



Assessment and preparedness to potential pollution scenarios within the Mediterranean basin in upstream and shipping operations

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eni overview

Eni is an Italian integrated energy company.

Active in 77 countries, with a staff of 78,400 employees.

Eni operates in oil and gas exploration, production, transportation, transformation and marketing, in petrochemicals, oilfield services, construction and engineering.



Raffineria di Venezia
Eni R&M
Source www.eni.com



Platform INAGIP Ivana, Nord
Adriatic Sea
Source EMRIL



Centro Olio E&P Viggiano
Val d'Agri
Source EMRIL



M/T "OCEAN LADY"

Tanker Ocean Lady
eni trading & shipping
Source ETS



Contents

- Assessment and preparedness: oil and gas exploration & production

- Assessment and preparedness: transportation

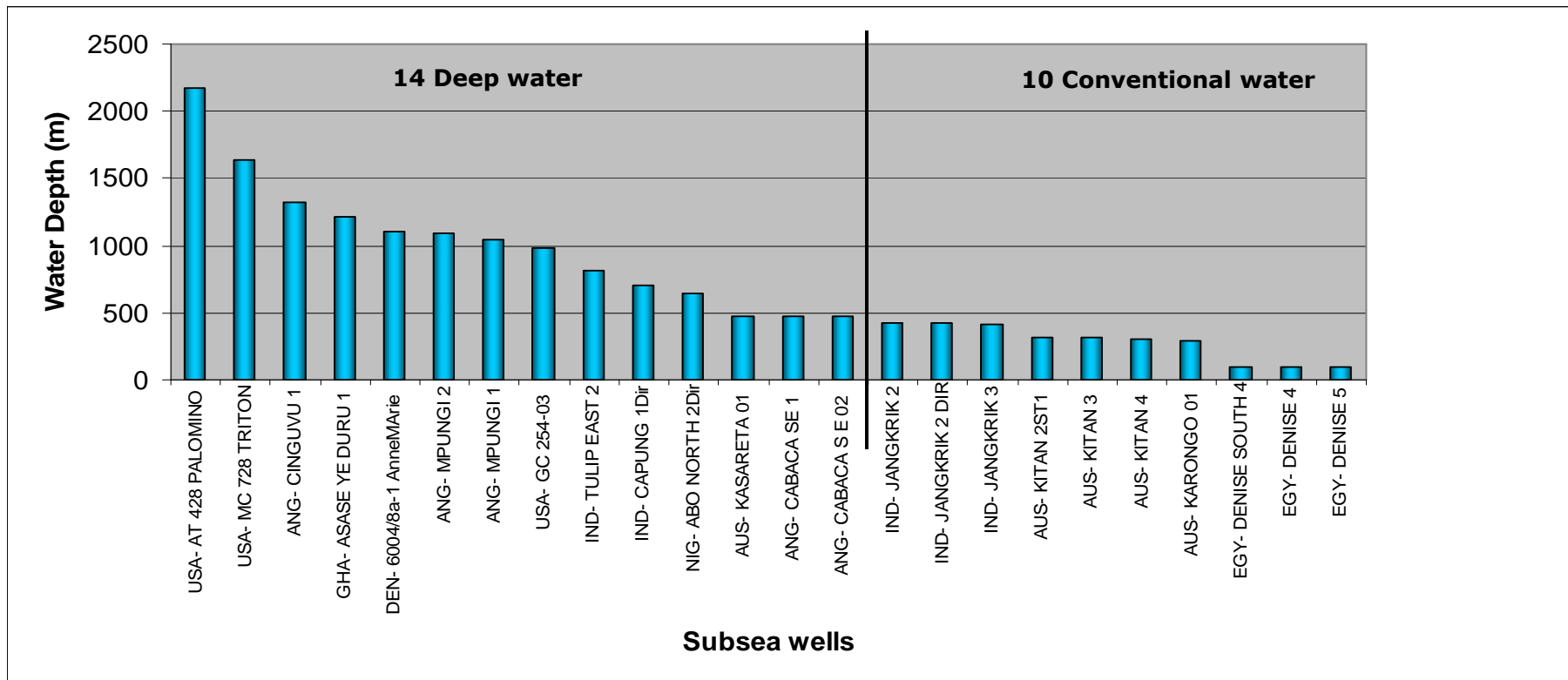
- Preparedness at corporate level
 - Corporate Emergency Plan
 - Emergency Room
 - Tools, exercise & network



