Bio-Optical Characterization of the Black Sea for Remote Sensing Applications

NATO *Science for Peace Project* # 982678

Minutes of
KICK-OFF MEETING

Venue: Lion Hotel, ISTANBUL, TURKAY
Dates: 09-10, November 2009
Start Time: 9. 30 A.M

Meeting participants:

- Temel Oguz (NPD) – Institute of Marine Sciences, IMS, Turkey
- Atanas Palazov (PPD) – Institute of oceanology –BAS, Bulgaria
- Michael Lee (Co-Director) - Marine Hydrophysical Institute, Ukraine
- Vaorel Malciu (Co-Director)- National Institute of Marine Research Development, Romania;
- Oleg Kopelevich (Co-Director)- P.P. Shirshov Institute of Oceanology – RAS, Russia;
- Giuseppe Zibordi - Joint Research Centre of the European Commission
- Jean-Paul Huot (European Space Agency (ESA)) ;
- Hasan Orek - Institute of Marine Sciences, IMS, Turkey
- Violeta Slabakova -Institute of oceanology –BAS, Bulgaria
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Monday 09 November

1. Welcome

Professor Temel Oguz, NPD, welcomed participants and opened the kick-off meeting. It was emphasized that this meeting is strategically important and that it is essential that all partners have a common understanding of the respective roles and duties in the project. A revised agenda was presented and adopted (Appendix A).

2. Project summary (partnership, objectives and management)

Dr. Giuseppe Zibordi made a presentation about the general overview of the project including:

- Review of the main objectives and aim of the project;
- Methodology;
- Partnership;

- Project structure and activities:

The Meeting briefly discussed the presentations and endorsed the working rules and organization of the project.

3. Status on the project budget and funding

The new budget of the project was discussed in detail. It was reminded that the money provided for bio-optical cruises (approximately 80.000 Euros) was refused completely, but all other funding requests for an amount of approximately 184.000 Euros (including 70.000 Euros for instrumentation) was approved by NATO.

4. Procurements (free-fall profiler)

The partners discussed the questions related with the choice of a concrete model of the optical free-fall profiler, as well as the opportunities for its delivery. Dr. Zibordi acquainted the participants in the meeting with the technical specifications of the equipments MiniProII and HyperProII to the company Satlantic Inc, as well as with the specific features at measurement with them. He compared the both offered equipments, as he emphasized their advantages and disadvantages. The discussion on instrument procurement led to the following decisions:

1.The procurement of an optical free-fall profiler with the capability of measuring Ed, Lu and Eu in at least 7 ocean color spectral bands including the center-wavelengths at 412, 443, 490, 530, 555, 670 nm (plus one more channel to be defined with the manufacturer). It was agreed that the profiler should be fully compatible with the JRC profilers to take advantage of the JRC processing chain and calibration facility.

2.The additional optional procurement of a hand-held sun-photometer, a GPS and a laptop (within the limits of the funding budget).

It was restated that the equipment will be in charge of IO, but should be made available to the whole project partnership beyond the project lifetime.

5. Individual partner activities:

Dr. Zibbordi presented the interest and capability of the JRC in performing most of the field measurements required by the project;

Dr. Lee gave presentations about the willingness of MHI to execute additional field activities (including both radiometry and volume scattering function measurements) at a fixed platform off the Ukrainian cost in addition to volume scattering function measurements during the official cruise campaigns

Professor Kopelevich presented the major interest of SIO to develop specific regional/seasonal algorithms

Dr. Orek gave presentations about some specific activities and researches of IMS related to the project.

6. Work plan for 2010 and 2011 (cruise plan and funding)

It was considered and discussed the work plan for 2010 and 2011, as well as the individual responsibilities of the partners on the respective activities. The provided in the project works for the first six months of 2010 are:

1. Procurements of field instrument, duration 3 months, responsible organization IO-BAS

2. Assessment of measurement method, duration 3 months,

Professor Oguz explained to the participants the important role of the two bio-optical cruises in the project, on which depends its successful completion. He asked the partners for particular suggestion related with the organization and funding of the cruises.

- Dr. Zibordi suggested to apply for a Romanian Research Vessel within the context of the current NATO project (through a partnership with the Rumanian Navy) and/or a Romanian Research Vessel funded within the framework of a project hopefully funded by the Romanian Space Agency and the European Space Agency. The former solutions would mostly ensure the capability of sampling in Romanian waters.
- Dr. Palzov proposed to be applied for the Bulgarian Research Vessel (Akademik) within the framework of the EUROFLEE initiative planned for 2010.

