OSCAR-MED

Co-ordinated Surveillance Operation in the Western Mediterranean Sea

REPORT

NOVEMBER 2009

I. Background

Following the adoption in 2002 of the Protocol concerning Co-operation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea ("Prevention and Emergency" Protocol), and in 2005 of the Regional Strategy for the Prevention of and Response to Marine Pollution from Ships (referred to as "the Strategy" hereunder), the involvement of the Centre in activities aimed at assisting the Contracting Parties in preventing and combating operational pollution from ships in the Mediterranean region significantly increased.

The Centre started carrying out several pilot projects in the field of monitoring and surveillance of illicit discharges from ships, focusing in particular on aerial and satellite observations. Among these, the projects AESOP (Aerial & Satellite surveillance of Operational Pollution), implemented in the Adriatic Sea in 2005-2006 and MARCOAST, carried out in 2007-2008 for Morocco, Algeria and Tunisia, highly contributed to enhance the knowledge and capabilities of the Mediterranean coastal States in relation to monitoring of sea based oil pollution and paved the way for the development of an operational service in the region.

Moreover, in line with the objectives of the Strategy, the Centre started to tackle some relevant judicial matters related to illicit discharges and the prosecution of offenders. In November 2007, REMPEC organized a regional seminar (MEDEXPOL 2007) aimed at disseminating information on the implementation and enforcement of legislation to all staff dealing with these issues as well as to legal experts, prosecutors and magistrates, with the final objective of improving the handling and processing of cases of illegal discharges before the courts. During the seminar several issues were discussed in detail, such as the international legal framework, the need to implement the MARPOL Convention, evidence gathering in case of violation, prosecution of offenders and regional cooperation. Regional cooperation, particularly in terms of surveillance and investigation, was fully recognized as a major need in order to combat operational pollution from ships in the Mediterranean. It was also duly noted that while in other regional seas (e.g. North Sea and Baltic Sea) a well advanced policy of co-operation is already in place and is regularly tested during large-scale surveillance operations, no such cooperation existed so far in the Mediterranean region.

Hence REMPEC launched the idea of carrying out, as a first attempt in the Mediterranean basin, a coordinated surveillance operation (OSCAR-MED *Opération de surveillance cordonnée aérienne des rejets en Méditerranée*) aimed at enhancing operational cooperation among the coastal States in preventing and combating operational pollution from ships. This initiative, which is also perfectly in line with specific objective 6 of the Strategy *("the Contracting Parties agreed to endeavour to establish, by 2010, sub-regional systems, including procedures to over-fly the waters under the jurisdiction of a neighbouring State if the Parties so agree, for surveillance of environmentally sensitive and/or high risk zones of the Mediterranean Sea")*, was first supported by REMPEC's 8th Focal Points Meeting (Malta, 7-11 May 2007) and later endorsed by the Contracting Parties to the Barcelona Convention during their 15th Ordinary Meeting, held in Almeria (Spain) from 14 to 18 January 2008.

II. The objectives

The main objectives of the OSCAR-MED operation may be summarized as follows:

- to improve operational cooperation in combating illicit discharges in the Mediterranean region;
- to perform a continuous monitoring (24hrs coverage) of ship source marine pollution;
- to exchange information on the pollution detected and on evidence gathering among the different countries;
- to catch the polluting ships red-handed and to develop rapid and effective follow up procedures in order to ensure the successful prosecution of offenders;
- to raise awareness among magistrates on the issue of illicit discharges from ships.

III. The preparatory phase

Being the first time that such an event was organized in the region and also in view of the size of the Mediterranean Sea, for practical reasons it was decided to limit the operation to the western part of the basin. The choice was made taking into account the following:

- Several sub-regional agreements on cooperation with dealing with pollution already exist in this part of the Mediterranean Sea, some of them dating back to a long period of time as RAMOGE, whereas others are more recent such as the Lion Plan or the sub-regional agreement signed between Algeria, Morocco and Tunisia. These agreements offered a pre-existing framework for cooperation to foster and develop;

- Some of the countries of this area already have dedicated means and trained personnel to carry out this kind of activities;
- Since 2004, this part of the Mediterranean Sea has also seen the start of an initiative in the field of defence. In the framework of the 5+5 initiative, the Ministers of Defence of the Western Mediterranean coastal States have already implemented actions which are relevant for the implementation of the 2002 Prevention and Emergency Protocol to the Barcelona Convention (SIMULEX anti pollution exercise in Morocco in 2006, anti pollution exercise in Algeria in 2007).

The Centre thus approached the countries of the western basin (France, Italy, Monaco, Spain, Algeria, Morocco and Tunisia) which replied positively to this initiative and confirmed their willingness to participate in the operation. However, Monaco and Tunisia informed immediately the Centre regarding the unavailability of surveillance means, whereas Morocco requested the Centre a specific training on aerial observation of oil at sea to be carried out prior to the operation. Unfortunately Morocco, initially willing to actively contribute to the operation, was not able to participate due to operational constraints. Surveillance aircrafts were rendered available by France, Italy and Spain. All the countries of the western basin had the opportunity, however, to participate in the operation as observers.

The first operational Meeting, aimed at discussing the modalities of the coordinated surveillance operation, was held in Paris in March 2009. Countries were called to consider a possible common airbase and survey zone as well as some tentative dates for the operation. With a view to save flight potential and to ensure a longer duration of the operation, France proposed an alternative pattern consisting of three areas to be patrolled by national means under a common coordination. Although this proposal would have facilitated several logistical aspects, as the aircrafts were meant to return to national bases after each mission, the general feeling was that a single airbase would have resulted in a better synergy.

Following a comprehensive discussion on the available aerial means and flight hours it was finally agreed that, as a first attempt, the operation should not have lasted more than three days.

With a view to ease the exchange of information on legal issues related to the possible pollution detected, the Centre also requested the countries to nominate a judicial focal point for the operation. It was duly noted that the operation could have represented a great opportunity for magistrates and prosecutors to become more familiar with the issue of illicit

discharges from ships and with the different kind of evidence that can be gathered. Furthermore, it was agreed that reporting officers of each participating country would have the possibility to board the different surveillance aircrafts.

With regards to the survey area, initially it was proposed to cover the sea area between Sardinia and the Baleares islands. Indeed, according also to the results achieved within the MARCOAST project, this zone appeared to be significantly threatened by illicit discharges. Nevertheless, due to the unavailability of airbases neither in Spain nor in Sardinia, it became necessary to readdress the operation towards another area of interest. Finally, it was agreed that the OSCAR-MED operation would have been carried out from the airbase of Hyéres (Toulon) and that France would have thus taken the lead of the operation.

In June 2009 a Meeting between REMPEC and the relevant French authorities was held in Paris in order to define both logistical and operational matters of OSCAR-MED. It was agreed that a Regional Coordinating Centre (RCC) would be set up in the airbase of Hyéres in order to provide assistance during the operation. Likewise, a National Coordinating Centre (NCC) would be arranged in each participating country with the task of ensuring that action is taken once a report of a pollution detected in their territorial waters is received. It was also decided that patrolling aircrafts would report directly to the NCC concerned who would then pass the relevant information to the RCC for statistical purposes.

IV. Logistical arrangements

The *Préfecture Maritime de la Méditerranée*, based in Toulon, was responsible for the organization and the logistical arrangements of OSCAR-MED in close cooperation with REMPEC.

For practical reasons, crews were accommodated at Hyéres airbase whereas the observers were accommodated at the *Cercle Naval Mirabeau* in Toulon.

Two rooms at the airbase were specifically dedicated to the OSCAR-MED operation.

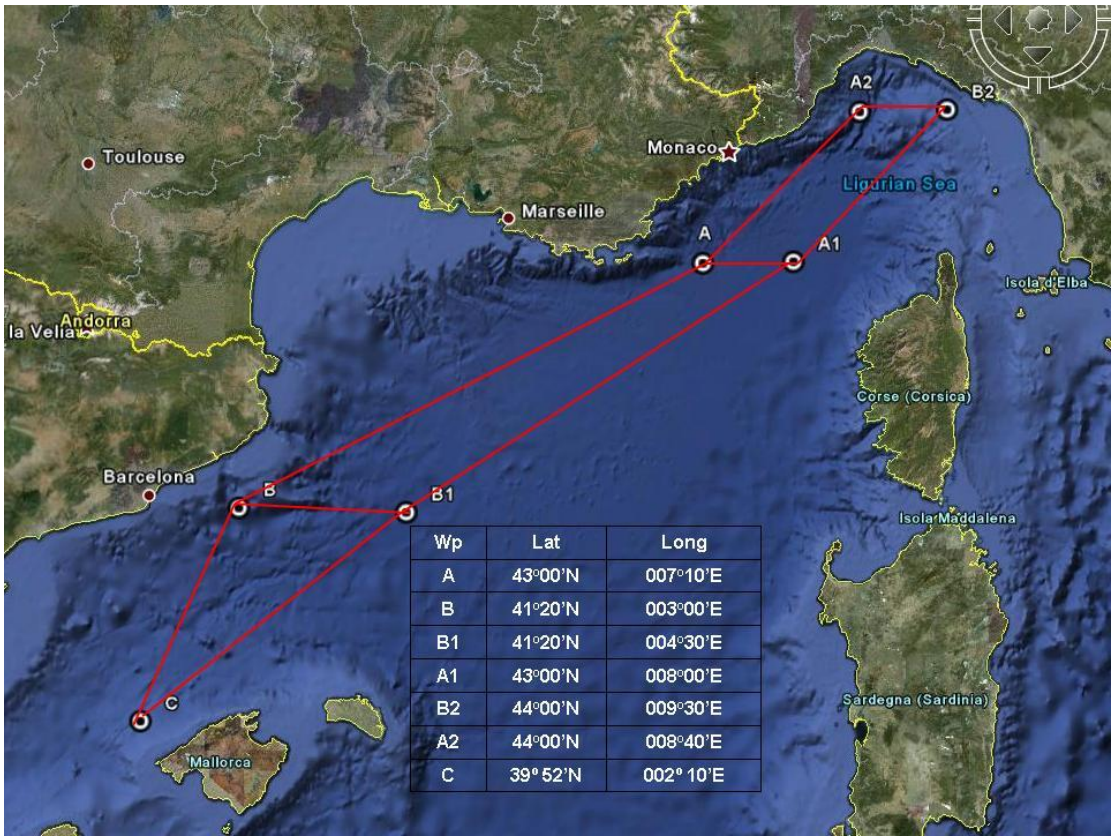
The crisis room, which was equipped with computers, internet connection and the required communication means, hosted the RCC. Observers were thus enabled to collect the relevant information concerning the pollution detected and to take action as appropriate.

