



**Copernicus Maritime Surveillance
Operational Use**

Fisheries Control



Sven TAHON
Senior Officer control technologies

sven.tahon@efca.europa.eu

Key Figures

-  PROXY: Number of union Inspectors: 1991
-  Number of EFCA-coordinated inspections: 20.074
-  Number of apparent infringements: 829
-  Number of officials trained: 875
-  Number of EFCA staff: 73





CMS for fisheries control



- EFCA coordinates requests for fisheries control from MS, third countries & RFMO's
- CMS service now actively & operationally used
- Predominantly non EU waters
- + 300 ordered by EFCA (2018)
- Mainly SAR (VDS) but growing number of optical
- Frontex/safeseanet/EFCA images shared



Copernicus acquisitions for fisheries control



- **NAFO** in support of ESP FPV deployment
- **NEAFC** (Iceland)
- **Mediterranean Sea** in support of EFCA JDP and GFCM coordination
- **Black Sea** in support of EFCA FPV deployment
- **West African waters** in support of PESCAO operations
- **Baltic Sea** in support of Baltic Tracking Exercise



Acquisition preparation & request



Service Request Form for Routine Tasking

Requestor

Sven Tahon, Coordinator Coast Guard, EFCA

Date of submission
10 May 2017

Background information

Request from EFCA on behalf of MS in the framework of the GFCM Pilot Project
Detection of:

1. Fishing activity targeting hake and deep-water rose shrimp in the restricted fisheries area of Sicily Channel in compliance with the Rec. GFCM 40/2016/4;
2. BFT purse sein fishing and related activities (the BFT campaign for purse sein FVs starts on 24th May 2017);
3. Non-reporting vessels fishing Swordfish;
4. IUU fishing activities.

Select the IMS operation where the data shall be available

Mediterranean

Define the Area of Interest using on one of the following approaches:

Area of Interest

Geographical Definition of Area of Interest (WGS84)

Restricted AREA

Buffer AREA

Restricted AREA

Buffer AREA

Restricted AREA

Buffer AREA

GFCM Pilot Project Area - Strait of Sicily

FRA 1 (East of Adventure Bank)

Upper left: (Lat = 37° 23,850'N Long: 12° 30,072'E)
Lower left: (Lat = 37° 11,532'N Long: 12° 30,095'E)
Upper right: (Lat = 37° 23,884'N Long: 12° 48,282'E)
Lower right: (Lat = 37° 11,567'N Long: 12° 48,305'E)

Upper left: (Lat = 37° 24,849'N Long: 12° 28,814'E)
Lower left: (Lat = 37° 10,528'N Long: 12° 28,845'E)
Upper right: (Lat = 37° 24,888'N Long: 12° 49,536'E)
Lower right: (Lat = 37° 10,528'N Long: 12° 28,845'E)

FRA 2 (West of Gela Basin)

Upper left: (Lat = 37° 12,040'N Long: 13° 17,925'E)
Lower left: (Lat = 36° 59,717'N Long: 13° 17,930'E)
Upper right: (Lat = 37° 12,047'N Long: 13° 36,170'E)
Lower right: (Lat = 36° 59,725'N Long: 13° 36,175'E)

Upper left: (Lat = 37° 13,041'N Long: 13° 16,672'E)
Lower left: (Lat = 36° 58,715'N Long: 13° 16,682'E)
Upper right: (Lat = 37° 13,049'N Long: 13° 37,422'E)
Lower right: (Lat = 36° 58,723'N Long: 13° 37,424'E)

FRA 3 (East of Malta Bank)

Upper left: (Lat = 36° 12,621'N Long: 15° 13,338'E)
Lower left: (Lat = 35° 59,344'N Long: 15° 13,338'E)
Upper right: (Lat = 36° 12,621'N Long: 15° 26,060'E)
Lower right: (Lat = 35° 59,344'N Long: 15° 26,060'E)

Upper left: (Lat = 36° 13,624'N Long: 15° 12,000'E)
Lower left: (Lat = 35° 58,342'N Long: 15° 12,000'E)

Attach file (polygon) in KMZ/KML or Shapefile
High priority area

Priority area:

1. GSA 14 outside 200m bathometry

Upper left: (Lat = 33.7500° Long: 12.5000°)
Lower right: (Lat = 35.1500° Long: 15.4000°)

2. FRA Buff 1 - FRA Buff 2 - FRA Buff 3

Define the operational time period that shall be covered/ supported by EO data and requested acquisitions:

Time period of the year for which EO service shall be delivered

Daytime Window

01/06/2017
30/06/2017

Additional Description for time period

All day

Number of images/services

During the periods with limited availability to other surveillance

Frequency of acquisition

Daily

Total number of acquisitions

1

Select time category to receive the requested services.

