

ITALIAN COAST GUARD HEADQUARTERS



THE MARITIME SURVEILLANCE WITH L.R.I.T.

CAPTAIN LEOPOLDO MANNA

WARRANT OFFICER WALTER CONTI

4th LRIT NCA Meeting, Lisbon may 3rd 2011



ITALIAN COAST GUARD
HEADQUARTERS



AGENDA

SOME REAL LIFE EXAMPLES ON LRIT APPLICATION:

1. LIBYAN SCENARIO:

- SUPPORT TO PEOPLE EVACUATION OPERATIONS BY MONITORING SHIPS TO BE DIVERTED TOWARDS LIBYAN PORTS;
- ASSO 22 HIJACKED BY LIBYAN SOLDIERS.

2. SAR EVENT ON 24/7/2010:

- MAN OVERBOARD FROM AN ITALIAN SAILING BOAT.

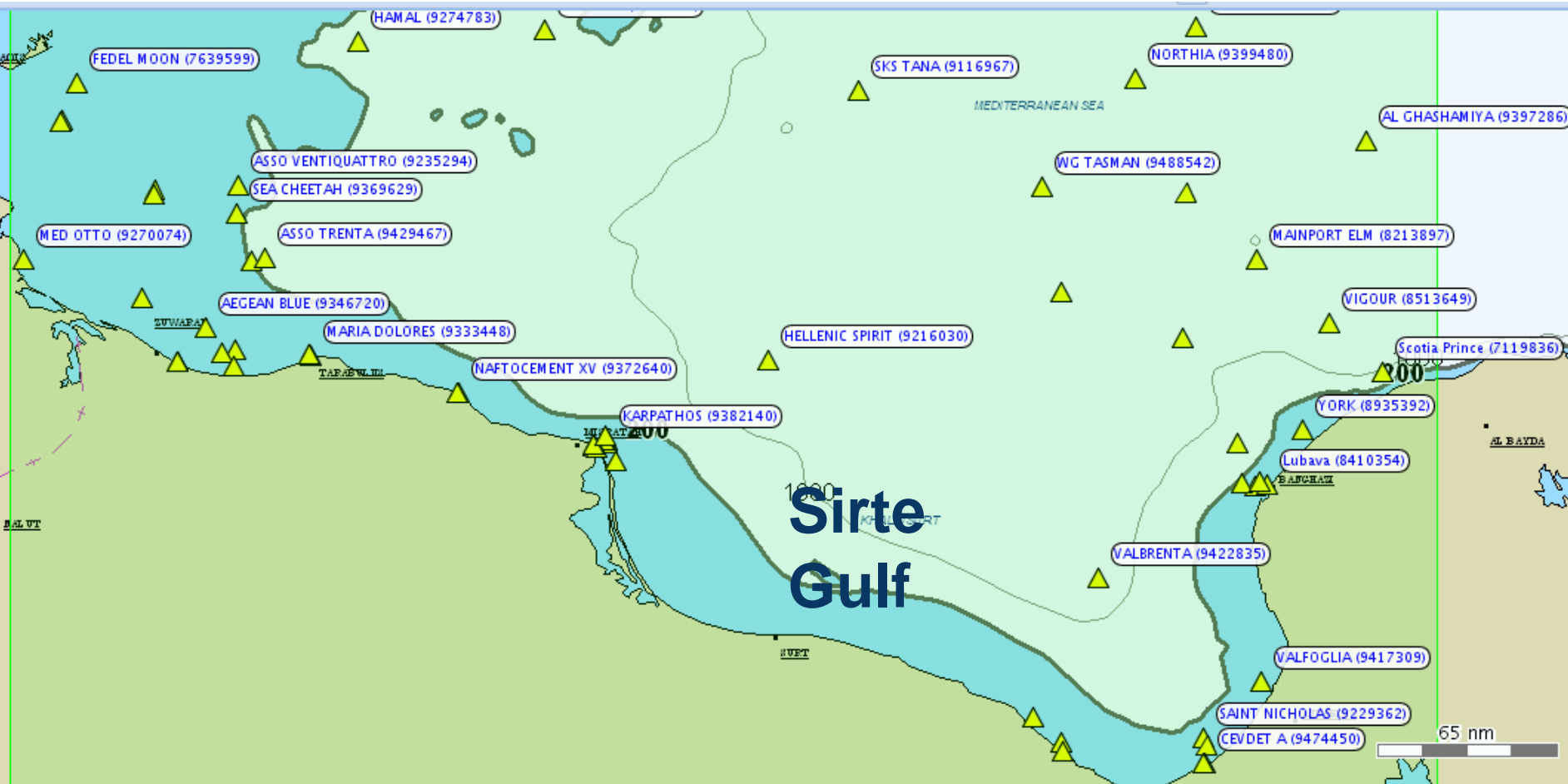
3. LRIT IN SUPPORT OF ANTI-PIRACY OPERATIONS:

- TANKER SAVINA CAYLYN;
- TANKER ALESSANDRA BOTTIGLIERI;
- TANKER ROSALIA D'AMATO;

4. COLLABORATION WITH JRC (PMAR PROJECT) AND WITH E-GEOS (MARISS AND G-MOSAIC PROJECTS).



LIBYAN WATERS SCENARIO: TRAFFIC MONITORING TO SUPPORT DECISIONS IN PEOPLE EVACUATION OPERATIONS



Detected ships with the aim to find any useful platform to divert to LIBYA for immediate evacuation of italian and foreign citizens.

ITALIAN SHIPS ALREADY BERTHED INSIDE LIBYAN PORTS ON March 1 2011

<i>TYPE</i>	<i>Name</i>	<i>Call Sign</i>	<i>FLAG</i>	<i>Position</i>		
TUG	CAPO D'ORLANDO	IZTA	IT	AT ANCHOR: MELLITAH		
TUG	CAPO FARO	IZRZ	IT	AT ANCHOR: MELLITAH		
TUG	MEGREZ	IQPV	IT	AT ANCHOR: MELLITAH		
TUG	ASSO VENTIDUE	IBJR	IT	AT ANCHOR: MELLITAH		
Platform Supply Ship	ASSO TRENTA	ICFE	IT	IN PORT: TRIPOLI		
Crude Oil Tanker	VALBRENTA	IBUJ	IT	AT ANCHOR: RAS LANUF		
Crude Oil Tanker	VALFOGLIA	ICLM	IT	AT ANCHOR: AZ ZUWAYTINAH		

ANY FLAG SHIPS IN THE AREA OF LIBYAN WATERS ON March 1 2011

<i>TYPE</i>	<i>Name</i>	<i>Call Sign</i>	<i>FLAG</i>	<i>Posizion UTC time</i>		
Crude/Oil Products Tanker	NEW CONQUEST	V7GG4	Marshall Islands	33 31'N - 013 07'E - 10:26Z		
	ARNEBORG			33 21'N - 013 51'E - 14:10Z		
Bulk Carrier	NORTON	3EFT6	Panama	33 11'N - 014 00'E - 17:53Z		
Crude Oil Tanker	FRANKOPAN	9AA4520	Croatia	33 32'N - 016 04'E - 12:06Z		
Passenger/Ro-Ro Ship	EXPRESS SANTORINI	SXQR	Greece	33 05'N - 016 40'E - 22:16Z		
LPG Tanker	GAZ PROVIDENCE	3FBR5	Panama	32 47'N - 017 05'E - 20:50Z		
	EL VENIZELOS			33 18'N - 017 25'E - 00:30Z		
Crude Oil Tanker	MINERVA ASTRA	SVAE	Greece	33 14'N - 019 36'E - 07:39Z		
Container Ship	COSCO QINGDAO	3FEF7	Panama	33 12'N - 021 21'E - 10:50Z		
Chemical/Products Tanker	CEVDET A	9HTW9	Malta	33 08'N - 021 56'E - 07:44Z		
Chemical/Products Tanker	ORIENTAL MARGUERITE	3EOL7	Panama	33 09'N - 022 52'E - 19:56Z		
Bulk Carrier	UMM AD DALKH	A8XK7	Liberia	33 02'N - 023 19'E - 05:48Z		
	BERMUDA SPIRIT			33 24'N - 017 58'E - 06:40Z		