The briefing room was dedicated to the general briefing and debriefing of the operation as well as to the briefings of the crews prior to the surveillance flights. Moreover, the room was

utilized by the observers to deliver some power point presentations focused on several issues related to illicit discharges from ships.

V. The Survey Area

Once Hyéres was confirmed as the common airbase for the OSCAR-MED operation, the participating countries were requested to agree upon a survey area. As the lead country, France circulated a proposal which was discussed and modified as appropriate by Italy and Spain. The choice was made taking into account that the axis Genoa-Barcelona represents one of the three main axes of commercial maritime traffic off the Western Mediterranean coasts and indeed a high number of oil spills are detected every year in this area by satellite and/or reported by POLREP messages. Participating countries concurred on the survey area reported in Fig.1.



Wp	Lat	Long
A	43°00'N	007°10'E
B	41°20'N	003°00'E
B1	41°20'N	004°30'E
A1	43°00'N	008°00'E
B2	44°00'N	009°30'E
A2	44°00'N	008°40'E
C	39° 52'N	002° 10'E

Fig. 1 The survey area of the OSCAR-MED operation

It was agreed that each aircraft involved in the operation would have followed the track A/B/B1/A1 (counter-clockwise). Points C, A2 and B2 were to be flown over only by those aircrafts having enough endurance.

VI. Aerial means and flights schedule

The following aerial means equipped with specific remote sensing devices[1] were rendered available during the OSCAR-MED operation:

Spain – one surveillance aircraft of SASEMAR (CN-235) fitted with SLAR, Scanner IR/UV/LFS, MWR, 360º radar, EO/IR turret, AIS receiver.

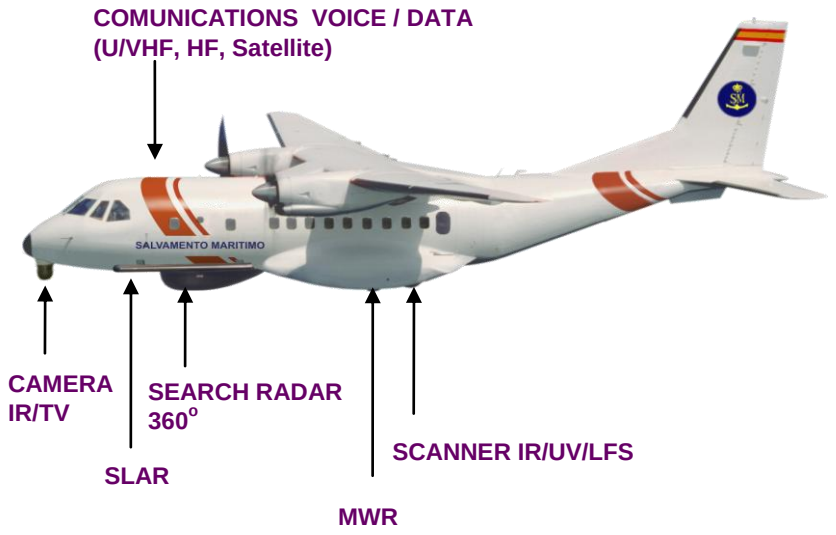


Fig. 2 The Spanish CN-235 aircraft

[1] **SLAR** – Side Looking Airborne Radar; **IR/UV/LFS** scanner – infrared/ultraviolet/laser fluorosensor line scanner; **MWR** – microwave radiometer; **EO/IR turret** – electro-optical infrared sensor; **EOST turret** – multisensors turret system; **AIS** – Automatic Identification System; **LLLTV** – low light level television.

France – two surveillance aircrafts of the French customs (F 406 POLMAR) fitted with SLAR, Scanner IR/UV, MWR, LLLTV, AIS receiver, SATCOM.

Fig. 3 Two images of the French F 406 POLMAR aircraft

Italy – one surveillance aircraft of the Italian Coast Guard (ATR 42) fitted with SLAR, EOST turret with IR, 360º radar, LLLTV.

Fig. 4 The ATR 42 of the Italian Coast Guard

Fig. 5 Operator working at the console of the aircraft

Flights were arranged according to the flight schedule reported in **Annex I**. The operation was started on Tuesday 13 October at 9 00 am local time and it was concluded on Thursday 15 October at 6 00 pm local time.

VII. Satellite images (the support of EMSA)

With a view to provide further support to the operation, following a request of REMPEC, the European Maritime Safety Agency (EMSA) agreed to render available through the CleanSeaNet (CSN) service the relevant satellite images related to the survey area which were analysed for oil spill detection.

Three satellite images for the period 13-15 October 2009 were ordered by EMSA. The relevant dates and times of acquisition (UTC) as well as the coverage of the images are reported in **Annex II.**

In order to benefit from the service provided by EMSA, REMPEC signed the "conditions of use for receiving the EMSA satellite based oil spill monitoring service". Hence the Centre was provided with a username and password in order to access the CSN browser and databank (for high resolution image download). A specific email address (cecmed.oscarmed@marine.defense.gouv.fr) was also created in order to enable the RCC to receive the relevant message alerts concerning a possible oil spill detected by satellite within the survey area.

VIII. Oil spill forecasting models (the support of MOON)

In the framework of the recently signed Agreement for cooperation between MOON (Mediterranean Operational Oceanography Network) and REMPEC and following the establishment of the virtual Emergency Response Office (ERO - a coordinating body for MOON Members to receive, evaluate and disseminate information), it was agreed that MOON would support the operation by providing drifting forecasts of the possible oil spills detected by satellite and/or the surveillance aircrafts.

Three MOON members provided 24 hrs support on site whereas other members, working remotely, provided additional available forecasting models for the area of interest through the ERO, which was activated for the first time during OSCAR-MED,

With a view to facilitate the surveillance flights and the monitoring activities, MOON also issued, on a daily basis, a meteo-oceanographic bulletin for the entire domain of the operation, providing the relevant information on surface currents, Sea Surface Temperature (SST), waves and wind at 10 m. Some examples are given in Fig. 6-9. A total of three bulletins were issued during OSCAR-MED.

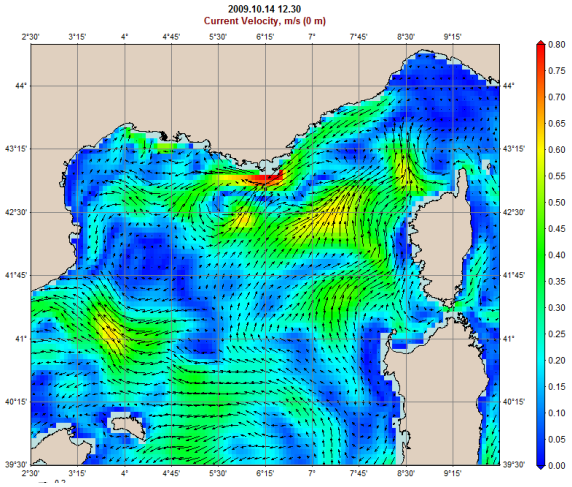


Fig. 6 MFS surface currents (m/s) 14/10/09 12:00 UTC

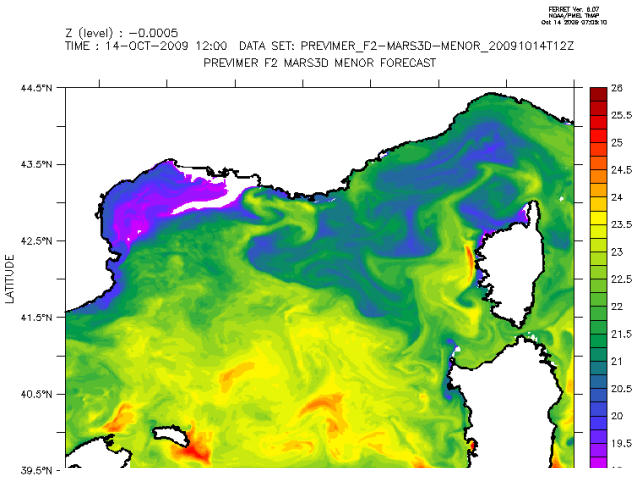


Fig. 7 PREVIMER Sea Surface Temperature (SST) 14/10/2009 12:00 UTC

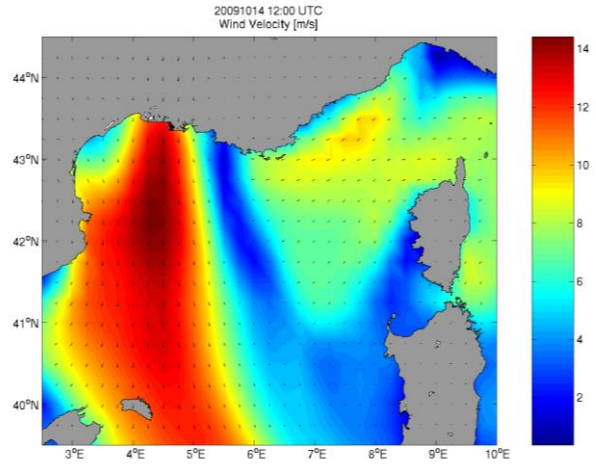


Fig. 8 ECMWF 10m wind speed (m/s) forecast for 14/10/2009 12:00 UTC

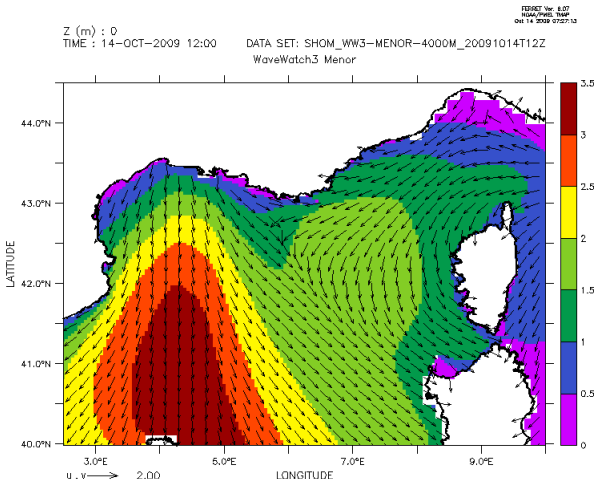


Fig. 9 PREVIMER significant wave heights 14/10/2009 12:00 UCT

IX. The participants

Aircrews and observers participated in the OSCAR-MED operation. A total of eight crews (four French, two Italian and two Spanish) ensured a proper turnover for the 24hrs coverage of the survey area. The full list of crewmembers is given in **Annex III**.

