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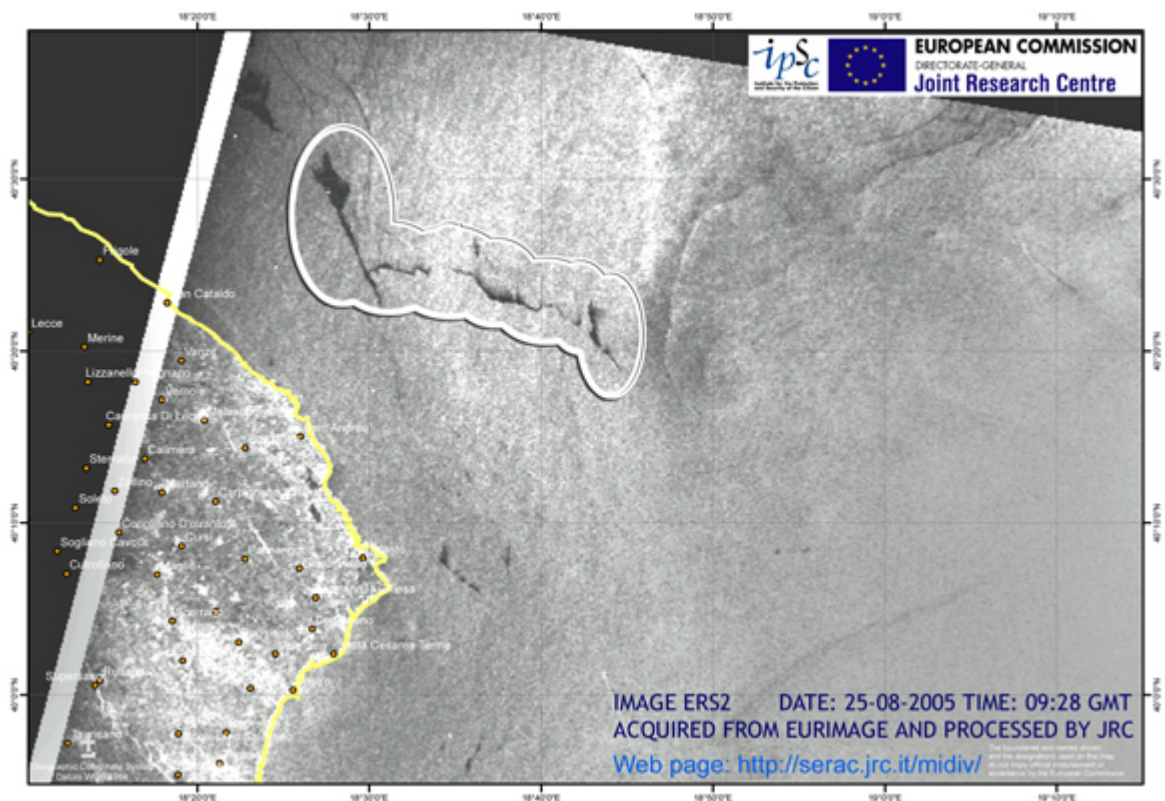
MEDITERRANEAN ACTION PLAN
PLAN D'ACTION POUR LA MEDITERRANEE



REGIONAL SEMINAR ON THE USE OF REMOTE SENSING IN OIL POLLUTION CONTROL - MEDEXPOL 2005

Cyprus, 17 - 20 October 2005

REPORT



NOVEMBER 2005

**REGIONAL SEMINAR
ON THE USE OF REMOTE SENSING IN OIL POLLUTION CONTROL
-
MEDEXPOL 2005**

Nicosia, Cyprus, 17 - 20 October 2005

REPORT

INTRODUCTION

The Regional Seminar on the use of remote sensing in oil pollution control, MEDEXPOL 2005, was organized by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) in Nicosia, Cyprus, between Monday, 17 October and Thursday, 20 October 2005.

The outline of the Seminar and its programme were prepared with the kind assistance and in close co-operation with the Institute for the Protection and Security of the Citizen (IPSC), Directorate General Joint Research Centre (DG JRC) of the European Commission, Ispra, Italy.

Department of Fisheries and Marine Research (DFMR), Ministry of Agriculture, Natural Resources and Environment, Republic of Cyprus provided logistic support for the organization of the Seminar.