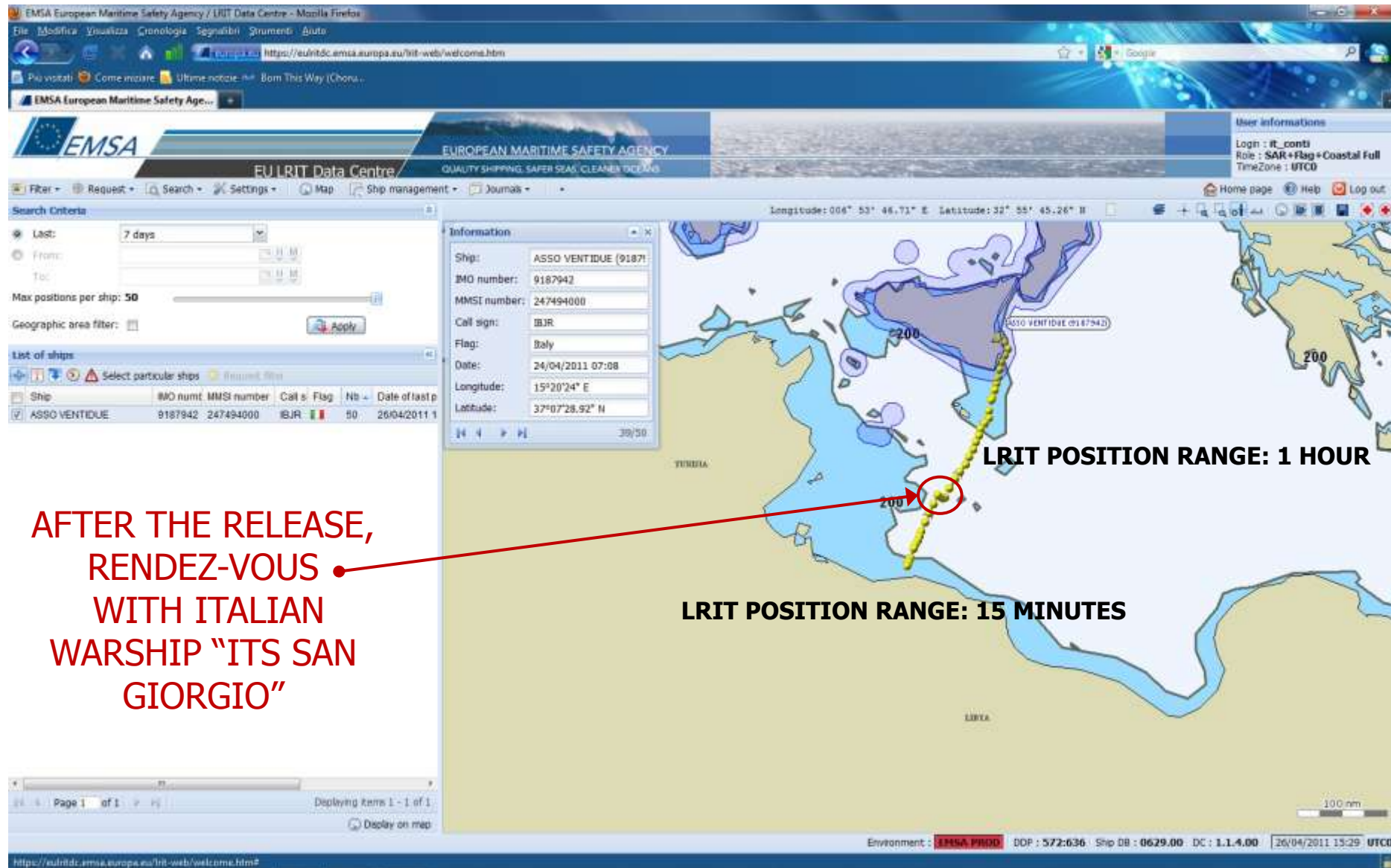
ITALIAN TUG "ASSO 22": HIJACKED BY LIBYAN SOLDIERS



ITALIAN COAST GUARD
HEADQUARTERS



ITALIAN TUG "ASSO 22": HIJACKED BY LIBYAN SOLDIERS



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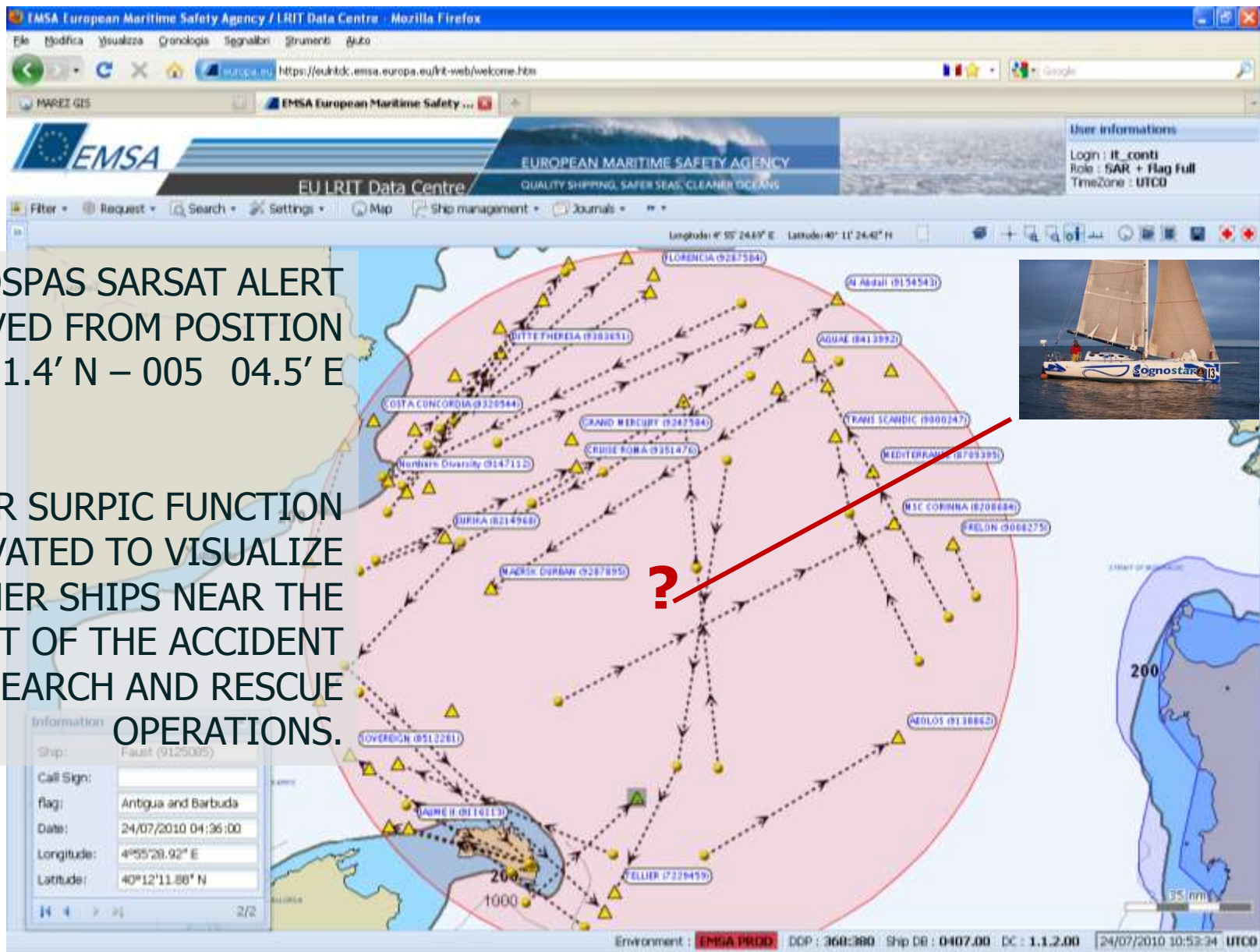
SAR CASE ON 24/7/2010:

MAN OVER BOARD FROM AN ITALIAN SAYLING BOAT

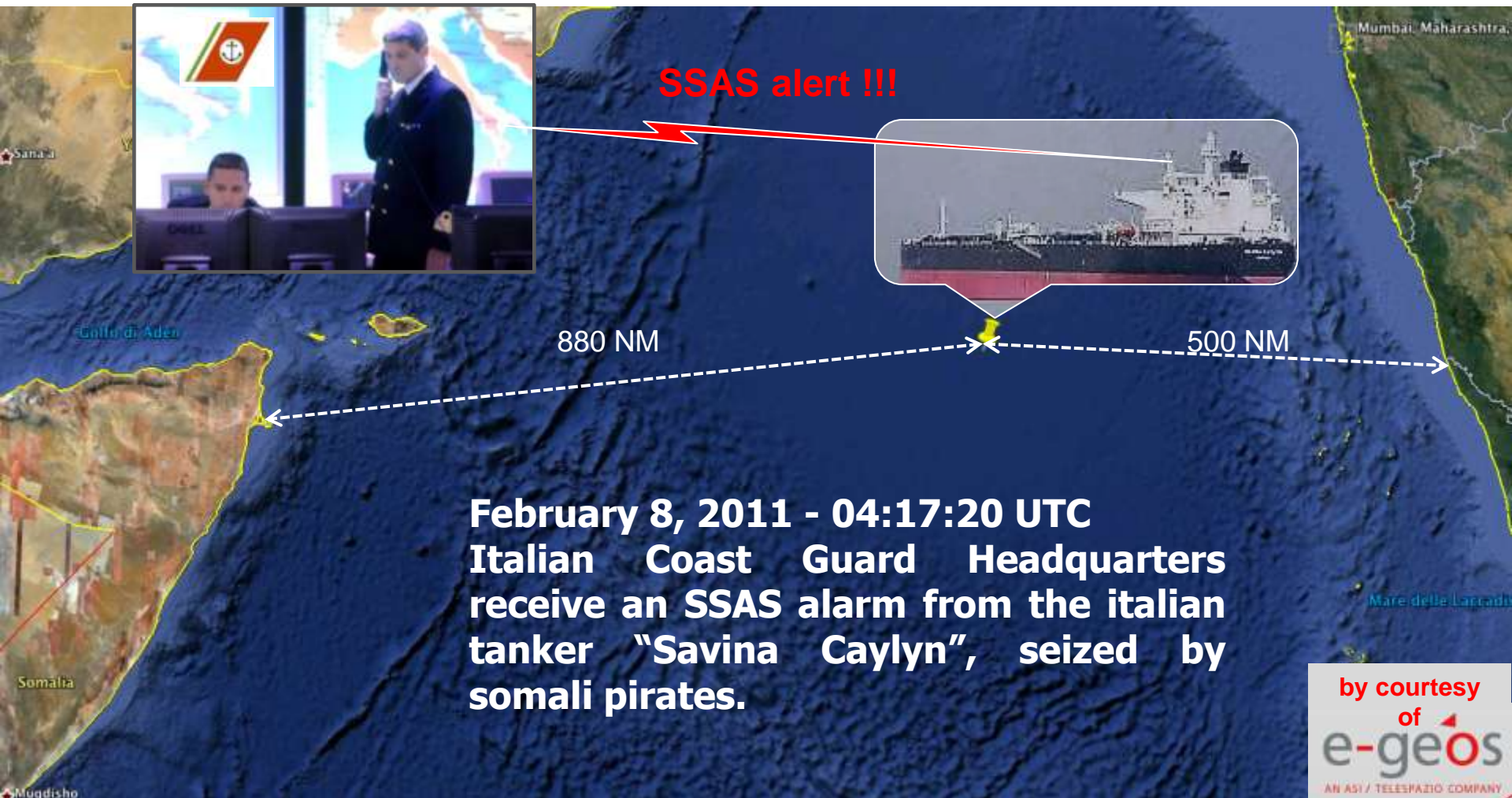


COSPAS SARSAT ALERT
RECEIVED FROM POSITION
41 01.4' N – 005 04.5' E

SAR SURPIC FUNCTION
ACTIVATED TO VISUALIZE
OTHER SHIPS NEAR THE
POINT OF THE ACCIDENT
FOR SEARCH AND RESCUE
OPERATIONS.



2011 February 8 – 04:17 UTC



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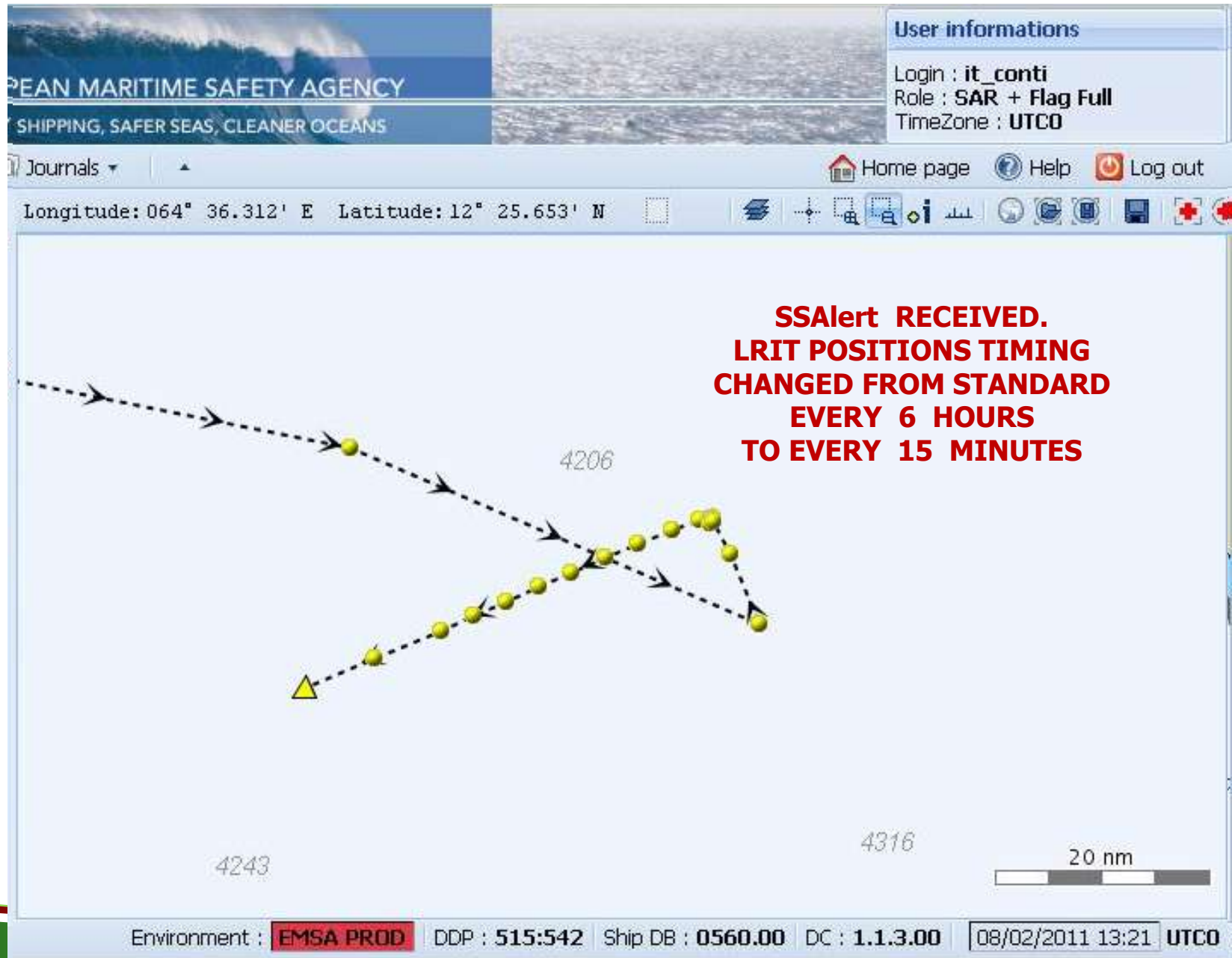
ITALIAN FLAG SHIPS UNDER PIRACY ATTACK

EXTENDED TRACKING SERVICE ON INDIAN OCEAN AREA FOR MONITORING OF TANKER SAVINA KAYLYN

- Service activated by Italian Coast Guard on 08-02-2011 at 10:00 UTC.
- At that time Italian Coast Guard starts to provide e-GEOS with LRIT data coming from SAVINA CAYLYN.
- By applying appropriate calculations on to the received LRIT data, e-GEOS tasked a COSMO-SkyMed satellite imagery acquisition on the area crossed by the italian tanker. The area has been estimated by propagating in the future the LRIT tracks transmitted by the ship 24 hours before of the first CosmoSM acquisition. The CSKM images could provide important informations on the traffic around the monitored tanker.
- The first acquisitions of COSMO SkyMed sensors have been acquired on 02-09-2011 at 15:45:54. The second one on 02-10-2011 at 02:17:51. These images have been acquired in ScanSAR Wide Mode 30mt. resolution.
- On 02-13-2011 CSKM acquired the SAVINA CAYLYN in StripMAP mode 5mt. resolution.
- On 02-14-2011 optical satellite IKONOS acquired the SAVINA CAYLYN.