Observers from the western Mediterranean countries as well as representatives of other regional Agreements (Bonn Agreement, Helcom) and of the European Maritime Safety Agency were also invited. With a view to enable a fruitful exchange of knowledge and expertise, the Centre encouraged the relevant countries to designate observers coming from their respective national authorities in charge of issues related to illicit discharges from ships. The full list of observers who attended the operation is given in **Annex V**.

X. The OSCAR-MED operation (12-16 October 2009)

The OSCAR-MED operation took place between the 12 and 16 October 2009. The full programme is given in **Annex V.**

- The General Briefing

Monday 12 October was dedicated to the arrival of the surveillance aircrafts at Hyéres airbase and to the general briefing of the operation, which was held in the afternoon and attended by both crew members and observers.

The briefing was opened by CV Emmanuel Jeanteur, Commander of Hyéres airbase, who welcomed the participants and expressed his pleasure of hosting such an important event which entails synergy and joint efforts of different countries of the Mediterranean region.

Mr. Bruno Leroy, Head of Division *"action de l'Etat en mer"* of the *Préfecture Maritime de la Méditerranée*, welcomed the participants also on behalf of the Maritime Prefect highlighting the full involvement of the Prefecture in such an important initiative. He recalled that OSCAR MED represented the first coordinated surveillance operation being organized in the Mediterranean region to combat illicit discharges from ships and that he was looking forward to achieving very positive results.

Ms. Cristina Farchi, Programme Officer of REMPEC, gave a brief overview of the activities carried out so far by the Centre in the field of prevention of marine pollution from ships which paved the way for the organization of the OSCAR-MED operation. She highlighted the importance of regional cooperation in terms of surveillance and investigation for combating illicit discharges in the region and explained that the objectives of the operation are perfectly in line with the ones outlined within the Regional Strategy. She also stressed that REMPEC is looking forward for this kind of operations to be carried out in the Mediterranean on a regular basis.

Mr. Christian Cosse, marine pollution expert from the French Customs, gave a general presentation of the operation, providing some details on the aerial means involved, the survey area, the satellite images and the support provided by MOON. He also informed the Meeting on some side activities organized for the observers and on the possibility to participate in surveillance flights.

Before closing the Meeting, Ms. Carine Jançon from the *Préfecture Maritime de la Méditerranée* informed the participants on the relevant logistical arrangements.

The Meeting was followed by an operational briefing specifically dedicated to the crews which aimed at discussing some relevant technical details of the operation. Crews were also presented with a standard pollution reporting form to utilize during the operation which is reported in **Annex VI**.

- **Results**

The main outcomes of the OSCAR-MED operation are reported below.

It should be noted that in order to avoid any hindrance to the legal investigations currently taking place, the details of the ships which were caught red-handed while discharging illegally within the survey area have been intentionally omitted. For the purpose of this report, reference will thus be made to ships "X" and "Y".

Tuesday 13 October

Surveillance flights were commenced at 9:00am local time. Due to adverse weather conditions along the southwestern route towards Spain, patrolling flights were performed mainly within the eastern part of the survey area.

- The analysis of the first satellite image provided by EMSA (acquisition time 09:41:29 UTC) detected three oil spills with a low confidence level within the area of interest (see fig. 10). An alert message and the relevant oil report were received by the MRCC La Garde, who promptly alerted the aircraft patrolling the area, and by the RCC at the email address cecmed.oscarmed@marine.defense.gouv.fr. A copy of the report is given in **Annex VII.**
- The three oil spills detected by satellite were confirmed by the Spanish aircraft (9:45 – 13:45 UTC) as old spills (see fig. 10).
- MOON developed the forecast of the spills detected by satellite which indicated the drifting of the oil in the direction where several observations were made by aircraft. In a particular case, the results of the simulation suggested that the slick was moving in the correct direction but slower than what was effectively observed (see fig.11).

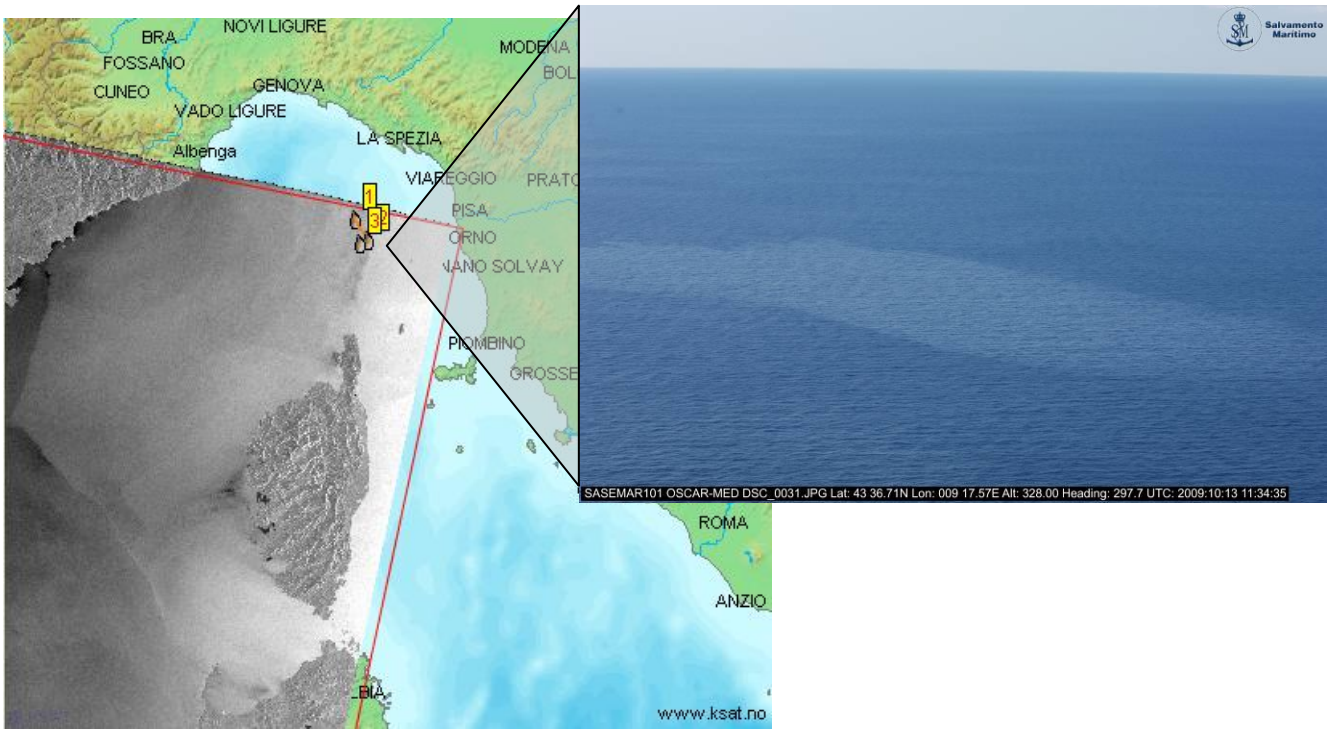


Fig. 10 Satellite image provided by EMSA reporting three oil spills close to the Italian coast. On the right, a picture taken from the surveillance aircraft confirming the slick detected by satellite.