Assessment and preparedness: oil and gas exploration & production

- Focus on deep water wells
- oil versus gas

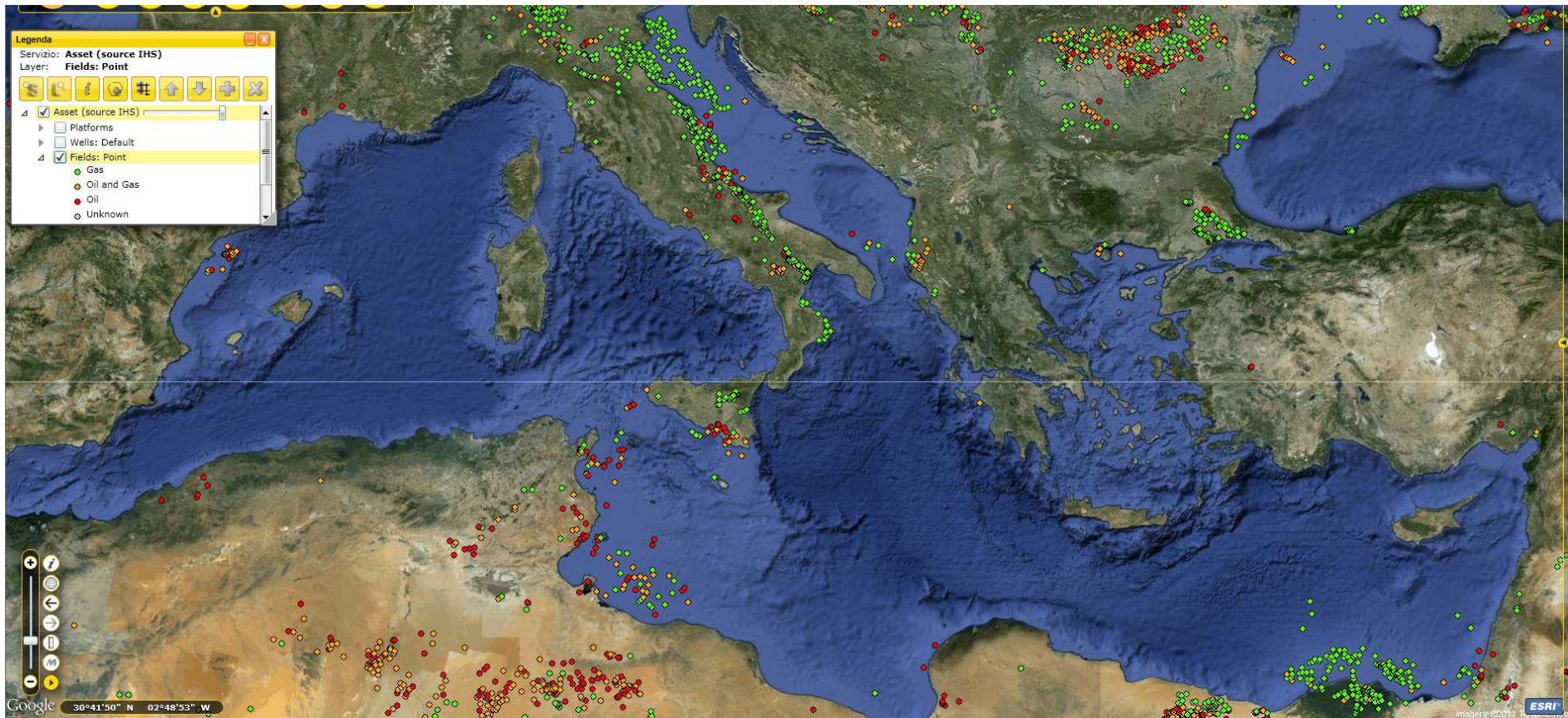
eni worldwide drilling experiences (2010 data)



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Synoptic placement of oil & gas Mediterranean fields (all operators)

Oil versus gas



eni deep water drilling activity in the Med for the future

2011 Offshore Egypt 1 well (~ 500m wd)

2012 No deep water drilling



Preparedness: oil and gas exploration & production

Emergency response for oil spill

- ✓ At field – facilities: *Emergency Response Plan* - local response for Tier 1
- ✓ Company *Oil Spill Contingency Plan* for all subsidiaries and Tier 2 resources
- ✓ Industry Tier 3 **Global Response Network** (for all eni subsidiaries: OSR based in UK)

National Contingency Plan and Regional Agreement for Tier 2-Tier 3 where in force



Assessment and preparedness: transportation

eni trading & shipping (ets)



Tanker Ocean Lady
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Assessment and preparedness: transportation

- Vetting - procedures and inspections – Minimum & Selecting Criteria
 - Chartering of Double Hull since 2000
 - Inert Gas or Nitrogen requested on ships loading/carrying/discharging low flash point cargos (regardless the size and in force international/national rules)
 - Quality of tonnage controlled through daily screening totaling over than 6000 clearance per year (all vessels being operated and/or calling at Terminals are screened at each single commercial proposal)
 - More than 400 inspections are carried out annually on board vessels utilized by ets
 - Management Reviews carried out at Owners / technical Operators premises in order to assess general quality of the organization and the service rendered
 - Incidents reviews are carried out in order to verify the correctness of actions taken by Vessel Operators to avoid recurrence, control of trends and quality of the tonnage managed by the Operator
- Emergency coordination plan
- Vessel tracking system



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Preparedness at corporate level: emergency HSE plan

Emergency: a situation caused by an incident that has already occurred but that may escalate or from other events that can cause damage or harm to people, the environment, assets and image.

