Interspill 2004

Exchanging Information for Improved Response and Public Communication in a Transboundary Oil Spill : The Prestige Experience

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Informative abstract

As the technical adviser to the French response authority, *Cedre* had, all along the response to the Prestige incident, a permanent need of information from Spanish sources. On the other hand, with its experience of the Erika incident, it had the capacity to analyse and format information that did not exist in Spain. For those reasons, considerable exchange of information took place between *Cedre* and various Spanish institutions along the incident.

This paper describes the most fruitful elements of that co-operation, the exchanges undertaken with the national salvage and pollution response company SASEMAR and the Basque scientific institute AZTI. Although the partners had far different status and responsibilities, they shared a common objective: to gather, format and deliver the best possible information on the pollutant, its fate and the response options. The exchange process they built was informal and practical, based on extensive use of electronic material. There was no restriction in the information communicated, but each participating institution bore full responsibility for the ways and extent it used it, including information to the general public.

The actions undertaken in that frame and their contribution to the efficiency of the French response and to public information are described and discussed here, with the aim to draw constructive experience for future, comparable transboundary pollution events.

Introduction

In a transboundary offshore oil spill, such as the Prestige incident, various authorities and contingency plans are rapidly and jointly concerned. They not only include different responsible authorities in the same country (central, regional, sectorial), but also their

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counterparts in the other(s) country(ies) concerned, plus related European authorities. All authorities involved in the same country have set procedures for exchange of information and public communication on the pollution, its predictable evolution, the response undertaken and the expectable consequences. At the time of the Prestige incident, procedures for the same purpose also existed between Spain and France, through the bilateral "Biscaye" plan. But distribution of responsibilities, preparedness and communication policy were different in the two countries.

As regards responsibilities, Spain was far more decentralised than France. As an example, when the opportunity arose to mobilise fishing boats for recovery at sea, all related chartering and waste disposal arrangements were in France the responsibility of the national authorities. In Spain, the responsibility relative to the fishing resides in the Regional Authorities (*Autonomias*). By that reason, the chartering and coordination of the fishing vessels, and the disposal of the emulsion they recovered were carried out by the Regional Authorities. However, the Maritime Administration, belonging to the Central Government, celebrated agreements with the fishing organisations of the Autonomous Communities, as a way of compensating them economically for their work of collection of fuel at sea. This allowed a recovery of important amounts of fuel off Galicia, Cantabria and Basque Country.

As regards preparedness, France was far advanced : it had learnt a lot from the very similar Erika incident and had recently refined and upgraded its response organisation and capabilities. As an example, the Spanish communication policy still gave precedence to short and strictly factual press releases by authorised officials. France was prepared to provide in real time explanatory information on the Internet, and that information was freely put on line not only by the authorities in charge, but also by their technical advisors.

Exchange of information procedures

The set procedures for bilateral exchange of scientific and operational information between the two countries were built on the single chain principle: information was to be channelled within one country from lower levels to the national co-ordinator, exchanged between the national co-ordinators through liaison officers, and fed by the latter into its national information chain. Comparable procedures existed for the mobilisation of European assistance and European information through the Maritime Pollution Co-operation Mechanism (MPCM).

Such single chain procedures have their merits. However, they unavoidably hamper the exchange of information process. It takes time for each piece of information to go through all links of the chain. Some of its content may be omitted or reformulated in the process, as each link may be tempted to reword or condense it, without being fully aware of the actual needs of the end users. As a consequence, there was a strong risk of receiving through the set information channels out-dated and/or incomplete information when the co-authors needed swift; unrestricted information on what the others knew. Within days from their involvement, it became clear that direct exchanges between them were required, to better satisfy the needs of the national response authorities in charge.

There was experience of previous direct relation through a co-operation agreement between *Cedre* and SASEMAR. There was a common scientific culture of direct, informal exchanges between *Cedre* and AZTI. But there was no such facilitating factor between Cedre and other institutions such as the Portuguese Hydrographical Institute or the Spanish Superior Council for Scientific Investigation (*Consejo Superior de Investigaciones Científica*s - CSIC), the University of Cantabria (which produced regional drift predictions

during the same period – Losada, 2004). As a consequence, fully open exchanges started right from the first day of the incident between *Cedre* and SASEMAR. When the pollution approached the coastline of the Spanish and French Basque countries, similar exchanges established in a matter of days, between *Cedre* and AZTI. But *Cedre* failed to achieve comparable success in exchanges with the Portuguese Hydrographical Institute and the Spanish CSIC.