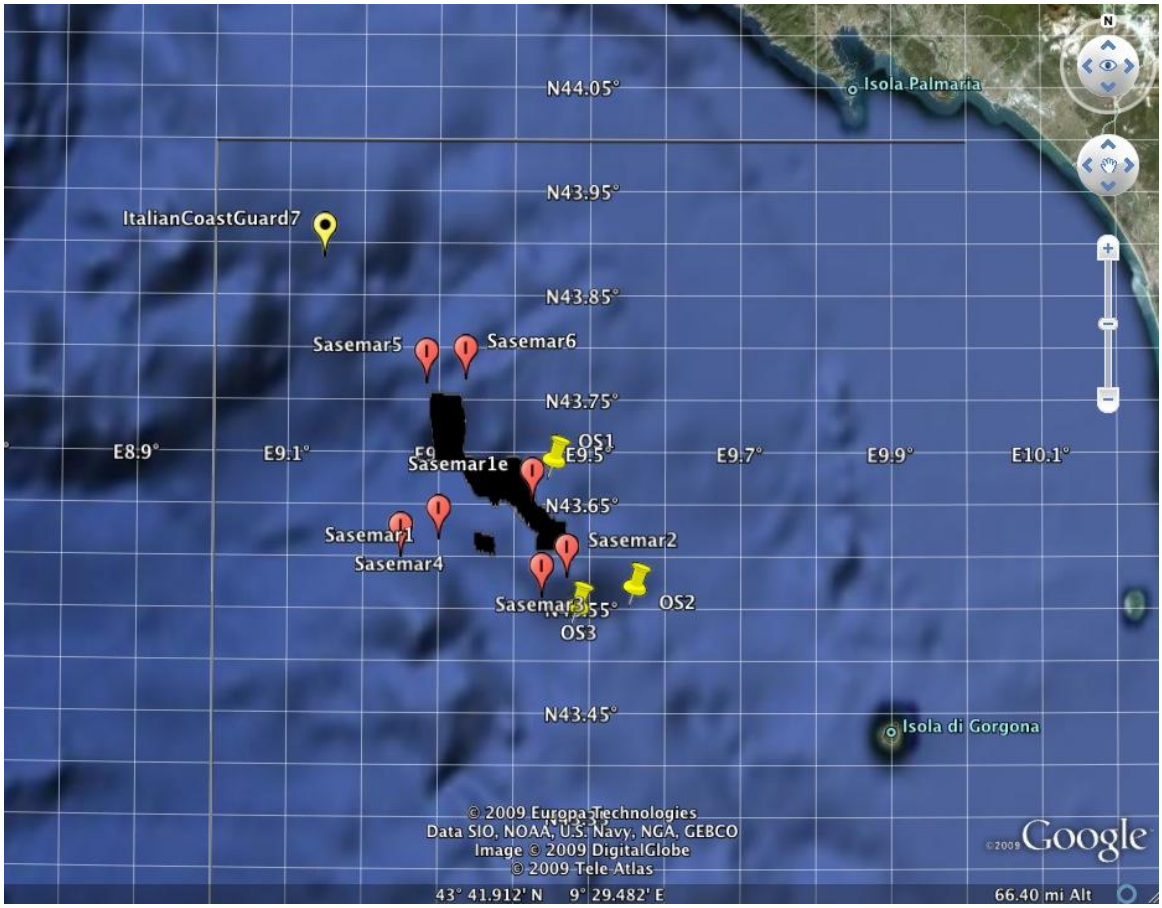


Fig. 11 Oil slicks identified by satellite (yellow), confirmed by aircraft (red) and the forecast developed by MOON (black slick). The yellow place marks OS1, OS2 and OS3 represent the central position of the 3 slicks detected by satellite at 9:41 UTC of 13 October 2009. The red place marks (Sasemar 1 to 6) represent the oil slicks observed by the Spanish aircraft around 12:00 UTC on 13 October 2009. These observations show a north-westward movement of the slicks. The yellow place mark named ItalianCoastGuard7 represents the observation of a slick at 3:00 UTC on 14 October. The black slick represents the forecast of OS1 at 3:00 UTC of 14 October developed by the MFS-PREVIMER system. The results of the simulation suggest that the slick is moving in the correct direction but slower than what is observed.

Wednesday 14 October

Due to persisting bad weather conditions, patrolling flights were still performed mainly within the eastern part of the survey area.

- The satellite image analysis (acquisition time 17:29:58 UTC) did not report the presence of possible oil spills.
- A passenger ship (ship “X”) was caught red-handed by the Spanish aircraft while discharging mineral oil at 8:10 UTC within the French Ecological Protection Zone

(EPZ). The ship had departed from Civitavecchia (Italy) and was directed towards Marseilles (France).

- In accordance with the national procedures of France, the French prosecutor was informed of the pollution detected and provided with the relevant evidence. The ship was stopped in Marseilles for further investigation.

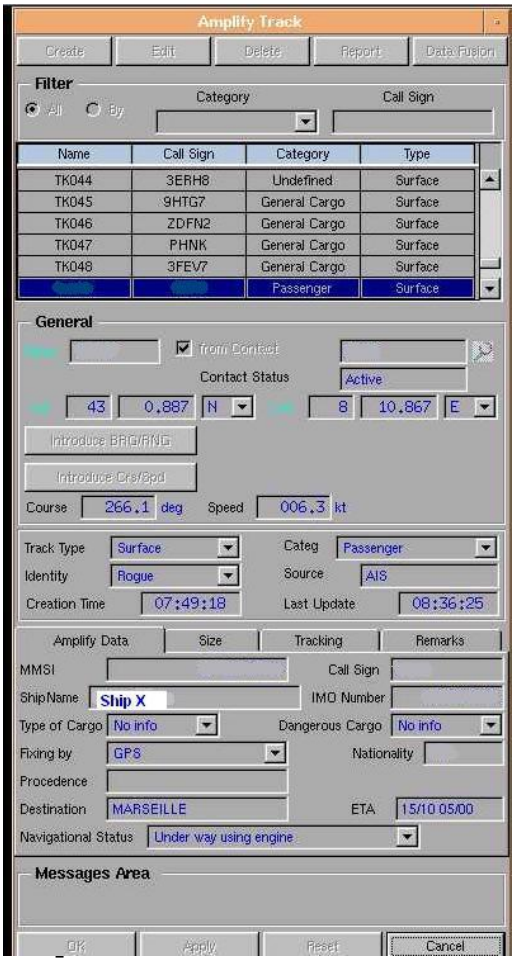


Fig. 12 AIS data related to ship “X”. Through AIS the aircraft is able to gain some relevant information concerning the suspected ship, such as: ship’s name, course, speed, nationality, IMO number, type of cargo and port of destination.

- A chemical tanker was detected by the Italian aircraft at 16:30 UTC while discharging vegetable oil for 18 km in international waters, 12.5 nm outside French territorial waters. The ship had departed from Genoa (Italy) and was heading for Barcelona (Spain). As the operation focused solely on MARPOL infringements, the case was not further investigated. Nevertheless a Port State Control was requested in the following port of call of the ship.

Fig. 13 Two pictures taken from the aircraft showing the chemical tanker discharging vegetable oil.

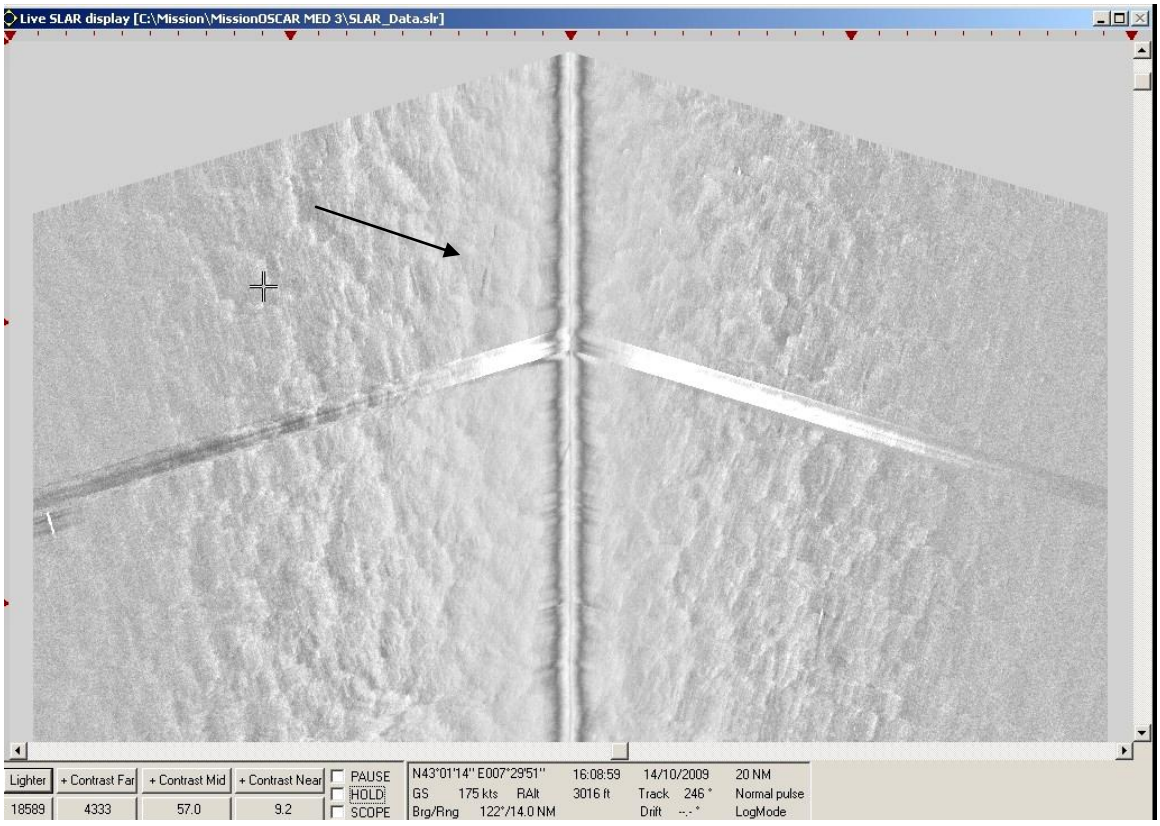


Fig. 14 Oil spill signature of the chemical tanker detected on the SLAR image.