3. Prof. Oguz suggested to apply for a Turkish Research Vessel (Bilim) within the framework of National research programs during 2011

7. Field and laboratory measurements

The partners considered the planed measurements, which would be done during the cruises. (Tab.1)

Table1: Bio-optical quantities and concentration of seawater constituents going to be determined during the field activities

Quantity	*Symbol*	*Wavelengths range or center-wavelengths*	*Instrument/Method*
Remote sensing reflectance	R_{rs}	380-700 (with 3 nm resolution)	Satlantic hyper-spectral profiler
Diffuse attenuation coefficient	K_d	380-700 (with 3 nm resolution)	Satlantic hyper-spectral profiler
Q-factor	Q_n	412,443,490,510,555,670,683 nm	Satlantic mini-profiler
Total absorption coefficient	a	412,443,490,510,555, 630, 650, 676,715 nm	WetLab AC-9
Absorption coefficient of pigmented particles	a_p	400-750 nm (with 1 nm resolution)	Spectrometry (Perkin-Elmer Lambda 900)
Absorption coefficient of non-pigmented particles	a_{dt}	400-750 nm (with 1 nm resolution)	Spectrometry (Perkin-Elmer Lambda 900)
Absorption coefficient by colored dissolved organic matter	a_y	350-750 nm (with 1 nm resolution)	Spectrometry (Perkin-Elmer Lambda 12)
Scattering coefficient	b	412,443,490,510,555, 630, 650, 676,715 nm	WetLab AC-9
Backscattering coefficient	b_b	443,490,510,555,620, 670 nm	HobiLabs Hydroscat-6
Volume scattering function	β	443,490,510, 532, 555,590, 620 nm	MHI VSF_Meter
Pigments concentration	Chl [1]	[1] includes chlorophylls, chlorophyll degradation products, carotenoid pigments	HPLC
Total suspended matter	TSM		Gravimetry
Salinity and temperature			CTD SBE 911 plus
Phytoplankton species			

It was discussed the number of the participants in the forthcoming cruises in 2010 and 2011. An evaluation of the personnel required for a comprehensive execution of the planned measurements and sampling (i.e., measurement of the apparent optical properties (AOP) with optical profilers, measurement of inherent optical properties (IOP) with the JRC instrumental package and the MHI volume scattering meter, seawater sample filtration) in addition to a suitable training for young scientists, has suggested the following minimum number of participants:

1. Three scientists from JRC (for IOP, AOP and filtration);
2. Two scientists from IO (for AOP and training);

3. Two scientist from NIMRD (for AOP and training);
4. Two scientists from IMS (for AOP, filtration and training)
5. One/two scientist from MHI (for IOP).

In terms of laboratory activities the JRC will take responsibility for seawater absorption measurements, while both JRC and IMS will produce pigments analysis using High Pressure Liquid Chromatography (HPLC).

Tuesday 10 November

1. Training activities

It was specified the periods for leading, the duration and the subjects of the three planned training courses within the project.

- Optical Profile Measurements and Data handling (three days in 2010), held in Varna and hopefully held in sharing by the company providing the optical profiler together with personnel of the JRC.
- Optical Profile Data Analysis and Applications (two days in early 2011), led and hosted by the JRC.
- Bio-Optical Modeling and Remote Sensing Data Applications (few days in late 2011 or early 2012). Details to be agreed in the near future.

Dr. Palazov suggested the third course to be lead in the training center of IOC Project Office in Ostende, Belgium and undertook to check the conditions of using the base and to report on the next meeting.

2. Data sharing and policy

All the project partners will be involved in data quality assurance and bio-optical modeling. A data policy will be formalized to rule data ownership and use (it was basically agreed that the data will be owned by the team producing the measurements, but data access will be granted to all project participants with co-sharing of results). IO-BAN was chosen for responsible for the web page of the project.

3. Closure of the meeting

Professor Oguz thanked the participants for their contributions and closed the meeting.

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KICK-OFF MEETING

09-10, November 2009, ISTANBUL, TURKAY

Host: Institute for Marine Sciences, METU
Venue: Lion Hotel, Lamartin Cad. No.45, Taksim

AGENDA

Day 1: Monday, 09 November 2009

09:30 Welcoming remarks from project directors

09:45 Project summary (partnership, objectives and management)

10:15 Status on the project budget and funding

11:00 *Coffee break*

11:30 Procurements (free-fall profiler)

12:30 Lunch break

14:00 Individual partner activities:

- Joint Research Centre of the European Commission;
- Institute of Oceanology – BAS, Bulgaria;
- P.P. Shirshov Institute of Oceanology – RAS, Russia;
- Marine Hydrophysical Institute, Ukraine;
- National Institute of Marine Research Development, Romania;
- Institute of Marine Sciences, METU, Turkey

16:00 *Coffee break*

16:30 Work plan for 2010 and 2011 (cruise plan and funding)

17:00 Field and laboratory measurements

Day 2: Tuesday, 09 November 2009

09:00 Training activities

11:00 *Coffee break*

11.30 Data sharing and policy

13.00 Closure of the meeting