



European Maritime Safety Agency

**Maritime Surveillance Pilot Project
Inter Agency Cooperation
EFCA - EMSA
BlueFin Tuna Campaign 2012**

**Meeting of the Member States experts subgroup
on the integration of maritime surveillance
4 September 2012**



BFT Pilot Project: an Inter-Agency Cooperation

1. Inter-Agency Cooperation
2. Results of the MARSURV-3 / BFTpilot project
3. The way forward



1. Inter-Agency cooperation

Why ?

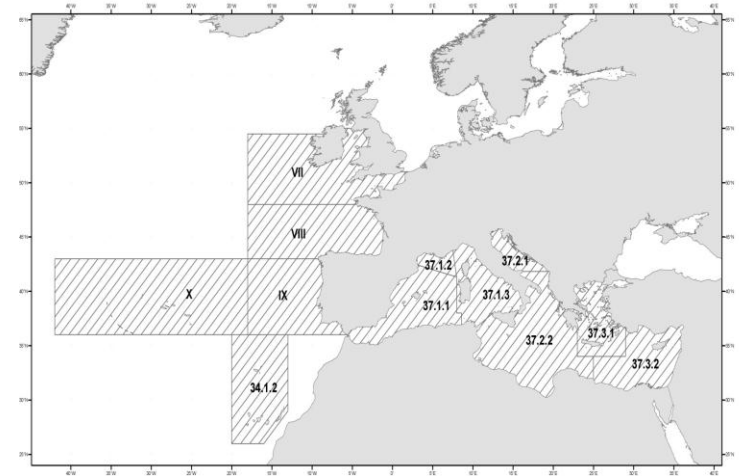


- EFCA requested to cooperate in support of the BFT inspection and surveillance activities coordinated by EFCA in the Mediterranean Sea.
- EMSA has experience in developing graphical maritime interface capabilities, combining data sources.
- The pilot project adheres to the CISE principle.

1. Inter-Agency cooperation BFT Pilot project

- Initial scope:

Purse Seiner Bluefin Tuna
campaign in the Baleares
and Central Mediterranean
From 15 May to 15 June
2012





2. Pilot project results

Previous situation



- Maritime information using different applications
 - time consuming
 - fragmented view
- Useful additional maritime information exist but not readably available
- Cross checking, fusion and correlation not automatic
 - time consuming
 - only for selected targets



2. Pilot project results

Basic principle



- In order to create an integrated real time maritime picture, can we enrich, cross-check and correlate the available VMS data with other maritime datasets ?
 - access and availability of data
 - technical infrastructure (single application)



2. Pilot project results

Expected deliverables



- **Real time** maritime awareness operational picture
- **Centralised and fast** access to wide selection of maritime information
- **Automated cross checking and correlation** between datasets
- Tool for **behaviour analysis, risk assessment** and classification of possible non compliance
- **Detection** of specific **targets** and non corresponding datasets
- Tool for **activity assessment** & follow up



2. Pilot project results

Real time maritime awareness picture



- **Dynamic information**
 - nautical chart layer
 - AIS and SAT AIS provided by EMSA
 - VMS provided by EFCA
 - inspection and surveillance information uploaded by EFCA
 - position of BFT farms and indication of specific fishery zones
 - LRIT information provide by EMSA
 - external layers for visual reference (My Ocean, Gebco, ArcGis...)
- **User defined picture**

Search

New search

Layers

- Position Source
 - T-AIS
 - Ship-AIS
 - Sat-AIS
 - LRIT
 - VDS
 - VMS
 - Coastal Radar
- Risk Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks
 - Position Source
 - Kalman Validation
 - Correlation
- BFT Incidents
 - Tuna Fishing Incidents
 - BFT Auxiliary Data
- External WMS Layers

Query

Area Centric Query

Area of interest:

Selection Info

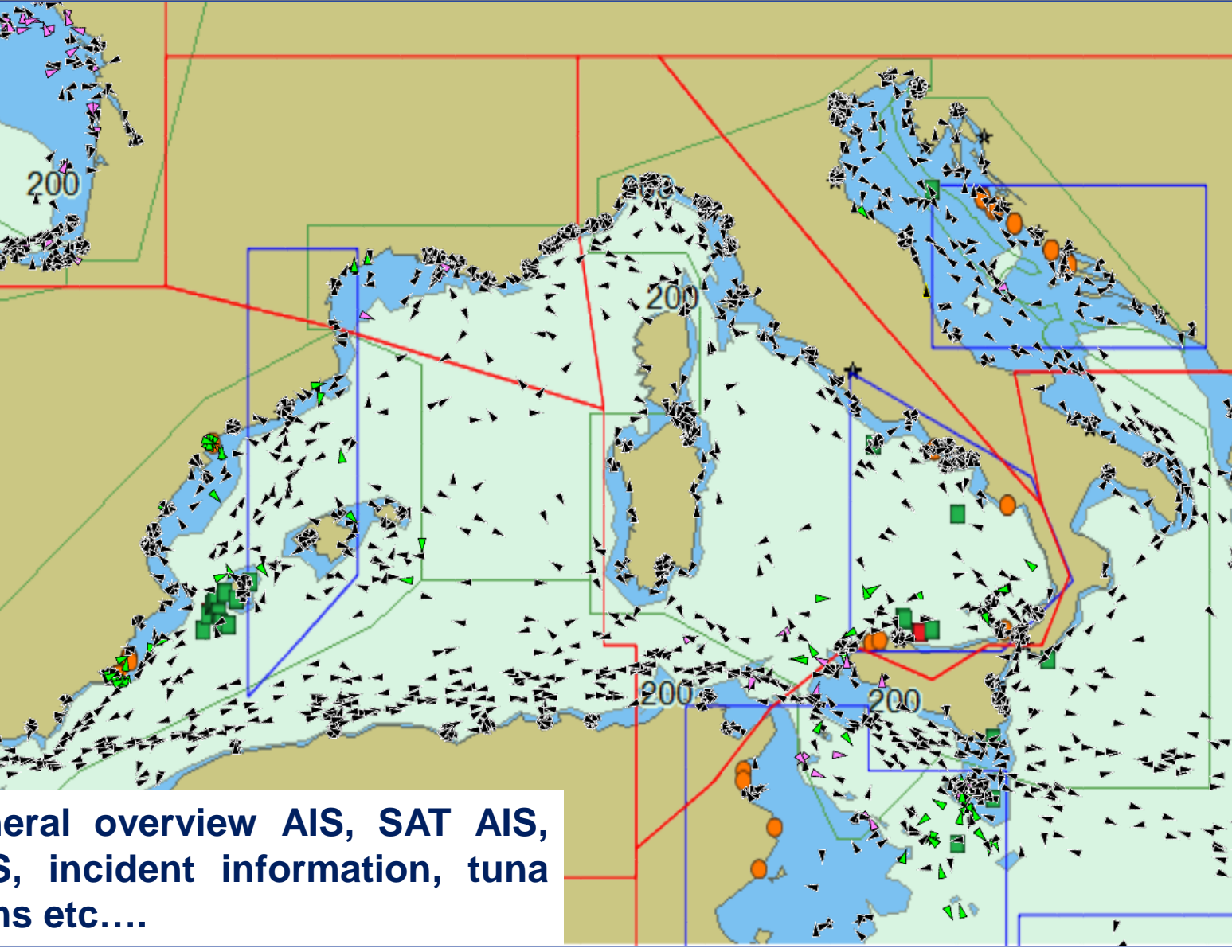
Last Position Report

Lon: 013°53'23"E
Lat: 42°57'29"N
Transmission: 2012-06-
Time: 06T13:48:24Z
Speed: 0.00 knots
Heading: 0 degrees
Position Source: T-AIS
Navigational Status: Invalid (15)
Status:
Enrichment: No Notificati
Validity Flag: Validated

Last Voyage Report

No Info

Vessel image



General overview AIS, SAT AIS, VMS, incident information, tuna farms etc....



