

Recent Developments with Oil Spill Preparedness in the Black Sea Region

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ABSTRACT

Regional preparedness and cooperation in cases of major oil pollution in the Black Sea are coordinated through the Bucharest Convention and its Emergency Protocol. The Black Sea Commission is the overall organising body for this cooperation and partnership between the littoral States, international organizations and the oil and shipping industries. The regional oil spill preparedness activities are aligned to the International Convention on Oil Pollution Preparedness, Response and Co-operation.

There have been a number of recent achievements and successes with oil spill preparedness in the Black Sea. These include the continuing implementation of a regional exercising programme to develop and embed the procedures of the Black Sea Contingency Plan (for co-operation) within national systems. There are also on-going developments of basin-scale oil pollution monitoring and information capability through an EU-funded project Environmental Monitoring of the Black Sea Basin: Monitoring and Information Systems for Reducing Oil Pollution (MONINFO) implemented by the Black Sea Commission. This is incorporating a variety of technical elements within a web-based portal.

The paper describes the current status of these regional developments and how the littoral States are benefitting from sustained and integrated approaches to oil spill preparedness.

INTRODUCTION

Experiences from around the world demonstrate that oil pollution can cause significant ecological damage and serious disruption to socio-economic activities. The primary focus of governments and industry is on preventing accidents leading to oil pollution. In parallel, there is also a responsibility to be prepared for mitigating potential spill's damage and disruption, through effective contingency planning. The International Maritime Organization (IMO) has recognized the need for the development of national, regional and international cooperation for major oil spills, through the implementation of the International Convention on Oil Pollution Preparedness and Co-operation, 1990 (OPRC Convention). This Convention has been ratified by five of the six Black Sea littoral States and it calls for governments' co-operation with the oil and shipping industries. In 1996, the Global Initiative was launched as a joint effort between the IMO and the International Petroleum Industry

Environmental Conservation Association (IPIECA), with a primary aim of supporting governments in the implementation of the OPRC Convention (Micallef and Thiam, 2008).

Oil pollution was recognized as one of the major threats to the marine environment of the Black Sea in the Strategic Action Plan (SAP) adopted in 1996 (Black Sea Commission, 1996). In the revised Black Sea Strategic Action Plan, adopted in 2009 at Ministerial Conference in Sofia (Black Sea Commission, 2009a), one of the four Ecological Quality Objectives (EcoQO4) refers to “Ensure good water quality for human health, recreational use and aquatic biota” and a sub-objective deals with “Reduce pollutants originating from shipping activities and offshore installations”. Under this sub-objective, eight short/mid/long-term targets have been assigned, addressing the immediate, underlying and root causes of the area of concern.

The Black Sea Contingency Plan (BS CP) was developed as an operational tool under the Protocol On Cooperation In Combating Pollution Of The Black Sea Marine Environment By Oil And Other Harmful Substances In Emergency Situations of the Convention on the Protection of the Black Sea Against Pollution - known as the Emergency Protocol to the Bucharest Convention (Black Sea Commission, 1992). BS CP represents the framework of a regional cooperation mechanism for mutual support during major oil spills. Although the BS CP has not yet been formally adopted by Russian Federation and Ukraine, it is active and efficiently functioning. A regional exercise programme serves to test and develop the BS CP and includes a series of events from communication tests through to full-scale exercises with command centre establishment and equipment deployments (Taylor et al, 2011).

OIL SPILL PREPAREDNESS IN THE BLACK SEA

The Black Sea Commission is the implementing organization for the Bucharest Convention and the BS CP is coordinated within the framework of the Commission's Advisory Group on the Environmental Safety Aspects of Shipping (AG ESAS).

AG ESAS recognized that holding oil spill exercises can represent major milestones and investments in the region's preparedness for oil spills. Guidelines for oil spill exercises were developed in 2004/05 and a regional exercise programme instigated thereafter. These guidelines were updated in 2010, formally approved at the 19th meeting of AG ESAS (Black Sea Commission, 2012a) and proposed to the Black Sea Commission to be included as Annex 10 of the BS CP.