Eni Corporate Emergency HSE Plan

The "Eni HSE Emergency Plan" does not substitute The "Business Area Emergency Plans" set out by the Divisions/Subsidiaries which have full responsibility for managing the emergency.

3 emergency levels

Eni **Crisis Unit** can be involved at Level 3



Preparedness at corporate level

The Eni Crisis Unit supports the Division/Subsidiary involved in the emergency and has the task of:



- coordinating, on request from the Division/Company in a emergency, the contribution of specialized resources and equipment;
- making information tools available to the Division/Company involved in Managing the emergency;
- coordinating, during emergencies, the proper flow of information in conjunction with the pertinent company functions;
- acting as the liaison for the Authorities (Italian or foreign) in case of disasters and/or emergency situations for which the Authorities ask for eni's intervention.



Preparedness at corporate level: emergency room

In order to ensure efficiency and effective management of level 3 emergencies, two emergency rooms have been set up.

The emergency rooms are the centre of the emergency management, in the room are concentrated, virtually and/or in real, all the resources involved about the crisis solution, the major emergency team to all the Eni divisions Managers involved in the emergency and, eventually, the Governmental Authority.



Preparedness at corporate level: emergency room



Preparedness at corporate level: tools

3Ter Advanced

Supporting Information System for Tier 3 Emergency Response

- web GIS (Geographic Information Systems) where all eni assets are superimposed on territorial data (nautical charts, satellite maps ecc.)
- managing the information on resources and equipment available in the Group
- enabling the use of specific tools like release diffusion models, databases ecc.
- eni **MedSTAR** (Mediterranean Safe Terminal And Routes) project: results available in 3Ter Advanced



Preparedness at corporate level: tools – 3Ter Advanced

The screenshot displays the 3Ter Advanced software interface, which is used for emergency preparedness at the corporate level. The main window shows an aerial view of an industrial site with various colored overlays representing different functional units and storage tanks. The interface includes several panels:

- LEGENDA (Legend):** Located on the left, it lists various functional units and macro areas. The 'Serbatoi' (Tanks) layer is highlighted with a red circle. The legend includes:
 - Access-Exit way
 - Firefighting
 - Flare-Blowdown
 - Multifunctional Building
 - Power Station
 - Process
 - Storage
 - Terminal
 - Water Treatment
 - Macro Area: Polimeri Europa, Syndial, Cesi, INEOS, N.d., Sasol Italy
- Selezione (Selection):** A panel on the right that allows users to filter data based on attributes. It shows 'Layer: Serbatoi' and 'Elementi selezionati: 6'. The attribute 'Prodotto' (Product) is set to 'BENZENE'.
- Oggetti selezionati (Selected Objects):** A table at the bottom that lists the selected storage tanks and their associated data.

Codice serbatoio	Codice impianto	Codice sub facility	Codice unita' funzionale	Tipo serbatoio	Layout	Prodotto	Classe prodotto	Tipo tetto	Pressione di stoccaggio	Temperatura di stoccaggio
S7E	Logistica			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente
S15L	Aromatici			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente
S14E	Logistica			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente
S16L	Aromatici			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente
S17L	Aromatici			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente
S6A	Cumene			Cilindrico		BENZENE		Galleggiante	Atmosferico	Ambiente



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Preparedness at corporate level: tools – 3Ter Advanced



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Preparedness at corporate level: tools – link to laser scanning data

The screenshot displays the Leica TruView software interface, version 2.1. The interface is divided into several sections:

- Top Left:** A 2D technical drawing of an industrial structure with four elevation markers: EL. 20.300, EL. 14.200, EL. 7.900, and EL. 4.000.
- Bottom Left:** A Google Earth satellite map showing the location of the facility, with coordinates 43°58'13" N and 12°17'51" E.
- Center:** The main 3D point cloud model of the industrial facility, overlaid with numerous yellow markers. Each marker is labeled with a number and height, such as "Nr3826 high 1851", "Nr3843 high 1851", "Nr3824 high 1851", "Nr3834 high 1851", "Nr3836 high 1851", "Nr3837 high 1851", "Nr3839 high 1851", and "Nr3858 high 1851".
- Right Panel:** A control panel with tabs for "View", "Markup", and "Measure". It includes a "Measure Properties" section with fields for Type, Color, Unit (set to Meters), and Distance. Below this is a "Markup Data" section with buttons for "Import", "Export", "Load From Server", "Load Local", and "Clear All". At the bottom, it shows "Neighbor TruViews: Number of Neighbors 54".
- Top Right:** A toolbar with icons for home, print, eye, rotate, zoom in, zoom out, and a warning icon. A "2D Markups" window is also visible.