2. Pilot project results centralised & easy access to maritime information

- All information available through a single application
 - visualisation of datasets, information and layers selectable on screen
 - immediate integration of uploaded activity (sightings & inspections)
 - access to uploaded and external vessel information (ICCAT list-.....)
- Additional access provided to;
 - Safeseanet information
 - LRIT information
- Web based application incorporated within the IMDatE architecture at EMSA

Search

Layers

Map projection: Mercator

Base layer: CMAP Base

Vessels **Symbology** BFT

- Fishing vessels
 - ICCAT vessels
 - Non ICCAT fishing vessel
 - Non fishing vessel
- Position Source
 - T-AIS
 - Ship-AIS
 - Sat-AIS
 - LRIT
 - VDS
 - VMS
 - Coastal Radar
- Risk Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks
- BFT Incidents

Query

- Integrated Ship Profile Query
- Area Centric Query
- Vessel Track Query

Selection Info

Vessel Info (center)

| | |
|------------------|--------------|
| IR: | ITA000027130 |
| Ship Name: | MIKAEL |
| Flag: | ITALY |
| Call sign: | IFWS2 |
| Identity Source: | EFCFA |
| Identity Status: | Valid |

BFT specific info

| | |
|---------------|---------------|
| ICCAT ID: | ATEU0ITA00963 |
| Permit type: | BFT_CATCH_LLD |
| Permit from: | 01/01/2012 |
| Permit to: | 31/12/2012 |
| Catch permit: | Yes |
| Gear type: | |
| Vessel type: | LL |

Last Position Report

Last Voyage Report

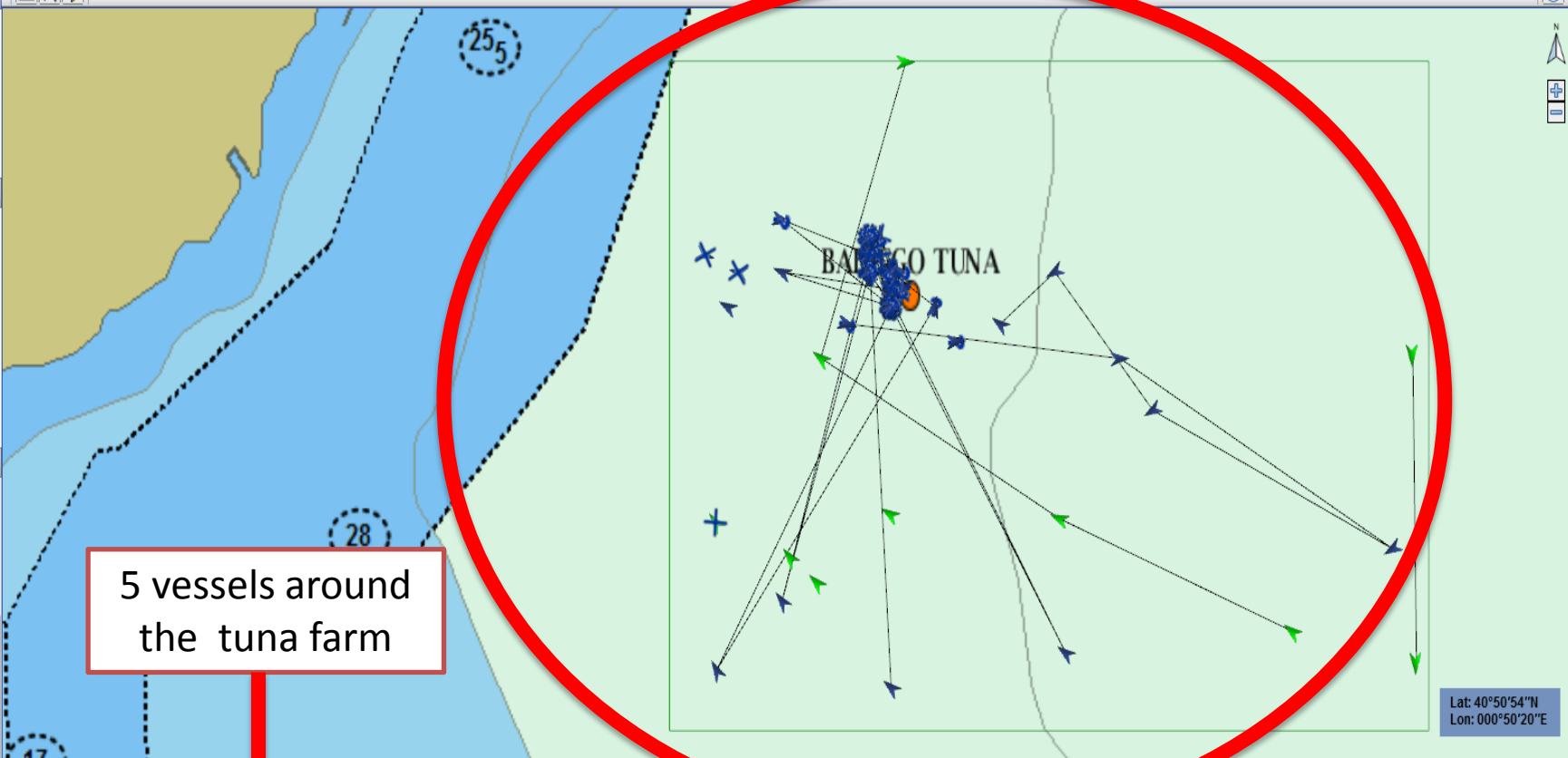
No info

Vessel image

VITTORIA PRIMA
2012-05-16T14:12:00Z
Heading: 164°; Speed: 0.00 knots;

Lat: 37°16'43"N
Lon: 015°12'29"E

The International Commission for the Conservation of Atlantic Tunas (ICCAT) register information integrated



5 vessels around the tuna farm

Lat: 40°50'54"N
Lon: 000°50'20"E

Vessel Tracks

Number of tracks: 45 Total track points: 177

| MMSI | IMO | IR | Ship Name | Call Sign |
|------|-----|--------------|---------------|-----------|
| N/A | N/A | ITA000018697 | ALFIERE | IODT |
| N/A | N/A | ESP000021751 | ISLETA IV | EA3257 |
| N/A | N/A | ITA000027535 | TWENTY THREE | IFZF2 |
| N/A | N/A | ITA000026937 | MARIA | IFOF2 |
| N/A | N/A | FRA000923751 | CISBERLANDE 5 | FPRE |

Number of positions: 1

Export Format: EXCEL

| Timestamp | Lat | Lon | Heading | Speed | Source |
|----------------------|--------|-------|---------|-------|--------|
| 2012-05-30T08:04:00Z | 40.862 | 0.853 | 165 | 0 | VMS |