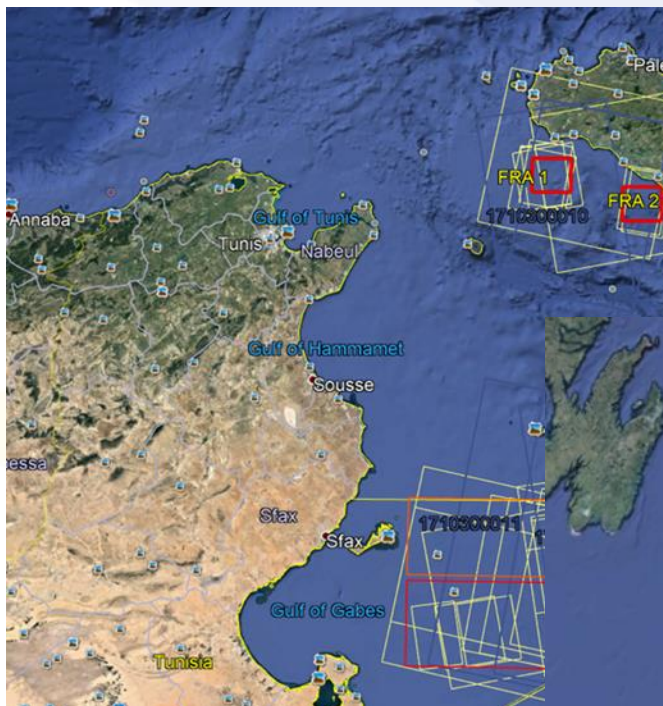
1. GSA 14: 2 acquisitions per day

2. FRA Buff 1 - FRA Buff 2 - FRA Buff 3: 1 acquisition per day

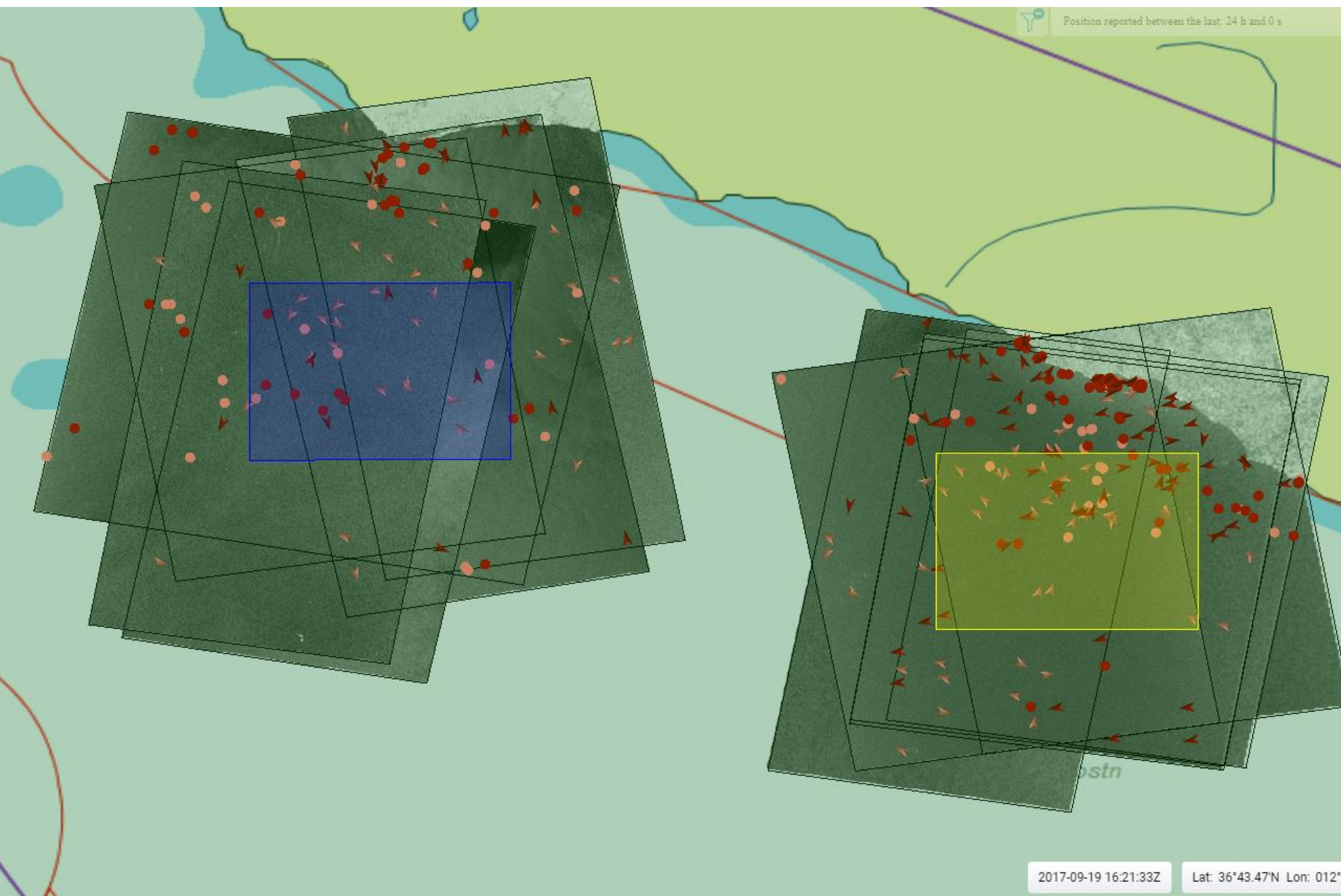
US Dept of State Geographer

IMS - In Valley

Acquisition schedule



1	Service Type	Service Identifier	Satellite	Acquisition start time	Sensor Mode	AREA
2	NRT+90min	1708090019	TERRASAR-X TERRASAR-X	2017-08-09 05:11:55 2017-08-09 05:11:55	SM SM	FRA01
3	NRT+90min	1708090018	TERRASAR-X TERRASAR-X	2017-08-09 05:12:32 2017-08-09 05:12:32	SM SM	GSA
4	NRT+30min	1708100021	TERRASAR-X TERRASAR-X	2017-08-10 17:04:49 2017-08-10 17:04:49	SM SM	GSA
5	NRT+30min	1708110028	TERRASAR-X TERRASAR-X	2017-08-11 16:47:59 2017-08-11 16:47:59	SM SM	FRA03
6	NRT+90min	1708140018	TERRASAR-X TERRASAR-X	2017-08-14 05:20:28 2017-08-14 05:20:28	SM SM	FRA01
7	NRT+90min	1708140017	TERRASAR-X TERRASAR-X	2017-08-14 05:21:09 2017-08-14 05:21:09	SM SM	GSA
8	NRT+90min	1708150022	TERRASAR-X TERRASAR-X	2017-08-15 05:03:34 2017-08-15 05:03:34	SM SM	FRA03
9	NRT+30min	1708150021	TERRASAR-X TERRASAR-X	2017-08-15 17:13:14 2017-08-15 17:13:14	SM SM	GSA
10	NRT+30min	1708160018	TERRASAR-X TERRASAR-X	2017-08-16 16:56:55 2017-08-16 16:56:55	SM SM	FRA01
11	NRT+30min	1708210018	TERRASAR-X TERRASAR-X	2017-08-21 17:04:40 2017-08-21 17:04:40	SM SM	GSA
12	NRT+30min	1708210019	TERRASAR-X TERRASAR-X	2017-08-21 17:05:28 2017-08-21 17:05:28	SM SM	FRA01
13	NRT+90min	1708260019	TERRASAR-X TERRASAR-X	2017-08-26 05:03:34 2017-08-26 05:03:34	SM SM	FRA03
14	NRT+30min	1708260018	TERRASAR-X TERRASAR-X	2017-08-26 17:13:14 2017-08-26 17:13:14	SM SM	GSA
15	NRT+90min	1708310021	TERRASAR-X TERRASAR-X	2017-08-31 05:11:56 2017-08-31 05:11:56	SM SM	FRA02
16	NRT+90min	1708310020	TERRASAR-X TERRASAR-X	2017-08-31 05:12:36 2017-08-31 05:12:36	SM SM	GSA
17	NRT	1708080017	RADARSAT-2 RADARSAT-2	2017-08-08 17:07:13 2017-08-08 17:07:13	XF0W2 XF0W2	GSA
18	NRT	1708080018	RADARSAT-2 RADARSAT-2	2017-08-08 17:07:41 2017-08-08 17:07:41	U25W2 U25W2	FRA03
19	NRT	1708100013	RADARSAT-2 RADARSAT-2	2017-08-10 04:54:14 2017-08-10 04:54:14	U21W2 U21W2	FRA03
20	NRT	1708110017	RADARSAT-2 RADARSAT-2	2017-08-11 17:19:42 2017-08-11 17:19:42	XF0S7 XF0S7	GSA