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Preparedness at corporate level: tools

Tracking of time charter eni oil/chemical tanker, supply vessels, LNG carrier, saipem drilling/ construction vessels



Preparedness at corporate level: tools - tracking

Nave: Portovenere
Data: 22/04/2011 11.28 (GMT)
Rotta: 40°
Latitudine: 44°3'16"
Longitudine: 9°53'31"
Velocità: 0 (km)

Punto nave Dati in tempo reale

Mostra solo navi attive Tutti i dati

Categoria: **LNG Carrier**
 Nave:
 Charterer:

Zoom a nave/categoria selezionata
 COSTRUZIONE
 Chemical Carrier
 Crude Oil Carrier
 FPSO
 GAS Carrier
 LNG Carrier
 Elba
 Lerici
 Palmaria
 Portovenere
 PERFORAZIONE
 Product Carrier (Clean)
 Product Carrier (Dirty)
 Supply Vessel

Punto nave Dati in tempo reale

Mostra solo navi attive Tutti i dati

Categoria: **Crude Oil Carrier**
 Nave: **Eco Europa**
 Charterer: **ETS-TI-Crude**

Asphalt Carrier Visualizza rotta nave selezionata
 COSTRUZIONE
 Chemical Carrier
 Crude Oil Carrier
Eco Europa

Rotta

Intervallo di visualizzazione: Dal giorno al giorno

Dati disponibili da 24/07/2006 a 22/04/2011

Da: 29/03/2011 00.00 A: 10/04/2011 23.59

Visualizza punto nave
 Visualizza linea rotta
 Zoom su intera rotta

Visualizza

Punto nave Dati in tempo reale

Mostra solo navi attive Tutti i dati

Categoria: **Crude Oil Carrier**
 Nave: **TH Serenade**
 Charterer: **ETS-TI-Crude**

Asphalt Carrier
 COSTRUZIONE
 Chemical Carrier
 Crude Oil Carrier
 Eco Europa
 Rio Genoa
 SC Sara
 Seaborne
 Seastorm
 Seepacis
 Seasentor
 TH Serenade
 Vulcano M.
 Domus Aurea
 ECO AFRICA
 FRANCESCO D'ALESSIO
 PRESIA
 LILIANA D'ALESSIO
 STROMBOLI
 Star Lady
 VALLE D'ARAGONA
 FPSO
 GAS Carrier
 LNG Carrier
 PERFORAZIONE
 Product Carrier (Clean)
 Product Carrier (Dirty)
 Supply Vessel