The direct, uncensored exchanges between *Cedre*, SASEMAR and AZTI, illustrated by the flow chart hereunder greatly, improved the efficiency of the French response to the incident. They also resulted in the publication at times on the Internet sites of *Cedre* and AZTI of information that was else where considered as confidential. Approaches to the worldwide Web were far different. SASEMAR was little prepared to public communication. It had a website, but no webmaster capable of upgrading it into an emergency information portal. *Cedre* had learnt from the Erika incident that the media and the general Public expect now objective, detailed information through the Internet on the situation and related risks. It had upgraded its website to cater with that need and its webmaster was prepared for that. AZTI had a well developed scientific information website, fully adaptable to the needs of a pollution crisis, and the typical open communication policy of independent scientific institutions.

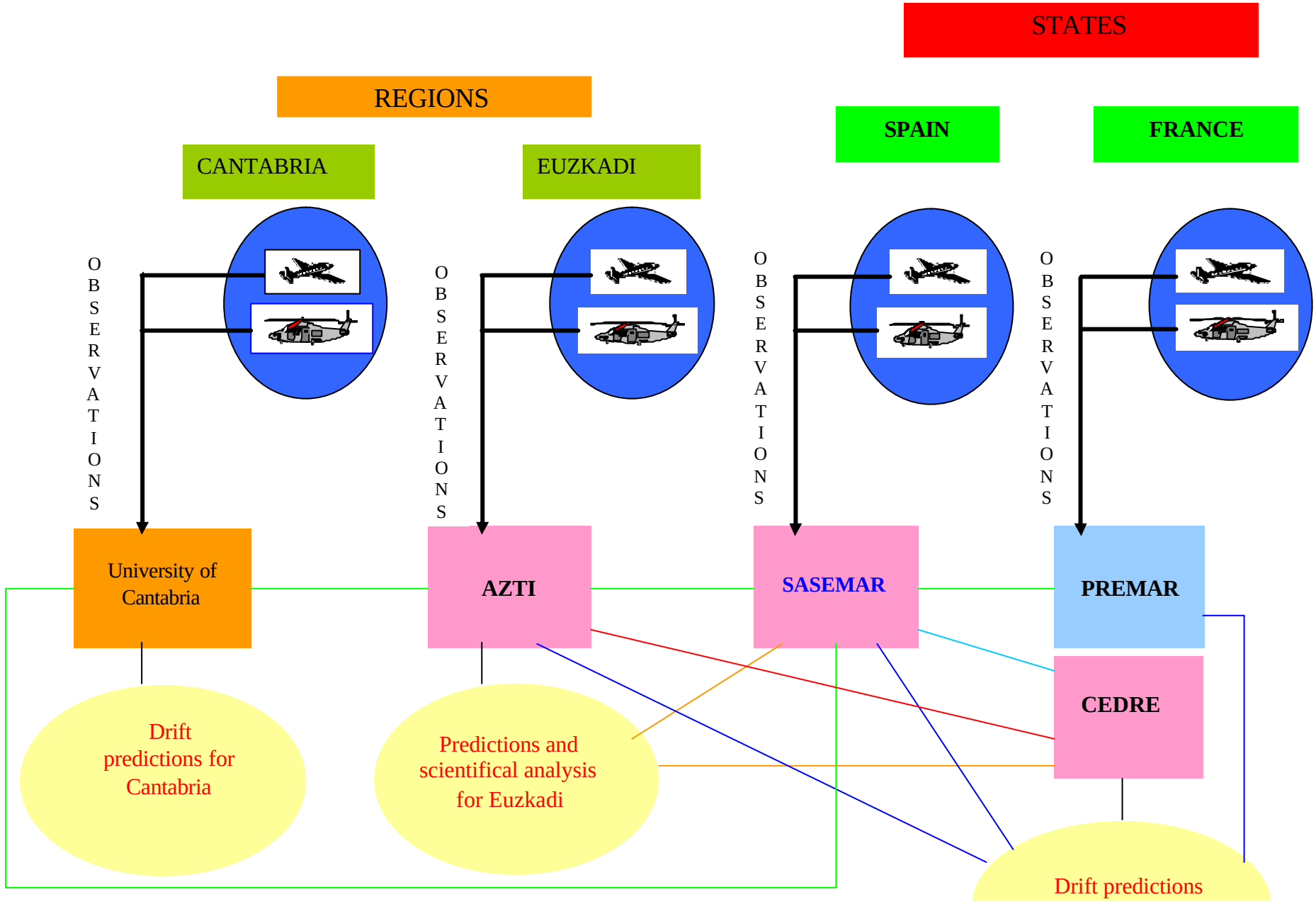
That situation could have hampered the exchange of information. Thanks to the goodwill of all, for the benefit of 3 key matters: understanding the Prestige oil, slick drift prediction, buoys drift recording and assistance to the recovery vessels.