21	NRT	1708130014	RADARSAT-2 RADARSAT-2	2017-08-13 05:07:11 2017-08-13 05:07:11	U11W2 U11W2	GSA
22	NRT	1708130015	RADARSAT-2 RADARSAT-2	2017-08-13 05:07:18 2017-08-13 05:07:18	U11W2 U11W2	GSA
23	NRT	1708160009	RADARSAT-2 RADARSAT-2	2017-08-16 05:19:43 2017-08-16 05:19:43	U1W2 U1W2	GSA
24	NRT	1708170013	RADARSAT-2 RADARSAT-2	2017-08-17 04:50:06 2017-08-17 04:50:06	U27W2 U27W2	FRA03
25	NRT	1708180022	RADARSAT-2 RADARSAT-2	2017-08-18 17:15:35 2017-08-18 17:15:35	XF0W3 XF0W3	GSA
26	NRT	1708180023	RADARSAT-2 RADARSAT-2	2017-08-18 17:16:26 2017-08-18 17:16:26	U23W2 U23W2	FRA01
27	NRT	1708200017	RADARSAT-2 RADARSAT-2	2017-08-20 05:02:22 2017-08-20 05:02:22	U20W2 U20W2	FRA02
28	NRT	1708200018	RADARSAT-2 RADARSAT-2	2017-08-20 05:02:34 2017-08-20 05:02:34	U7W2 U7W2	FRA03
29	NRT	1708200019	RADARSAT-2 RADARSAT-2	2017-08-20 05:03:01 2017-08-20 05:03:01	U18W2 U18W2	GSA
30	NRT	1708220015	RADARSAT-2 RADARSAT-2	2017-08-22 16:59:22 2017-08-22 16:59:22	U12W2 U12W2	FRA03
31	NRT	1708230015	RADARSAT-2 RADARSAT-2	2017-08-23 05:14:49 2017-08-23 05:14:49	U6W2 U6W2	FRA01
32	NRT	1708230016	RADARSAT-2 RADARSAT-2	2017-08-23 05:15:34 2017-08-23 05:15:34	U5W2 U5W2	GSA
33	NRT	1708230017	RADARSAT-2 RADARSAT-2	2017-08-23 05:15:42 2017-08-23 05:15:42	U5W2 U5W2	GSA
34	NRT	1708250016	RADARSAT-2 RADARSAT-2	2017-08-25 17:11:21 2017-08-25 17:11:21	XF0W3 XF0W3	GSA
35	NRT	1708250017	RADARSAT-2 RADARSAT-2	2017-08-25 17:12:11 2017-08-25 17:12:11	U22W2 U22W2	FRA02
36	NRT	1708270017	RADARSAT-2 RADARSAT-2	2017-08-27 04:58:13 2017-08-27 04:58:13	U27W2 U27W2	FRA02
37	NRT	1708270018	RADARSAT-2 RADARSAT-2	2017-08-27 04:59:01 2017-08-27 04:59:01	U25W2 U25W2	GSA
38	NRT	1708280009	RADARSAT-2 RADARSAT-2	2017-08-28 17:23:52 2017-08-28 17:23:52	U26W2 U26W2	GSA
39	NRT	1708290012	RADARSAT-2 RADARSAT-2	2017-08-29 16:55:13 2017-08-29 16:55:13	U5W2 U5W2	FRA03
40	NRT	1708300017	RADARSAT-2 RADARSAT-2	2017-08-30 05:11:22 2017-08-30 05:11:22	U6W2 U6W2	GSA
41	NRT	1708300018	RADARSAT-2 RADARSAT-2	2017-08-30 05:11:30 2017-08-30 05:11:30	U6W2 U6W2	GSA





CMS for fisheries control some examples



- **West African waters (PESCAO)**

Operational support (tactical support)