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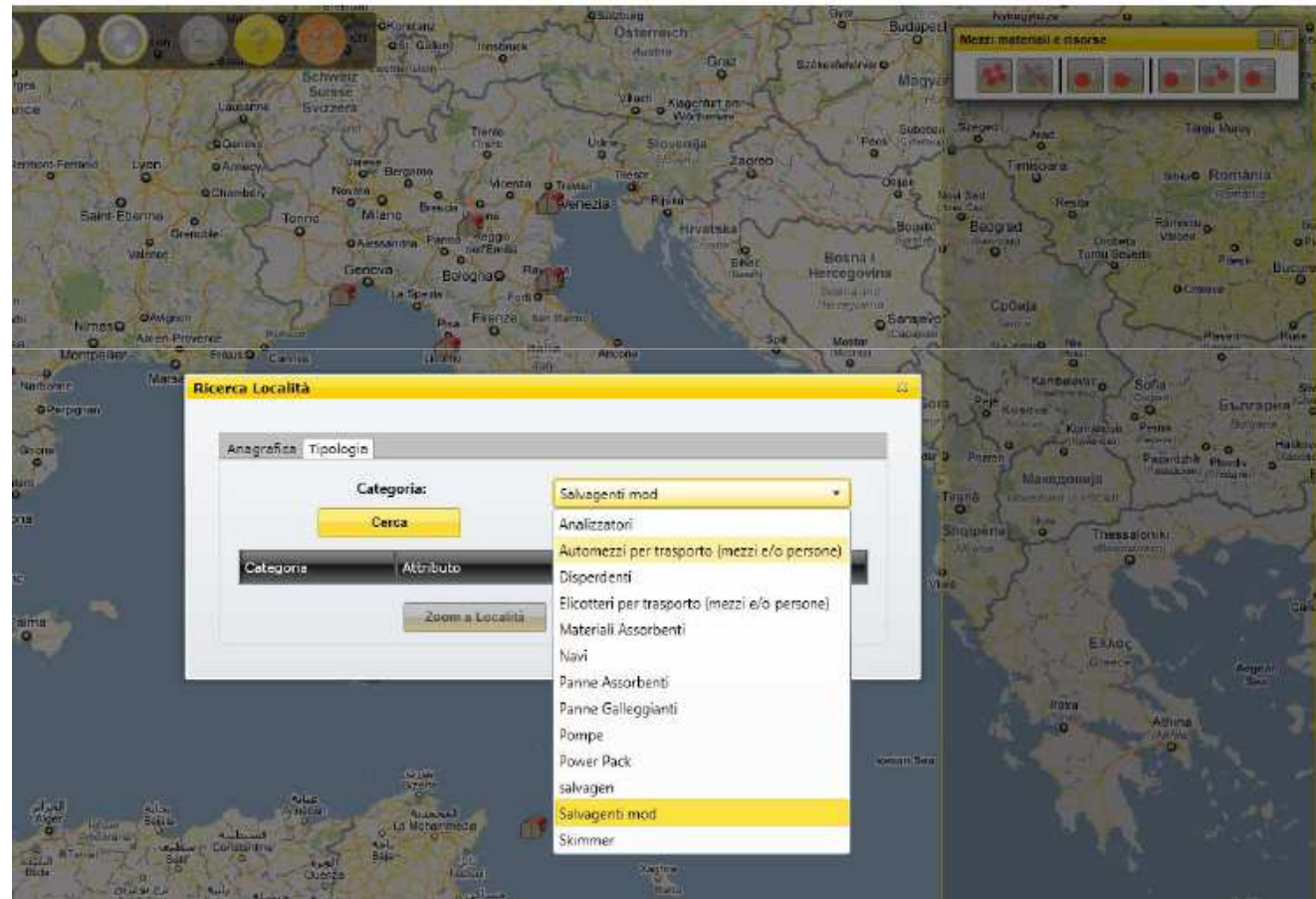
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Preparedness at corporate level: tools – db equipment

3Ter Advanced

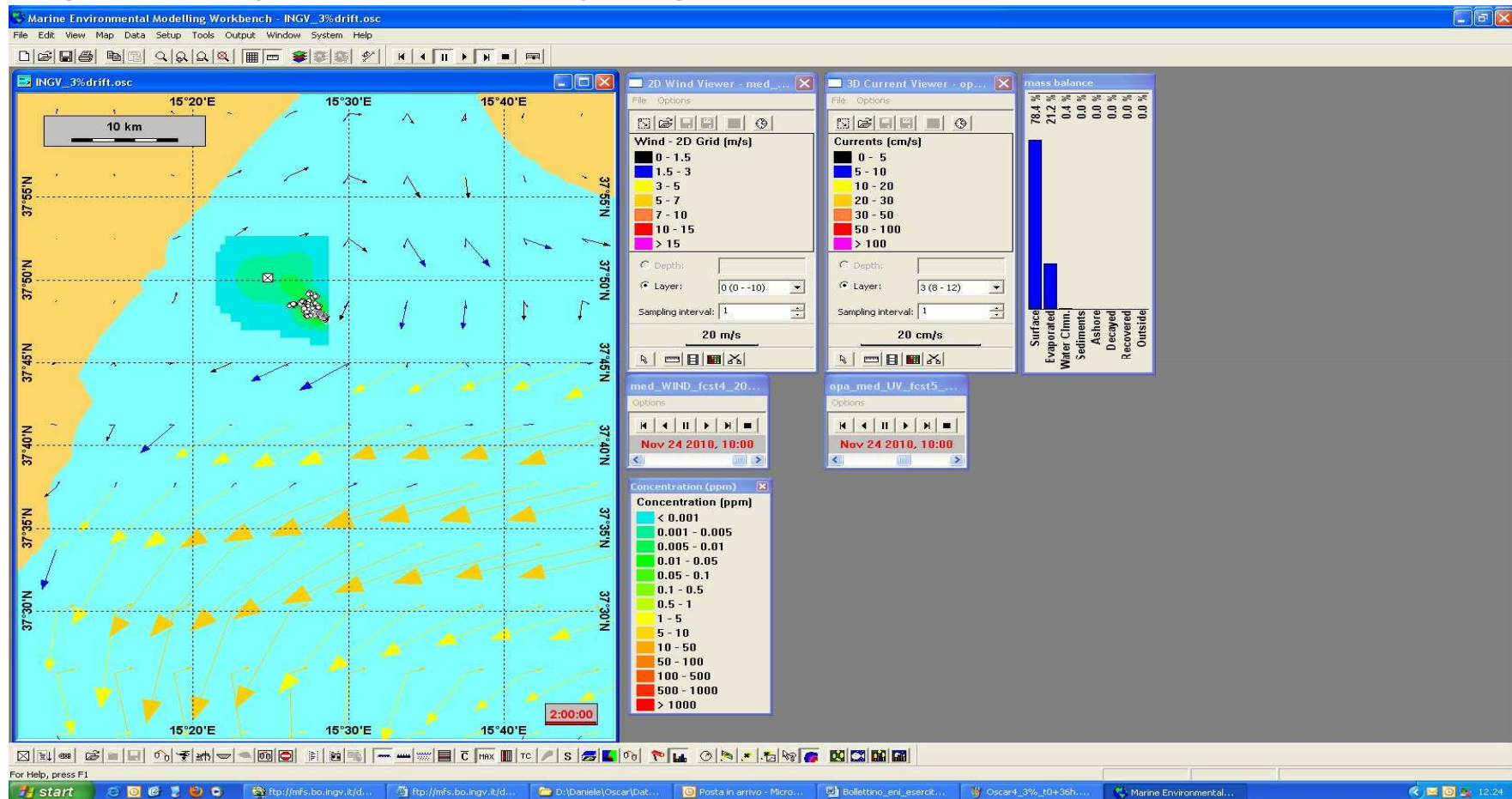
- managing the information on resources and equipment available in the Group