The Seminar was organized in line with REMPEC's programme of training activities for the biennium 2004-2005, as proposed by the 6th Meeting of REMPEC Focal Points (Malta, 12-15 February 2003) and subsequently endorsed by the 13th Meeting of the Contracting Parties to the Barcelona Convention (Catania, Italy, 11-14 November 2003)

The topic of the 2005 Regional Seminar was selected taking into consideration the wish expressed by several Meetings of REMPEC's Focal Points, that regional training activities should address specific, rather than general, issues and focus on advanced topics. Remote sensing was chosen as the topic of MEDEXPOL 2005 also bearing in mind the interest in the advanced methods for detection and monitoring of oil spills shown by the participants in the Regional Workshop on prevention and control of operational pollution in the Mediterranean region, organized by REMPEC in Ancona, Italy in November 2004. Finally, when deciding on the topic for MEDEXPOL 2005, REMPEC also considered the importance of the selected subject for both main fields of REMPEC activities, namely preparedness and response to accidental marine pollution and prevention of pollution from ships.
present

OBJECTIVES OF THE SEMINAR

The main objectives of MEDEXPOL 2005 were:

- to provide participants with up-to-date information on various technical and operational aspects of remote sensing, including both aerial surveillance and satellite monitoring (Earth Observation);
- to inform the participants on the current and prospective uses of remote sensing in the fields of prevention of, preparedness for and response to ship-generated marine oil pollution;
- to share with the participants the experience gained outside the Mediterranean region in the use of airborne and satellite remote sensing in prevention of illicit oil discharges from ships and in management of response operations in case of recent major oil spills;
- to facilitate an open dialog between participants and speakers aimed at identifying the potentials for a wider use in the Mediterranean region of remote sensing techniques for control of illicit discharges from ships and in spill response management;

With a view to achieving these objectives REMPEC prepared the programme comprising a total of 26 presentations, which were delivered by five (5) external speakers and two (2) speakers from the Centre.

ORGANIZATION

The organization of MEDEXPOL 2005 comprised two distinguished phases, namely the preparation of the programme and selection of key speakers, and the logistic part of the organization.

REMPEC carried out the first phase of the preparation in close collaboration with the experts from the Institute for the Protection and Security of the Citizen (IPSC) of the European Commission's Directorate General Joint Research Centre (DG JRC), who had the most extensive experience in the field of remote sensing, and who generously offered their assistance to the Centre. Following a series of consultations with a number of experts in the field, five external speakers have been identified and the programme of the Seminar was finalized in agreement with them.

In addition to the preparation of the programme and the selection of speakers in the Seminar, REMPEC was also responsible for the preparation of several presentations, the invitation of the participants, making travel arrangements for both speakers and the participants, as well as for general co-ordination of the event, including its financial aspects.

The logistic support for organization of the Seminar in Cyprus was provided free of charge by the Department of Fisheries and Marine Research (DFMR), the Centre's Governmental Focal Point in Cyprus. In accordance with the agreement reached prior to the Seminar between REMPEC and DFMR, the latter was in charge of:

- liaison with REMPEC regarding the organization of the Seminar;
- Identifying a suitable hotel and making hotel reservations for all participants in the Seminar
- ensuring the provision of the adequate conference room equipped with necessary audio-visual equipment, screen, etc, as well as refreshments at coffee breaks
- identifying English/French interpreters, and making necessary arrangements for the simultaneous interpretation and for the provision of the interpretation equipment (including a booth for the interpreters, headphones, microphones, complete wiring for sound and technical assistance with the equipment)
- organizing the transfer all participants from Larnaca airport to the hotel upon arrival, and from the hotel to the airport on departure;
- preparing, producing, printing and binding Seminar proceedings
- facilitating the issue of entry visa for the participants who require one.
- preparing and submitting to REMPEC, at the end of the Seminar, a Financial Report
- providing other support, aimed at the smooth running of the Seminar

Like all regional meetings and training activities organized by REMPEC, MEDEXPOL 2005 was a bilingual Seminar. Since presentations were made in both English and French languages, simultaneous interpretation from English into French and vice versa was provided throughout the Seminar. For this purpose, two interpreters were hired locally through DFMR.

MEDEXPOL 2005 was held in the conference room of the hotel "Holiday Inn – Nicosia City Centre" in Nicosia. All participants and speakers were accommodated in the same hotel.

The working hours of the Seminar were between 09.00 and 16.45 hours, with two coffee breaks, one in the mid-morning and the other in the mid-afternoon.

MEDEXPOL 2005 was inaugurated on 17 October 2005 at 09.00. Mr. Darko Domovic, Senior Programme Officer, addressed the participants on behalf of R. Adm. Roberto Patrino, Director, REMPEC. Mr. Georgios L. Georgiu, Director, Department of Fisheries and Marine Research (DFMR), the Centre's Governmental Focal Point in Cyprus, welcomed the participants on behalf of the host country.