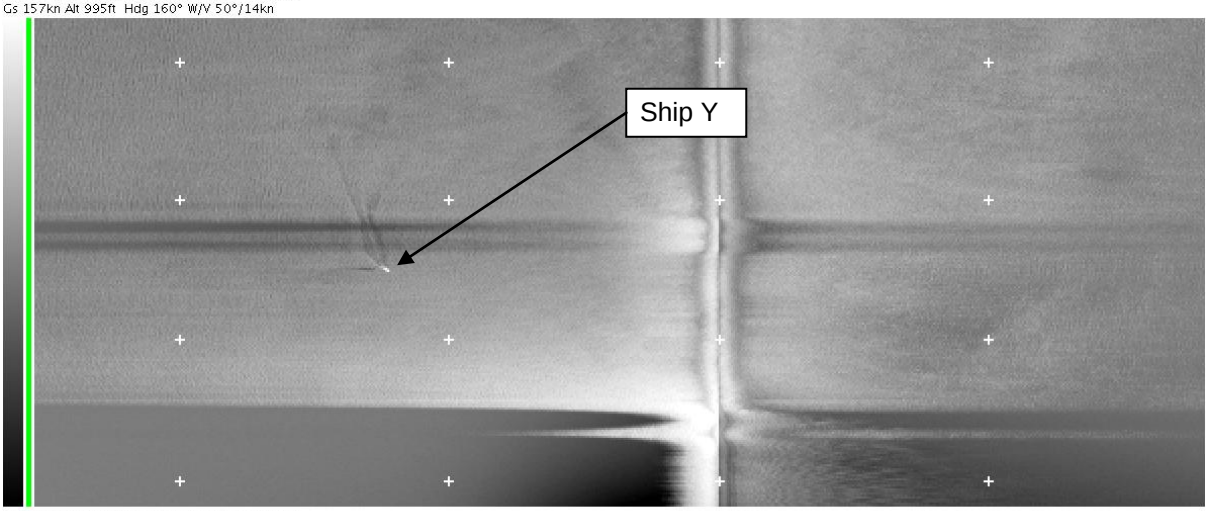
Thursday 15 October

- A passenger ship (ship “Y”) was caught red-handed by the Spanish aircraft while discharging mineral oil at 4:15 UTC within the French EPZ. Three oil slicks were detected and confirmed by the SLAR and IR sensors (see Fig. 15 and 16). The ship, which was sailing towards Marseilles (France), was stopped in its port of destination for further investigation.
- The satellite image analysis (acquisition time 05:42:22 UTC) did not report the presence of possible oil spills.

The operation was concluded at 18:00 local time.

Sensor: SLAR (Grid: 5000, Geopos: off, Geotarget: off, Zoom: 2)
LUT Range: 0 - 65535
Mission: SM-101200910151 2009-10-15 02:38:22.0 ACFT: EC-KEK
Op: JUAN PEÑA Op2: MAR ALBERT
Time: 04:55:22 Lat: N 41°44.5' Lon: E 006°17.8'
Gs 167kn Alt 965ft Hdg 152° W/V 0°/0kn

Time: 04:51:41 Lat: N 41°53.2' Lon: E 006°12.0'
Gs 175kn Alt 963ft Hdg 153° W/V 13°/12kn
Sensor: SLAR (Grid: 5000, Geopos: on, Geotarget: off, Zoom: 2)
LUT Range: 10570 - 55317
Mission: SM-101200910151 2009-10-15 02:38:22.0 ACFT: EC-KEK
Op: JUAN PEÑA Op2: MAR ALBERT
Time: 05:20:10 Lat: N 41°57.9' Lon: E 006°04.4'
Gs 157kn Alt 995ft Hdg 160° W/V 50°/14kn



Time: 05:16:36 Lat: N 42°06.2' Lon: E 006°05.2'
Gs 152kn Alt 986ft Hdg 312° W/V 35°/14kn

Fig. 15 SLAR images showing ship “Y” while discharging mineral oil. The ship is clearly visible as a white spot.

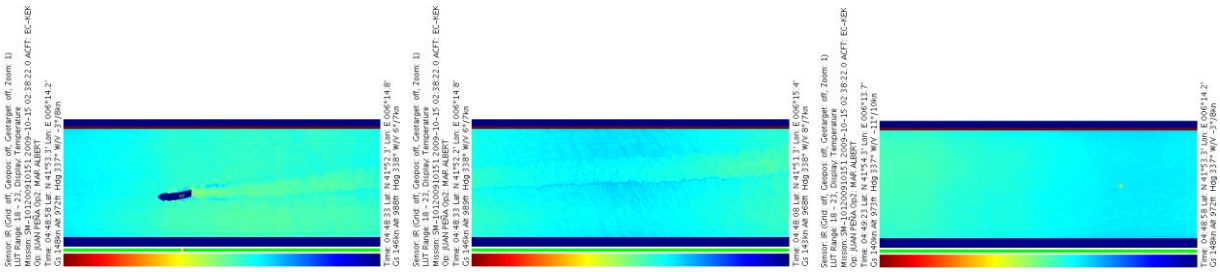


Fig. 16 IR image of ship “Y” while polluting the sea.

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- **Side activities for the observers**

As mentioned earlier in the report, observers were given the opportunity to follow the operation from the crisis room and to participate in the surveillance flights. Short briefings were organized each morning of the operation in order to update the observers/experts on the latest developments and on any pollution eventually detected during the night.

With a view to enhance the exchange of knowledge and expertise, a series of power point presentations focusing on various aspects related to illicit discharges from ships were also delivered. The first two days were mainly dedicated to technical aspects related to aerial observation, satellite surveillance and oil spill modelling while the last day was focused on legal issues and on the procedures adopted in the different countries with regards to MARPOL offenders.

Tuesday 13 October

Mr. Christian Cosse, marine pollution expert from the French Customs, delivered a presentation on aerial surveillance of oil at sea. He provided a general overview of the added value of aerial surveillance for both accidental and operational pollution at sea and described the main instruments that a surveillance aircraft is equipped with for the detection of oil. He then showed a comprehensive series of pictures of oil at sea taken from the aircraft, highlighting the difficulties which can occur in identifying the pollution and emphasizing on the need of specific training for the personnel in charge of pollution reporting.

Mr. Giovanni Coppini, from INGV, presented the MOON oil spill detection and forecasting system. He gave a brief description of MOON, highlighting its main duties and objectives, and described the work carried out by the Network in the field of oil spill modeling. He also presented the activities carried out in collaboration with REMPEC in the last few years which paved the way for the development of the recently signed Agreement for cooperation between MOON and REMPEC.

Mr. Pierre Garreau from IFREMER presented the French coastal operational forecasting system – PREVIMER. He stated that PREVIMER represents the French partner of MOON and provides observation data, modeling tools and real time forecasts. He further explained that the system provides synoptic observations and 48 hour to 6 day forecasts for the French marine coastal areas for the following parameters: direction and intensity of currents, sea-surface and bottom temperature, sea level, waves' frequency, direction and height, salinity, nutrients and phytoplankton concentration and water quality. He highlighted that all the relevant information is available on the web and that the system should be able to become fully operational in the near future.

Fig. 17 Observers attending the presentations on illicit discharges in the briefing room (Hyéres airbase)

Wednesday 14 October

Mr. Francois Parthiot, representative of CEDRE for the Mediterranean, delivered a presentation on satellite radar surveillance of oily waters discharges. He highlighted the added value of integrating aerial observations with satellite surveillance, particularly in

consideration of the capacity of satellites to survey very large zones. He also pointed out that since a higher number of satellites have become operational, surveillance of the Mediterranean area is currently more frequent and efficient. He provided several examples of satellite images with detected oil spills and showed how radar information combined with infrared, AIS and LLLTV may represent relevant evidence which may be used for prosecution of MARPOL offenders. Finally, he briefly described the results of the SuperCEPCO operation which was carried out from the airbase of Aalborg, Denmark, in April 2008 involving several countries of the Bonn Agreement area which rendered available a surveillance aircraft for a period up to 10 days.

Mr. Giovanni Coppini, from INGV, gave then a brief presentation on the Italian PRIMI project, which was carried out in summer 2009 on board of a scientific research vessel in the Sicily channel. He explained that the project achieved some interesting results as it enabled to groundtruth several satellite oil spill detections and to verify the oil spill forecasting models developed in relation to the detected spills. He also mentioned that some drifting buoys were deployed on the oil slicks in order to verify and further improve the reliability of the models.

In the afternoon, a visit to the MRCC (CROSS) La Garde was organized for all observers. A representative of the MRCC gave a brief presentation on the organization and mission of the MRCC focusing on its duties in relation to oil pollution at sea. Observers had then the opportunity to visit the facilities of the MRCC, in particular the operational room.

Thursday 15 October

Ms. Debora Ferioli, from the Italian Coast Guard, presented the Italian situation with regards to the legal instruments and law enforcement in marine pollution. She gave an overview of the duties and responsibilities of the Italian Coast Guard in relation to marine pollution from ships and of the follow up procedures which are developed in case of illicit discharges, highlighting the different procedures adopted in case the polluting ship is navigating in internal waters, territorial waters, international straits, EEZ or high sea. Finally, she reported several cases where possible polluting ships were identified through the CleanSeaNet service, describing the actions taken by the Italian Coast Guard (PSC inspections) and the results achieved.

Mr. Alejandro Iglesias, from the Direction General of Merchant Marine, presented the Spanish sanctioning procedure in relation to maritime pollution. He explained that in case a polluting ship in route towards a Spanish port is identified by Spanish aerial means, an investigation is carried out and most likely a sanctioning procedure is opened. The Maritime Administration is entitled to impose sanctions on marine pollution offenders which can sum up to €3.000.000 according to the seriousness of the infraction. Mr. Iglesias gave also an overview of the preventive actions against marine pollution taken by the Spanish administration and provided some examples of sanctions which can be imposed as a consequence for the non fulfillment of obligations set by international regulations.

Mr. Francois Parthiot, representative of CEDRE for the Mediterranean, presented the legal actions in France in relation to marine pollution from ships. He mentioned that following the ERIKA and PRESTIGE accidents many changes have occurred in the French legal system in order to strengthen the law against marine pollution. Three specialized courts have been created (Brest, Marseilles and Cherbourg), possible fines have been reinforced and governmental instructions have been modified in order to achieve increased repression and deterrence. An improved coordination has also been established between prosecutors, *Préfets Maritimes* (or the MRCC) and pollution reporting officers, which often leads to the development of Port State Control and judicial inspection for suspected ships. He also informed the participants that the French prosecutor alone is able to decide whether the evidence collected is sufficient to reroute the ship to a port for further investigation. Mr. Parthiot concluded his presentation by stressing the need of harmonisation of practices at the international level in order to avoid the displacement of illicit discharges to other areas

==========

- The general debriefing

In the morning of Friday 16 October a general debriefing of the OSCAR-MED operation was organized at Hyéres airbase with the participation of both crew members and observers. The scope of the Meeting was to discuss the main results, challenges and lessons learnt with a view to improve the organization of future similar activities. Both technical and logistical aspects were tackled.