Understanding the Prestige oil

A first area of exchange was the understanding of the nature, dangers, behaviour and weathering of the Prestige oil, particularly as regarded to the risk that the sunken wreck would spill oil for months or years. *Cedre* had learnt the hard way, in the Erika incident, up to what point clear and objective information on those matters is of paramount importance in a major oil spill (Paul et al., 2000) not only for proper decision making, but also, and possibly more, to fight quickly rising hearsay on hidden hazards. For that reason, as soon as *Cedre* knew about the incident, the link created by their bilateral co-operation agreement was used to ask from SASEMAR a sample of the Prestige cargo. SASEMAR kindly obliged and *Cedre* could soon compare that sample with a sample of the weathered emulsion collected by the French recovery vessel of the navy Ailette off Galicia, on 18th November 2002.

The analyses performed and the results achieved will not be detailed here. They are available on the Internet site of *Cedre* (**www.le-cedre.fr**), in the Prestige incident dossier. A key point they established was that, although the Prestige fuel was very viscous, with a pour point given at +6°C by the Saybolt-Lettonia certificate of the cargo, it would not solidify at 2.4°C, the water temperature around the wreck. That was shown by a rheology test performed at *Cedre*'s request by the University of Occidental Brittany. Furthermore, a buoyancy test performed at *Cedre*'s request by IFREMER in a pressure chamber demonstrated that it would remain buoyant with a density of 1.012 at the temperature and pressure around the wreck, compared to 1.045 at 3°C and 350 bars of the seawater (see **www.ifremer.fr**, at the Prestige dossier, in Environmental activities.

THE FLOW CHART OF THE EXCHANGE OF INFORMATION BETWEEN THE PARTNERS



Cedre's conclusion was that the cargo of the Prestige would still tend to seep through any available hole or crack after it had cooled down to the surrounding water temperature, a situation comparable to that of the Erika three years before. This information of paramount importance was immediately communicated to the French authorities through the daily technical synthesis of *Cedre*, copied to SASEMAR. It was soon made available to the general public on *Cedre*'s website and immediately relayed by the Spanish media.

Slick drift prediction

On another front of pollution response, the Erika incident had shown that accurate prediction of oil slicks drift and slicks' landing was essential for the coastal response authorities and the general Public. This implied much more than daily general prediction based on commercial models using second hand information on aerial observations and weather predictions. It required a joint involvement of all national expertise in oil weathering and comportment, meteorology, hydrology and movements of water masses, working jointly, with direct access to the latest aerial observations and meteorological predictions. In other words, close to one of those full expert systems for decision aid still little used in oil spill response (Graham, 2003)

Right from the day of the incident, *Cedre* and the French meteorological service, Meteo France, activated their bilateral co-operation in the same ways they had done in the Erika incident, to provide their best slick drift predictions (Daniel et al., 2002) with the latest improvements in the Meteo France real time Mothy slick drift prediction model (Daniel et al., 2003). On 21 November, the French Secretariat General for the Sea instructed *Cedre*, Meteo France, the State Action at Sea Division of the Navy, the Hydrographic Service of the Navy and IFREMER to operate jointly, under the co-ordination of *Cedre*, a slicks drift prediction committee, the daily predictions of which would be the national reference. This implied more than information from the sole French observation planes and ships. It was clear that the committee needed access to the information collected by the Spanish planes, helicopters, and Ships, and by the European planes and ships co-ordinated by SASEMAR.

Over a matter of days, with the invaluable contribution of liaison officers of both sides, an electronic chain of exchange of information became fully operational. SASEMAR communicated daily to *Cedre* and to the French Maritime prefecture, by 4PM, maps of the morning observations produced on the very GIS used by *Cedre* for the drift prediction maps (fig. 1). The maritime prefecture phoned the French observations to *Cedre* shortly after. Joint maps of observations were finalised, whilst Meteo France produced slick drift prediction models from selected points. All that information was made available to the Committee members for their daily meeting, starting shortly after 5 PM. Between 6 and 6.30 PM, the consensual drift predictions and comments of the Committee were included in the daily joint situation/prediction maps. By 7 PM, the finalised electronic maps were sent to the French Authorities, with copy to SASEMAR. They were made available to the general Public the following day, on the Internet site of the French navy in the morning, and on that of Cedre in the afternoon.

In the meantime, the prevision process had started again overnight with afternoon observation maps transmitted by SASEMAR and further data form the ships and French Navy / Customs planes.