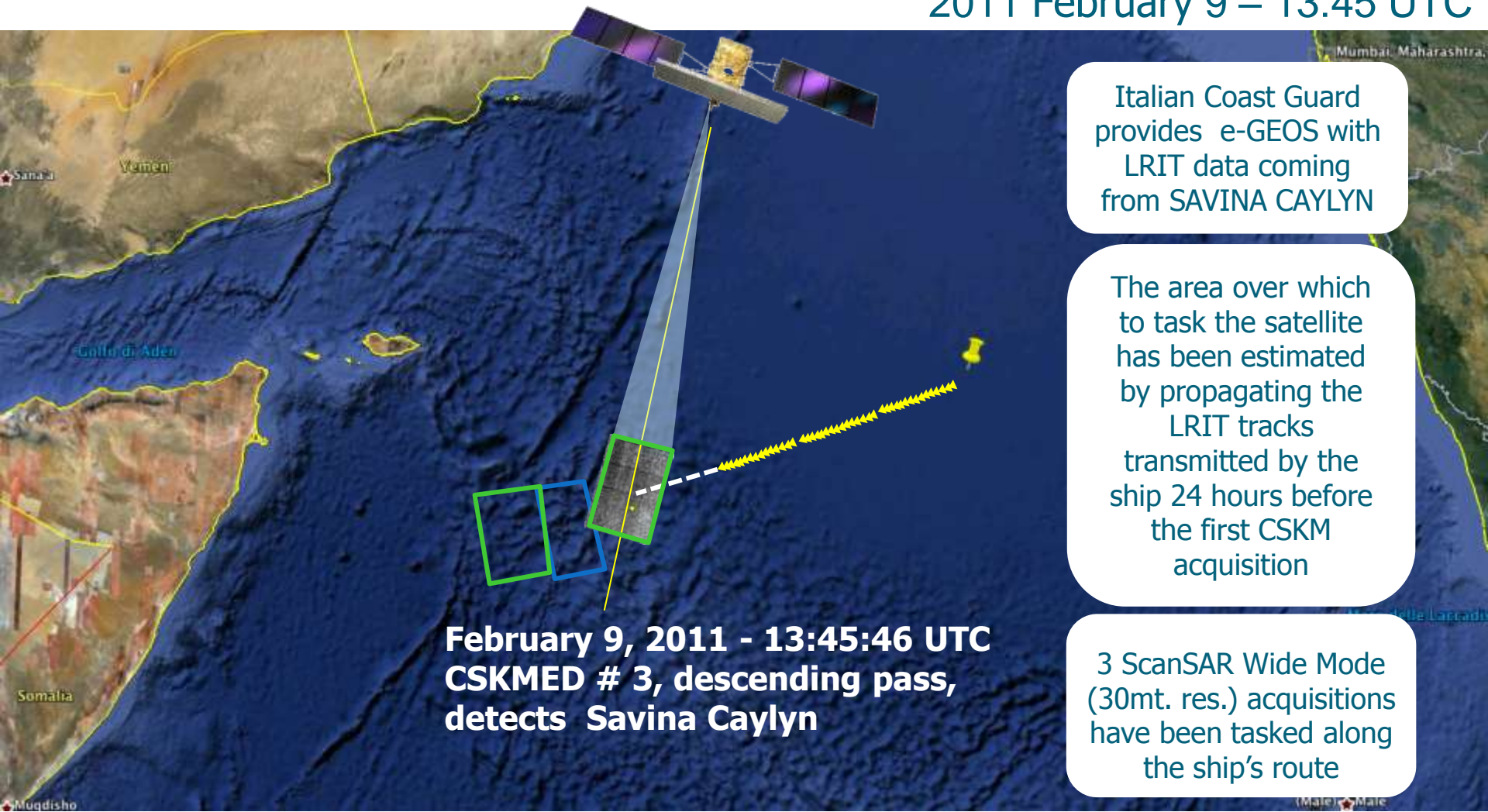
SAVINA TANKER MONITORED WITH LRIT



HEADQUARTERS



2011 February 9 – 13:45 UTC



**February 9, 2011 - 13:45:46 UTC
CSKMED # 3, descending pass,
detects Savina Caylyn**

Italian Coast Guard provides e-GEOS with LRIT data coming from SAVINA CAYLYN

The area over which to task the satellite has been estimated by propagating the LRIT tracks transmitted by the ship 24 hours before the first CSKM acquisition