2. Pilot project results

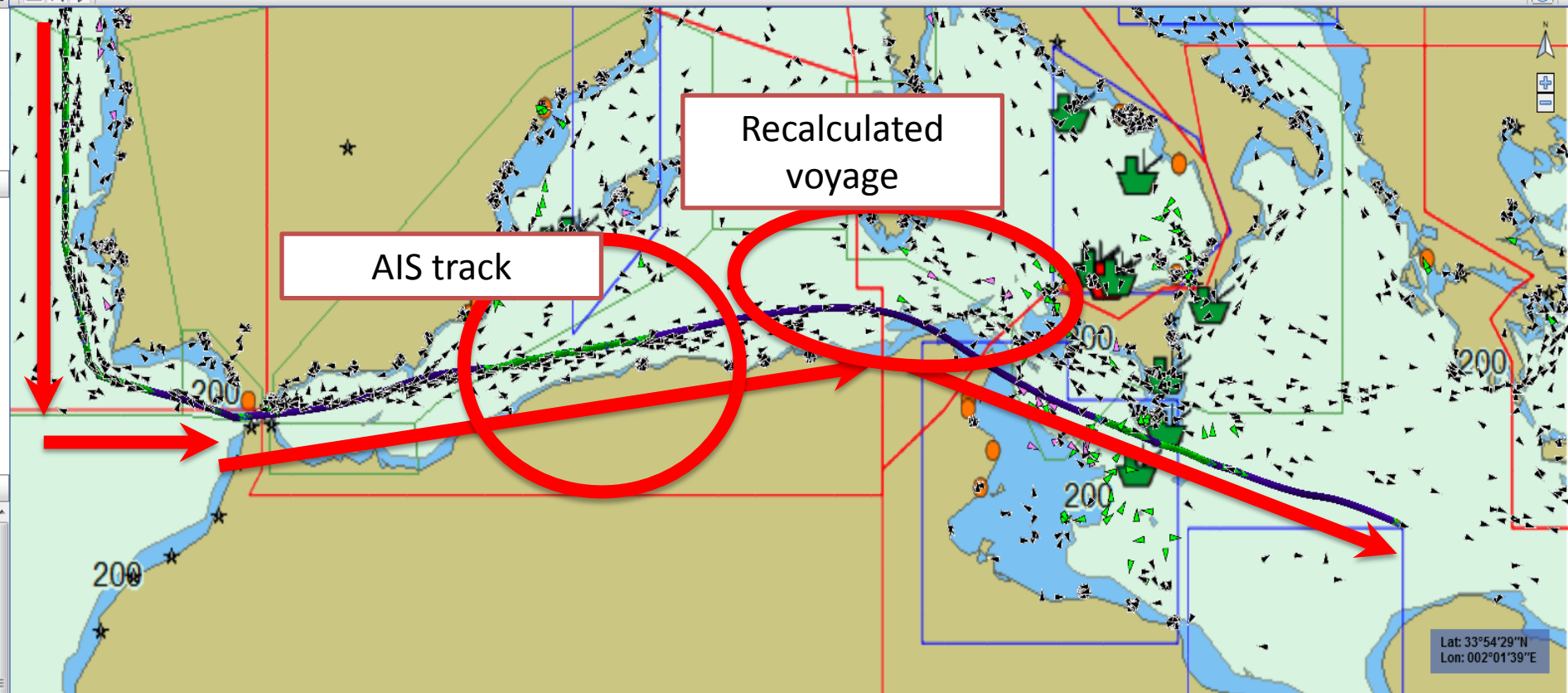
Cross checking, correlation and data fusion

• Cross checking

- easy visual cross checking for individual vessels due to availability of several data sets on a single screen
- automated cross-checking possible against pre-defined criteria (sighting information, AIS-VMS, closed areas...)

• Correlation and data fusion

- visual voyage correlation (AIS and VMS track)
- automated correlation between position data pertaining to the same vessel if unique identifier is available.
- calculation of most probable track based on last available data
- completion of fragmented vessel tracks



Number of tracks: 1 Total track points: 1153

MMSI:

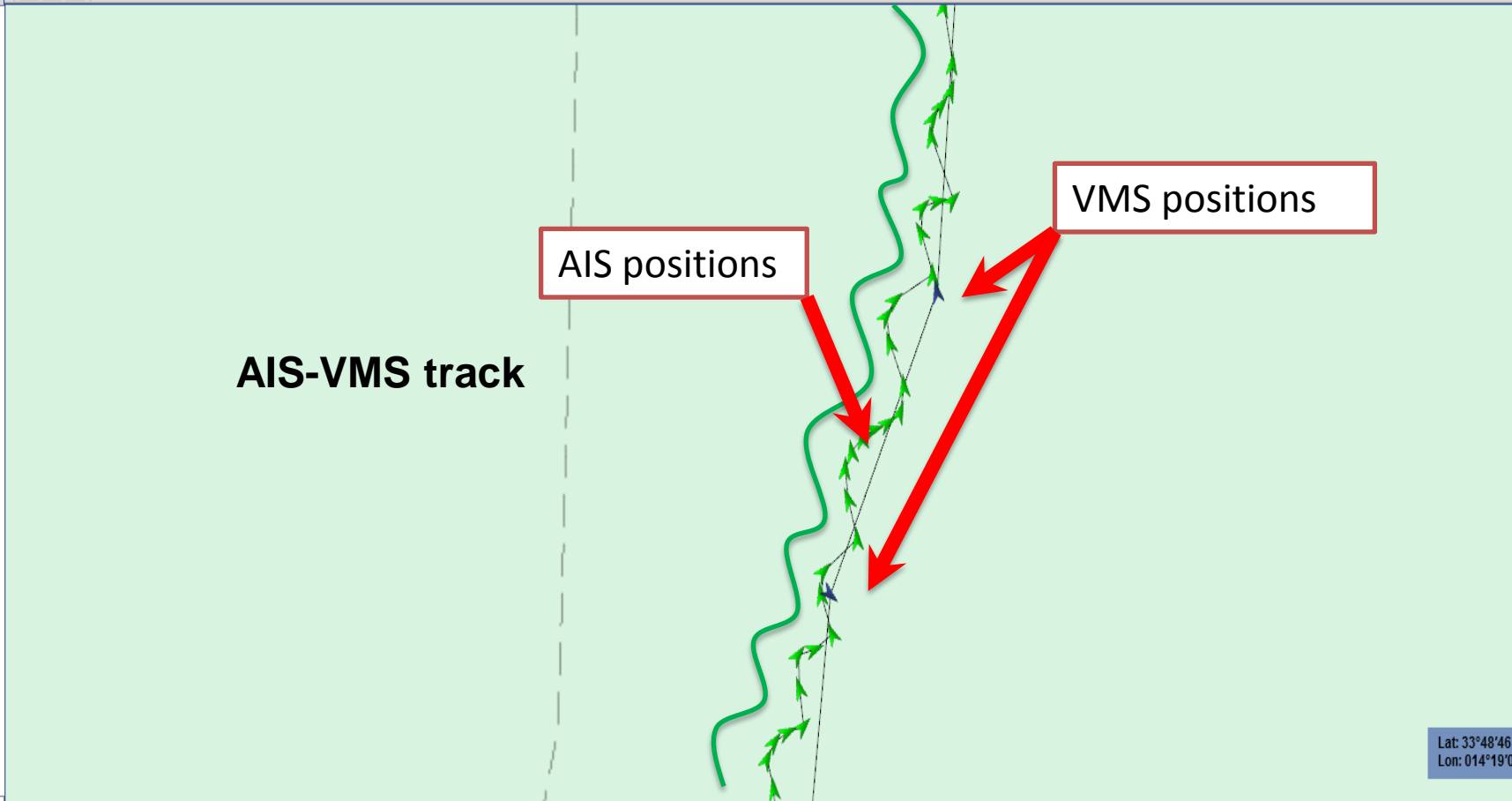
Number of positions:

Export Format: EXCEL

| MMSI | IMO | IR | Ship Name | Call Sign |
|-----------|---------|-----|-------------|-----------|
| 273539310 | 8024002 | N/A | ARCTIC WOLF | UDUT |

| Timestamp | Lat | Lon | Heading | Speed | Source |
|---------------------------------------|-----|-----|---------|-------|--------|
| Select a vessel to show its positions | | | | | |

Monitoring of fishing vessel behavior in transit (Russian fishing vessel entering Med on the way to Suez)



Lat: 33°48'46"
Lon: 014°19'0"

Vessel Tracks

Number of tracks: 4 Total track points: 1660

MMSI

| MMSI | IMO | IR | Ship Name | Call Sign |
|-----------|-----|--------------|--------------|-----------|
| 248000690 | N/A | N/A | MANWEL | 9HOW |
| 247148120 | N/A | N/A | NADIR | IPMV |
| 248286000 | N/A | N/A | HISPANIA UNO | 9H9507 |
| N/A | N/A | ATEUOMLT0015 | HISPANIA UNO | 9H9507 |

Number of positions: 0

Export Format: EXCEL

| Timestamp | Lat | Lon | Heading | Speed | Source |
|---------------------------------------|-----|-----|---------|-------|--------|
| Select a vessel to show its positions | | | | | |

enter]

ATEUOMLT00156
 HISPANIA UNO
 MALI 
 9H9507
 EFCA
 Valid

ATEUOMLT00156
 BFT_OTHER_TUG
 2014 04 04



2. Pilot project results

Behaviour analyses

risk assessment



- Behaviour analyses

- vessels movements and activities can be analysed vis-à-vis user defined criteria and information (i.e. movements to ports, farms...)
- inter vessel behaviour (i.e. transshipment and catching operations...)