The Seminar was closed at 13.00 on 20 October 2005. On behalf of REMPEC, Mr. D. Domovic expressed the Centre's gratitude to the speakers for their excellent presentations, to the participants for their active participation in the Seminar, and to the Cypriot authorities for their support. Speaking on behalf of the participants, Dr. Abdelhafid Laouira, the representative of Algeria, thanked REMPEC and the speakers for their efforts in organizing and successfully conducting MEDEXPOL 2005.

PARTICIPATION

MEDEXPOL 2005 was intended for the senior Government officials whose responsibilities included prevention of, preparedness for and response to pollution from ships, and who might need, in the course of their present and future work, updated knowledge of remote sensing techniques currently being used in control of ship-generated marine pollution.

REMPEC invited each Mediterranean coastal State participating in the Mediterranean Action Plan, as well as the EC, i.e. all Contracting Parties to the Barcelona Convention, to nominate two participants in MEDEXPOL 2005. Taking into consideration that the topic selected for the Regional Seminar addresses the control of the two main aspects of marine pollution from ships, namely operational and accidental pollution, REMPEC Focal Points were invited to include in their respective delegations personnel responsible at the national level for both of these two aspects of marine pollution control. With a view to avoiding duplication of nominations, the Centre requested its OPRC and Prevention Focal Points respectively to jointly nominate the participants.

Since some of the Contracting Parties informed REMPEC in advance that they would not be able to attend the Seminar, or nominated only one participant, additional places were offered to the countries in the region having a special interest in remote sensing.

In addition to the Mediterranean coastal States, a group of French speaking West and Central African (WACAF) countries, Contracting Parties to the Abidjan Convention, had also been offered several fellowships, thanks to the voluntary contribution of the Government of Monaco to the Centre's budget for the biennium 2004-2005. REMPEC requested the Secretariat of the Abidjan Convention, based at UNEP Headquarters in Nairobi, to select the relevant countries and to invite their representatives on behalf of the Centre.

Within the framework of the ongoing co-operation between REMPEC and the European Maritime Safety Agency (EMSA), the Centre agreed with the request of EMSA and offered several places in MEDEXPOL 2005 to the representatives of the new European Union member States from the Baltic region.

Finally, REMPEC also agreed with the request from the Regional Centre for Assistance and Disaster Relief (RCADR), based in Divulje, Croatia, to send as observers to MEDEXPOL 2005 two of its staff members.

The costs of participation of the representatives of the Baltic countries and of RCADR were born by EMSA and RCADR respectively, while the participants from the Mediterranean and WACAF coastal States were fully sponsored by REMPEC.

Unfortunately, only four days prior to the start of the Seminar, REMPEC was informed by its Focal Point in Cyprus that due to the change of procedures the visa for the participants from several Mediterranean coastal States, as well as from the three WACAF countries could not be issued at the airport upon arrival, as originally advised. In case of several Mediterranean countries and one WACAF country it was possible to find alternative solutions, however this last minute notice regrettably prevented the participation in MEDEXPOL 2005 of the representatives of two Mediterranean coastal States, as well as of the participants nominated by Gabon and Senegal.

A total of 45 participants eventually attended MEDEXPOL 2005: 39 participants came from 17 Contracting Parties to the Barcelona Convention, one from Cameroon (Abidjan Convention Contracting Party), 3 from Baltic coastal States and 2 were the representatives of RCADR. Also present were 5 external speakers and 3 REMPEC staff.

The profile of participants in the Seminar was varied, included personnel from national maritime administrations, ports, national authorities responsible for environment, Navy, Coast Guards, oil spill response services, universities. All of them had previous experience in prevention of pollution from ships, or in preparedness for and response to accidental marine pollution.

The complete list of participants is given in **ANNEX 1**. The list also includes the numbers appearing on the Certificates of attendance, which were presented to the participants during the closing ceremony. A specimen of the Certificate is reproduced in **ANNEX 2**.

THE PROGRAMME

The programme of MEDEXPOL 2005 included 26 presentations, divided in four groups, with each day of the Seminar dedicated to a specific topic. These encompassed the most important issues related to remote sensing from aircraft and satellite platforms, with a particular emphasis, wherever possible, on the situation in the Mediterranean. The four groups of presentations were:

- Introduction to monitoring operational and accidental marine oil pollution
- Legislation, monitoring tools and aerial surveillance
- Satellite monitoring
- Oil pollution monitoring in the Mediterranean

The average duration of a lecture was 45 minutes and all were illustrated by MS PowerPoint presentations.