3 ScanSAR Wide Mode (30mt. res.) acquisitions have been tasked along the ship's route

SAVINA CAYLYN MONITORED WITH COSMO SKYMed AND LRIT

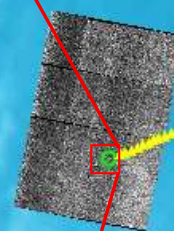
TECHNOLOGIES

LRIT

From 08/02/2011 23:24:00 up
to 09/02/2011 13:14:00

COSMO SkyMed

09/02/2011 13:45:54

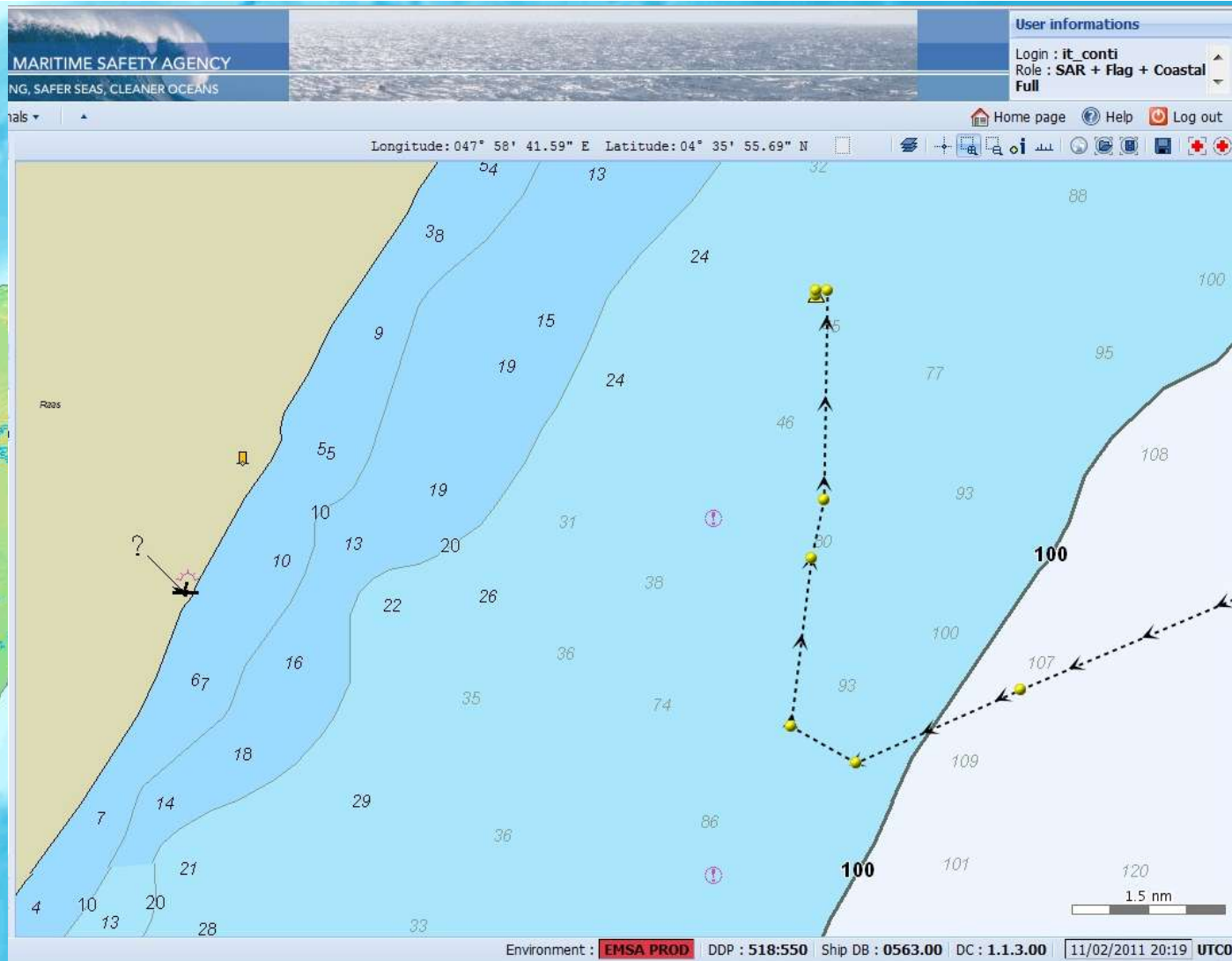


by courtesy
of
e-geos
AN ASI / TELESPIAZIO COMPANY

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SAVINA CAYLYN MONITORED WITH COSMO SKYMED AND LRIT TECHNOLOGIES



LRIT

From 08/02/2011 23:24:00 up to
09/02/2011 13:14:00

COSMO SkyMed

09/02/2011 13:45:54

COSMO SkyMed

10/02/2011 02:17:51

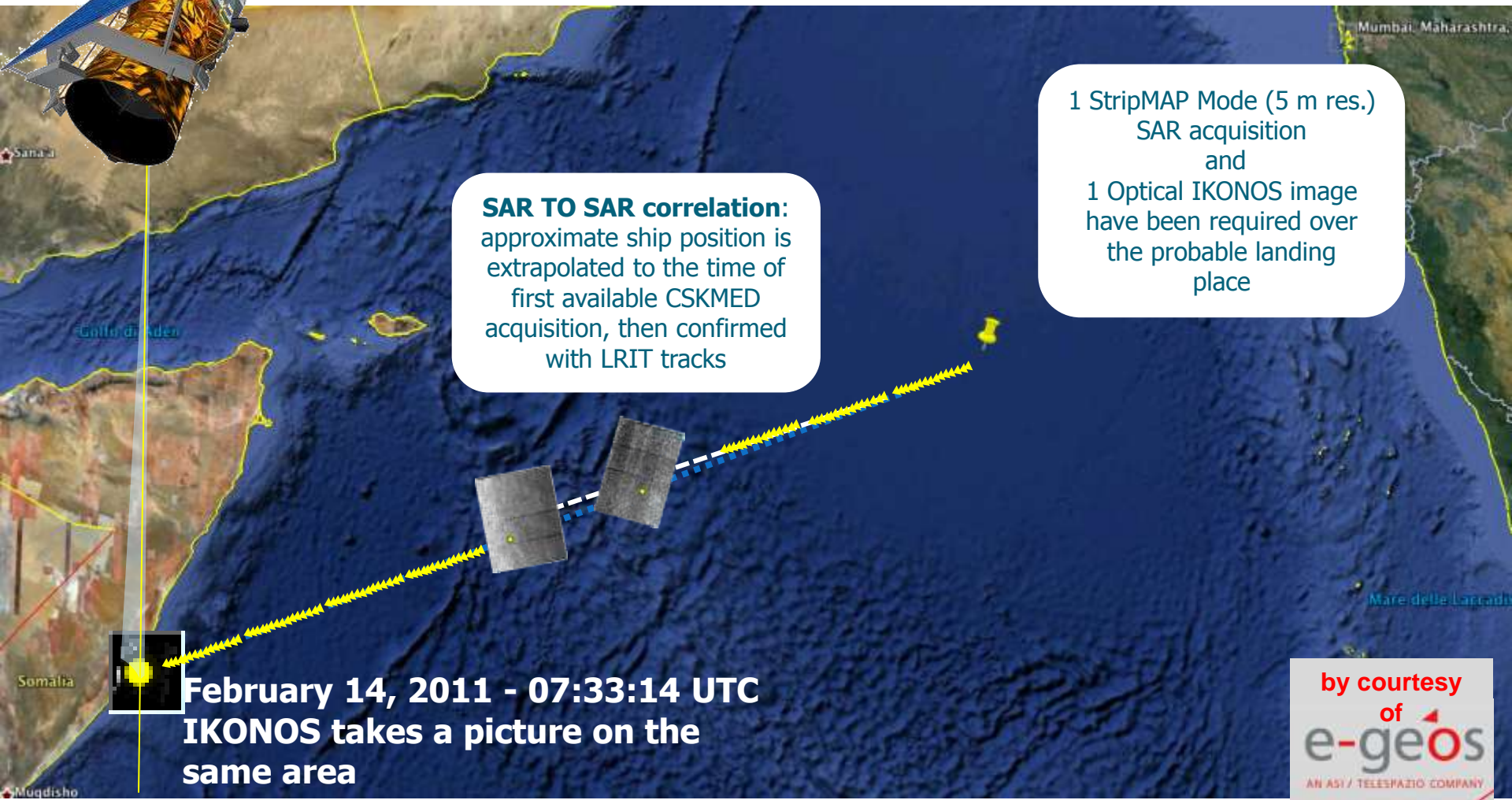
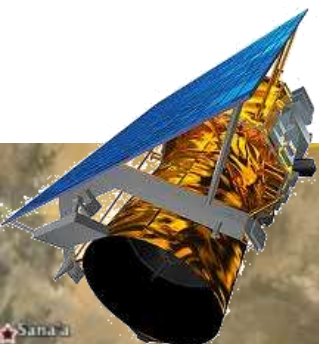
LRIT

11/02/2011 20:19:00

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2011 February 14 – 10:00 UTC



SAR TO SAR correlation:
approximate ship position is
extrapolated to the time of
first available CSKMED
acquisition, then confirmed
with LRIT tracks

1 StripMAP Mode (5 m res.)
SAR acquisition
and
1 Optical IKONOS image
have been required over
the probable landing
place

February 14, 2011 - 07:33:14 UTC
IKONOS takes a picture on the
same area

by courtesy
of
e-geos
AN ASI / TELESPIAZIO COMPANY

SAVINA TANKER MONITORED WITH COSMO SKYMED AND IKONOS 14 – 02 - 2011



Optical IKONOS image

by courtesy
of
e-geos
AN ASI / TELESPIAZIO COMPANY

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----- Covert/Security Alert Received -----

Mobile Terminal No : 424700243
To CES : 121
Position : 05 16.87'N 002 52.22'E

ORDER PIRACY ATTACK ALESSANDRA BOTTIGLIERI

Pos
Na
Co
Ac
Po
Co
Sh
TE
IM
CA
ITA

The screenshot shows the EMSA EU LRIT Data Centre web application. The search criteria panel on the left shows a search for ship ALESSANDRA BOTTIGLIERI (IMO number 9239460) on 12/04/2011 at 12:24. The list of ships table shows the following data:

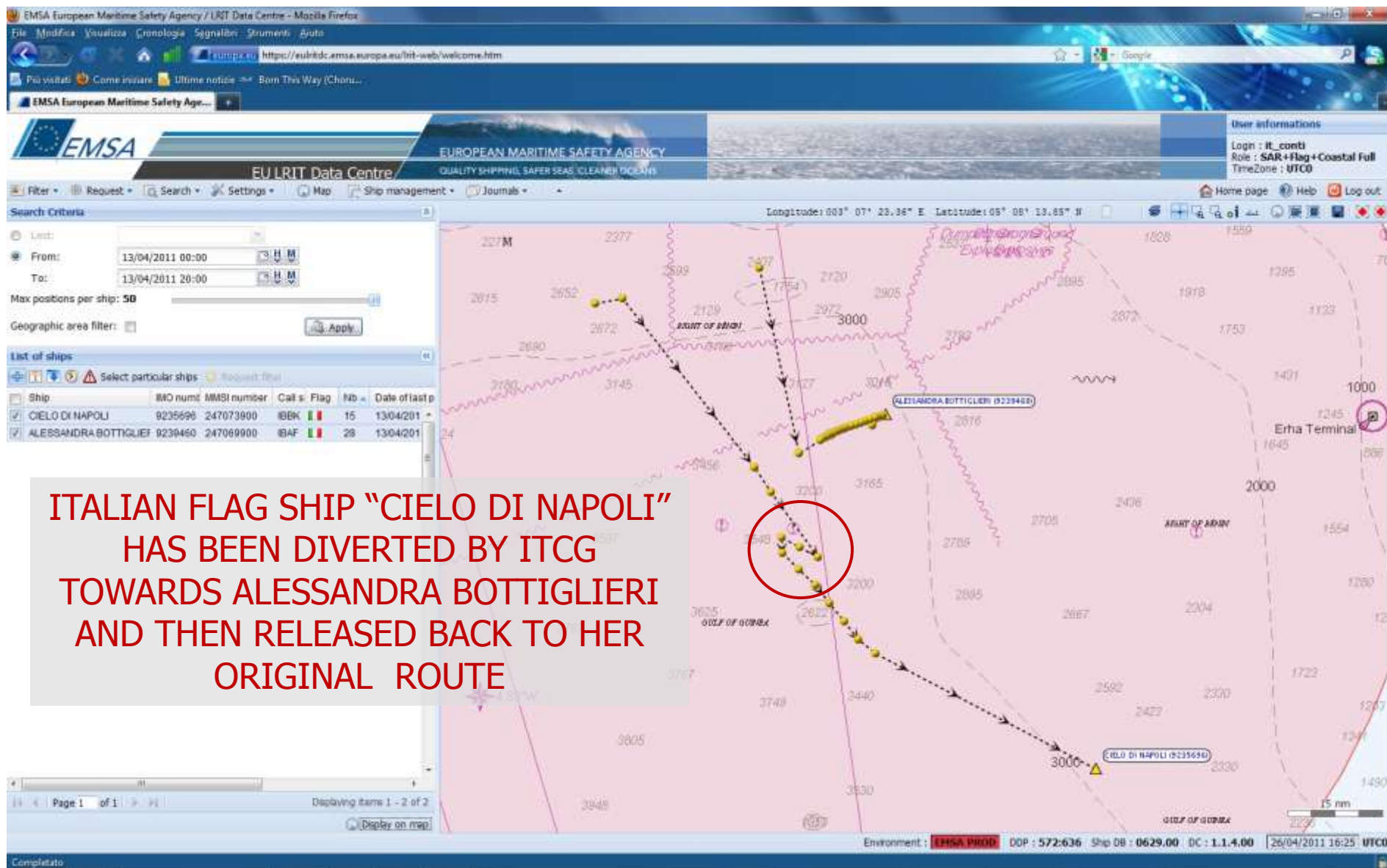
MMSI number	Call si	Flag	Nb	Date of last position
247073900	IBBK	Italy	1	13/04/2011 12:14
636092111	VOLIO	Italy	1	13/04/2011 08:14
311036700		Italy	1	13/04/2011 10:36
371027000		Italy	1	13/04/2011 10:50
354504000		Italy	1	13/04/2011 09:48
538002971		Italy	1	13/04/2011 10:16
636014074		Italy	1	13/04/2011 11:00
636090866		Italy	1	13/04/2011 11:12
636091362		Italy	1	13/04/2011 11:01
370158000		Italy	1	13/04/2011 07:48
215297000	9HUM	Italy	1	13/04/2011 09:06
311010700		Italy	1	13/04/2011 12:06
370113000		Italy	1	13/04/2011 12:04
367148000		Italy	1	13/04/2011 09:13
371895000		Italy	1	13/04/2011 06:30
311005100		Italy	1	13/04/2011 10:18
247069900	IBAF	Italy	1	13/04/2011 10:06
677027600		Italy	1	13/04/2011 06:38
667527000		Italy	1	13/04/2011 11:46
636008030		Italy	1	13/04/2011 06:44
636011000		Italy	1	13/04/2011 09:00

The map view shows the location of ALESSANDRA BOTTIGLIERI (9239460) and other ships in the area, including CIELO DI NAPOLI (9235696) and LE JADE (9102423). A pink overlay indicates a search area. The status bar at the bottom shows the environment as EMSA PHROD, DOP as 572:636, Ship ID as 0629:00, DC as 1.1.4.00, and the date/time as 26/04/2011 16:09 UTC0.