The guidelines detail all types of exercises agreed under BS CP (notification, table-top, equipment deployment, major events) drawing on the experiences from other regions, notably the Baltic Sea region and the work of the Helsinki Commission. At the regional level, according to the long term schedule from BS CP-Annex 9, major events (or 'DELTA' exercises) are undertaken biennially, with the host country rotating.

Figure 1 shows example activities from regional DELTA exercises organized in the Black Sea: hosted by Turkey - SULH 2007 (Kirac, 2008), Romania - RODELTA (Black Sea Commission, 2009b) and the most recent by Georgia in September 2011- named GEODELTA. Preparatory work for GEODELTA started in the beginning of 2011 and under the newly restructured Maritime Administration in Georgia. It was successfully hosted in Batumi involving all relevant local authorities, alongside regional and international participants.

An important role was played by the Oil Spill Preparedness Regional Initiative (Caspian Sea – Black Sea – Central Eurasia) - an oil industry initiative known as

OSPRI and administered through IPIECA - in the GEODELTA exercise scenario development and suggestions for establishing the exercise objectives and planning. The previous experiences and lessons learned from SULH and RODELTA were taken into account, proving very useful. One key lesson is that the preparatory and planning activities for exercises are as valuable as the actual event for building capacity. The on-going series of regional exercises provides an opportunity for sustainable improvements and embedding of cooperation procedures in national administrations and other stakeholders. In addition to the Georgians authorities, the GEODELTA exercise was attended by the Black Sea littoral States' representatives, relevant stakeholders in the region and various international organizations (OSPRI, ITOFF, Sea Alarm Foundation, Oil Spill Response Limited and observers from the Caspian Sea region). At the operational level, there was supporting equipment and personnel mobilized from Turkey and one of the European Maritime Safety Agency's network of stand-by oil spill response vessels located in Constanta, Romania, was also involved (EMSA, 2012).



Figure 1: Example of activities from regional exercises (in 2007, 2009 & 2011)

The exercise was well organized; the communication between command centre and the field activities went well. The fully equipped EMSA vessel and Turkish logistics did not raise problems related to the customs procedures as in the previous RODELTA exercise, due to existing special agreements between Georgia and Turkey. However the customs issue was recognized as very important by the Black

Sea countries at the 20th ESAS AG meeting (October, 2011), when the results of GEODELTA were discussed and analysed. Customs procedures will require further attention in the Black Sea region.

GEODELTA was a good opportunity to test the oil pollution drift forecast model, adapted from the Baltic Sea for the Black Sea under an EU-funded project (MONINFO), namely Black SeaTrackWeb (BSTW).

CONTEXT AND SETTING FOR THE MONINFO PROJECT

Effective implementation of the relevant international conventions and protocols by the Black Sea countries is crucially important for ensuring improvements in the systems of contingency planning and response, development of strategies/procedures for financing the response measures during incidents and damage compensation mechanisms, as well as for strengthening the capacity of the oil spill response authorities and environmental management in emergencies in line with international good practices.

Approximately 101.7 million tonnes crude oil (of Eurasian origin) was transported on the Black Sea in 2010 (CERA, 2011). It is also notable that general shipping can bring oil spill risks, as they carry oil either as fuel or for utility purposes (e.g. lubrication and engine oil). Larger cargo vessels carry significant quantities of heavier grades of fuel oil.

The value of effective monitoring oil pollution goes beyond preparedness for accidental oil spills to include 'operational' spills and oil discharge violations. It can provide a deterrent to deliberate pollution but, more constructively, offers the ability to facilitate understanding of vessel masters' behaviour, if committing oil discharge violations. A monitoring programme can provide factual data on the level of discharge violations; these data can be used to highlight and address behavioural

and procedural issues. This should promote and raise understanding within governments, port authorities and wider civil society about the reasons behind violations and the potential solutions e.g. no special fee for use of port reception facilities. There is clear evidence from other regions (e.g. the Baltic Sea) that a holistic approach to monitoring programmes coupled to political awareness and informed introduction of policy-making at the regional level can lead to changes that reduce pollution.