The first group of presentations aimed at defining the situation in the Mediterranean region regarding maritime traffic and risks posed by it, legal and institutional framework in place in the region, sources and behaviour of spilled oil and the possibilities for detection of oil pollution through remote sensing.

The second day was dedicated to discussing the legal background for monitoring marine oil pollution and to surveillance of oil spills from aircraft.

The third module dealt with the use of satellites in remote sensing of oil slicks, but also included a presentation on basics of securing evidence on discharges from ships.

Finally, the last day of the Seminar comprised presentations on ongoing projects in the Mediterranean in the field of remote sensing and on new initiatives aimed at reducing pollution from ships in the region, which included the use of remote sensing as a tool for achieving this goal. Ample time on the fourth day was allocated for discussion and for drawing conclusions from the Seminar.

The first draft programme was prepared jointly by REMPEC and DG JRC – IPSC, and was subsequently discussed with a number of experts in the field, mainly from the Bonn Agreement Contracting Parties, who all have an extensive experience in remote sensing. The final version of the programme, reproduced in **ANNEX 3**, was the result of the consultations with all these experts, including those who attended MEDEXPOL 2005 as speakers.

LECTURERS

REMPEC invited 5 external speakers to present the lectures included in the programme of the Seminar, in addition to providing two speakers from among its staff. The speakers were selected from the institutions which have a proven record and vast experience in various aspects of remote sensing, including both aerial surveillance and satellite monitoring. These included two key speakers from DG JRC – IPSC, and one each from EMSA, the International Tanker Owners Pollution Federation Ltd. (ITOPF) and the United Kingdom Maritime and Coastguard Agency.

A complete list of lecturers is given in **ANNEX 4**.

DOCUMENTS

Each participant in the Seminar received a folder including black and white printouts of PowerPoint presentations delivered during MEDEXPOL 2005. In addition, following the request of the majority of those present, REMPEC compiled after the Seminar all presentations and produced a CD including colour *PDF* versions of all presentations. The CD is being distributed to the participants, REMPEC national Focal Points and other REMPEC partners. The *PDF* format was chosen due to the need to protect the copyright of certain images included in the presentations.

The list of all presentations included in the CD is given in **ANNEX 5**.

DISCUSSION AND COMMENTS

Once the last presentation was delivered the floor was opened for discussion and comments. The session was chaired by Cdr. Guido Ferraro (DG JRC – IPSC). The ensuing discussion involved a number of participants and all speakers, and demonstrated the great relevance of the topic selected for MEDEXPOL 2005 for the representatives of the Mediterranean coastal States that attended the Seminar, as well as for the observers from outside the region.

Participants in the discussion had shown particular interest in case studies presented during the Seminar, and many questions were related to the possibility of using or adapting the methodologies developed outside the Mediterranean region, such as the Bonn Agreement Oil Appearance Code, in the Mediterranean countries.

Several participants requested specific additional information about the areas chosen for the implementation of pilot projects concerning surveillance and monitoring, envisaged within the comprehensive CleanMed Project. In this regard a representative of Egypt suggested that the pilot area identified as the Eastern part of the Mediterranean be extended to Suez Canal including Port Said, Egypt.

The participant from Greece, while welcoming the idea of focusing during MEDEXPOL 2005 on identification and assessment of oil slick, also emphasised the need of working on the identification of ships causing in particular operational oil pollution.

A representative from Algeria pointed out that in order to achieve an efficient surveillance, maritime traffic patterns and trends needed to be identified as accurately as possible. This would only be achieved through a close cooperation, not only among the countries in the region, but also among the various national services within the same country. In addition, he emphasized that, when using terrestrial and satellite transmitters, particular attention should be paid not to overload the personnel on board. Finally, the same participant emphasized the need, when developing information systems, to involve seafarers and the representatives of the maritime industry in general.

There was a general consensus with the initiatives of the European Commission aimed at ensuring long term monitoring of the sea area of the European Union, including the Mediterranean Sea. The support was expressed for the envisaged creation of the European Database on oil spills and for the development of the European Atlas, as well as for making available in near-real time of data on oil spills detected through satellite monitoring.

REMPEC was encouraged to seek to continue co-operation with the DG JRC of the European Commission in the field of remote sensing, and also with relevant partners in other regional seas, such as the North-Eastern Atlantic and Baltic regions.