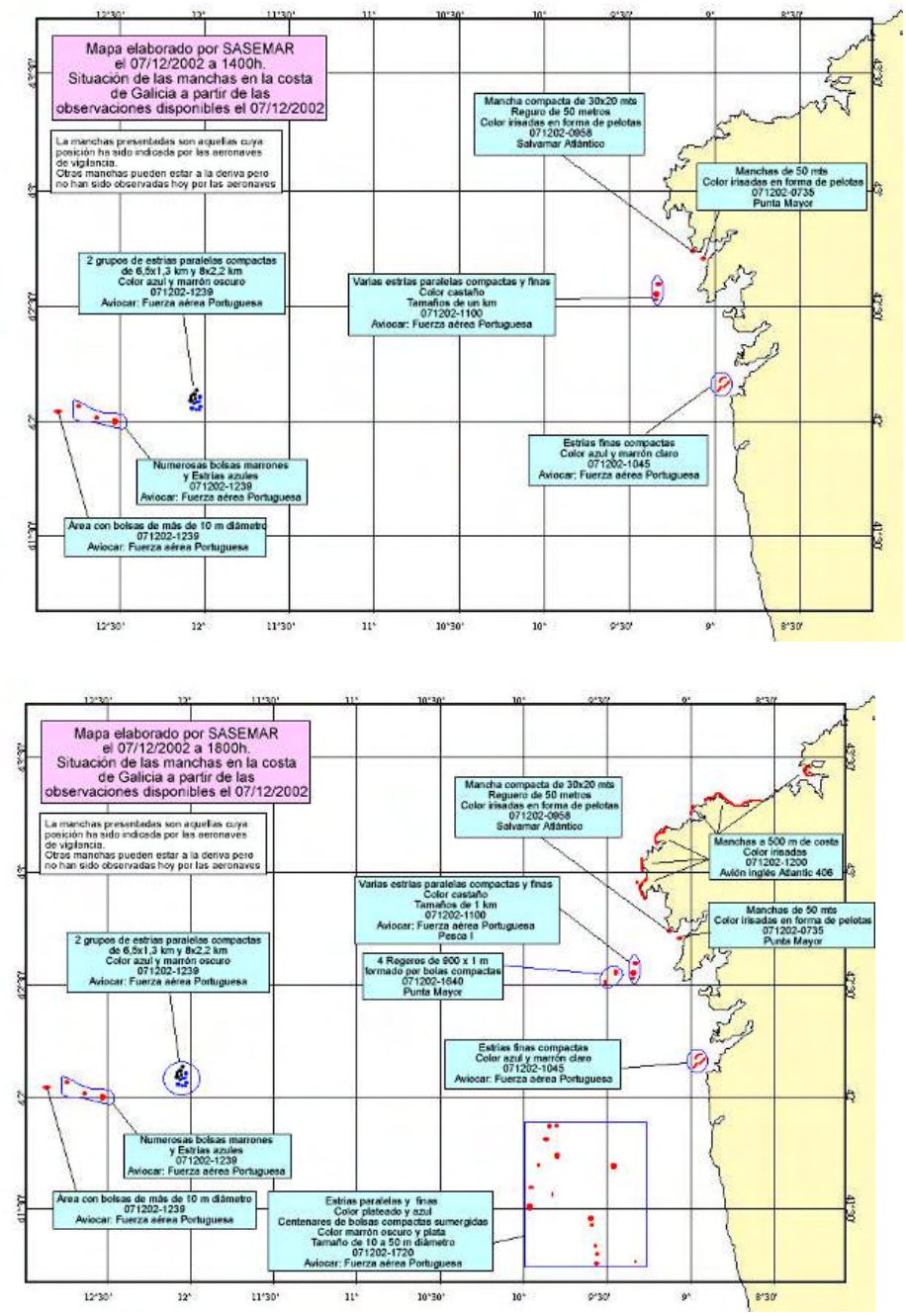


Fig 1: example of morning and afternoon observation maps supplied by SASEMAR

In early December, when oil slicks approached the Spanish (= Euskadi) and French Basque countries, AZTI joined the chain, providing information on observations made by Euskadi fishing boats and producing a daily situation/prediction electronic bulletin. The AZTI bulletin reproduced and commented the joint observations/prediction maps on aspects of interest for Euskadi and neighbouring areas, complementing them with regional situation data and regional slick drift prediction maps built from an in-house model.

Each time discrepancies arose between the different situation and prediction maps produced, they were discussed through the liaison officers of SASEMAR and/or direct phone conversations. The results of those exchanges were incorporated in the maps of the following day.