In the context that oil pollution is considered one of the major threats to the marine environment in the Black Sea, also reflected in the Black Sea Synergy Communication from the European Commission, the European Union granted the Black Sea Commission (BSC) two Contribution Agreements for the development of the Black Sea oil pollution monitoring and information system, aimed at reducing oil pollution, shortly referred to as MONINFO I and MONINFO II (Black Sea Commission, 2012b).

One of the main tasks of the BSC is to cooperate with the competent national authorities and international organizations in developing appropriate programmes for environmental control, prevention and combat of oil pollution, and improvement of regional preparedness and response capability in the Black Sea

Taking into consideration the BSC management targets related to the pollution from shipping activities, the EU-funded MONINFO projects were coordinated by the BSC Permanent Secretariat between 2009 and 2011. MONINFO I and MONINFO II overlapped each other, since they were complementary. The projects aimed to enhance the prevention, preparedness and response to oil pollution in the Black Sea.

The overall outcome of these projects was to develop an operational internet-based data management and information service, including an Expert System for authorities to deal better with oil spill pollution in the Black Sea.

The general objectives were:

- Development/improvement of information and monitoring systems for oil pollution originating from either oil discharge violations or accidental oil spills.
- Enhancement of response capabilities, including risk assessment management and emergency preparedness planning

The actions under the Contribution Agreement can be summarized as:

- a) performing a gap analysis of the existing monitoring and information system;
- b) analysis of stakeholder data needs;
- c) institutional analysis of existing monitoring activities;
- d) investigation of data exchange mechanisms;
- e) concept development and initial design of the information and monitoring system;
- f) drafting of agreements on data exchange mechanisms (including on Automatic Identification System [AIS] data); and
- g) capacity building and training.

These actions were intended in the second Contribution Agreement to be followed by technical design, implementation, set-up and operation of the monitoring and information system, including support for a continuously institutional capacity building and training. Despite the successful completion of MONINFO I, a requested extension was not granted for the MONINFO II Project due to insufficient guarantees in the region that the project objectives will be met and the project came to conclusion in December 2011.

Major Outcomes

In the MONINFO I the following tasks were undertaken:

1. **Information system** – The main deliverable under this task was to prepare an overview of requirements to be used for creation of an information system concept, summary of the availability of data based on the Black Sea Contingency Plan and terms of access; gaps in information.
2. **Monitoring system** – The primary deliverable under this task was a report aimed at an overview of present state of the oil spill monitoring (discharge violations and accidental spills), gaps in the existing monitoring system of oil pollution from an institutional setting to aftermath analysis, design of AIS network data exchange (a Black Sea AIS server), carry out a case study of accidental spill (i.e. a comprehensive report concerning the spill in the Kerch Strait, 2007) and shared best practices from the region and from analogous regional conventions, e.g. HELCOM (SeaTrackWeb oil spill drift model).
3. **Institutional strengthening / dissemination activity** - The overall target was to develop a Concept and Initial Design for Monitoring and Information Systems for Reducing Oil Pollution which would serve as a basis of an operational system to be set up during the MONINFO II. The internet-based data management and information service was built on the best practices of national and international information systems.

By its close, MONINFO I had successfully facilitated training on different components and drafted three Guidelines to be included in the BS CP, for the capacity building in the region:

- Guidelines on the use of oil spill dispersants.

- Guidelines for post-spill monitoring of oil spill effects, including oiled wildlife response recommendations.
- Update of guidelines on oil spill exercises.

MONINFO I and MONINFO II were interrelated, interdependent and had one common overall objective, namely to increase the capacity of the Black Sea region for combating oil pollution.

The objectives of MONINFO II were to:

- Set up and operate a Regional Monitoring and Information System (MONINFO System);
- implement a satellite monitoring pilot study;
- develop a mechanism for aerial surveillance of reported oil spills;
- prepare and facilitate the necessary agreements for Automatic Identification System (AIS) data exchange; and
- carry out training and capacity building for the MONINFO system.

