njenih vzgoji morskih organizmov, spremljanje kopaliških voda in stanja obalnega morja (spremljanje stopnje onesnaženja organizmov in sedimenta s težkimi kovinami in ogljikovodiki), dolgoročno spremljanje trofičnega stanja obalnega morja in biomonitoring za oceno bioloških posledic onesnaženja na morskih organizmih. Zbrane podatke izvajalci monitoringa posredujejo Ministrstvu za okolje in prostor ter koordinacijski enoti - sekretariatu MAP-a v Atene. Zelo pomemben je tudi program za zagotavljanje kakovosti podatkov. Poleg tega je v okviru programa MED POL treba periodično pripraviti nacionalni pregled točkovnih in netočkovnih virov onesnaženja na kopnem, kot so opredeljeni v protokolu LBS, in poročati o drugih, za kakovost morja relevantnih dejavnostih ter vsake 4 leta pripraviti nacionalno poročilo o stanju morskega in obalnega okolja. Po drugi stani pa sekretariat MAP-a zagotavlja državam podporo in pomoč pri uresničevanju programa MED POL in drugih dejavnosti v okviru MAP-a.

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WORKSHOP ON BENEFITS OF THE IMPLEMENTATION OF THE GLOBAL OCEAN OBSERVING SYSTEM IN THE MEDITERRANEAN REGION, RABAT - Morocco, 1-3 November 1999

From 1-3 November 1999 I represented Slovenia at the Workshop on Benefits of the Implementation of the Global Ocean Observing System in the Mediterranean Region, which was held in Rabat, Morocco.

The Global Ocean Observing System (GOOS) an international program promoted by the Intergovernmental Oceanographic Commission (IOC), the World Meteorological Organisation (WMO), the United Nations Environment Program (UNEP) and the International Council of Science (ICSU).

The mission of GOOS is to prepare a permanent global framework for observing, modelling and analysing ocean variables in order to provide service and benefits to governments, marine industries, environmental management, fisheries, climate prediction, public health, safety at sea, coastal defences, tourism, wildlife conservation, shipping and port operations, agriculture and the management of energy supply.

MedGOOS is Mediterranean component of GOOS and concerns all countries bordering on the Mediterranean Sea. The participants at the Workshop were from Algeria, Morocco, France, Egypt, Italy, Libya, Malta, Greece, Tunisia, Lebanon, Bosnia-Herzegovina, Syria, Croatia, Slovenia, Israel, Turkey, Palestine and Cyprus and also from United Kingdom, South Africa, Belgium, Kenya and the Netherlands.

After the plenary lectures and presentation of Mediterranean projects, a presentation of national activities by southern and eastern Mediterranean countries took place. I was given an opportunity to present the Coastal Oceanographic Station Piran - Development of Operational Oceanography in Slovenia.

The Marine Station Piran of the National Institute of Biology is researching and monitoring the oceanographic and ecological parameters in the southern part of the Gulf of Trieste. It is closely collaborating with similar institutions in the neighbouring countries - Italy and Croatia. The continuous needs of the oceanographic and ecological parameters resulted in a project proposal for the Coastal Oceanographic Station Piran (COSP).

The objective of the project is to set up an oceanographic and monitoring system, which would allow:

- Oceanographic and ecological study of the shallow Gulf of Trieste
- Pollution prevention
- Immediate intervention in the case of potential ecological catastrophes
- General safeguarding of the sea
- Improvement of the Vessel Traffic System to improve the manoeuvring

The data will be available to various research institutions of the neighbouring countries, the oceanographic and meteorological communities, town halls, regional and state agencies, working on pollution problems and educational organisations.

Coastal Oceanographic Station Piran will consist of:

- Coastal oceanographic buoy with measuring and communication equipment
- Land station at the Marine Station Piran

The buoy will be located 1.4 mile off the tip of Piran in the direction of Grado and 2.1 miles off the Marine Station Piran and five miles off the neighbouring coun-

tries of Italy and Croatia. It will be moored in a shallow area (at a depth of 22 m) with flat muddy (silty-sand) bottom. It will measure the oceanographic and ecological parameters of the sea and marine meteorological parameters above it.

The Telemetry System for the oceanographic monitoring will distribute data in two ways:

- Local distribution - direct radio communication between the buoy and MSP
- Global distribution - data will be transmitted via Argos transmitter to the Argos satellite

The oceanographic buoy will have measurement sensors for conductivity, oxygen, temperature, pressure (depth), turbidity, current (Acoustic Doppler Current Profiler), wave/tide, air pressure, wind speed, air temperature, humidity and solar irradiance.

At MSP there will be configuration for data collection and backup (1 PC with appurtenant software), which will allow:

- Database elaboration and maintenance
- Graphical applications (plots of data)
- Numerical applications (spectrum calculations, data filtering)
- Data exchange with WEB server
- Design and presentation of data products on the WEB
- Internet communications tool (FTP, telnet)

From MSP the data and data products would be broadcast via WEB server. Data products will be composed of time series of previous 24 hours, basic statistics (daily averages and trends) and meta-data (information about the data and sensors).

The COSP and two buoys on the Italian side will measure the time series of parameters (temperature, salinity, chlorophyll etc.). Through research vessel surveying we will obtain also the spatial distribution of the parameters. These surveys will be also triggered off by some peculiar behaviour of certain quantity, which would be noticed from the time series of data received from COSP, such as concentration of dissolved oxygen or low surface salinity (riverine freshwater spreading also in the southern part of the Gulf of Trieste). We expect to obtain a new research vessel by the end of 1999.

The announcement of tenders has already been launched. It is expected that COSP will start to operate before June 2000. When operating, the MedGOOS secretary will be notified and the arrangements for invoking the MedGOOS in the net of operational oceanography will commence.

Among others, the mission of COSP will be to obtain the data significant for the study of known phenomena, e.g. flooding and anoxia.

Flooding in northern Adriatic does not occur only in Venice but also in towns on the eastern coast, such as Piran. The flooding is interplay between high tides and interaction with the storm-surge. The latter is driven by atmospheric pressure gradients as well as by the wind field. COSP will measure wind field at one spot above the sea - these are the "missing data" for the evaluation of the storm-surge. Wind driven circulation has not been modelled yet with "in situ" observations simply because there are NO data at the sea. The wind field, which is estimated from the coastal stations that are behind or in front of topographic abruption (Trieste), is far from the real situation at sea.

The Gulf of Trieste, a semi-enclosed shallow area with depths of less than 30 m, is one of those coastal regions that show varying degrees of oxygen impoverishment at the depths greater than 20 m. The oxygen depletion is the consequence of consumption of oxygen at the bottom and too low input of oxygen from the upper part of the water column. Severely hypoxic/anoxic bottom waters lead to benthic mortalities. Anoxia takes place in September and October when the dynamics of water mass is weak and pycnocline is present near the bottom.

With a vertical profiling system we intend to gain a better view into the bottom layer anoxia/hypoxia and to relate it to the horizontal movement of water mass to stratification and, unhopefully, also monitoring of oxygen consumption (benthic chambers) near the ocean buoy - also located in place where hypoxia has been noticed.

Similar project (oceanographic buoy on the Italian side) was also presented by Roberto Purini from ITS-CNR Trieste, Italy.

At the Workshop, the EU programs for the Mediterranean and operational oceanography were also presented. The working groups were formed for actions to start the implementation of MedGOOS.