Samples of those maps are given in fig 2. The upper row shows an early version designed for transmission both by Email and by fax. The lower row shows a later version, designed for transmission by E-mail only.

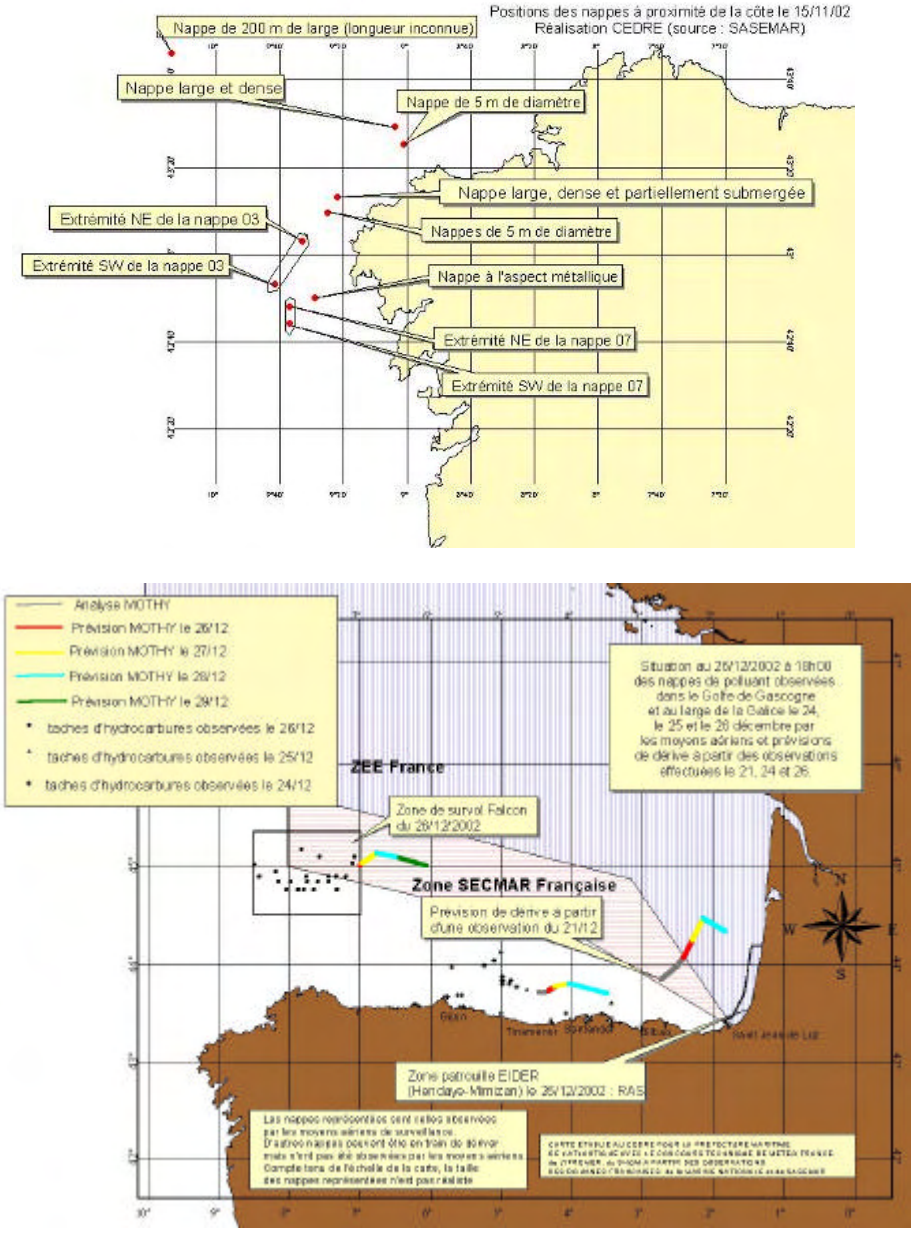


Fig 2: Samples of observations and drift prediction maps validated by the French Slick drift prediction Committee

Similar maps were produced in the same time by the Portuguese Hydrographic service (fig.3). But without permanent exchange of information.