SAR SURPIC TO IDENTIFY OTHER SHIPS IN AREA

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ITALIAN FLAG SHIPS UNDER PIRACY ATTACK

Activation – tanker “Rosalia D’Amato”

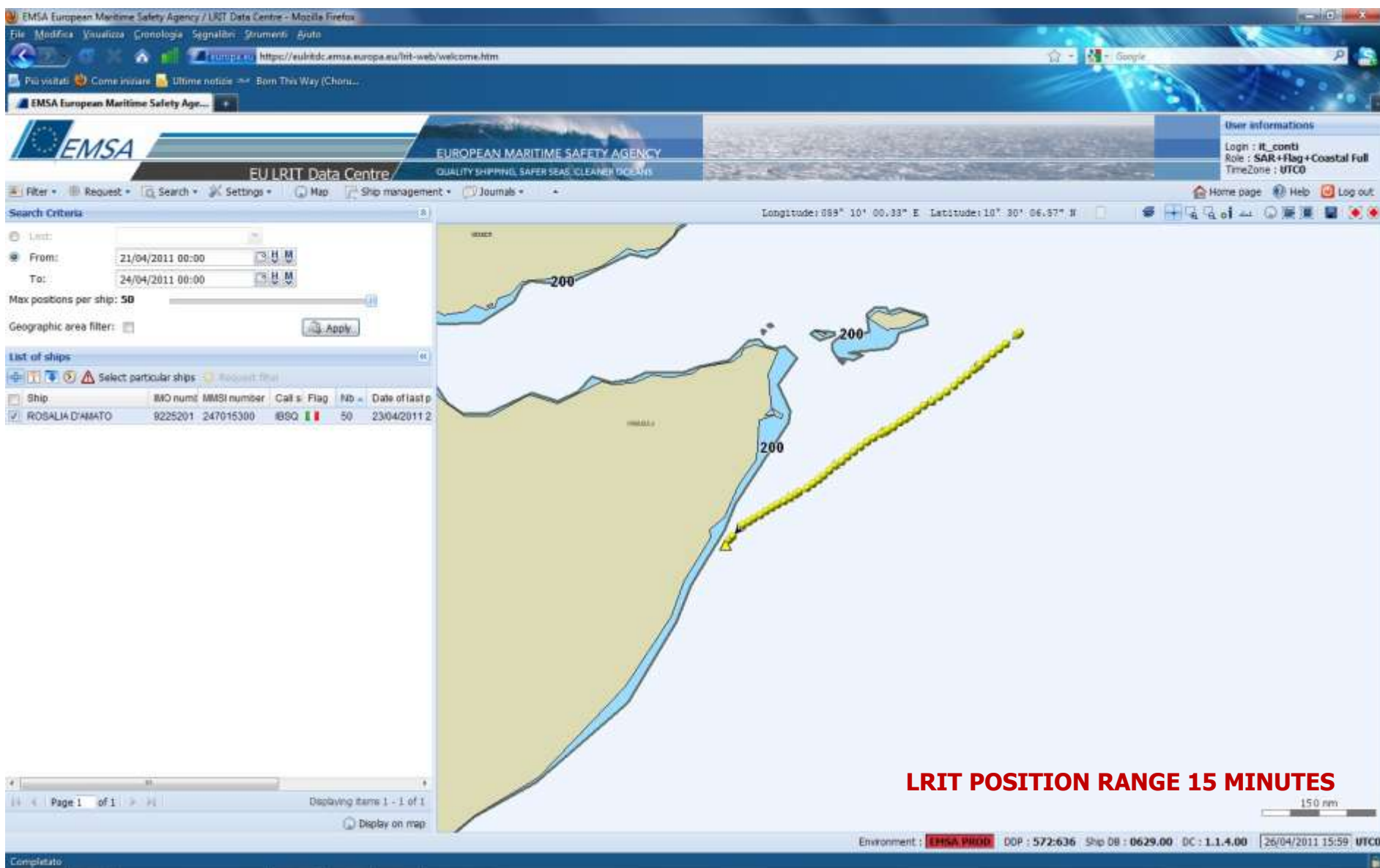


Event description:

- On April 22nd, 2011 the tanker Rosalia D’Amato was attacked by pirates in the Arabic Sea.

Triggering entity: **Italian Coast Guard**

- e-GEOS has been activated by the Italian Coast Guard in the framework of G-MOSAIC Rapid Geospatial Reporting Service to monitor vessel route using both optical and radar satellite images, **with the strict support of LRIT system**.
- e-GEOS immediately planned and acquired both Cosmo-SkyMed and IKONOS images along the estimated route provided by the IT Coast Guard, detecting the vessel in different positions, according to **LRIT tracks**.



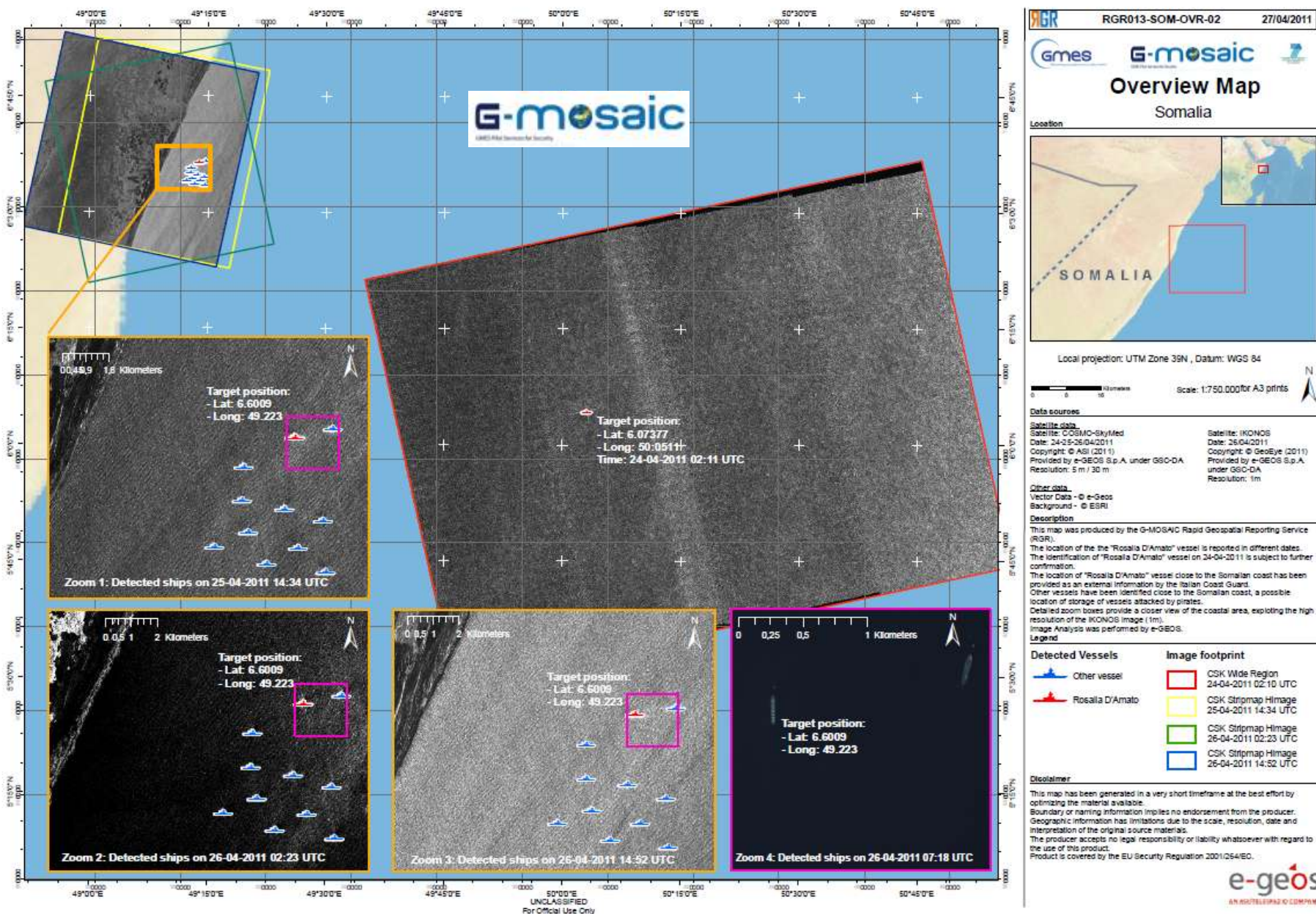
LRIT POSITION RANGE 15 MINUTES



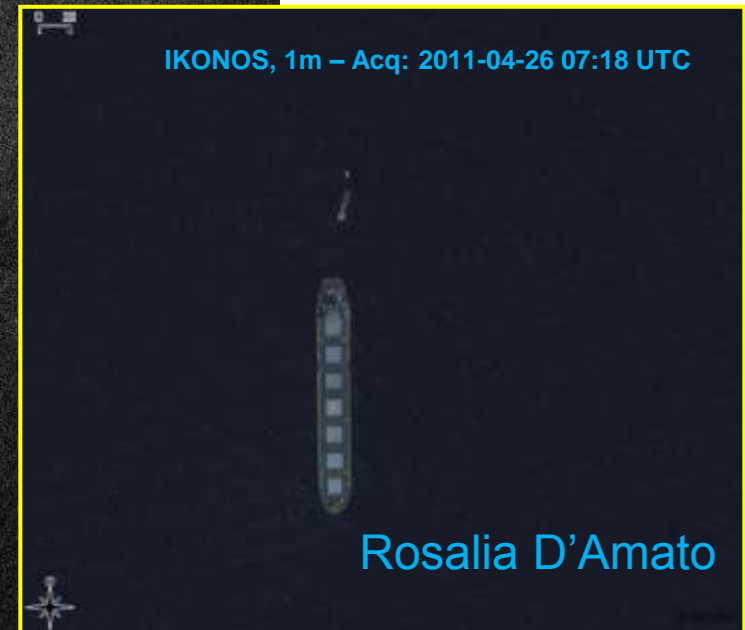
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MAP PRODUCTS DELIVERED THROUGH G-MOSAIC WEB PORTAL