- Risk assessment

- the integrated picture, allows for a better assessment of possible risk for non compliance (i.e. specific vessels near to or in certain areas)
- availability of historical data, query and playback functionalities can provide good base for pre-operational risk assessment

Search

Vessel search

Last search

Vessels

- MICHELANGELO
- 247108400

Show on map Apply filter

Layers

Map projection: Mercator

Base layer: CMAP Base

- Vessels [Symbology](#): BFT
- Tracks
- BFT Incidents
- BFT Auxiliary Data
- External WMS Layers

Query

- VMS
- Coastal Radar
- Uncorrelated Positions
- BFT Incidents
- Tuna Fishing Incidents

Search

Selection Info

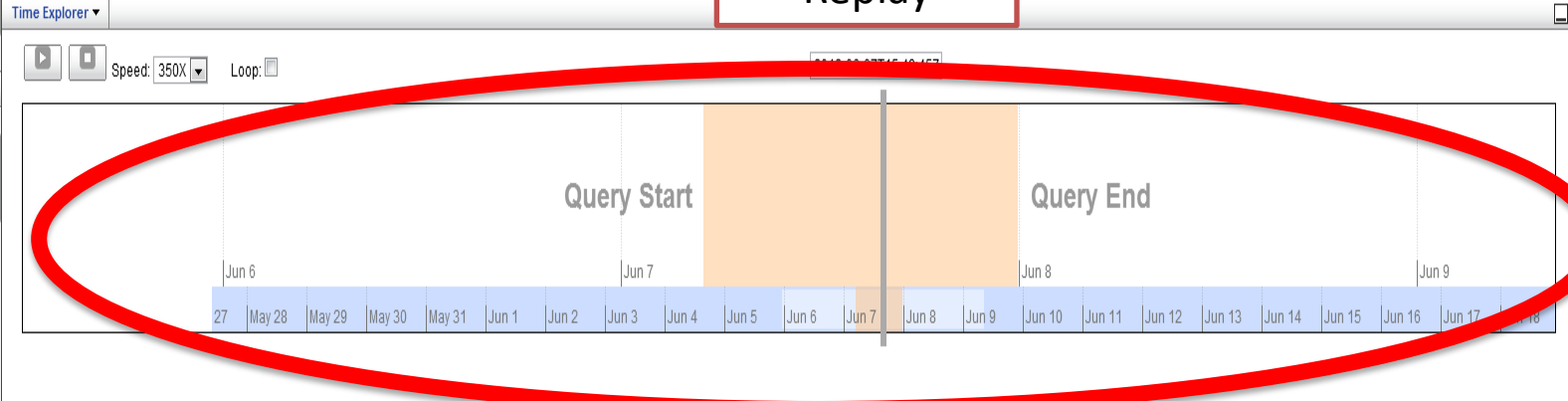
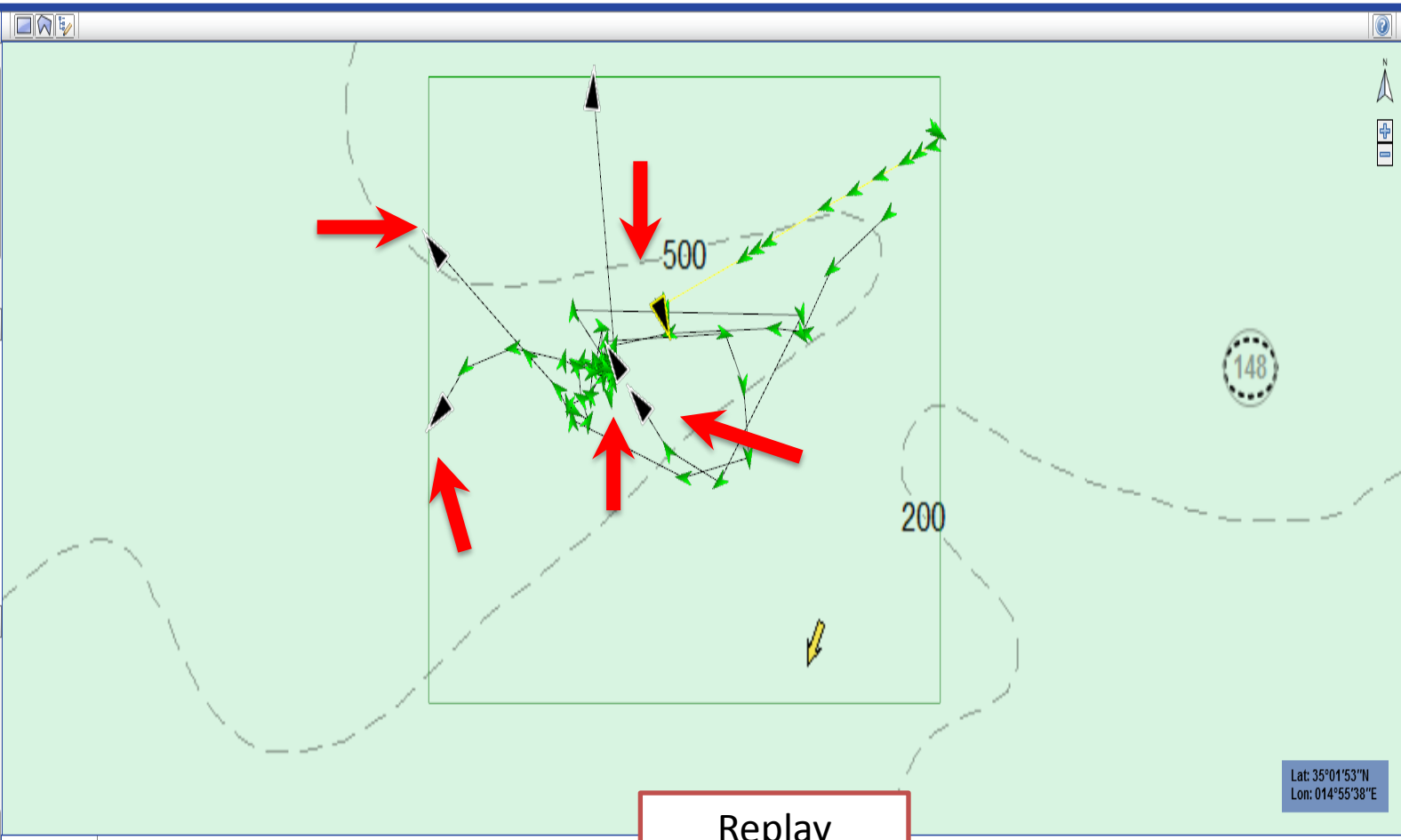
Vessel Info (center)

MMSI: 256000350
 IMO: 6519510
 Ship Name: MIRKURT
 Flag: SAINT MARTIN (FRENCH PART)

