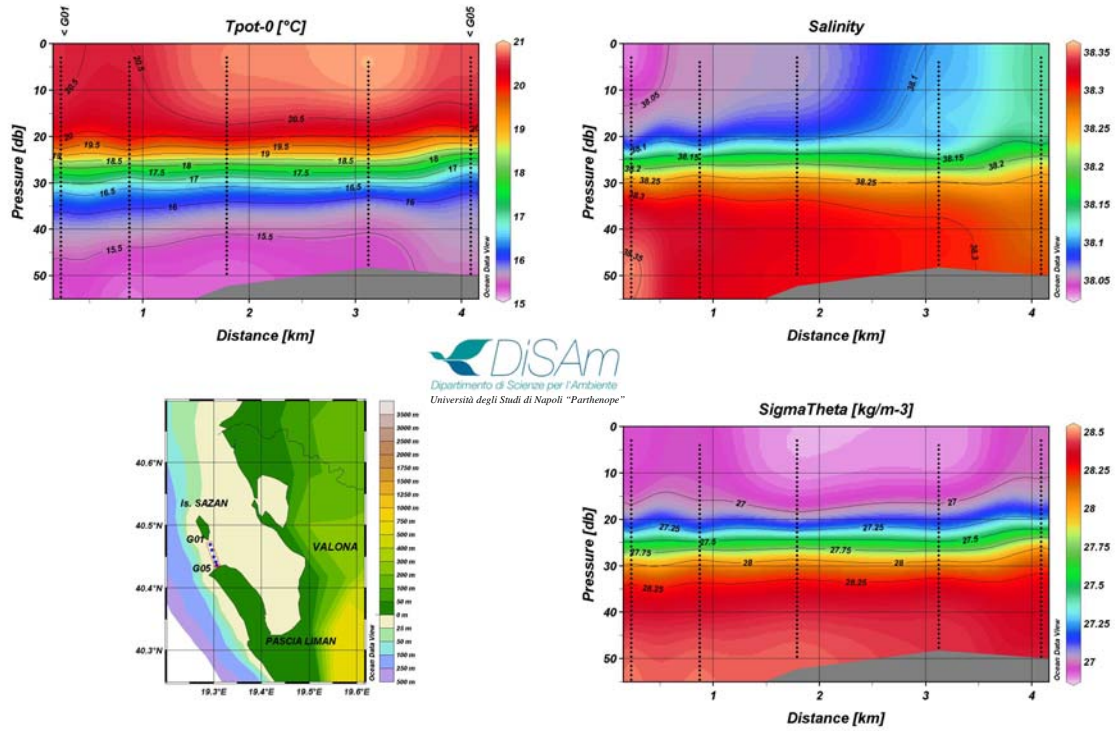
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT F



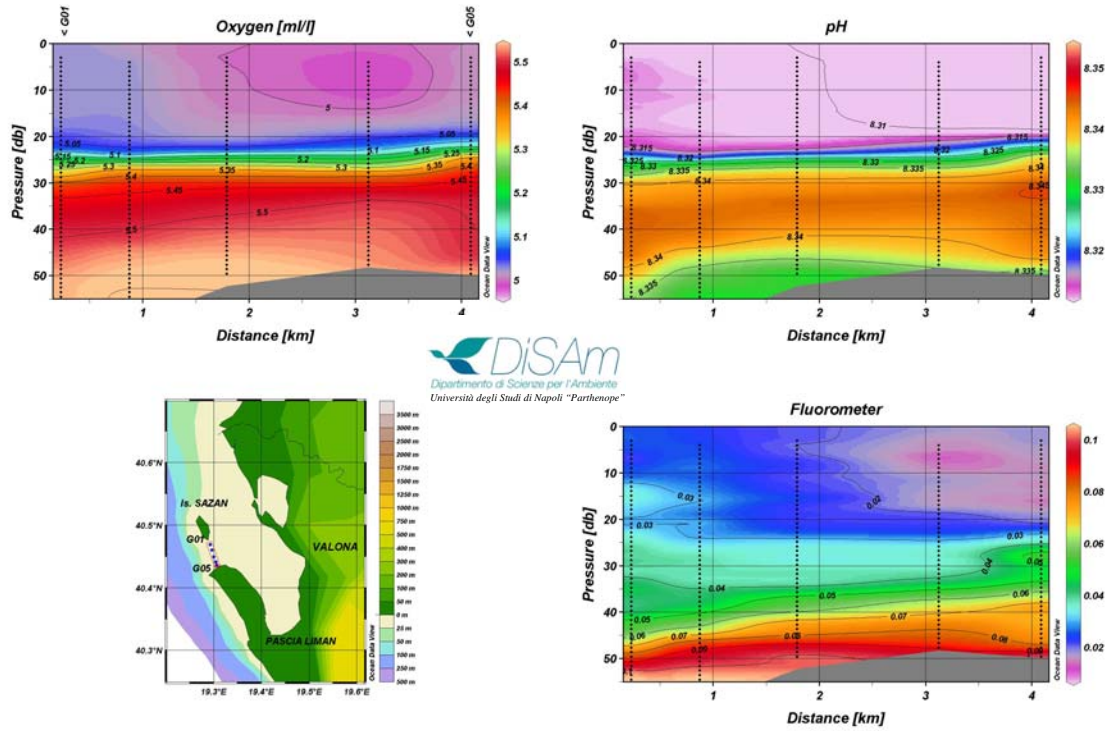
DiSAM
 Dipartimento di Scienze per l'Ambiente
 Università degli Studi di Napoli "Parthenope"