The MONINFO System is designed as a component of the Black Sea Information System (BSIS). Based on the feedback received, the concept and initial design were merged into one document “Conceptual Design”. The basic components of the MONINFO System prototype have been placed on a development server, hosted at the premises of the Black Sea Commission’s Permanent Secretariat.

The MONINFO System architecture has the following components:

- web interface;
- document repository that includes contact details of responsible authorities, the possibility to create dedicated fora, with a user and group access with rights management;

- satellite based monitoring of oil spill -CleanSeaNet/BSSatNet (comprising SCANEX-Russia/ITU CSCRS-Turkey);
- oil spill drift model (BlackSeaTrackWeb) that could be run as standalone application using MyOcean database with a dedicated server located in Marine Hydrographical Institute (MHI) of Ukraine;
- Black Sea Regional AIS Data Exchange Network (currently operating with open freely available AIS data from www.marinetraffic.org);
- Geographic Information System (GIS) server;
- database server (or servers) for provision of data.

The components are accessible through a web portal with different access levels based on user identification. The testing system is reachable at: <http://bscpsecretariat.no-ip.org:8080/RIP-0.1/>. The system finally will be a multi-layered application accessed over the Internet, integrated with the Black Sea Commission webpage (<http://www.blacksea-commission.org/main.asp>).

The system architecture is developed as fully expandable and scalable to contain environmental information necessary for different purposes generated and reported within the framework of the Black Sea Commission activities (such as fisheries, coastal zone management, pollution monitoring, land-based pollution information, biodiversity etc...) using standard data exchange procedures and formats.

As shown in Figure 2, the MONINFO System is a comprehensive web-based system including:

- a) website;
- b) GeoPortal;
- c) document repository;

- d) links to the independent applications like Black SeaTrackWeb (BSTW) - an oil spill drift modeling system;
- e) CleanSeaNet from the European Maritime Safety Agency (EMSA);
- f) BlackSeaSatNet - a newly proposed satellite based oil spill monitoring system for the Black Sea for several non EU countries. Functionality and data in the system are accessible based on a user level “role” table. A web-based GIS system is presented as a Black Sea Geoportal (diagonal part in Figure 2) including AIS maps, Oil Spill Maps, Sensitive areas etc. (shown as light blue ellipses in the diagonal section of Figure 2).

An example, as one of the layers' component of the system, the BlackSeaTrack Web is a 3-dimensional circulation model covering that makes up to 3 days forecasts (to 5 days from August 2011) included into BSTW. The area covered by the BSTW system is the entire Black Sea. The forecast current, temperature and salinity fields are provided by the MyOcean Black Sea Marine Forecasting Center –MFC-(<http://www.myocean.eu/web/19-products-and-services.php>). The horizontal grid resolution is 0.06110 along longitude and 0.04440 along latitude (approximately 5 km). The MHI model uses 35 different depth levels up to bottom, it assimilates sea level anomaly provided by AVISO/Altimetry a multi-satellite data active archive centre (France). Surface wave dynamics are coupled with the circulation model.