- **Mediterranean Sea**

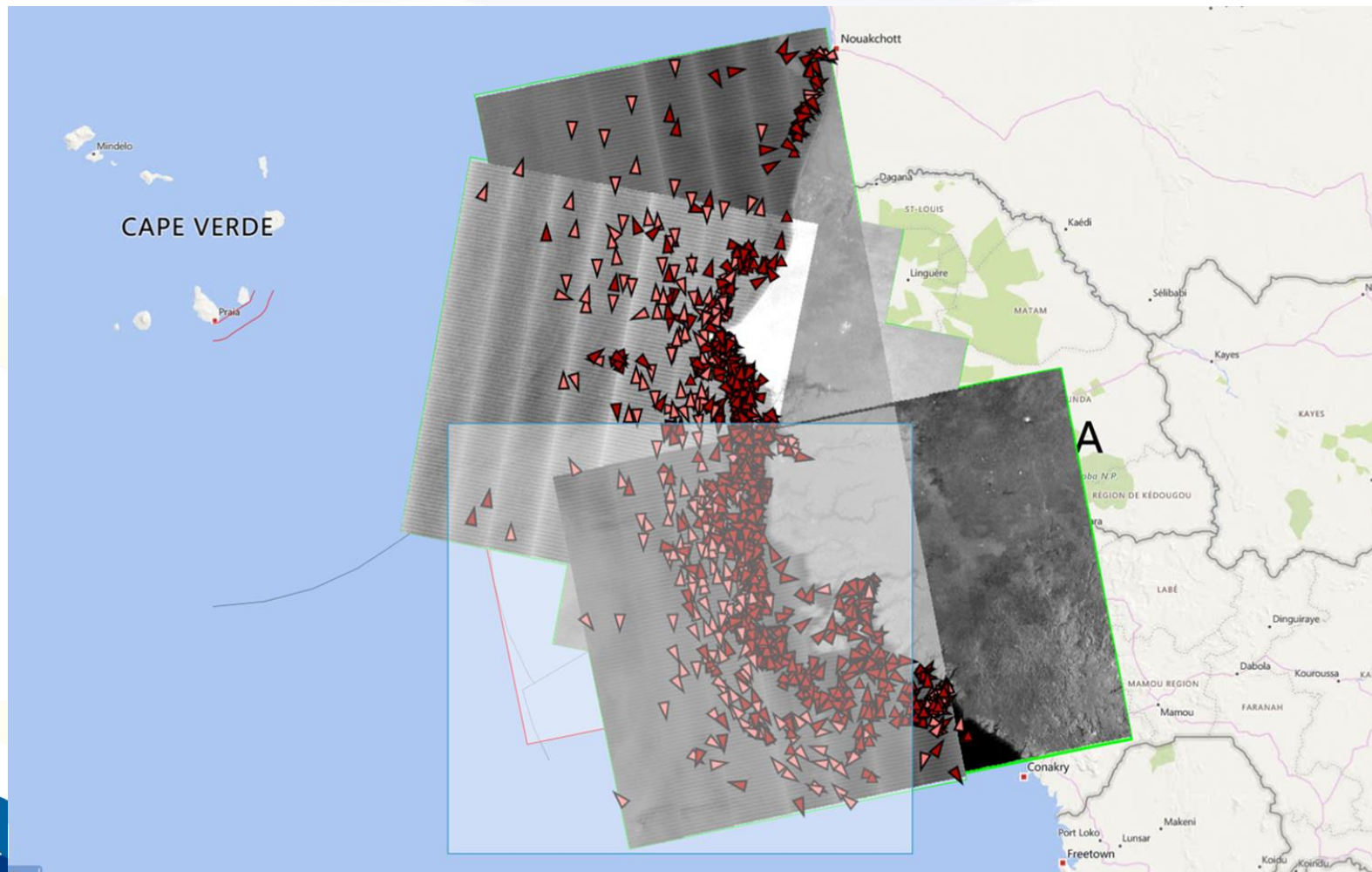
Enhanced analysis

- **Black Sea**

Feedback

West African Waters

Vessel detection & Tactical reporting



				Correlated	Uncorrelated	Total
Delivery time	Satellite	Service Identifier	Acquisition Start Time (UTC)			
NRT+30min	RADARSAT-2	1809010034	2018-09-01 06:53:16	47	93	140
NRT+30min	RADARSAT-2	1809050039	2018-09-05 19:18:47	36	56	92
NRT+30min	TERRASAR-X	1809020034	2018-09-02 19:17:20		-	-
NRT+30min	TERRASAR-X	1809030023	2018-09-03 07:02:02	10	14	24
NRT+30min	TERRASAR-X	1809020038	2018-09-02 19:16:19	22	22	44
NRT+30min	RADARSAT-2	1809050040	2018-09-05 19:20:22	-	-	-
NRT+30min	RADARSAT-2	1809180028	2018-09-18 06:57:27	64	90	154
NRT+30min	RADARSAT-2	1809080028	2018-09-08 06:49:25	59	99	158
NRT+30min	RADARSAT-2	1809150025	2018-09-15 19:27:03	82	208	290
NRT+30min	RADARSAT-2	1809080029	2018-09-08 19:31:36		-	-
NRT+30min	TERRASAR-X	1809190029	2018-09-19 19:07:34	6	13	19
NRT+30min	TERRASAR-X	1809090029	2018-09-09 06:53:28	4	19	23
NRT+30min	TERRASAR-X	1809130031	2018-09-13 19:17:20	6	48	54
NRT+30min	RADARSAT-2	1809150026	2018-09-15 19:28:18	59	108	167
NRT+30min	TERRASAR-X	1809130036	2018-09-13 19:16:19	20	53	73
NRT+30min	TERRASAR-X	1809190027	2018-09-19 07:09:39		-	-
NRT+30min	TERRASAR-X	1809140031	2018-09-14 07:01:05	2	18	20
NRT+30min	TERRASAR-X	1809200028	2018-09-20 06:53:28	6	26	32
NRT+30min	TERRASAR-X	1809140034	2018-09-14 07:02:02	11	43	54
<3hours	SPOT-6	1809170036	17/09/2018 11:34			
<3hours	SPOT-6	1809160040	16/09/2018 10:52	0	0	0
<3hours	SPOT-6	1809170034	17/09/2018 11:33	0	1	1
<3hours	SPOT-6	1809210026	21/09/2018 11:03			
			TOTAL	434	911	1345