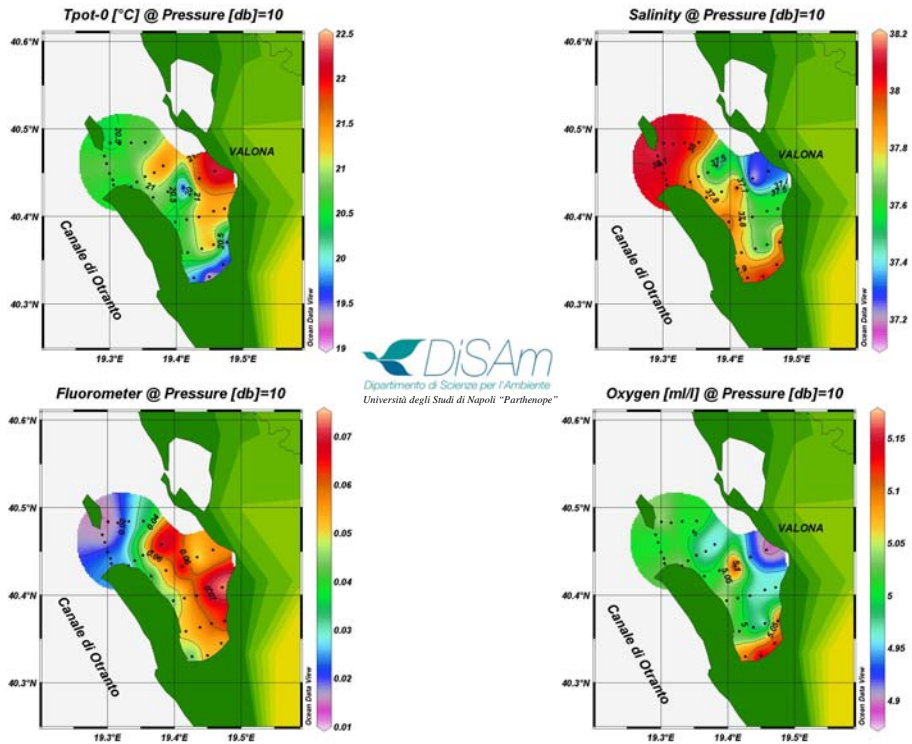
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT G