- For oil spill combat (Tier 1)
local resources - booms, skimmer, dispersants, vessels ecc. - are recorded and updated



Preparedness at corporate level: tools

- MEMW OSCAR – modelling for oil-spill drifting*
(Sintef Oil Spill Combat And Response)



* It is not a real case



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Preparedness at corporate level: tools

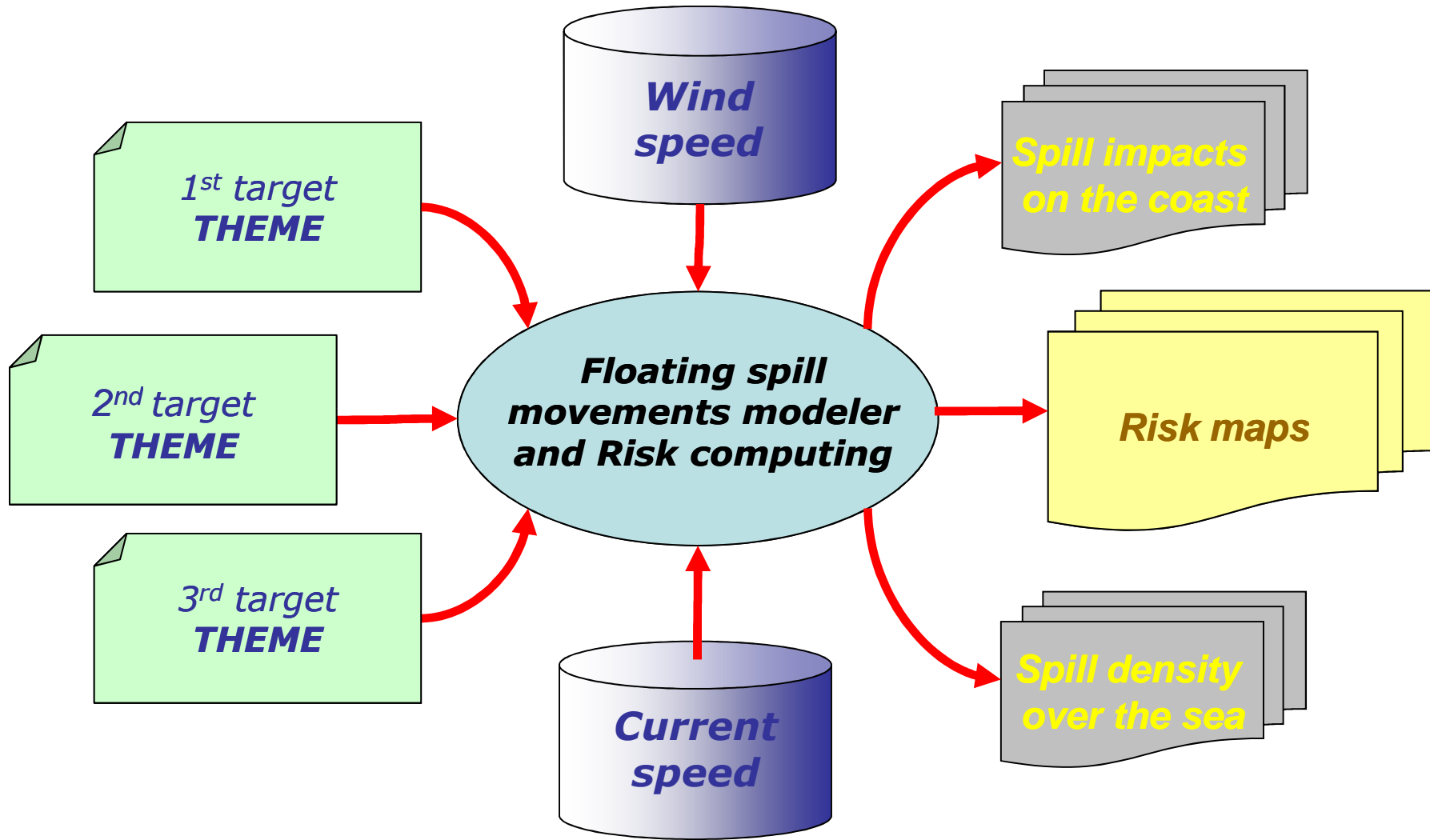
eni **MedSTAR** project: results available in 3Ter Advanced