CONCLUSIONS

Great interest in the subject of remote sensing in the field of oil spill control, shown by the participants in MEDEXPOL 2005 and their active participation in the proceedings of the Seminar, had proven that the choice of the topic for the 2005 regional training activity was a good one.

Several participants requested REMPEC to endeavour to organize, in the future, training activities dedicated to the same or similar subject, recognizing in particular its relevance for both better and more effective prevention of pollution from ships, and for more efficient management of oil spill response in case of major marine pollution incidents.

ANNEX 1

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IMO



REMPEC



MAP



UNEP

**REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE
FOR THE MEDITERRANEAN SEA
(REMPEC)**

CERTIFICATE

No.

This is to certify that

has attended

**REGIONAL SEMINAR
ON THE USE OF REMOTE SENSING IN OIL POLLUTION CONTROL**

**Nicosia, Cyprus
17 – 20 October 2005**

organised by the

**REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE
FOR THE MEDITERRANEAN SEA
(REMPEC)**

within the framework of the

MEDITERRANEAN ACTION PLAN

with the support of the

**MINISTRY OF AGRICULTURE, NATURAL RESOURCES AND ENVIRONMENT
DEPARTMENT OF FISHERIES AND MARINE RESEARCH
REPUBLIC OF CYPRUS**



A handwritten signature in black ink, appearing to read "Roberto Patrino".

Rear Admiral Roberto PATRUNO
Director, REMPEC

ANNEX 3

PROGRAMME

DAY 1	MONDAY, 17 October	
INTRODUCTION TO MONITORING OPERATIONAL AND ACCIDENTAL MARINE OIL POLLUTION		
08.00 – 09.00	Registration of participants	
09.00 – 09.30	Opening and Introduction to the Seminar	REMPEC
09.30 – 10.30	Maritime traffic in the Mediterranean and the importance of control of oil pollution from ships	R. Patruno (REMPEC)
10.30 – 11.00	<i>Coffee break</i>	
11.00 – 11.45	Prevention & Emergency Protocol / REMPEC	L. Khodjet El Khil (REMPEC)
11.45 – 12.30	Origins and sources of marine oil pollution	D. Domovic (REMPEC)
12.30 – 13.15	Fate and effects of oil	R. Johnson (ITOPF)
13.15 – 14.30	<i>Lunch</i>	
14.30 – 15.15	Detection of oil spills – an introduction: How can we detect oil spills	O. Trieschmann (EMSA)
15.15 – 15.30	<i>Coffee break</i>	
15.30 – 16.15	Detection of oil spills – an introduction: Airborne remote sensing / Surveillance systems / Sensors	O. Trieschmann (EMSA)
16.15 – 16.45	<i>Discussion</i>	

DAY 2 TUESDAY, 18 October		
<i>LEGISLATION, MONITORING TOOLS and AERIAL SURVEILLANCE</i>		
09.00 – 09.45	Legislation on monitoring marine pollution	G. Ferraro (DG JRC)
09.45 – 10.15	Legislation on monitoring marine pollution	G. Ferraro (DG JRC)
10.15 – 10.45	<i>Coffee break</i>	
10.45 – 11.45	Use of remote sensing in accidental oil spill response	R. Johnson (ITOPF)
11.45 – 12.15	The Prestige case	G. Ferraro (DG JRC) D. Tarchi (DG JRC)
12.15 – 13.00	Introduction to aerial surveillance Visual observation of oil spills	David Mason (Atlantic Reconnaissance - UK)
13.00 – 14.30	<i>Lunch</i>	
14.30 – 15.15	Bonn Agreement Oil Appearance Code	David Mason (Atlantic Reconnaissance - UK)
15.15 – 15.30	<i>Coffee break</i>	
15.30 – 16.15	Operational aspects of aerial surveillance	David Mason (Atlantic Reconnaissance - UK)
16.15 – 16.45	<i>Discussion</i>	