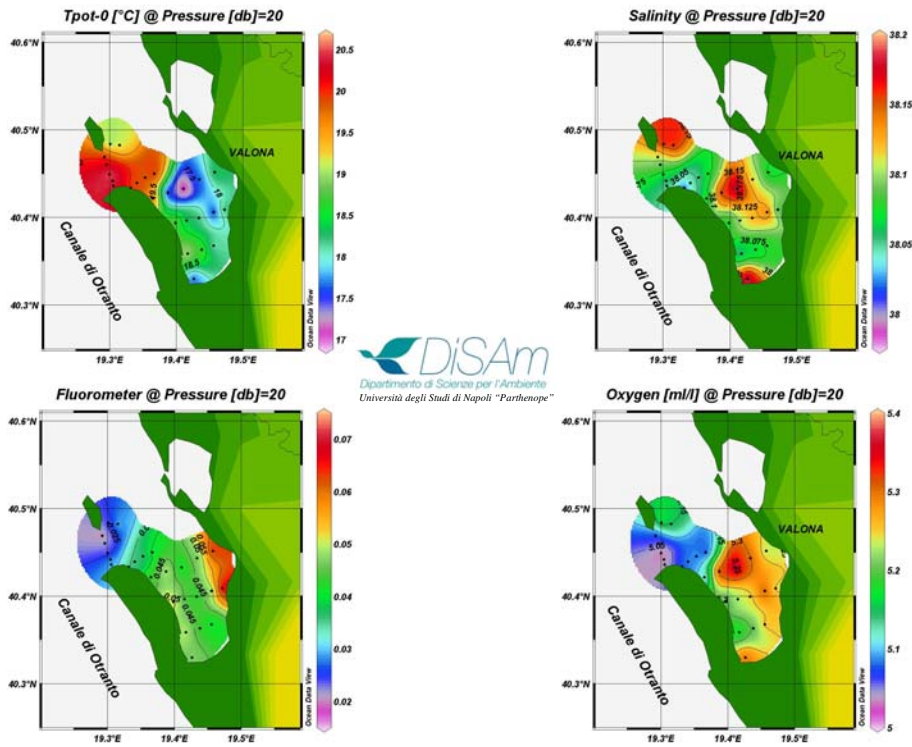
CRUISE CISM1 - Albania MAY 27 2007- TRANSECT G



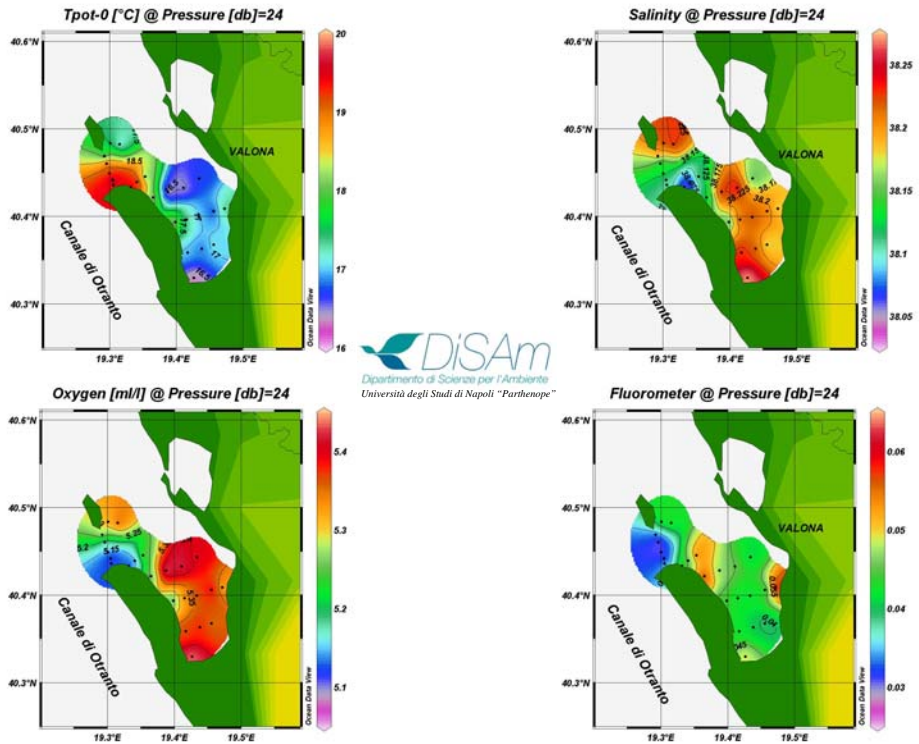
CRUISE CISM1 - ALBANIA MAY 27 2007 - 10 db



CRUISE CISM1 - ALBANIA MAY 27 2007 - 20db



CRUISE CISM1 - ALBANIA MAY 27 2007 - 24 db



CRUISE CISM1 - ALBANIA MAY 27 2007 - SURFACE