Mediterranean Safe Terminal And Routes project is firstly a methodology for risk assessment due to spills at sea

- Implement a **procedure to compute the environmental risks** due to **spills floating on the sea surface** under the action of winds and currents (*historical data from INGV*)
- **Identify and build some target themes**, both on the sea surface and along the coasts, to use as data input for damage evaluation
- **Compute qualitative risk** and produce thematic maps as final results on the Mediterranean and Black sea basins

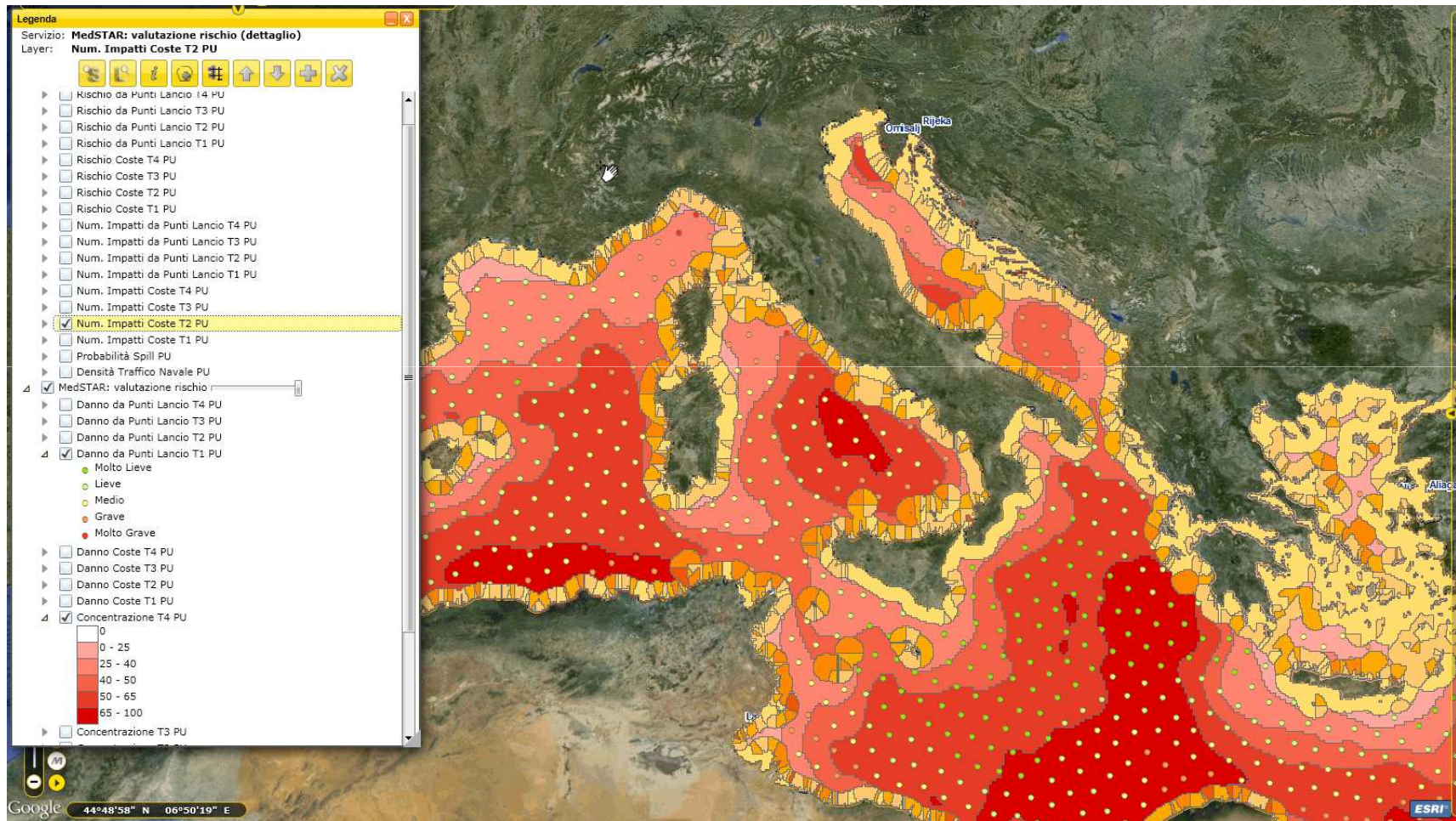


The general reference scheme



Preparedness at corporate level: tools

eni MedSTAR project: results available in 3Ter Advanced



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Preparedness at corporate level: exercise

2010 - 9 exercise

Some were focused at e&p off shore scenarios, selected with eni subsidiaries, while others were proposed and coordinated by authorities like Italian Civil Protection or the Italian Navy



Nurra 2007
eni trading&shipping
time charter tanker



Nurra 2007
Source: EMRIL

Preparedness at corporate level: network

- Italy: Headquarters Coast Guard, Ministry of Environment - ISPRA (emergency unit), Civil Protection (DPC-COEMM) –Union Oil (Unione Petrolifera)
- IPIECA Oil Spill Working Group
- OGP **Global Industry Response Group** (GIRG)
Oil Spill Response sub-team - GIRG OSR: over forty experts and responders from OGP, the IPIECA Oil Spill Working Group, and the Tier 3 Oil Spill Response Centre in UK - Full consultative process in worldwide Oil Spill Response Community - 19 issues identified for further work

<http://www.ogp.org.uk/downloads/GirgOSR.pdf>

Prevention: Well Engineering Design and Equipment/Operating procedures

<http://www.ogp.org.uk/downloads/GirgWells.pdf>

Intervention: Capping and Containment

<http://www.ogp.org.uk/downloads/GirgCapping.pdf>



Preparedness: GIRG recommendations (OGP press release 16 May 2011)

■ Prevention

Establishment of an OGP-governed Wells Expert Committee (WEC) that will develop better capabilities and practice on well engineering design and well operations management in order to reduce the likelihood of future incidents