Mr. Frederic Hebert, Director of REMPEC, opened the debriefing by congratulating all crew members for the hard work carried out during the three day operation and expressed his satisfaction for the positive results achieved. He also recalled that the OSCAR-MED operation represented a unique challenge for the Mediterranean region and that he was looking forward for other similar initiatives to follow soon.

Fig. 18 Participants attending the general debriefing of OSCAR-MED

Mr. Cosse briefly reported the main outcomes of the operation as follows:

- three satellite images delivered by EMSA, the first one reporting 3 oil slicks that were confirmed by aircraft;
- three ships caught red-handed. Two of them while discharging mineral oil within the French EPZ, the third one while discharging vegetable oil close to French territorial waters (see fig. 19);
- two cases of judicial follow up. In one case the ship's detection occurred during the night;
- valuable support provided by MOON in terms of daily meteo oceanographic bulletins and oil spill drifting forecasts. The MOON Network provided both on site and remote support through the activation of the ERO that was first tested during OSCAR-MED;
- four surveillance flights cancelled. Three of them (one French, one Italian and one Spanish) were cancelled for technical reasons whereas one flight of the Spanish aircraft was cancelled due to a major military operation taking place in the vicinity of Hyéres;
- Fruitful exchanges with observers who participated in the surveillance flights with the Italian and Spanish aircrafts. Due to operational constraints, observers were not allowed on board the French aircraft.

Fig. 19 The three ships detected by the surveillance aircrafts while discharging within the French EPZ

Mr. Giovanni Coppini, from INGV, briefly presented the contribution of the ERO to the OSCAR-MED operation, highlighting the usefulness of this kind of activities for understanding and improving some weaknesses related to the ERO procedures and to the products delivered. He mentioned the need to further improve the oil spill forecasting systems by using and testing them together with users in other joint surveillance and validation operations.

Time was then left for the participants to discuss the main problems encountered during the operation as well as some possible improvements to consider in future similar operations.

The following recommendations were highlighted:

- several delegations concurred on the **need to nominate a liaison officer, for each participating country, who would be in charge of operational and technical matters.** It was recognized that a liaison officer would allow a better coordination with crew members and facilitate the exchange of communication with the airbase;

- some pilots reported a number of **difficulties experienced with the air control.** It was noted that many problems might have occurred due to a military operation taking place during the same days in the vicinity of Hyéres. The Meeting agreed that in future operations it should be duly verified that no other activities interfere with the surveillance flights;
- some participants pointed out the added value of the power point presentations delivered during the operation and expressed the wish that in future similar activities observers may have a period of time dedicated to surveillance flights and another one for lectures and discussions.

Finally, the Director of REMPEC thanked France and particularly the airbase of Hyéres for having hosted the operation as well as the *Préfecture Maritime de la Méditerranée* for the valuable support provided in the organization of the event. The Meeting was closed on Friday 16 October at 11 am.

A press conference followed which was attended by representatives of the *Agence France Presse* and some other newspapers.

XI. Discussion and Conclusions

The OSCAR-MED operation has fully demonstrated the significant steps forward which have been made in the field of aerial surveillance and satellite monitoring of sea based oil pollution in the Mediterranean region. Although it was the first time for such an event to take place in the basin, the operational capability of a near real time satellite monitoring service, its effectiveness in facilitating aerial observations, the up to date technology utilized for aerial surveillance and the successful collaboration among neighbouring countries were clearly proved.

The detection of three polluting ships in three days also confirms the Mediterranean as an area at major risk of operational pollution and that further action needs to be taken in order to prevent such offences. Regional cooperation has demonstrated to play a crucial role in combating illicit discharges from ships, representing a major asset for both the detection of oil at sea and the prosecution of offenders. As mentioned in the Regional strategy, the Contracting Parties agreed to endeavour to share collected data and to facilitate acceptance of the evidence gathered by other States as well as to adopt common rules and harmonise sanctions with a view to ensure even-handed treatment of discharge offenders throughout

the Mediterranean region. With a view to achieve these objectives, it is strongly recommended to continue carrying out joint surveillance operations on a regular basis.

Future operations could certainly benefit from this first experience in the region, taking into account the problems occurred and the consequent lessons learnt on both operational and logistical matters. In order to avoid complex logistical arrangements, neighbouring countries should consider the idea of carrying out surveillance flights over different areas under a common coordination, as it was initially proposed by France.

It should also be noted that further operations could serve to fine-tune the collaborations initiated within OSCAR-MED. Indeed the MOON Network should continue to be involved in this kind of initiatives in order to better fulfil the users' requirements and to improve its operational capacity.

Finally, the Centre is willing to encourage similar initiatives also in other areas of the Mediterranean affected by operational pollution from ships, assisting those countries which require specific technical support with the relevant expertise and training. In this regard, a technical training organized by REMPEC and addressed to crewmembers of surveillance aircrafts is planned to take place in Morocco in December 2009 with the support of CEDRE (Centre de Documentation, de Recherche et d'Expérimentations sur les pollutions accidentelles des eaux).

ANNEX I

OSCAR-MED flight schedule

Area: Lion gulf-Provence-Genoa Gulf

Dates: Wednesday, 13 October to Thursday, 15 October

Operation flights from 2009/10/13 at 0700 UTC to 2009/10/15 at 1600 UTC

Order of flights:

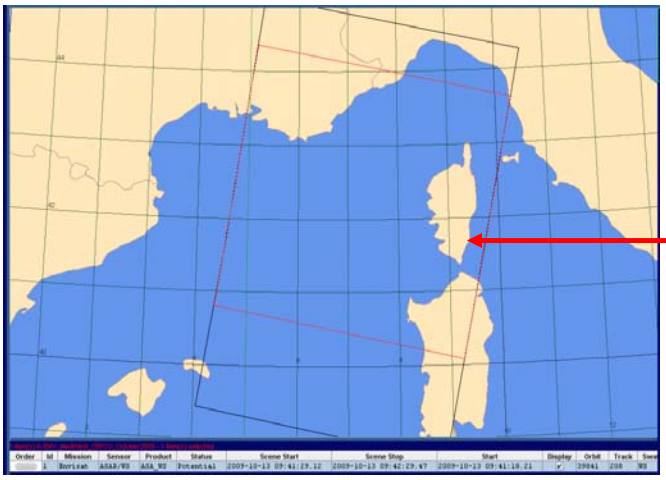
Date 13th	Time Period (UTC)		Participant
	07:00	10:00	FR
	09:45	13:45	SP
	13:30	17:30	IT
	17:15	20:15	FR
	20:00	00:00	SP
14th			
	23:45	03:45	IT
	03:30	06:30	FR
	06:15	10:15	SP
	10:00	13:00	FR
	12:45	16:45	IT
	16:30	20:30	SP
	20:15	23:15	FR
15th			
	23:00	03:00	IT
	02:45	06:45	SP
	06:30	09:30	FR
	09:15	13:15	IT
	13:00	16:00	FR

FLIGHT HOURS

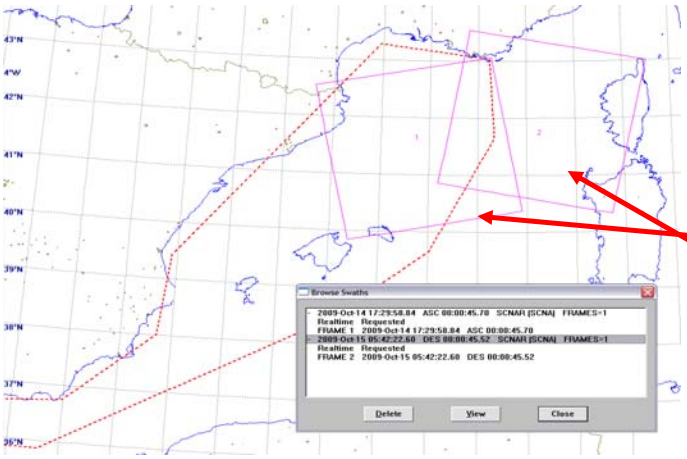
FR	21
SP	20
IT	20

ANNEX II

Satellite images provided by EMSA



ENV 13/10/2009 09:41:29



1 - RS-1 14/10/2009 17:29:58
2 - RS-1 15/10/2009 05:42:22

ANNEX III

List of Crewmembers

ITALIAN CREW

TV (CP) Pil	GIACOMO	PACCI
TV (CP) Pil	MASSIMILIANO	BRUNO
STV (CP) Pil	GIUSEPPE	BIASCO
STV (CP) Pil	SAVERIO	COCO
STV (CP) Pil	DANILO	DI PIETRO
GM (CP) Pil	IACOPO	TACCHINO
C° 1ª Np/Taer	SANDRO	DE MARCO
C° 1ª Np/Taer	GRAZIANO	OLIVA
2° C° Np/Taer	FRANCESCO	BOCCUNI
2° C° Np/Saer	VINCENZO	GAMBONE
SC. 2ª Np/Ov	DIEGO	LUCARINI
SC. 2ª Np/Ov	DAVIDE	GENOVESE
SC. 3ª Np/Ov	ALFIO	PANEBIANCO
SC. 3ª Np/Ov	GIANCARLO	LILLO