DAY 3		WEDNESDAY, 19 October	
SATELLITE MONITORING			
09.00 – 09.45	Introduction to satellite monitoring		D. Tarchi (DG JRC)
09.45 – 10.15	Methodologies for man-made oil spill detection		D. Tarchi (DG JRC)
10.15 – 10.45	<i>Coffee break</i>		
10.45 – 11.30	Signature of oil spills from ship discharges		D. Tarchi (DG JRC)
11.30 – 12.15	Effects of natural sea phenomena in SAR images		O. Trieschmann (EMSA)
12.15 – 13.00	Operational aspects of satellite monitoring (the German experience)		O. Trieschmann (EMSA)
13.00 – 14.30	<i>Lunch</i>		
14.30 – 15.15	Long term monitoring of sea-based pollution: Towards an atlas of European oil pollution		D. Tarchi (DG JRC)
15.15 – 15.30	<i>Coffee break</i>		
15.30 – 16.15	Introduction to securing evidence on discharges from ships through remote sensing		G. Ferraro (DG JRC)
	Practical experiences		David Mason (Atlantic Reconnaissance – UK)
16.15 – 16.45	<i>Discussion</i>		

DAY 4		THURSDAY, 20 October
<i>MONITORING IN THE MEDITERRANEAN</i>		
09.00 – 09.45	First results of the AESOP project	D. Tarchi (DG JRC) G. Ferraro (DG JRC)
09.45 – 10.15	REMPEC initiatives for reducing illicit discharges in the Mediterranean region	L. Khodjet El Khil (REMPEC)
10.15 – 10.45	<i>Coffee break</i>	
10.45 – 11.45	<i>Discussion</i>	
11.45 – 12.45	Conclusions	REMPEC
12.45 – 13.00	Closure of the Seminar	REMPEC
13.00 – 14.30	<i>Lunch</i>	

ANNEX 4

LIST OF SPEAKERS

Guido FERRARO (Cdr.)

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ANNEX 5

THE CONTENTS OF THE CD INCLUDING POWERPOINT PRESENTATIONS

<i>Number and short title</i>	<i>Author</i>	<i>Full title</i>
01 Mar. Traffic	R. Adm. R. Patruno:	Maritime traffic in the Mediterranean – The importance of control of marine pollution from ships
02 P&E Protocol	Dr. L. Khodjet El Khil:	Le Protocole prévention et situation critique et le REMPEC
03 Origins-Sources	Mr. D. Domovic:	Origins and sources of marine oil pollution
04 Fate-Effects	Mr. R. Johnson:	Fate and effects of oil
05 EMSA	Dr. O. Trieschmann:	EMSA - Monitoring and surveillance
06 Detection (1)	Dr. O. Trieschmann:	Detection of oil spills (1)
07 Detection (2)	Dr. O. Trieschmann:	Detection of oil spills (2)
08 Legislation (1)	Cdr. G. Ferraro:	Pollution and Legislation (1)
09 Legislation (2)	Cdr. G. Ferraro:	Pollution and Legislation (2)
10 Legislation (3)	Cdr. G. Ferraro:	Pollution and Legislation (3)
11 Acc. spill resp.	Mr. R. Johnson:	Remote sensing in accidental spill response
12 The Prestige	Cdr. G. Ferraro; Dr. D. Tarchi:	The Use of satellite radar imagery in the Prestige accident
13 Visual Observ.	Mr. D. Mason:	Visual observation of oil spills
14 BAOAC	Mr. D. Mason:	Bonn Agreement Oil Appearance Code
15 Op. Aspects	Mr. D. Mason:	Operational Aspects of Aerial Surveillance
16 Sat. Intro.	Dr. D. Tarchi:	Satellite Monitoring of sea-based oil pollution – An introduction
17 Sat. Method.	Dr. D. Tarchi:	Methodologies for man-made oil spill detection
18 Sat. Signature	Dr. D. Tarchi:	Signature of oil spills from ship discharges
19 SAR Effects	Dr. O. Trieschmann:	Effects of natural sea phenomena in SAR images

- 20 Sat. Op. Aspect **Dr. O.Trieschmann:** Operational aspects of satellite monitoring
- 21 EGEMP **Dr. O.Trieschmann:** EGEMP
- 22 Long term mon. **Dr. D. Tarchi:** Long term monitoring of sea-based oil pollution
- 23 Evidence **Cdr. G. Ferraro:** Introduction to securing evidence on discharges from ships
- 24 Pract. Exp. **Mr. D. Mason:** Securing evidence on discharges from ships through remote sensing – U.K. / Bonn experience
- 25 AESOP **Dr. D. Tarchi; Cdr. G. Ferraro; Cdr. M. Mancini; Mr. M. Perkovic:** AESOP Project - Preliminary results
- 26 Initiatives **Dr. L. Khodjet El Khil:** Les initiatives du REMPEC pour réduire la pollution opérationnelle



Opening of the Seminar



Participants 1



Participants 2



Participants 3



Speakers during discussion



Participants and speakers at the end of the Seminar