Call sign: 9H8G
 Ship type: Fishing (30)
 Identity Source: SSN
 Identity Status: Valid

Last Position Report

Lon: 014°56'13"E



Search

Vessel search

Last search

Vessels

TUNA BOAD AZROU-1

Show on map Apply filter Remove filter

Layers

Map projection: Plate Carrée

Base layer: CMAP Standard

Vessels Symbology: BFT

Tracks

BFT Incidents

Query

Integrated Ship Profile Query

Area Centric Query

Vessel Track Query

Selection Info

Vessel Info (center)

MMSI: 242963000
 IMO: 9098646
 Ship Name: TUNA BOAD AZROU-1
 Flag: MOROCCO
 Call sign: CNA4379
 Ship type: Fishing (30)
 Identity Source: SSN
 Identity Status: Valid

Last Position Report

Lon: 032°54'21"E
 Lat: 35°56'25"N
 Transmission Time: 2012-05-30T10:11:40Z
 Speed: 8.00 knots
 Heading: 292 degrees
 Position Source: T-AIS
 Navigational Status: Invalid (45)


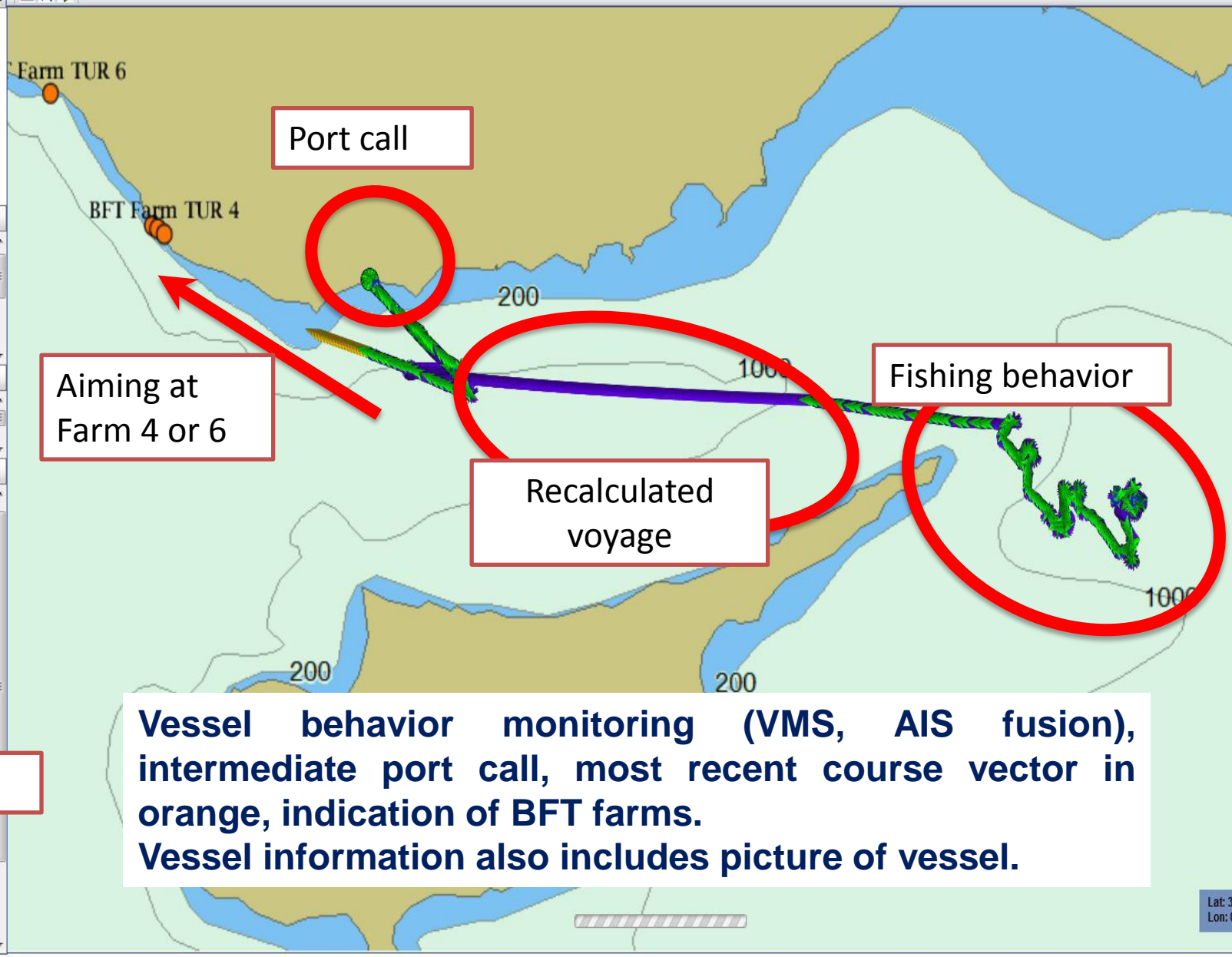
Enrichment

Picture

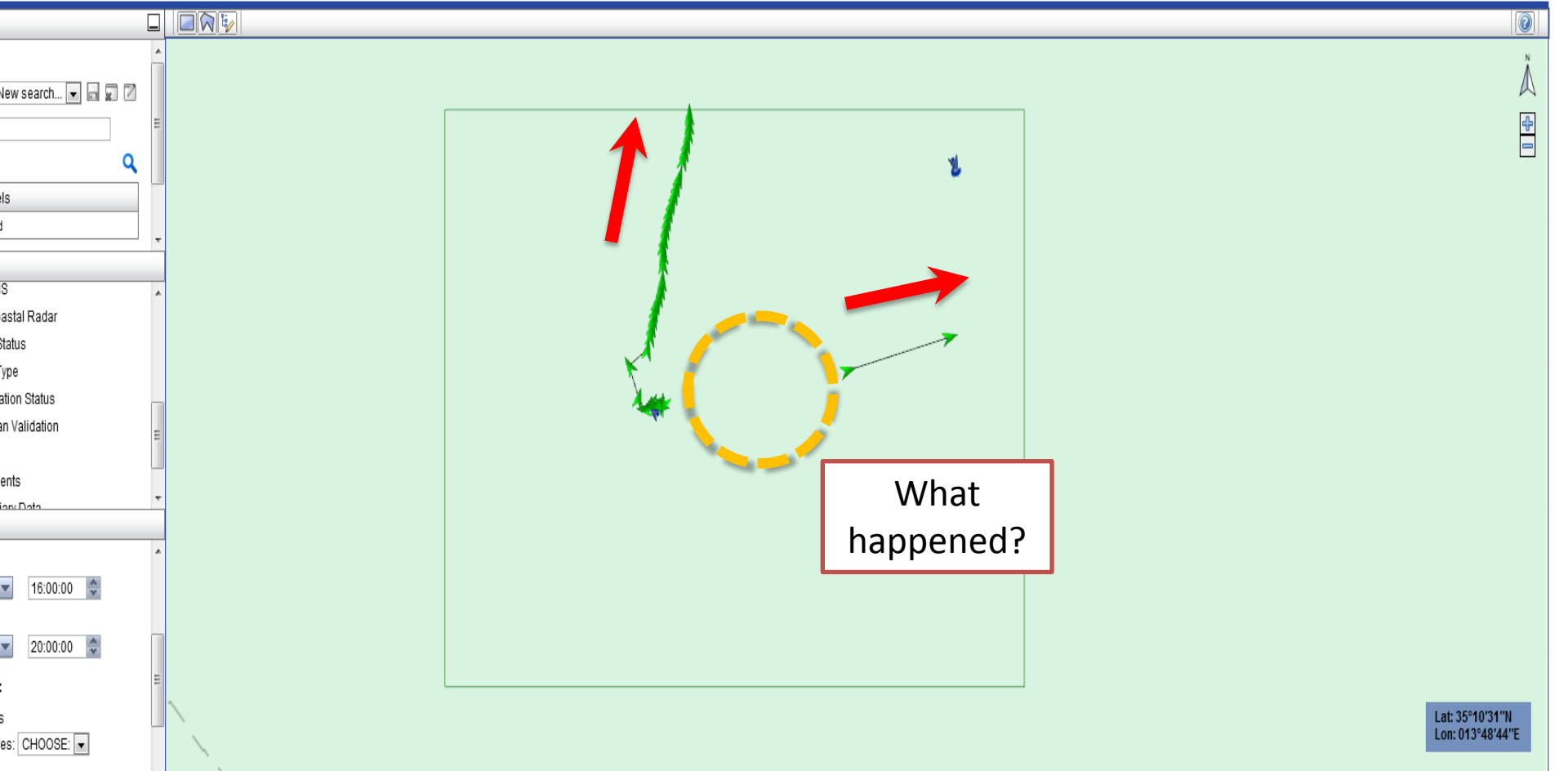
Last V

No Info

Vessel image

Vessel behavior monitoring (VMS, AIS fusion), intermediate port call, most recent course vector in orange, indication of BFT farms. Vessel information also includes picture of vessel.



Lat: 35°10'31"N
Lon: 013°48'44"E

Vessel Tracks

Number of tracks: 4 Total track points: 39

MMSI:

Number of positions:

Export Format: EXCEL

| MMSI | IMO | IR | Ship Name | Call Sign |
|-----------|-----|--------------|--------------|-----------|
| N/A | N/A | ITA000027915 | NUOVA ALCAPA | IKWM2 |
| 215000460 | N/A | N/A | N/A | 9H6922 |
| N/A | N/A | GRC000003200 | AIGAION | SY8648 |
| 247301700 | N/A | N/A | NUOVA ALCAPA | IKWM2 |

| Timestamp | Lat | Lon | Heading | Speed | Source |