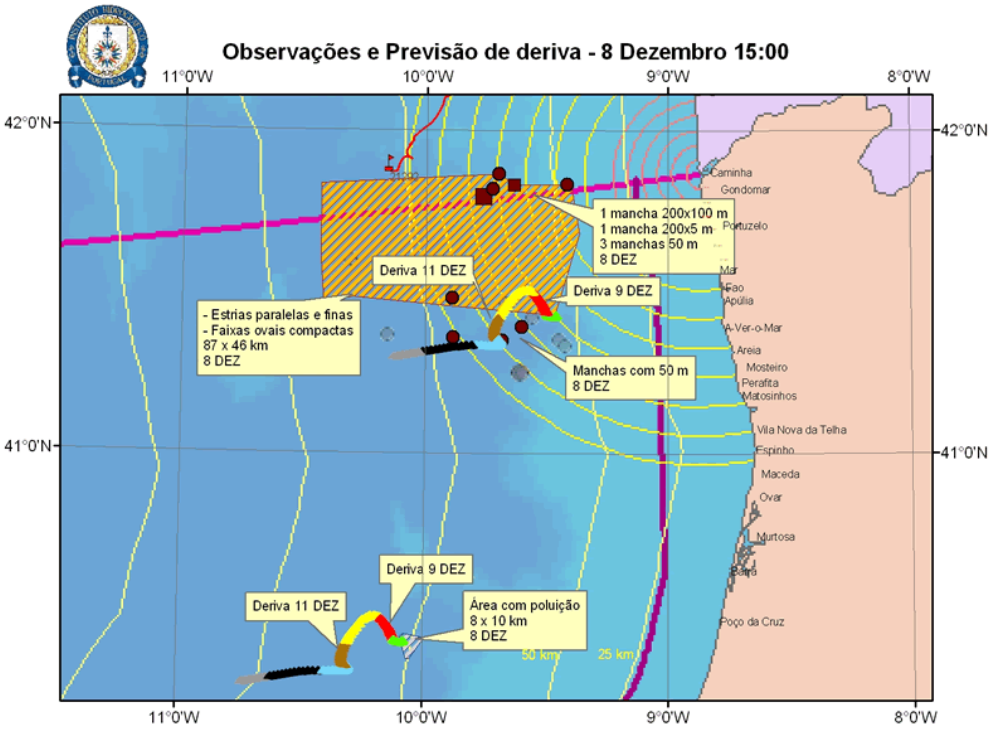


Fig 3: Sample of observations and drift prediction map produced by the Portuguese Hydrographic Institute

The work performed and the results achieved were acknowledged by the French authorities, the media and the general Public as a considerable progress compared to the Erika situation, although it was recognised that hydrographic information was still insufficient (Landrain, 2003). And it was decided to formally include the slick drift prediction committee, as it operated in the Prestige incident, in the French Marine pollution response rule (i.e. "Polmar" rule) to be revised on the basis of the lessons learnt for the Prestige incident.

Buoys drift recording

In the course of the activities above, the partners quickly considered that actual slicks observations had to be complemented by the satellite recording of the movements of surface and mid-water drifting buoys. Releases included:

- Both surface and mid-water buoys, in the Bay of Biscay, in the flow of the so-called "Christmas" current, supposed to flow East from Cape Finisterre, along the Cantabrian coast, and then North along the Aquitaine coast, to determine the actual direction and speed of that current;
- Surface buoys in the Bay of Biscay, ahead of groups of slicks of particular interest, to mark their most eastern end, as an aid to observation planes and recovery vessels;
- Surface buoys over the wreck, on a periodical basis (about monthly), in order to show the path of potential slicks, would the wreck suddenly release a consistent amount of oil.

In the Bay of Biscay, buoys provided by *Cedre* and by the Hydrographic service of the Navy were released by French Navy and SASEMAR vessels and by fishing vessels co-

ordinated by AZTI. Over the wreck, buoys provided by *Cedre* were released by SASEMAR.

The buoys released in the Bay of Biscay demonstrated that the "Christmas" current was weakly established and played only a little role in the observed drift of the slicks, compared to wind driven currents. The surface buoys demonstrated that the oil slicks impacting on the coasts of Brittany in the late spring and summer of 2003 were not coming from new seeps from the wreck, but from oil that had circulated for months in the Bay of Biscay (fig 4).