VESSEL STORAGE AREA NEAR SOMALIA COAST



COLLABORATION WITH JRC ISPRA: PMAR PROJECT

Data sources

- Commercial
 - Satellite-AIS, Satellite SAR
 - Bulk of the data
- Institutional
 - MSSIS, ESA, VMS, LRIT, EUNAVFOR, EMSA
 - Essential data owned by authorities
- Partners exchange
 - EUSC, DLR, FFI, NURC, US
 - Cooperation with R&D partners



**LRIT DATA NECESSARY TO
CONDUCT THE EXPERIMENTAL
PHASE PROVIDED BY ITALY**



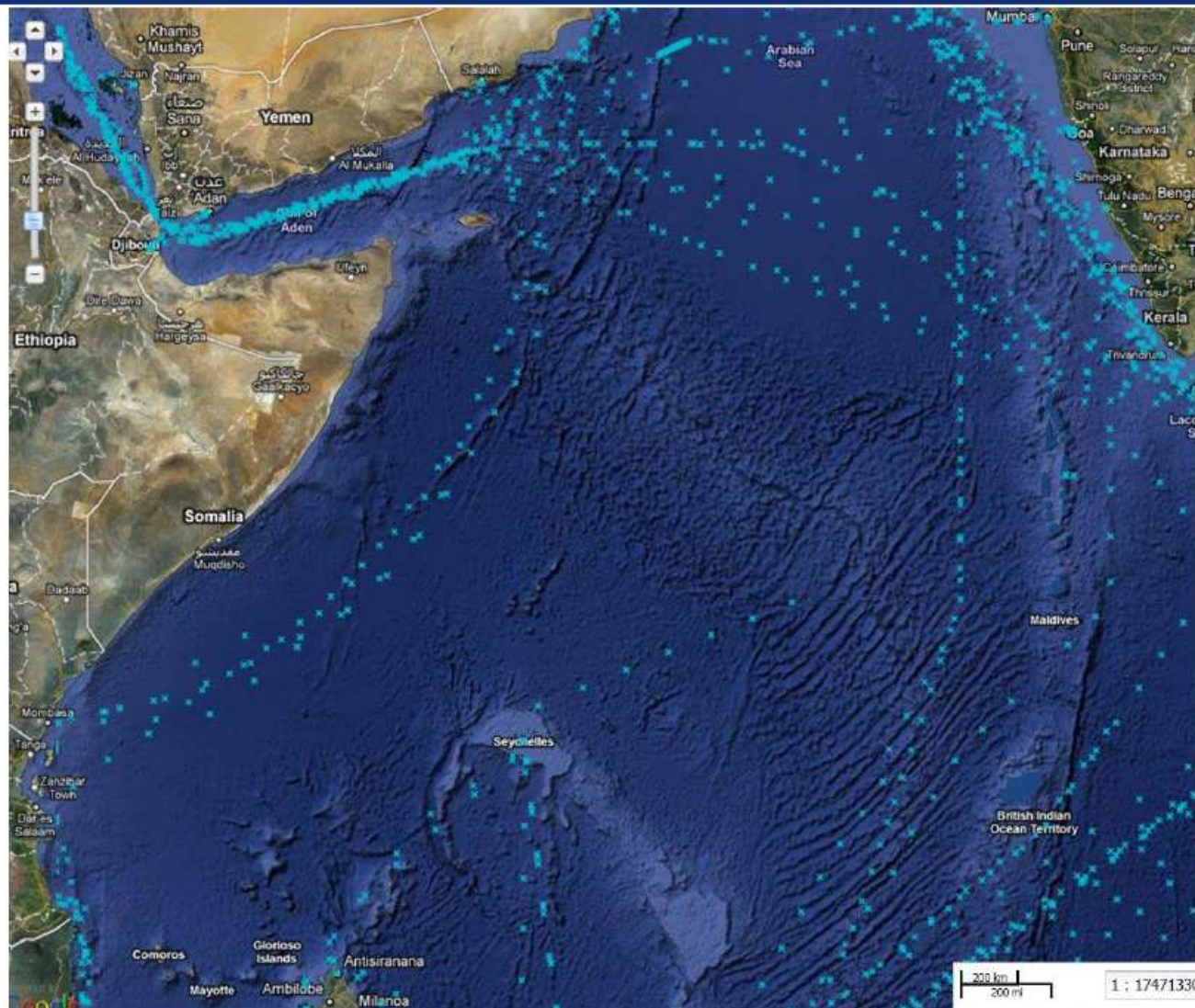
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LRIT

IT flag
multi-day

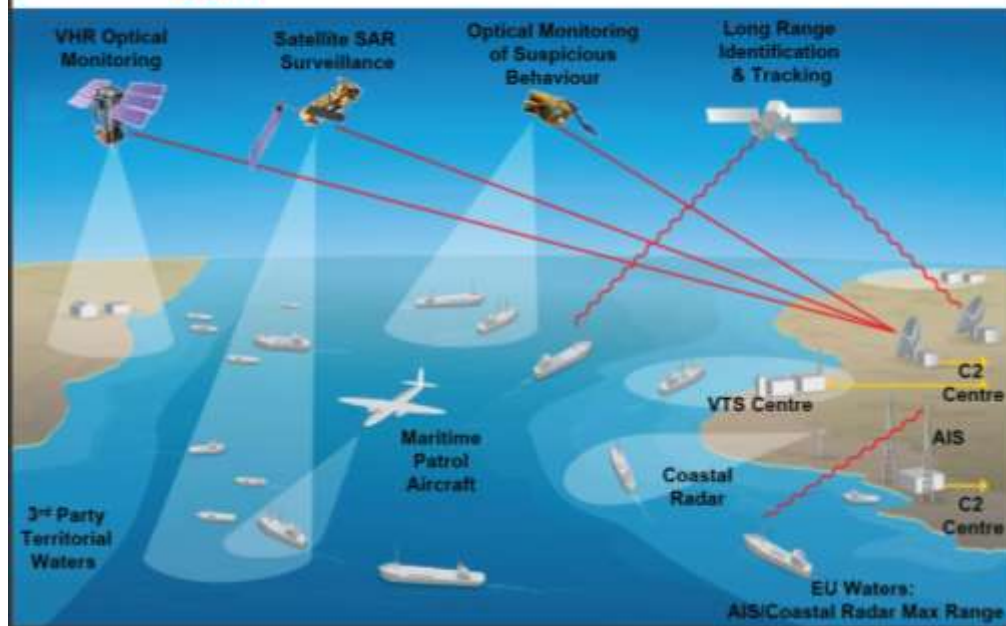
Data source:
Italian Coast Guard



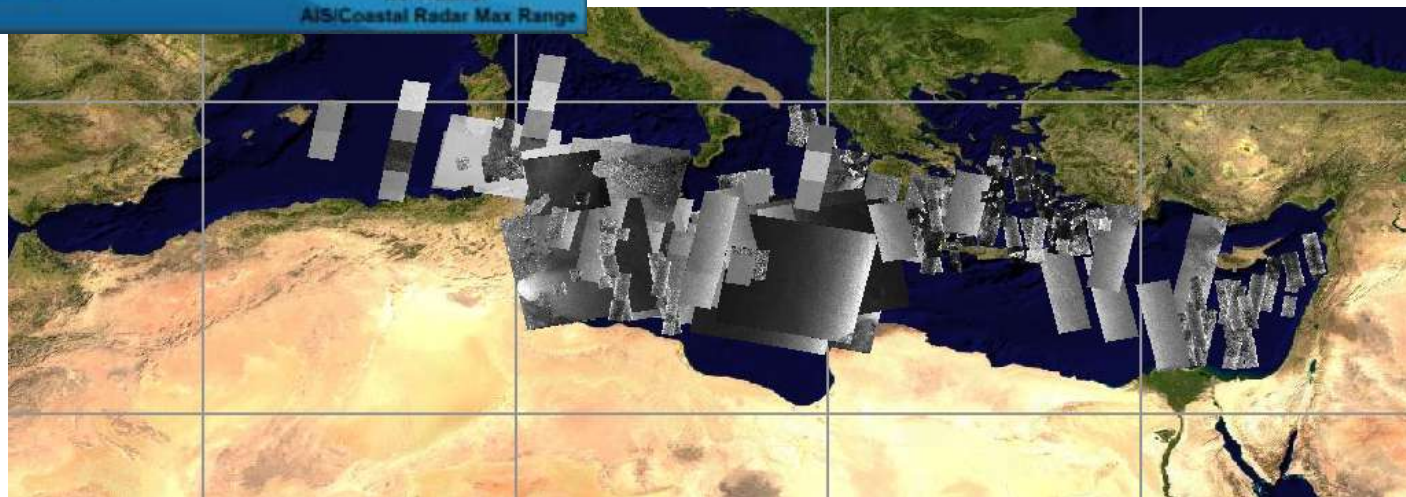
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MARISS Target: GMES Services for Integrated Maritime Surveillance