|---------------------------------------|-----|-----|---------|-------|--------|
| Select a vessel to show its positions | | | | | |

GRC000003200
 AIGAION
 GREECE
 SY8648
 35 m
 EFCA
 Valid
 info
 ATEU0GRC00460

AIS track detail on top of Maritime chart: analyses of fishing activity gillnet fisheries on top of wrecks

Layers

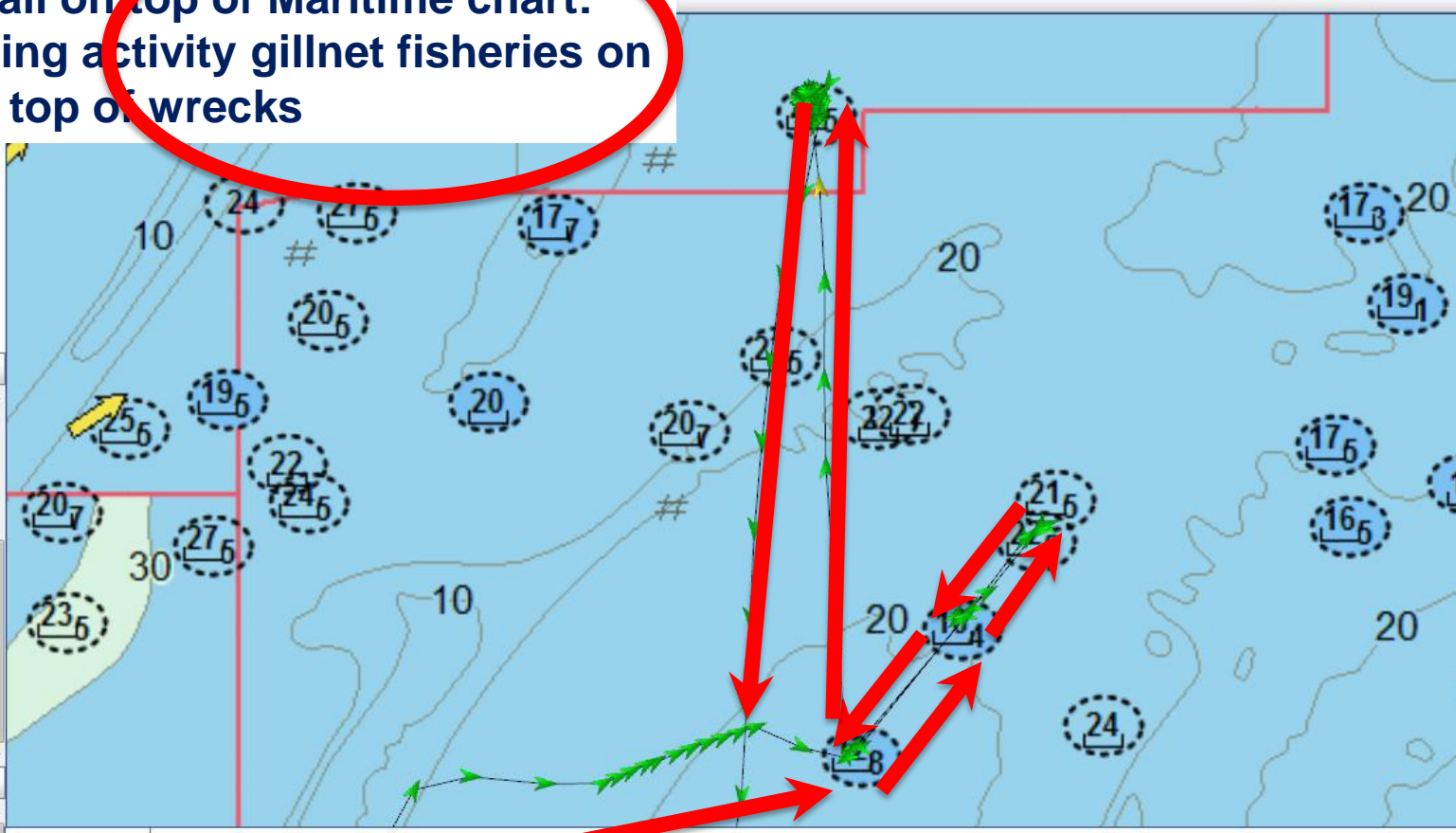
- Sat-AIS
- LRIT
- VDS
- VMS
- Coastal Radar
- Risk Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks
- BFT Incidents
- BFT Auxiliary Data
- External WMS Layers

Query

Area Centric Query

Integrated Ship Profile Query

Selection Info



Vessel Tracks Total track points:

MMSI

| MMSI | IMO | IR | Ship Name | Call Sign |
|-----------|-----|-----|-------------|-----------|
| 205311000 | N/A | N/A | N95 JONAS 2 | OPDQ |

Number of positions:

| Timestamp | Lat | Lon | Heading | Speed |
|----------------------|----------|---------|---------|-------|
| 2012-05-29T22:54:05Z | 51.42707 | 2.60495 | 95.1 | 0.1 |
| 2012-05-29T22:46:44Z | 51.42719 | 2.60487 | 68.1 | 0.1 |
| 2012-05-29T22:33:54Z | 51.41409 | 2.60711 | 353.5 | 7.5 |
| 2012-05-29T22:27:34Z | 51.40066 | 2.60827 | 0.7 | 7.6 |



2. Pilot project results

activity assessment and follow-up

- **Activity assessment**

- historical inspection and sighting activity information can be retrieved and visualised
- possibility to assess performed monitoring and surveillance deployment against fishing activity in given areas

- **Follow up**

- Monitoring of fleet behaviour following conservation measures (i.e. closed areas, quota exhaustion, inspection activity...)