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PILOTOS/COPILOTOS	ANTONIO	BAZAN BEJAR
	PEDRO	CABALLERO RUFO
	JUAN	GIL ALBESA
	EDUARDO	GUZMAN MALDONADO
OPERADORES/AS	MARIA DEL MAR	ALBERT CASTELLÓ
	PAU	ONTIVEROS GUITART
	JUAN FRANCISCO	PEÑA IBAÑEZ
	ISABELA	GOMEZ LUNA
TAV,s	JESUS RAFAEL	ESPINA ORDOÑEZ
	JOSE LUIS	SANCHEZ CALDERON
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CP	PASCAL	LABADIE
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C1	RAYMOND	HERNANDEZ
CP	REGIS	BOULANT
CP	CHRISTIAN	BELLEC
CP	YVES	GILBERT
C2	ERIC	FLASSEUR
CP	JEAN	AUBRY
CP	JEAN CLAUDE	BAFFOGNE
CP	JOEL	CHATAIGNER
CP	PATRICK	BIGUET MERMET

CP = contrôleur principal
C1 = contrôleur de 1ere classe
C2 = contrôleur de 2eme classe

ANNEX IV

List of participants

FRANCE / *FRANCE*

M. Christian COSSE
Expert pollution maritime,
DGDDI Bureau B2, 11
Rue des 2 communes
93558 Montreuil Cedex,

Tel No: +33 (1) 57 53 46 66
Portable: +33 (6) 64 54 71 61
E-mail: **christian.cosse@douane.finances.gouv.fr**

ITALY / *ITALIE*

C.V. (CP) Giovanni GALATOLO
Project Co-ordinator, Head of ITCG,
Centrale Operativa per le Emergenze in Mare - Italian M.R.C.C.
Viale dell'Arte 16,
00144 Rome,

Tel No: +39 (06) 59 08 47 08
Mobile: +39 (33) 16 712 979
Fax No: +39 (06) 590 834 26
E-mail: **giovanni.galatolo@trasporti.gov.it**
giovanni.galatolo@mit.gov.it

C.F. (CP) Vittorio PAGOTTO
Centrale Operativa per le Emergenze in Mare - Italian M.R.C.C.
Viale dell'Arte 16,
00144 Rome

Tel No: +39 (06) 59 08 47 08
Fax No: +39 (06) 590 834 26
Email: **vittorio.pagotto@mit.gov.it**

S.T.V. (CP) Debora FERIOLI
Centrale Operativa per le Emergenze in Mare - Italian M.R.C.C.
Viale dell'Arte 16,
00144 Rome

Tel No: +39 (06) 59 08 47 08
Fax No: +39 (06) 590 834 26
Email: **debora.ferioli@mit.gov.it**

MONACO/*MONACO*

M. Pierre BOUCHET
Adjoint Directeur des affaires maritimes
Direction des affaires maritimes
Département de l'équipement, de l'environnement et de l'urbanisme
Quai Jean Charles Rey
B.P. 468
MC-98012 Monaco Cedex

Tel No: +377 (-) 98 98 22 80
Portable +377 (06) 07 93 17 99
Fax No: +377 (-) 98 98 22 81
E-mail: **pbouchet@gouv.mc**

SPAIN / *ESPAGNE*

Mr. Antonio VILLAR MUNOZ
Dirección General de la Marina Mercante
Ministero de Fomento
C/Ruiz de Alarcon, 1
28071 Madrid

Tel No: +34 (91) 597 9147
Fax No:++34 (91) 597 92 97
E-mail: **avillarm@fomento.es**

Mr. Alejandro IGLESIAS MARQUES
Dirección General de la Marina Mercante
Ministero de Fomento
C/Ruiz de Alarcon, 1
28071 Madrid

Tel No: +34 (91) 597 90 70
Fax No:++34 (91) 597 92 07
E-mail: **aimarques@fomento.es**

Mr. Sergio Rodriguez CARBONELL
Head of Marine Environment Protection
Spanish Maritime Safety Agency (SASEMAR)
Operations Directorate
Fruela 3
28011 Madrid

Tel No: +34 (91) 755 91 00 (direct)
Fax No:+34 (91) 755 97 09
E-mail: **sergiorc@sasemar.es**

Mr. Nestor PERALES
Spanish Maritime Safety Agency (SASEMAR)
Operations Directorate
Fruela 3
28011 Madrid

Tel No: +34 (91) 755 91 00
Fax No:+34 (91) 755 97 09
E-mail: **nestorpg@sasemar.es**

TUNISIA / *TUNISIE*

M. Moncef FREJ
Directeur de la flotte et de la navigation maritime
Ministère du Transport
Direction Générale de la Marine Marchande
Rue 7 Novembre près de l'aéroport Tunis
Carthage -Tunis 2035

Tel No: +216 (71) 77 21 10 / +216 (71) 20 83 75
Portable: +216 98 90 20 13
Fax No: +216 (71) 806 419
E-mail: **monceffrey@yahoo.fr**

MOON

Mr. Giovanni COPPINI
Istituto Nazionale di Geofisica e Vulcanologia (INGV)
Via Aldo Moro 44,
40127 Bologna

Tel No: +39 (051) 378 26 41
Mobile:+39 347 770 28 66
Email: **coppini@bo.ingv.it**

Ms. Micol FERRETTO
Istituto Nazionale di Geofisica e Vulcanologia (INGV)
Via Aldo Moro 44,
40127 Bologna

Tel No: +39 (051)378 26 48
Mob. No: +39 347 81 28 471
Email: **m.ferretto@sincem.unibo.it**

M. Pierre GARREAU
Ifremer
Technopôle de Brest-Iroise
BP 70
29280 Plouzané

Tel No: +33 (0)2 98 22 40 40
Fax:No:
Email: **Pierre.Garreau@ifremer.fr**

CEDRE

M. François PARTHIOT
CEDRE/Délégué pour la Méditerranée
C/O Centre IFREMER de Toulon
Zone portuaire de Bregaillon
83507 La Seyne sur Mer - Cedex
FRANCE

Tel No: +33(4) 94 30 48 87 / 49 93
Fax No: +33 (4) 94 30 44 15
E-mail: **Francois.Parthiot@cedre.fr**

ORGANIZERS

PREFECTURE MARITIME DE LA MEDITERRANEE

Mr. Jean-Lup VELUT
Commissaire Général de la Marine
Email: **jean-loup.velut@premar-mediterranee.gouv.fr**

Mr. Bruno LEROY
Chef de la division «action de l'Etat en mer»
Email: **bruno.leroy@premar-mediterranee.gouv.fr**

Ms. Carine JANÇON
Commissaire de première classe de la marine
Pôle gestion des risques - Bureau sécurité maritime
Email: **carine.jancon@premar-mediterranee.gouv.fr**

Préfecture Maritime de la Méditerranée
Division de l'Action de l'Etat en Mer
BP 921
83 800 Toulon Armées
FRANCE

Tél.: +33 (4) 94.02.03.72
Fax: +33 (4) 94.02.13.63

CENTRE RÉGIONAL OPÉRATIONNEL DE SURVEILLANCE ET DE SAUVETAGE POUR LA MÉDITERRANÉE CROSS MED LA GARDE

Mr. Daniel DEJARDIN
Directeur du CROSS MED La Garde

Mr. Christian BEAUVAL
Chef du Service « Opérations et surveillances

Ms. Mirelle LASSERRE
Chef du Pole «Police en mer

Centre Régional opérationnel de surveillance et de
sauvetage en méditerranée
Fort Sainte Marguerite
B.P. 69
83953 LA GARDE Cedex
FRANCE

Email: **cross-la-garde@equipement.gouv.fr**

REGIONAL MARINE POLLUTION EMERGENCY RESPONSE CENTRE FOR THE MEDITERRANEAN SEA (REMPEC)/ ***CENTRE REGIONAL MEDITERRANEEN POUR L'INTERVENTION D'URGENCE CONTRE LA POLLUTION MARINE ACCIDENTELLE (REMPEC)***

Mr. Frederic HEBERT
Director
E-mail: **fhebert@rempec.org**

Ms. Cristina FARCHI
Programme Officer
E-mail: **cfarchi@rempec.org**

REMPEC
Maritime House
Lascaris Wharf
Valletta VLT 1921
MALTA

Tel No: +356 21 33 72 96/7/8
Fax No +356 21 33 99 51
E-mail: **rempec@rempec.org**
Web: **www.rempec.org**

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ANNEX V

Programme

Coordinated Surveillance Operation in the Western Mediterranean
(OSCAR – MED) Toulon, 12-16 October 2009

organized by REMPEC in close cooperation with
the national competent authority of France

with the support of

EMSA CleanSeaNet Service
and of
the Mediterranean Operational Oceanography Network (MOON)

Monday, 12 October.

- Morning: arrival of surveillance aircrafts at the airbase of Hyères.
- 3:00 pm: pick up of observers from the Cercle Mirabeau in Toulon
- 4:00 pm: welcome of observers and crewmembers and general briefing of the coordinated surveillance operation (OSCAR-MED) – *Briefing room (room n. 031, 1st floor building Babot), Hyéres airbase*
- 5:00 pm: transfer for observers to the Cercle Mirabeau and operational briefing for crewmembers – *Briefing room (room n. 031, 1st floor building Babot), Hyéres airbase*

Between Tuesday 13 and Thursday 15 October.

- 9:00 am pick up of observers from the Cercle Mirabeau in Toulon
- 9:45 am operation briefing – *Crisis room (room n. 225, 2nd floor building Babot), Hyéres airbase*

The Crisis room will be at the disposal of observers and national liaison officers in order to gather information and reports from the National Coordination Centres (NCC) and from the aerial means involved in the operation. Representatives from the Mediterranean Operational Oceanography Network (MOON) will support the operation (24h) from both the crisis room and remotely by providing oil spill drifting forecasts of the slicks detected by satellite and/or by the surveillance aircrafts.