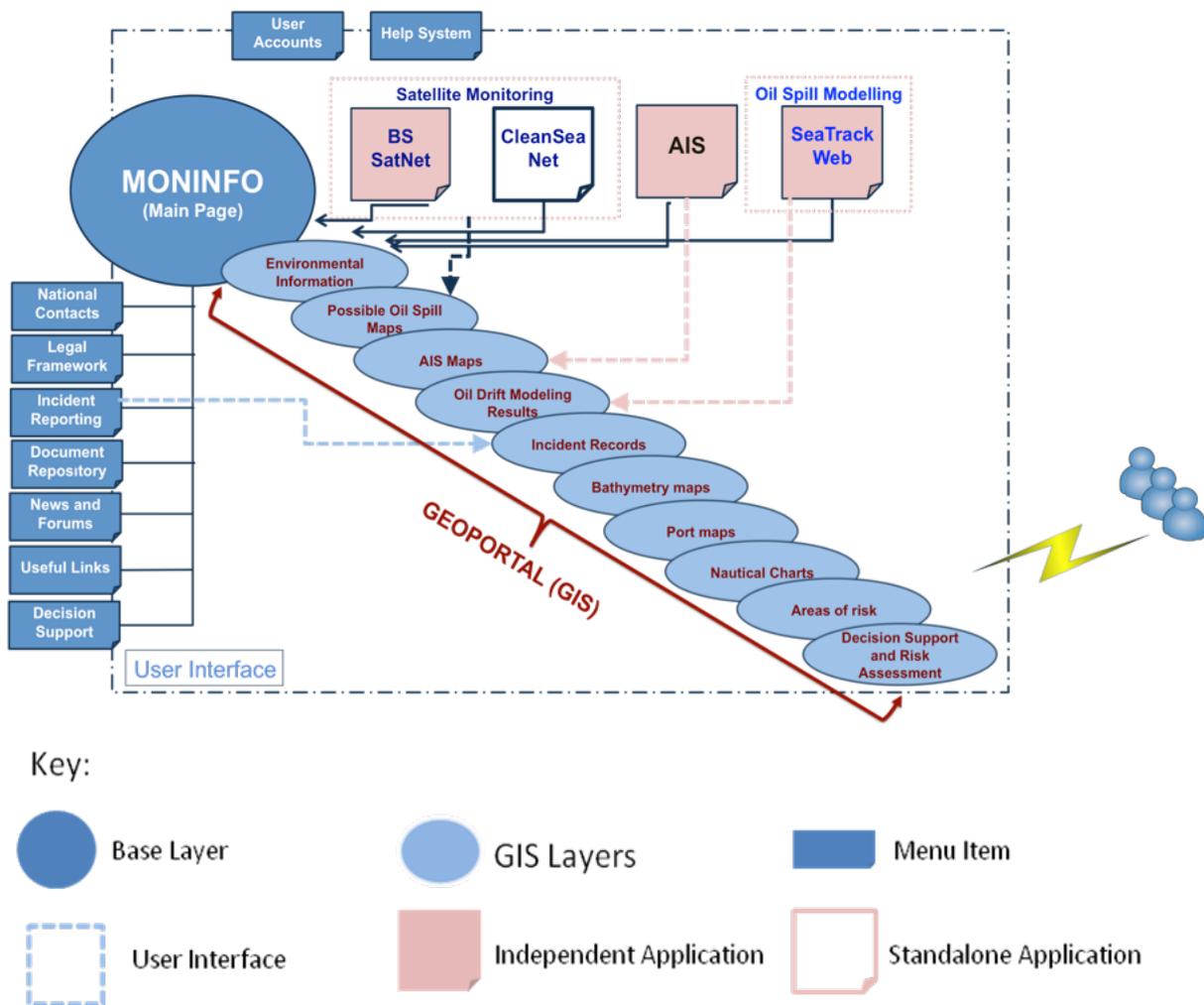


Figure 2 MONINFO System Scheme

CONCLUSIONS

The littoral States of the Black Sea continue to invest effort in the development of regional cooperation in case of oil pollution. This is coordinated through the Black Sea Commission under the framework of the Bucharest Convention and its Emergency Protocol.

The risk of oil pollution comes from oil exploration, production and transportation, as well as general shipping activities. Whilst prevention of oil pollution is the priority, the development of oil spill preparedness has involved a broad stakeholder group, including the oil and shipping industries – fully consistent with the OPRC Convention.

An important mechanism to embed and develop cooperation procedures amongst all stakeholders is provided through the regional oil spill exercise programme. The programme represents a sustainable activity, ensuring regional-scale readiness to mitigate the potential ecological and socio-economic consequences of major oil spills.

The EU-funded MONINFO project has assisted in the strengthening of technical and organizational aspects of regional preparedness. It has also provided pilot projects demonstrating tools that can improve cooperation and sharing of data. Future oil spill preparedness developments in the region will benefit from the outcomes and achievements of MONINFO.

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