Layers

- RISK Status
- Ship Type
- Navigation Status
- Kalman Validation
- Tracks
- BFT Incidents
 - Tuna Fishing Incidents
 - Event Type
 - Inspection
 - Sighting
 - Infringement
- BFT Auxiliary Data

Query

Area of interest:

Active Id:

Begin Date: 2012-05-31 01:00:00

End Date: 2012-05-31 23:00:00

Service options:

Vessel Tracks

Position sources: CHOOSE

- T-AIS
- Ship-AIS
- Sat-AIS
- LRIT

Selection Info

TUNA_FISH_INCIDENTS

| | |
|---------------|-------------------------|
| CTRL_STATE | Italy |
| MEDIUM | Air |
| EVENT_TYPE | Sighting |
| NO_INF | 0 |
| DATE_AND_TIME | May 25, 2012 4:55:00 PM |
| OBJECT_INFO | ASIA |
| OBJECT_FLAG | Italy |
| ACTIVITY | |

7 seconds to upload all inspection activities on screen

Search

New search

Layers

- Position Source
 - T-AIS
 - Ship-AIS
 - Sat-AIS
 - L RIT

Query

Area Centric Query

Area of Interest

| Active | Id |
|--------|----------------------------|
| | Select an area of interest |

Begin Date: 2012-05-15 00:00:00

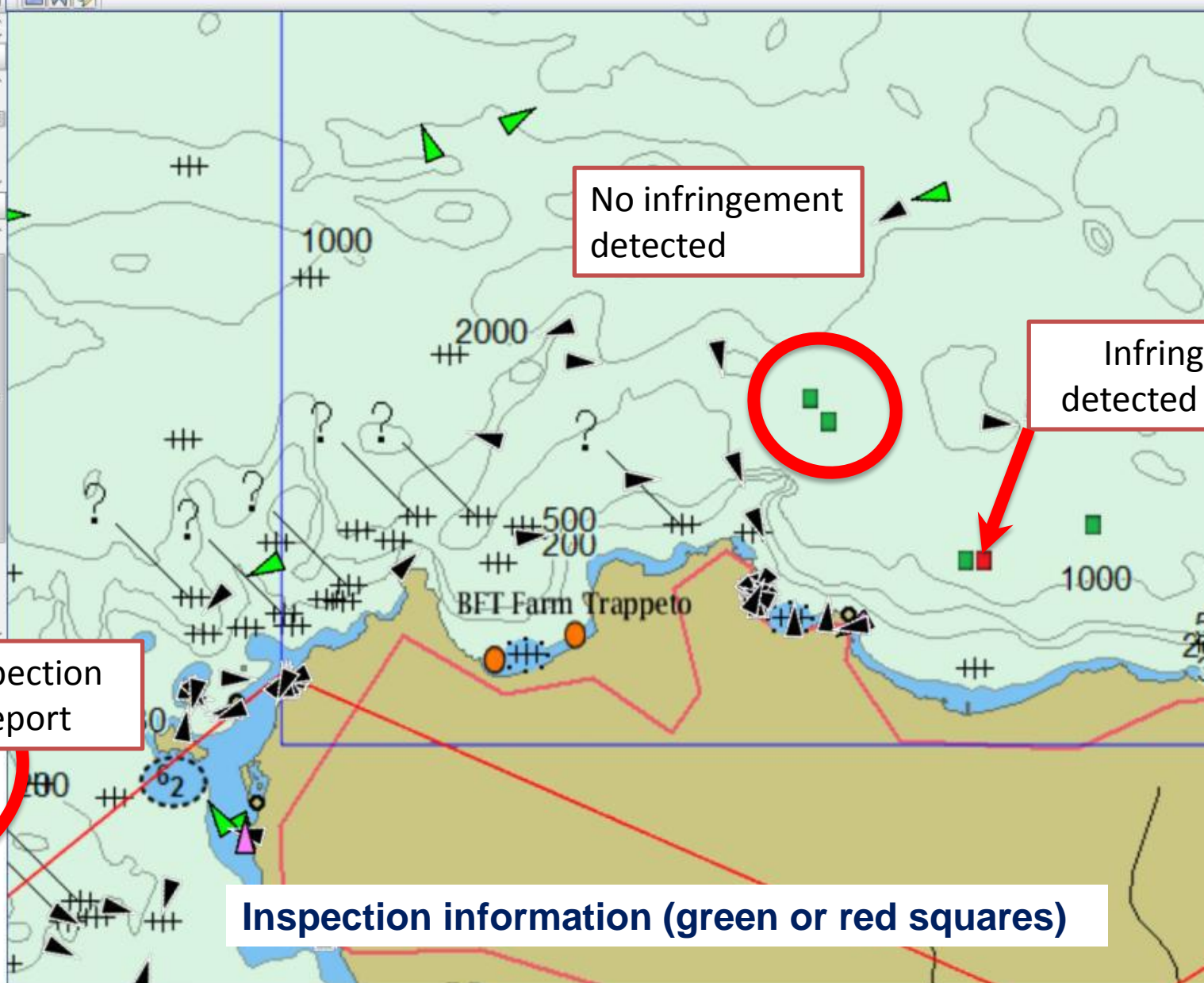
End Date: 2012-07-04 00:00:00

Service options:

- Vessel Tracks
- Position sources: ALL
- Uncorrelated Positions

Selection

| TUN FISH INCIDENTS | |
|--------------------|-------------------------|
| CTRY_STATE | Italy |
| MEDIUM | Sea |
| EVENT_TYPE | Inspection |
| NUM_INF | 1 |
| DATE_AND_TIME | May 19, 2012 3:40:00 AM |
| OBJECT_INFO | SHARON |
| OBJECT_FLAG | Italy |
| ACTIVITY | |



No infringement detected

Infring detected

Inspection report

Inspection information (green or red squares)



2. Pilot project results

non corresponding data sets detection of specific targets

- **Non corresponding datasets**

- As a result of non successful correlation, non corresponding data sets can be flagged

- **Specific targets**

- Each data element can be assessed against user defined criteria and uploaded information.

- Visual alarm functionalities can be automatically triggered against thresholds. (i.e. vessel without licence in a given area and time)

Search

Vessel search

New search...

MMSI

Vessels

No vessel found

Show on map Apply filter Remove filter

Layers

Map projection: Mercator

Base layer: CMAP Base

Vessels Symbology: BFT

Fishing vessels

Position Source

Query

Selection Info

Vessel Info (center)

IR: CYP00000789
Ship Name: QUEEN IRENE
Flag: CYPRUS
Call sign: P3XH8
Identity Source: EFCA
Identity Status: Valid

BFT specific info

ICCAT ID: ATEU0CYP00003
Permit type: BFT_CATCH_LLD24
Permit from: 2012-01-01
Permit to: 2012-05-31
Catch permit: Yes
Gear type: LLD
Vessel type: LL