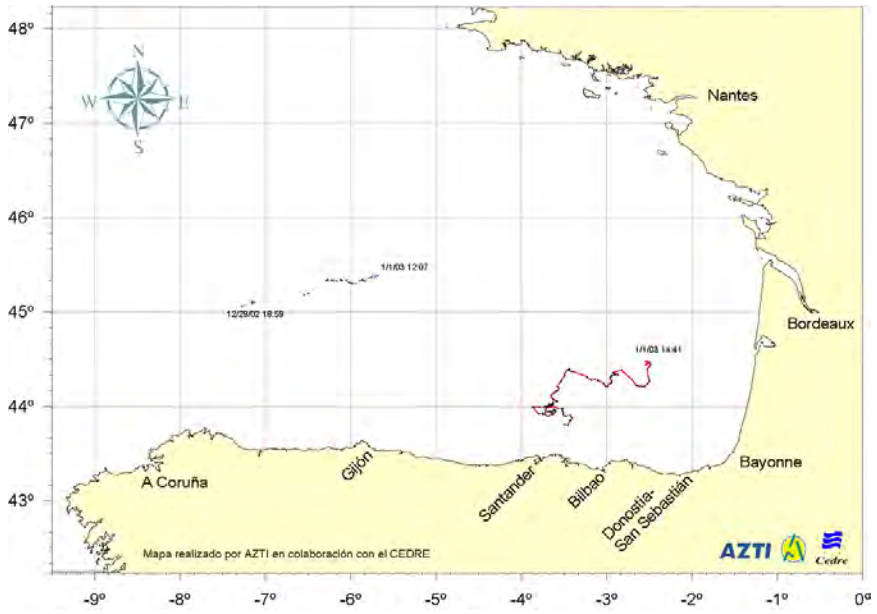


Fig.4 Movements of surface buoys in the bay of Biscaye

The surface buoys released over the wreck showed that the same incident two months later would not have entered in the Bay of Biscay, and would have impacted heavily the Azores and Canary islands (fig 4).

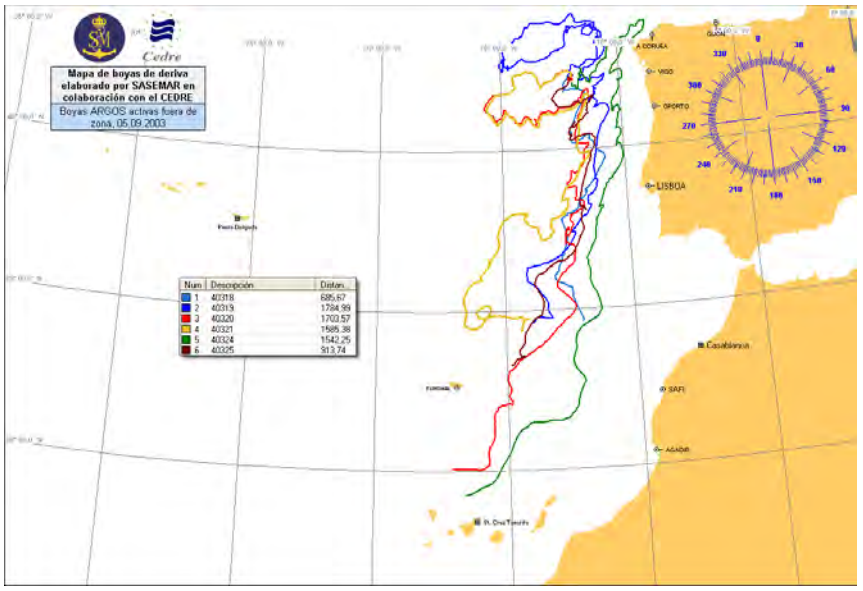


Fig 5. Movements of surface buoys released over the Prestige wreck

Most unfortunately, similar information from buoys released by the Portuguese Hydrographic institute shortly after the wreckage (fig 5) reached us only months later

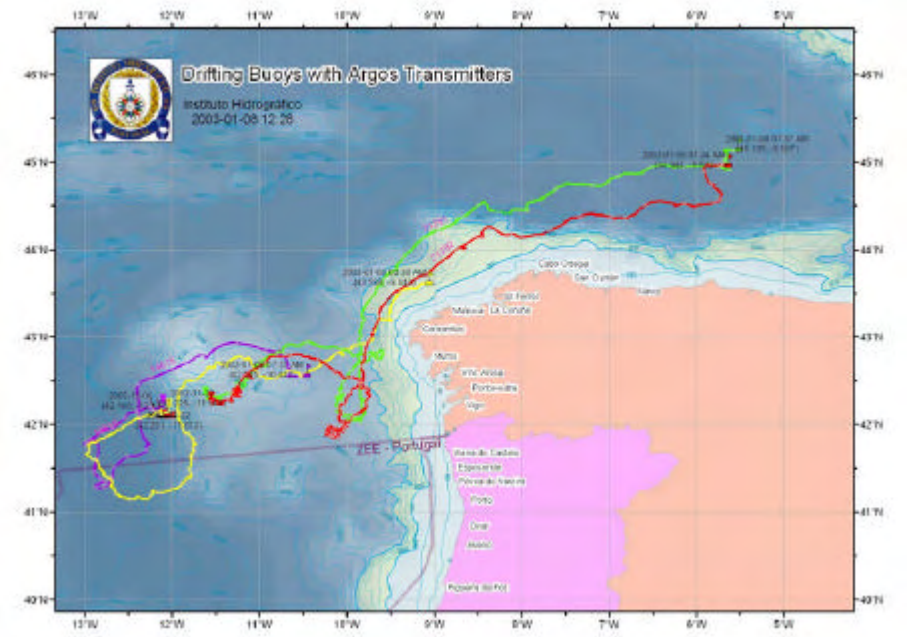


Fig 5. Movements of surface buoys released over the Prestige wreck in December and January, Portuguese Hydrographic Institute