Recommendation to industry and regulators that a “two (independent and physical) barrier” policy is in place during the life of a well
Introduction of a 3-tier review process
Promotion of human competence management systems

■ Intervention

Development of a consortium of nine major oil companies that will enhance the industry’s ability to cap future well incidents, will study further the need for, and feasibility of, **global containment solutions**, and will develop an operating model for any equipment

■ Response

Creation of a Joint Industry Project (JIP) including OGP and IPIECA to improve coordination between key stakeholders internationally and advance continuous improvements in oil spill preparedness and response capabilities
Recommendation to establish key principles on the value of dispersants, their effective deployment, and regulatory pre-approval for their use
Enhancement of existing recommended practices for In Situ Burning



Preparedness at corporate level: network - MOIG

The Mediterranean Oil Industry Group (**MOIG**) serves as a regional oil industry forum on oil spill prevention, preparedness and response for the Mediterranean region to ensure industry coordination in the event of an oil spill in the Mediterranean Sea. MOIG is made up of a network of industry experts on oil spill response.

MOIG was promoted by IPIECA in Cairo in 1992. Officially institutionalised in Tunisia, it provides a regional oil industry forum and a regional industry interface with the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC).

Mediterranean Government-Industry Cooperation Action Plan (MGICAP)
Next Activity for 2011: regional Workshop with REMPEC on Risk Assessment



Preparedness at corporate level: network - MOIG

TOTAL **ETAP** **Eni** **Shell** **ExxonMobil**

SAMIR **REPSOL** **TP** **AuDAX** **MEKE** **PESCO**

MOTOR OIL (HELLAS) CORINTH REFINERIES S.A. **bp** **AOST**

MOIG **Oil Industry Group**

Thyna Petroleum Services

DESMI Ro-Clean A/S **NUMHYD**

SEREPT **Lundin** **TankMED** **TANKAGE MEDITERRANEE SA** **BG TUNISIA**

PA RESOURCES

OIL EGYPTIAN ASSOCIATION PIPEC

Shell Egypt **Ocean Energy** **Ocean Egypt Companies** **Eni** **leoc** **BG Egypt** **GEOTE**

APEX **Vikoma**

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