JOINT REGIONAL FISHERIES SURVEILLANCE OPERATION

NAME OF CODE:<<MORY GNINGUE>>

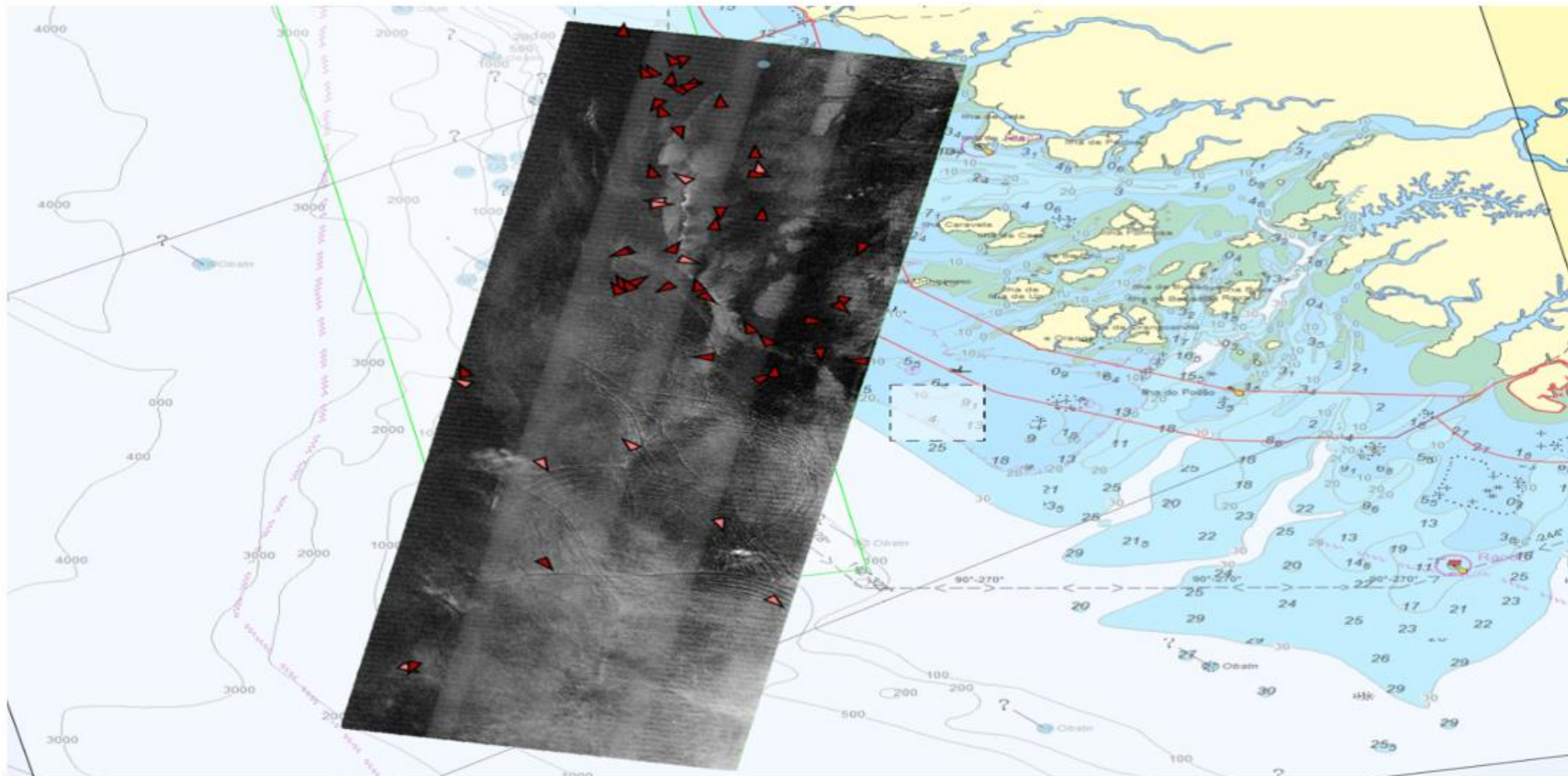
Copernicus services

Acquisition: Analysis of SAR sat imagery

Service ID: 1809140034

Acquisition start: 2018-09-14 07:03:06Z

Sensor resolution: 18.7m



JOINT REGIONAL FISHERIES SURVEILLANCE OPERATION

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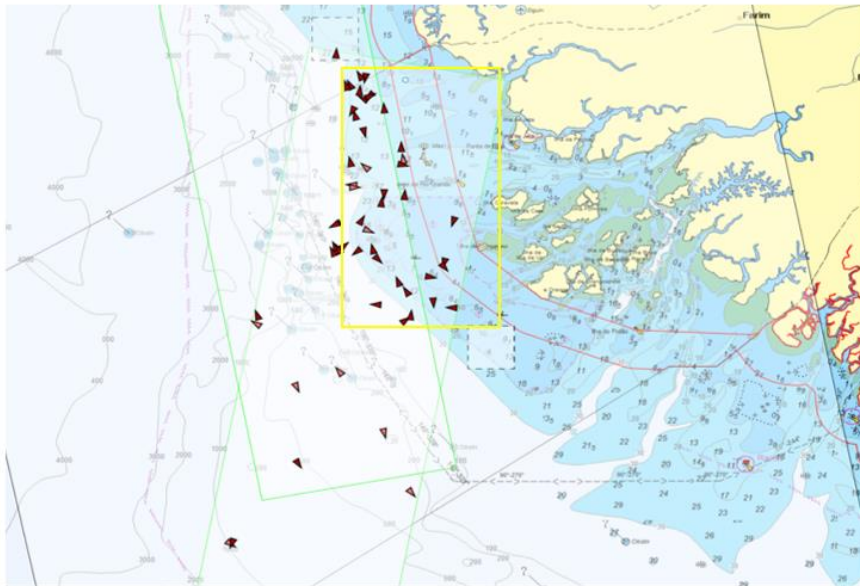