As a whole, buoys drift recording proved to be a key tool to aerial and maritime observations for medium to long term surveillance and interpretation. The drift maps were made available to the public, with comments on the Internet site of Cedre. They were of paramount importance for the information of the media, showing objectively facts that would not have been easy to explain in their absence.

Assistance to recovery vessels

In parallel to the activities above, the co-authors were heavily involved in assistance to public oil recovery vessels and fishing vessels engaged in oil recovery. SASEMAR was involved as owner of the response and co-ordination tugs and the chartering of foreign oil recovery vessels. Cedre was involved in its usual role of technical advisor to the French response authorities. AZTI, a member of the joint response unit of the central and regional authorities for Euskadi, was involved as technical advisor to the fishing fleet, and among others chartered a private plane to directly advise the Euskadi fishing vessels engaged in oil recovery.

Along those activities, considerable information was exchanged by phone and electronic mail between the co-authors, on observations made, performance of the tools used by different vessels, overall performance of the vessels and oil landings. In coordination with SASEMAR, an observer from AZTI visited *Cedre* and the French maritime prefecture, and aboard the French navy vessel co-ordinating operations at sea in the area under French responsibility. A *Cedre* observer flew on a mission of the plane chartered by AZTI, reporting to the French authorities on the high efficiency of an operation making a most constructive use in pollution response of a communication centre designed for assistance to the anchovy and tuna fisheries

Those exchanges contributed to the exceptional performance of the recovery at sea recorded in the Prestige incident. This was particularly true as regards the invaluable contribution of the Euskadi fishing fleet in reducing the amount of oil that impacted the Aquitaine coastline or came close to it, impacting later the Breton coastline.

Discussion

The exchange of information described here was a first such event for all three partners. It was also, to our knowledge, the first to that extent in a transboundary pollution. There was no pre-set and rehearsed co-operation plan providing answers to our questions on what could be made and what could not. Responses had to be improvised, to the best of our feelings and capacities.

It wasn't an easy task. We had many example of how true is the sentence "problems raised by transboundary operations are very complex, require solutions to be developed by governments, but with OSRO's at the negotiating table, and should be addressed well before the incident occurs" (Crick and Wallace, 2003). The public impact of the quick and extensive publication of information on the Internet sites of Cedre and AZTI didn't make thing easy at times for the SASEMAR co-authors, who were bound by much stricter rules as regards communication. The necessary channelling of all decision making concerning operational pollution response co-operation through the co-ordinating central government authorities was seen as a heavy constraint by the AZTI co-authors, when direct co-operation at regional level between the Spanish and French Basque countries could have been a valuable option for the efficiency of oil recovery by the fishing fleet. The Cedre co-authors were heavily concerned with the impossibility to establish similar, direct and confident exchanges with the Spanish CSIC wreck assessment committee. And would the French slick drift prediction committee had known more about the magnificent work undertaken by the Portuguese Hydrographic Institute, they would have tried harder to build operational ties with it.

Personal trust and the daily evidence that all partners dramatically lacked information that the others could provide, were the basic fuel of the co-operation achieved. The extent reached was an invaluable achievement, which greatly helped decision makers.

However, there is no doubt that more could have been made, that exchanges could at time have been more extensive and faster, would procedures for that have been pre-planned. Such procedures could include, among others:

- automatic dispatching of samples of pollutant and a joint table of the analyses on a PTF or Website site fed jointly by the partners
- automatic dispatching of observations and prediction to the same PTF site as soon as available
- plans for drifting buoys release, stocks of buoys and permanent updating of the drift information on the PTF site above.

Other examples of procedures of interest could be given. All would require the use of common or compatible software, a PTF or Website fed with permanently updated information and, more than anything, mutual trust.

Those are the challenges to be met for the next incident. Ensuring mutual trust is a task to be implemented at head management level, requiring permanent relation in the form of meetings and joint initiatives for improved preparedness. The other tasks require that the software and hardware wizards of the partners would make common or compatible choices and be ready to offer a fully operational product at the time of next incident.

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