Presentations – *Briefing room (room n. 031, 1st floor building Babot), Hyéres airbase*

Presentations will be delivered according to the following schedule (changes may occur in the timetable according to operational needs):

Tuesday 13 October

Morning

11:00 Aerial observation for the detection of oil at sea, Mr. Christian Cosse, French Customs

12:00 – 1:30 Lunch

Afternoon

2:30 MOON oil spill detection and forecasting system, Mr. Giovanni Coppini, INGV
3:30 Previmer ocean forecasting system, Mr. Pierre Garreau, IFREMER

Wednesday 14 October

Morning

10:00 Satellite surveillance of oily discharges, Mr. Francois Parthiot, CEDRE
11:00 The Italian PRIMI Project – oil spill detection and forecasting system, Mr. Giovanni Coppini, INGV

12:00 – 1:30 Lunch

Thursday 15 October

Morning

10:00 Legal actions in France concerning illicit discharges from ships, M. Jean-Luc Blachon, Substitut du Procureur de la République Près le Tribunal du Grande Instance de Marseille
11:00 The Spanish sanctioning procedure in relation to maritime pollution, Mr. Alejandro Marques Iglesias, Dirección General de la Marina Mercante

12:00 – 1:30 Lunch

Afternoon

2:30 Legal instruments and law enforcement in marine pollution (Italy), CF Vittorio Pagotto/STV Debora Ferioli, Italian Coast Guard.

On **Wednesday 14th of October** a visit of the French MRCC La Garde is organized for all observers at 2:00 pm. Presentation of the missions of the MRCC in relation to pollution surveillance. Transfers from Hyéres airbase to the MRCC La Garde in Toulon are scheduled at **1:30 pm**. After the visit, observers will be driven back to the Cercle Mirabeau.

On Tuesday 13 October and Thursday 15 October departure from the airbase to Cercle Mirabeau is scheduled at **5 pm**.

Friday, 16 October.

- 9:00 am: pick up of observers from the Cercle Mirabeau.
- 9:45 am: general debriefing (observers and crewmembers) – *Briefing room (room n. 031), Hyéres airbase*
- 11:00 am: press conference – *Control tower, Hyéres airbase*
- 12:00 am – 1:30 pm Lunch
- 2:30 pm departure to Cercle Mirabeau

SURVEILLANCE FLIGHTS

The observers who may wish to participate in the surveillance flights will have the opportunity to do so. The boarding schedule of the observers will be arranged on site.

ACCOMMODATION (covered by REMPEC)

Observers will be accommodated on a B&B basis at the Cercle Mirabeau, 29 Avenue Jean Moulin, Toulon.

MEALS (covered by REMPEC)

Lunches will be provided at the Officers' mess near the naval airbase between 13 and 16 October.
The are no special arrangements for dinners.

SECURITY AT THE AIRBASE

For security reasons, all observers shall take with them their passport or identity card as they will be asked for identification when entering the airbase.

ANNEX VI

Standard pollution observation / detection log

ANNEX A

☐ HELCOM ☐ BONN AGREEMENT **STANDARD POLLUTION OBSERVATION / DETECTION LOG** ☐ NO POLLUTION DETECTED

REPORTING AUTHORITY	AIRCRAFT REG	MISSION No	CAPTAIN	CO PILOT	OPERATOR	OBSERVER	DAY	DATE	MONTH	YEAR

FLIGHT TYPE	ROUTE / AREA				TIME OVER THE SEA DAY		TIME OVER THE SEA NIGHT		TOTAL TIME OVER THE SEA	
					hrs	mins	hrs	mins	hrs	mins

No	AREA CODE	TIME UTC	POSITION		DIMENSIONS		AREA COVER	OILED AREA	OIL APPEARANCE COVERAGE (PERCENTAGE - %)						MINIMUM VOLUME	MAXIMUM VOLUME	COMBAT
			LATITUDE 'NORTH'	LONGITUDE 'EAST/WEST'	LENGTH Km	WIDTH Km	%	Km^2	1	2	3	4	5	Oth	m^3	m^3	Y / N

No	POLL TYPE	DETECTION						PHOTO	VIDEO	FLIR	WEATHER					REMARKS
		SLAR	IR	UV	VIS	MW	LF	Y / N	Y / N	Y / N	WIND		CLOUD		VIS	SEA	Wx	
											°			FT				
											°			FT				
											°			FT				
											°			FT				
											°			FT				

No	REMARKS

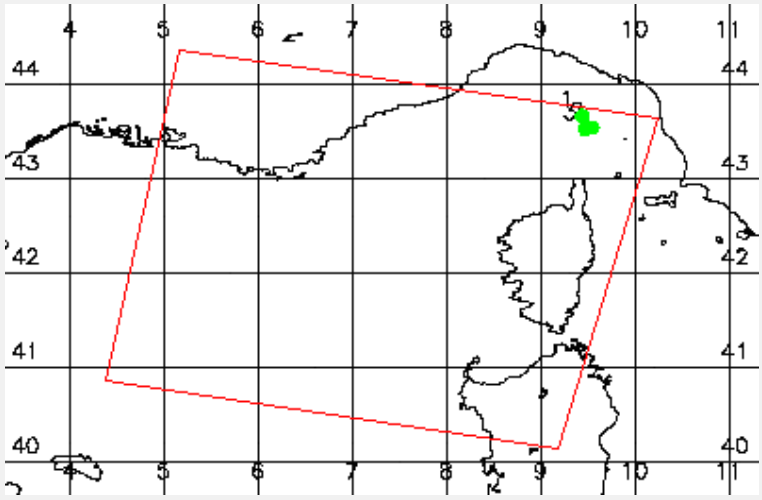
OIL APPEARANCE TABLE			
No	OIL APPEARANCE DESCRIPTION	MINIMUM VOLUME m^3 / km^2	MAXIMUM VOLUME m^3 / km^2
1	SHEEN	0.04	0.30
2	RAINBOW	0.30	5.00
3	METALLIC	5.00	50.0
4	DISCONTINUOUS TRUE COLOUR	50.0	200
5	TRUE COLOUR	200	>200

ANNEX VII

Oil service report

OIL SERVICE REPORT

Possible Oil Slick Detected



Satellite	Acquisition Time UTC
ENVISAT	2009-10-13 09:41:24.017
Satellite scene coordinates	
44°21'47"N / 005°10'24"E	43°38'37"N / 010°14'23"E
40°52'29"N / 004°23'42"E	40°09'33"N / 009°11'16"E
Number of detected oil slicks	**Frame ID**
3	20091000408
Comments	
N/A	

Possible Oil Slick number	Confidence	Possible sources	Country (EEZ)	
1	LOW	N/A	Italy	Details
2	LOW	N/A	Italy	Details
3	LOW	N/A	Italy	Details

Possible Oil Slick number 1		Confidence: LOW	
Central Position: 43°40'30"N / 009°26'42"E			
Region affected		**Country associated**	
Italy		Italy	
Area	**Width**	**Length**	**Slick orientation**
6.54 km²	0.50 km	13.01 km	SE-NW
Possible sources			
N/A			
Characteristics			
Type:	Linear	**Shape:**	Irregular
Contrast:	Medium	**Edges:**	Sharp and Diffuse
Surroundings:	Homogenous		
Met-ocean data:			
Model Wind:	1.6 m/s from 61.7°	**Model Wave:**	0.6 m towards 21.7°
SAR Wind:	5.0 m/s from 42.5°	**SAR Swell:**	N/A
Sea Surface Temperature:	N/A	**Sea Current:**	N/A
Criteria for confidence level			
Medium contrast, sharp and diffuse edges, irregular linear shaped slick, fragmented, source: N/A, homogenous surrounding.			
Comments			
N/A			

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Possible Oil Slick number 2		**Confidence: LOW**	
Central Position: 43°33'12"N / 009°33'09"E			
Region affected		**Country associated**	
Italy		Italy	
Area	**Width**	**Length**	**Slick orientation**
1.45 km²	0.66 km	2.21 km	SE-NW
Possible sources			
N/A			
Characteristics			
Type:	Patch	**Shape:**	Irregular
Contrast:	Strong	**Edges:**	Sharp and Diffuse
Surroundings:	Homogenous		
Met-ocean data:			
Model Wind:	1.7 m/s from 34.3°	**Model Wave:**	1.0 m towards 62.2°
SAR Wind:	6.4 m/s from 80.0°	**SAR Swell:**	N/A
Sea Surface Temperature:	N/A	**Sea Current:**	N/A
Criteria for confidence level			
Strong contrast, sharp and diffuse edges, irregular patch shaped slick, source: N/A, homogenous surrounding.			
Comments			
N/A			

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Possible Oil Slick number 3		**Confidence: LOW**	
Central Position: 43°32'07"N / 009°28'36"E			
Region affected		**Country associated**	
Italy		Italy	
Area	**Width**	**Length**	**Slick orientation**
1.29 km²	0.59 km	2.18 km	S-N
Possible sources			
N/A			
Characteristics			
Type:	Patch	**Shape:**	Smooth
Contrast:	Strong	**Edges:**	Sharp and Diffuse
Surroundings:	Homogenous		
Met-ocean data:			
Model Wind:	2.4 m/s from 39.6°	**Model Wave:**	1.0 m towards 62.2°
SAR Wind:	0.5 m/s from 62.9°	**SAR Swell:**	N/A
Sea Surface Temperature:	N/A	**Sea Current:**	N/A
Criteria for confidence level			
Strong contrast, sharp and diffuse edges, smooth patch shaped slick, source: N/A, homogenous surrounding.			
Comments			
N/A			

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The scene and associated information are available on the EMSA service website.

Log in at http://cleanseanet.emsa.europa.eu/

EMSA	**Operator: A. Sansone, *Telespazio S.p.A.***
Direct phone: +351 911089138	Direct phone: +39 0835 375408 (24h/7d)
	Fax: +39 0835 375422
EMail: mailto:CSN-alert@emsa.europa.eu	EMail: mailto:nrt-matera@tpz-services.it