Image n.2

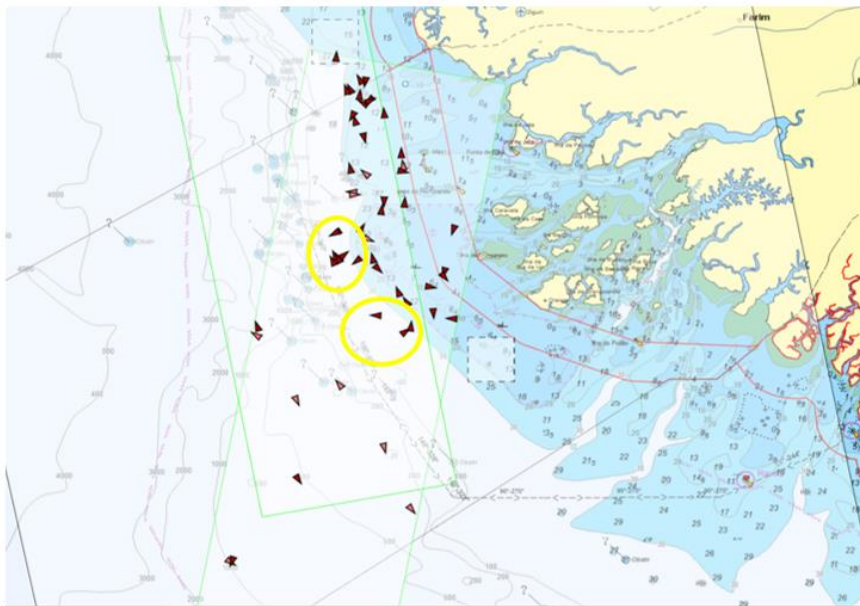
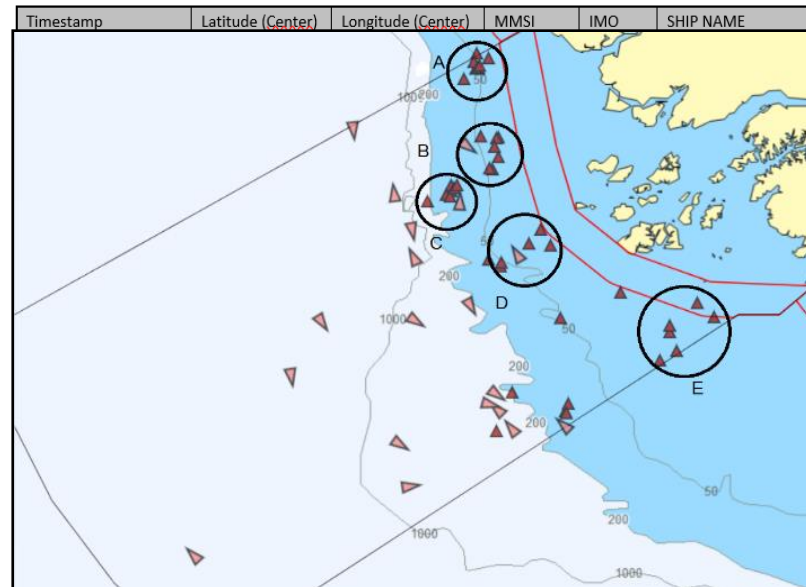


Image n.3

JOINT REGIONAL FISHERIES SURVEILLANCE OPERATION

NAME OF CODE:<<MORY GNINGUE>>



Timestamp	Latitude (Center)	Longitude (Center)	MMSI	IMO	SHIP NAME
2018-09-14 07:03:47Z	09°44'09"N	017°39'44"W	N/A	N/A	N/A
2018-09-14 07:03:40Z	10°09'14"N	017°20'33"W	N/A	N/A	N/A
2018-09-14 07:03:22Z	11°13'28"N	016°57'35"W	N/A	N/A	N/A
2018-09-14 07:03:08Z	12°10'13"N	017°01'32"W	N/A	N/A	N/A
2018-09-14 07:03:22Z	11°12'20"N	016°38'49"W	N/A	N/A	N/A
2018-09-14 07:03:21Z	11°17'06"N	016°59'21"W	N/A	N/A	N/A
2018-09-14 07:03:22Z	11°10'54"N	016°38'38"W	N/A	N/A	N/A
2018-09-14 07:03:08Z	12°11'25"N	017°03'11"W	N/A	N/A	N/A
2018-09-14 07:03:10Z	12°01'18"N	016°55'59"W	N/A	N/A	N/A
2018-09-14 07:03:09Z	12°08'28"N	017°05'56"W	N/A	N/A	N/A
2018-09-14 07:03:18Z	11°25'17"N	016°36'16"W	N/A	N/A	N/A
2018-09-14 07:03:17Z	11°31'55"N	016°56'39"W	N/A	N/A	N/A
2018-09-14 07:03:09Z	12°06'45"N	017°03'01"W	N/A	N/A	N/A
2018-09-14 07:03:13Z	11°49'06"N	016°51'07"W	N/A	N/A	N/A
2018-09-14 07:03:26Z	10°59'31"N	016°58'38"W	N/A	N/A	N/A
2018-09-14 07:03:06Z	12°18'24"N	017°09'41"W	N/A	N/A	N/A
2018-09-14 07:03:22Z	11°15'51"N	017°04'10"W	N/A	N/A	N/A
2018-09-14 07:03:17Z	11°33'49"N	016°56'07"W	N/A	N/A	N/A
2018-09-14 07:03:17Z	11°34'12"N	016°50'05"W	N/A	N/A	N/A
2018-09-14 07:03:14Z	11°43'15"N	016°50'14"W	N/A	N/A	N/A
2018-09-14 07:03:25Z	10°59'48"N	016°41'56"W	N/A	N/A	N/A
2018-09-14 07:03:25Z	10°58'26"N	016°36'58"W	N/A	N/A	N/A
2018-09-14 07:03:23Z	11°08'02"N	016°42'23"W	N/A	N/A	N/A
2018-09-14 07:03:15Z	11°44'27"N	017°05'51"W	N/A	N/A	N/A
2018-09-14 07:03:12Z	11°53'07"N	017°01'42"W	N/A	N/A	N/A
2018-09-14 07:03:11Z	11°59'04"N	017°04'33"W	N/A	N/A	N/A