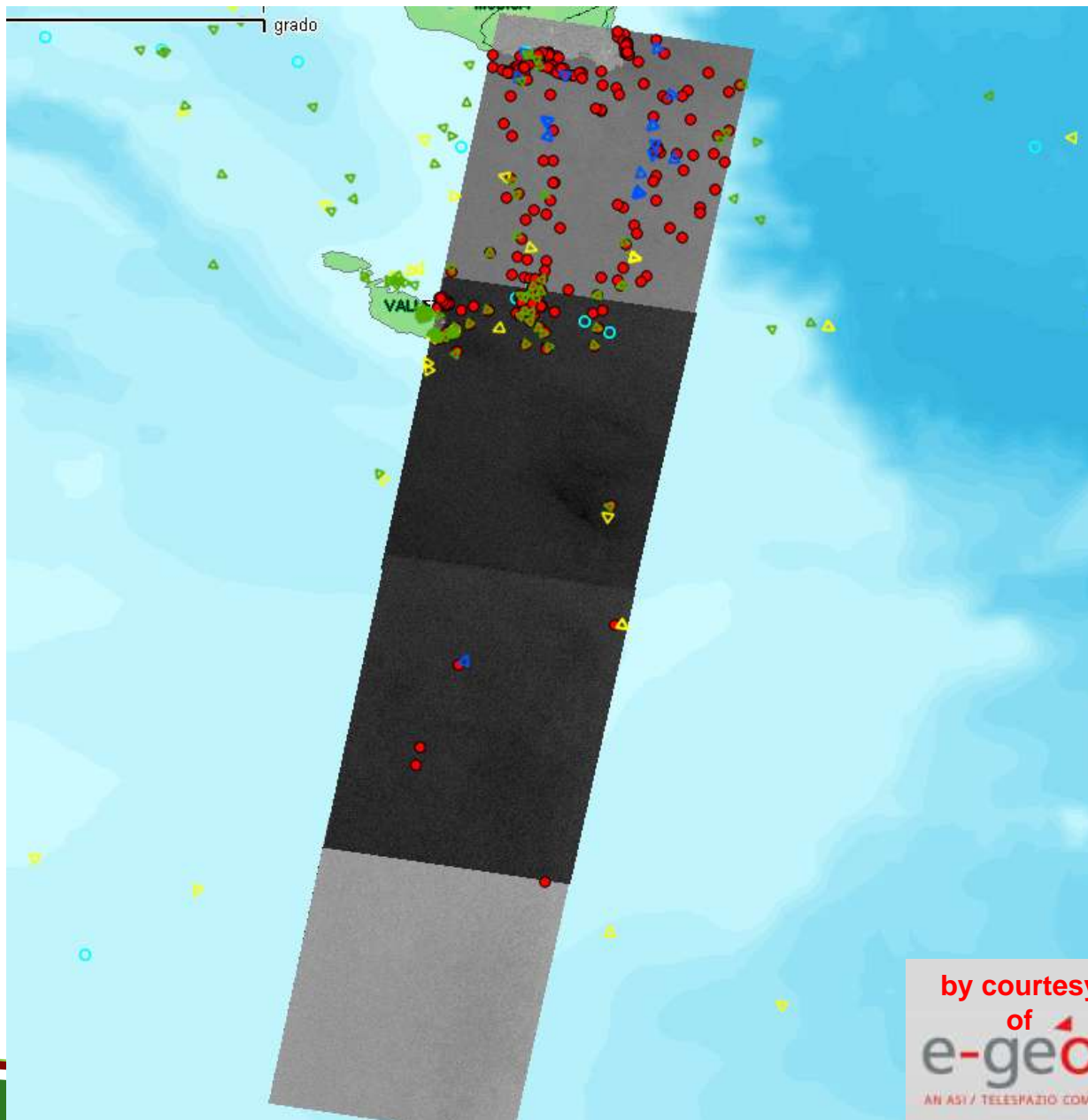
MARISS PROJECT DATA CORRELATION AND MATCHING



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MARISS : ENVISAT ASAR 21:12:2010



● Ship Detection Report

○ LRIT

△ Satellite AIS

△ VMS

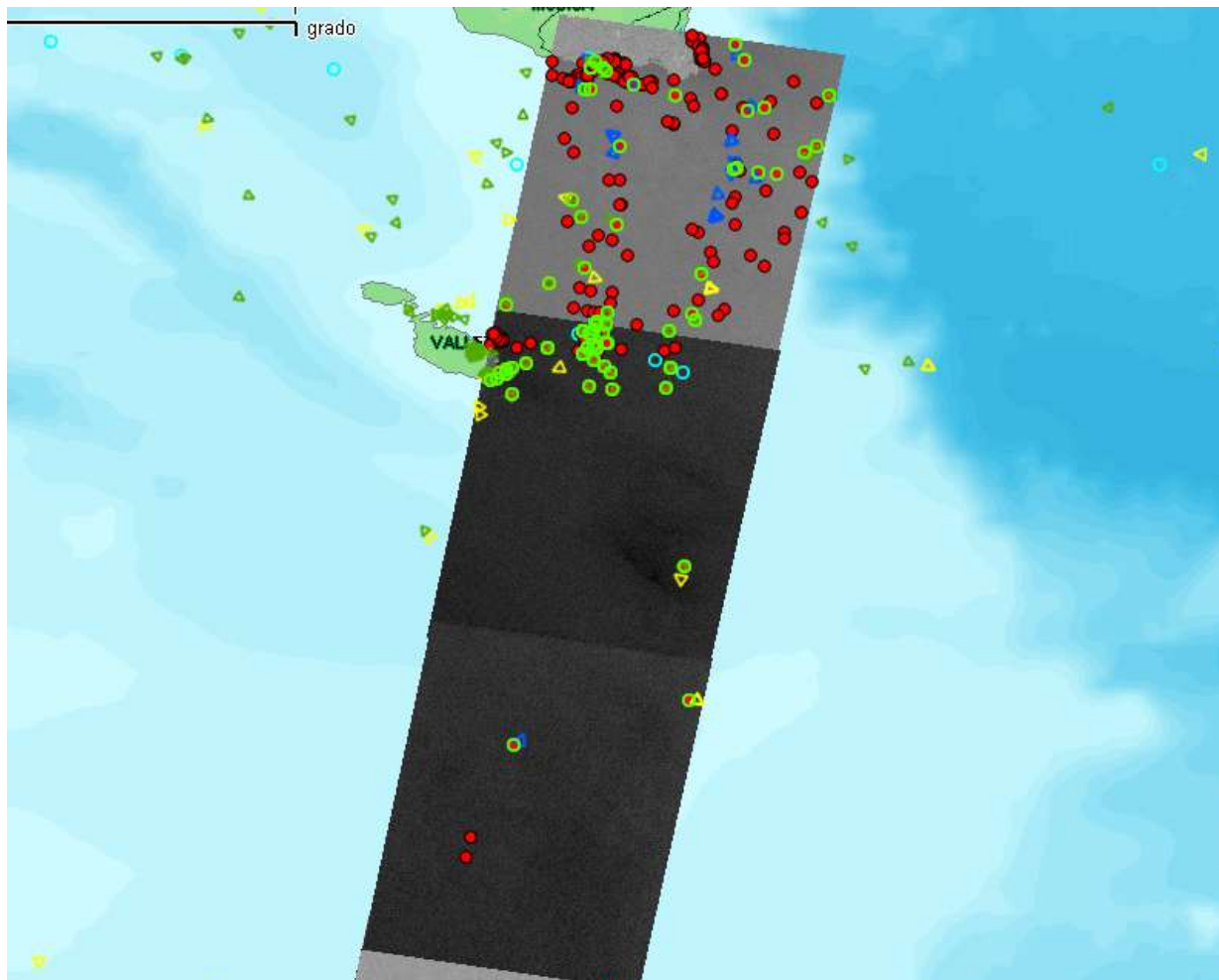
△ AIS

by courtesy
of
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GUARD
HEADQUARTERS



MARISS : ENVISAT ASAR 21:12:2010



● Ship Detection Report

○ LRIT

△ Satellite AIS

△ VMS

△ AIS

○ Correlated Ship

72 ships detected on SAR image have been identified using terrestrial AIS, Satellite AIS ,VMS and **LRIT**

by courtesy
of
e-geos
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THANK YOU FOR ATTENTION!



ITALIAN COAST GUARD HEADQUARTERS - ROME

4th LRIT NCA Meeting Lisbon, may 3rd 2011



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