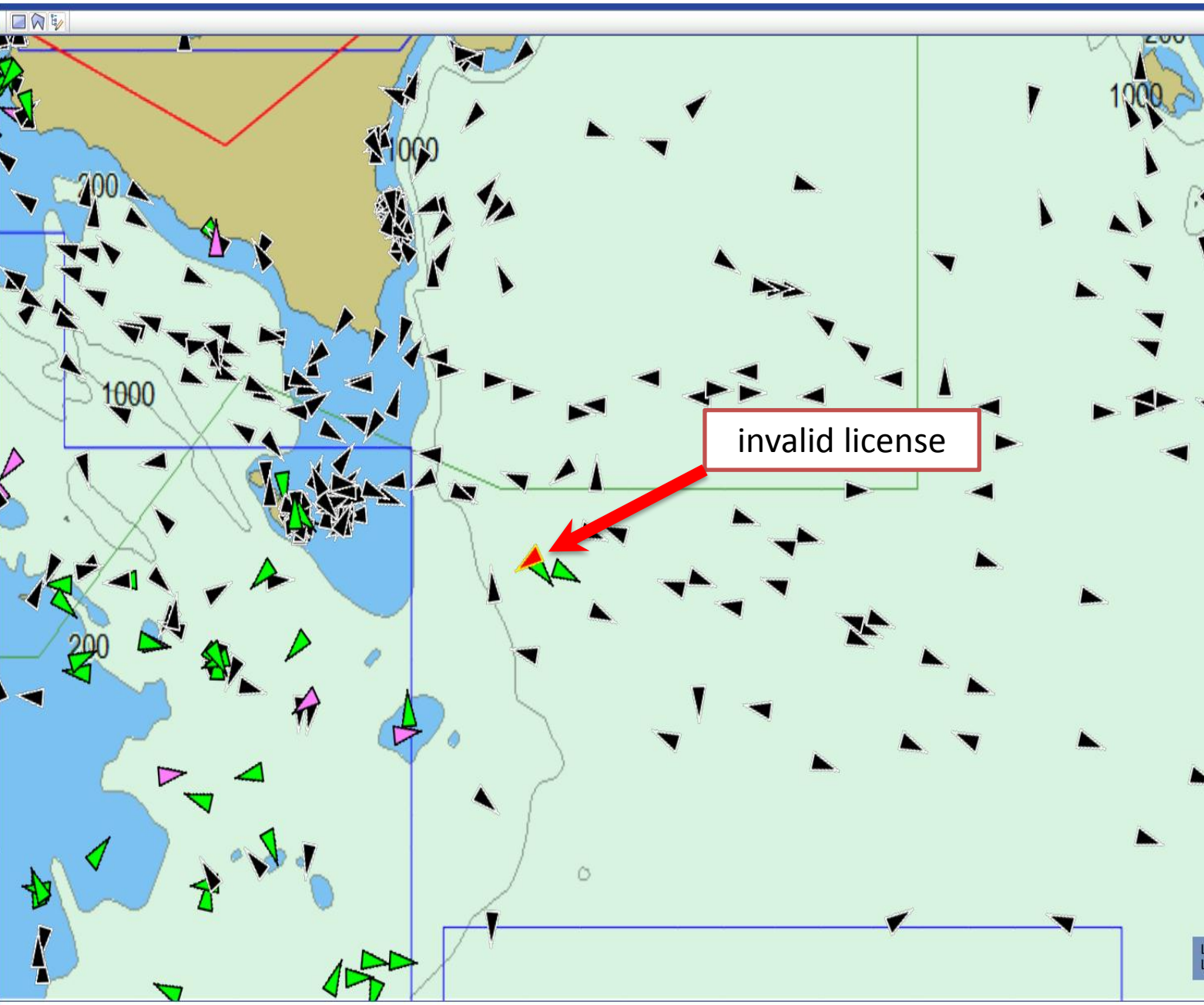
Last Position Report

Lon: 016°11'20"E
Lat: 35°39'22"N
Transmission Time: 2012-05-31T08:28:00Z
Speed: 0.00 knots
Heading: 240 degrees
Position Source: VMS
Validity Flag: Unable to Validate

Last Voyage Report

No Info

Vessel Image



invalid license



3. The way forward added value



- **MARSURV-3** provides for an **integrated maritime picture** and thus **better maritime awareness** .
- **Various maritime datasets** appear on one **single screen**.
- Possibility to identify **vessel behaviour** that would have not been detected otherwise.
- **Increased surveillance** and **targeting** capacity.



3. The way forward lessons learned



- Time & resources available for the pilot project too limited to develop and test all functionalities thoroughly
- Based on first experiences during test period, additional user requirements were formulated for future development
- Support of MS crucial in view of the availability of VMS and LRIT data.



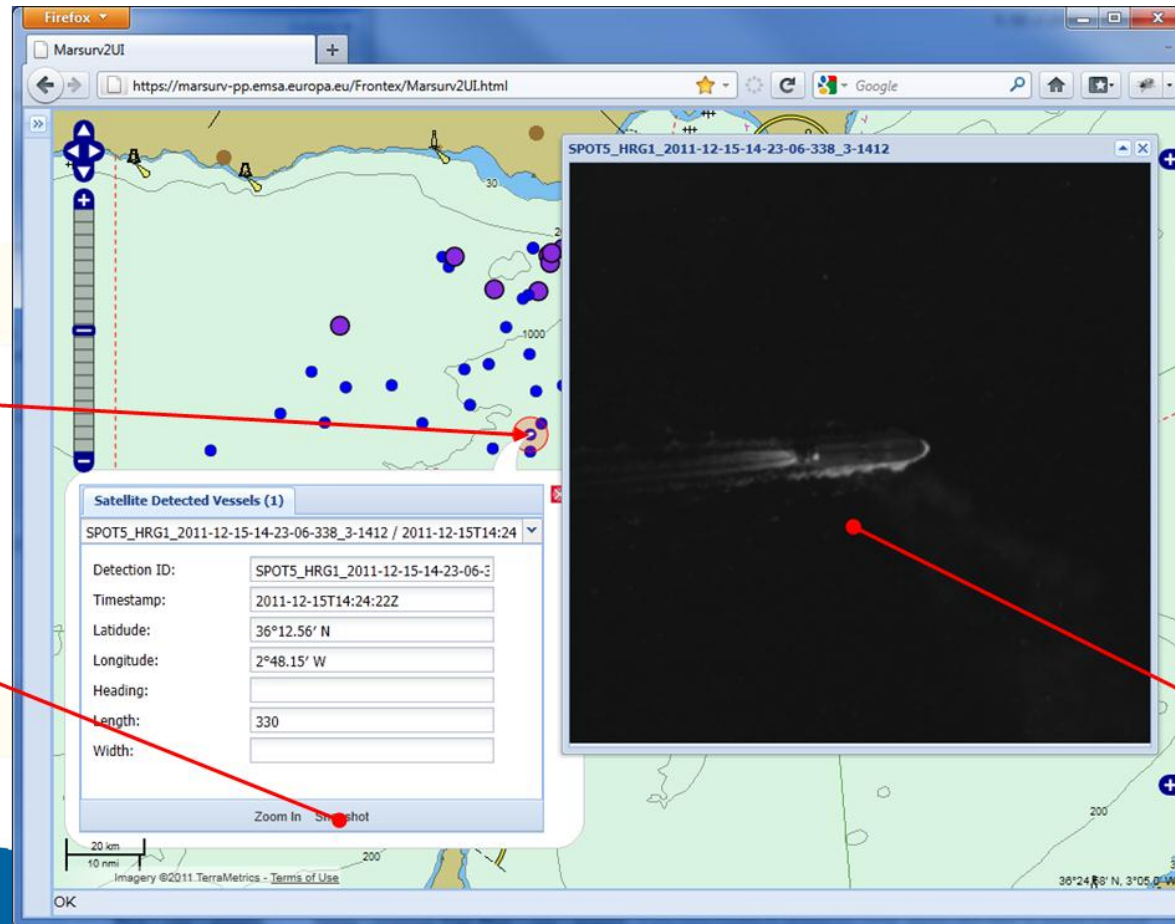
3. The way forward challenges



- Development of multiple parameters and trigger scenarios for the automated cross-checking, correlation and behaviour analyses
- Quality of used maritime data sets need to be assessed (i.e. identifiers, activity recording etc....)
- Infrastructure providing adequate capacity to store and process large amounts of maritime data from different sources

3. The way forward future development

- Satellite Monitoring can be integrated as well





3. The way forward

future cooperation opportunities

- Pilot project BFT 2013
 - based on the experience of the BFT 2012 pilot project there is a large potential to further improve functionalities of MARSURV-3 in view of the BFT campaign 2013
- Testing of the application and functionalities during EFCA JDP coordination activities in other areas (NAFO-NEAFC, North Sea, Western Waters)



Thank you for your attention