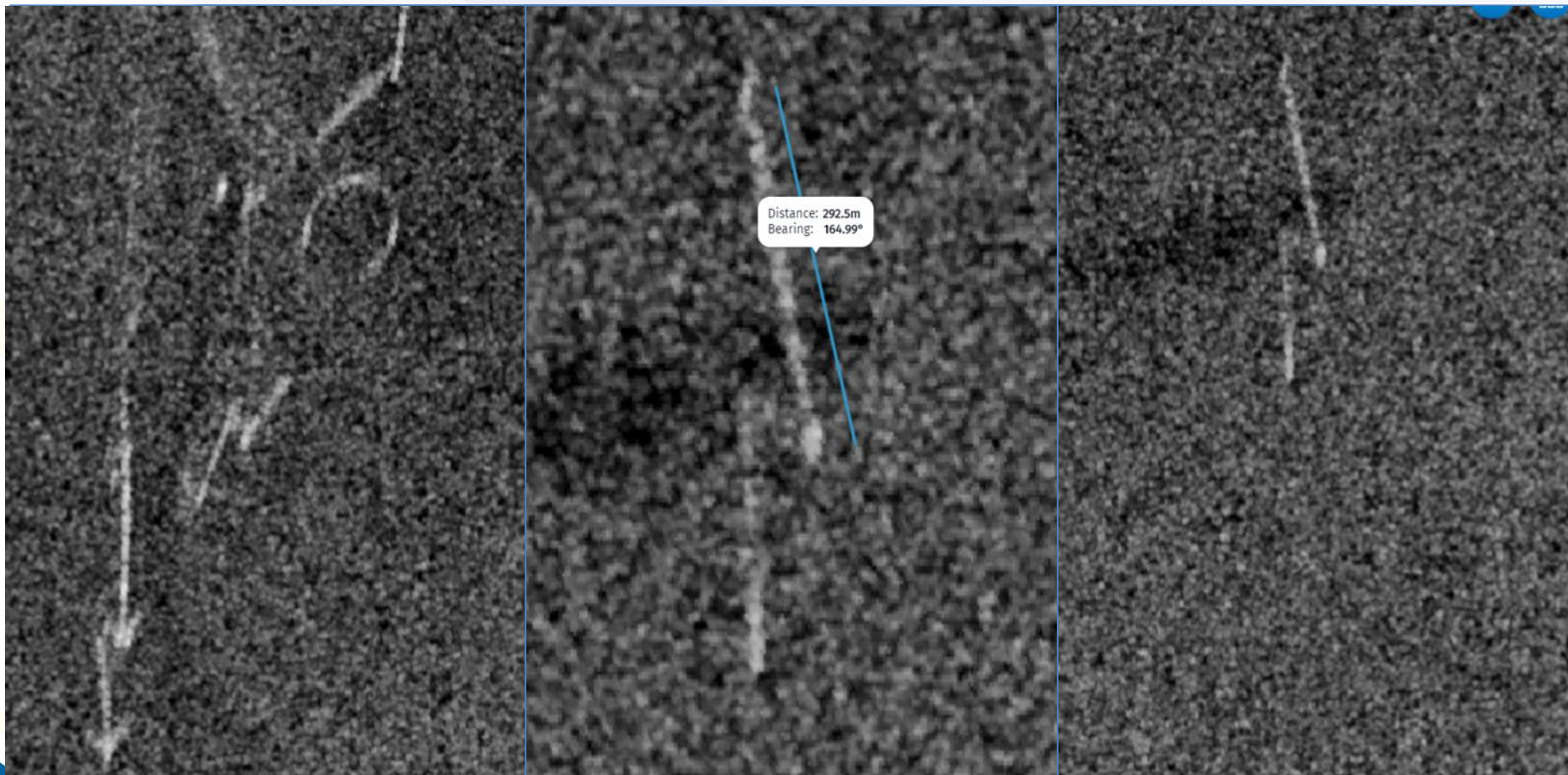
como objectivo Principal.

上有老，下有小，出了事故不得了！
Tem família! Acontecer um
acidente estraga tudo.



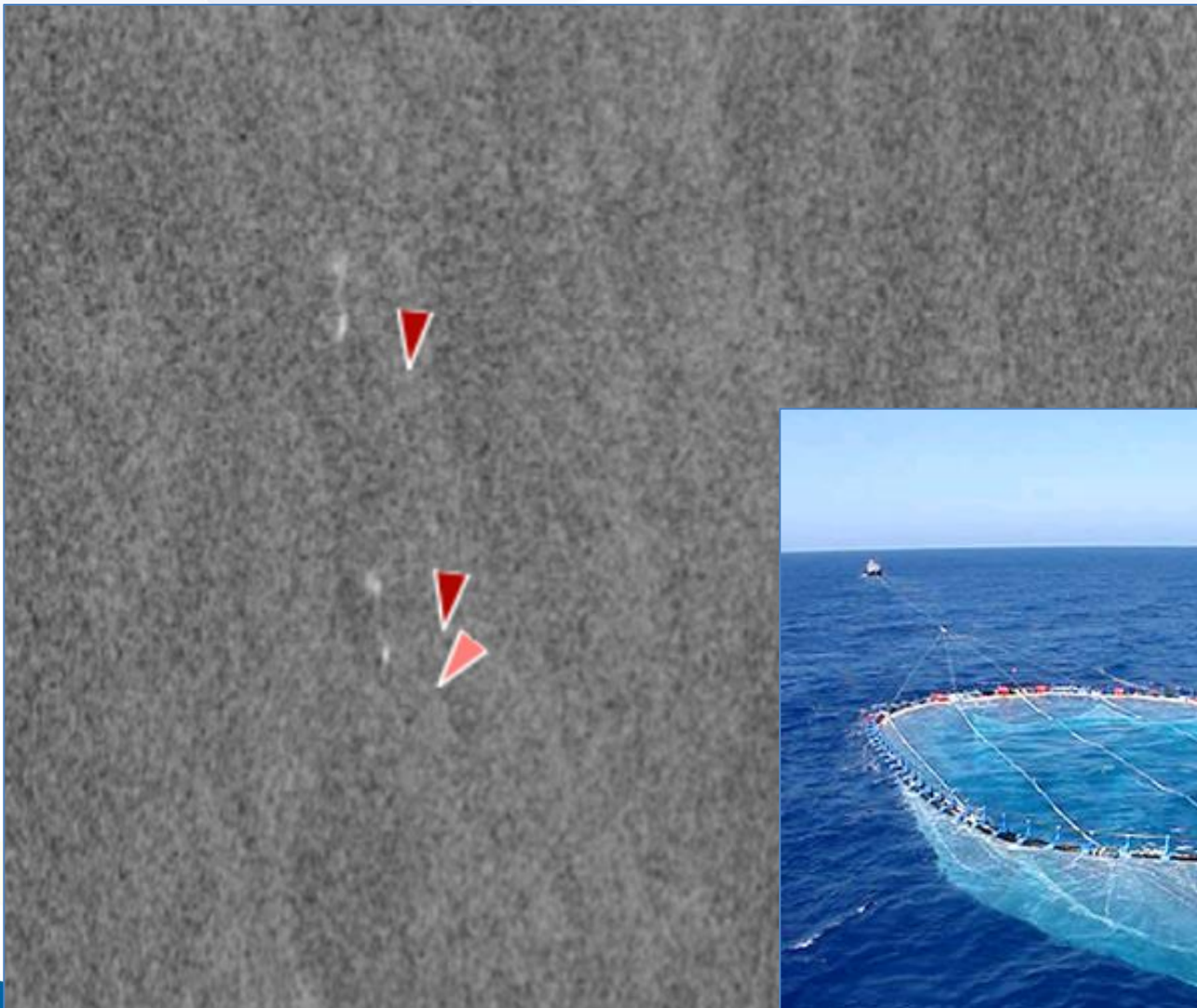
Mediterranean Sea

Enhanced analysis



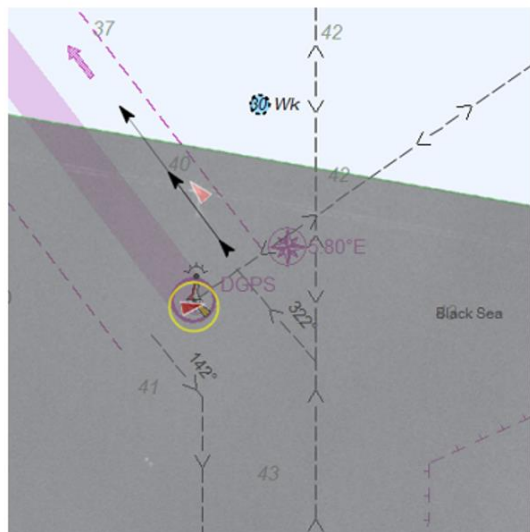
Mediterranean Sea

Enhanced analysis

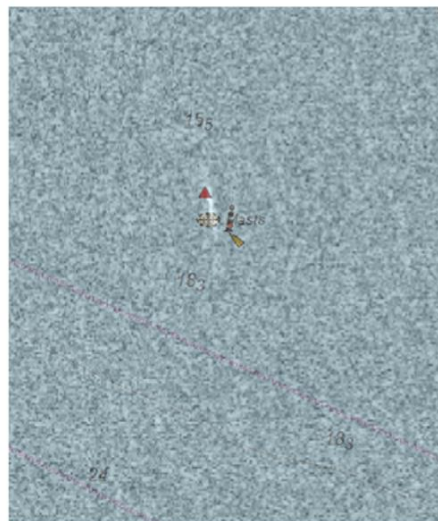


Black Sea

Feedback



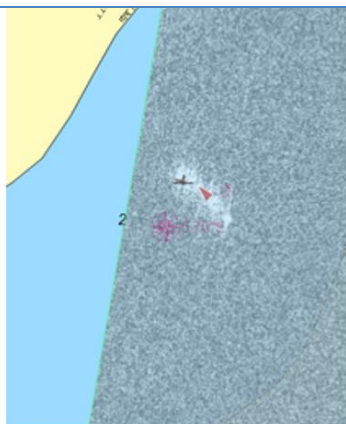
Unidentified object (6) is marked on the nautical chart



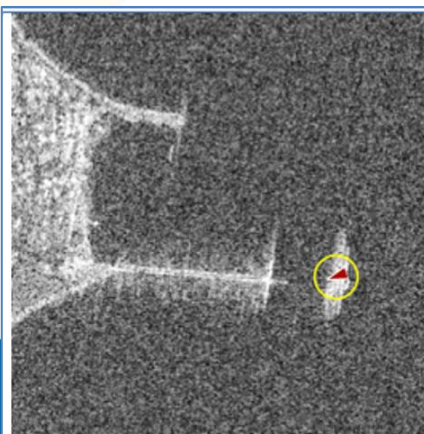
Unidentified object (2), marked on the nautical map, buoy (Date-07.04.2018-1804070014_EO)



Unidentified object (15), marked on the nautical map, buoy (Date-07.04.2018-1804070014_EO)



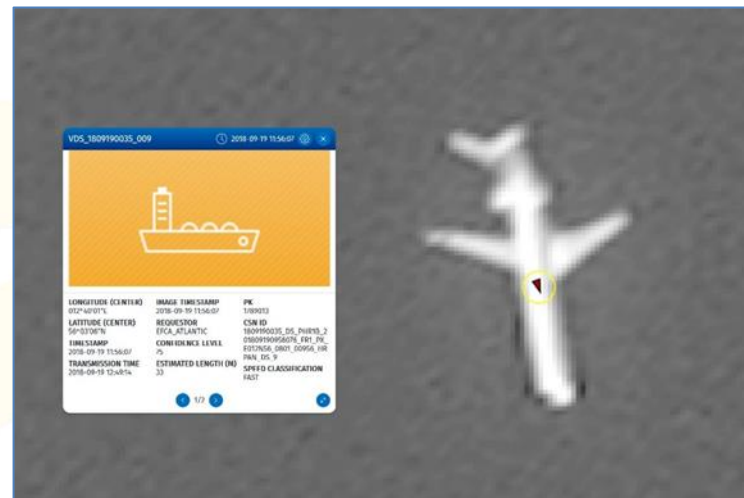
Unidentified object (7) is marked on the detailed nautical chart as a wreck



Unidentified object (1) appears to be a floating dock close to the Shabla Lighthouse

Black Sea

Enhanced analysis & Feedback

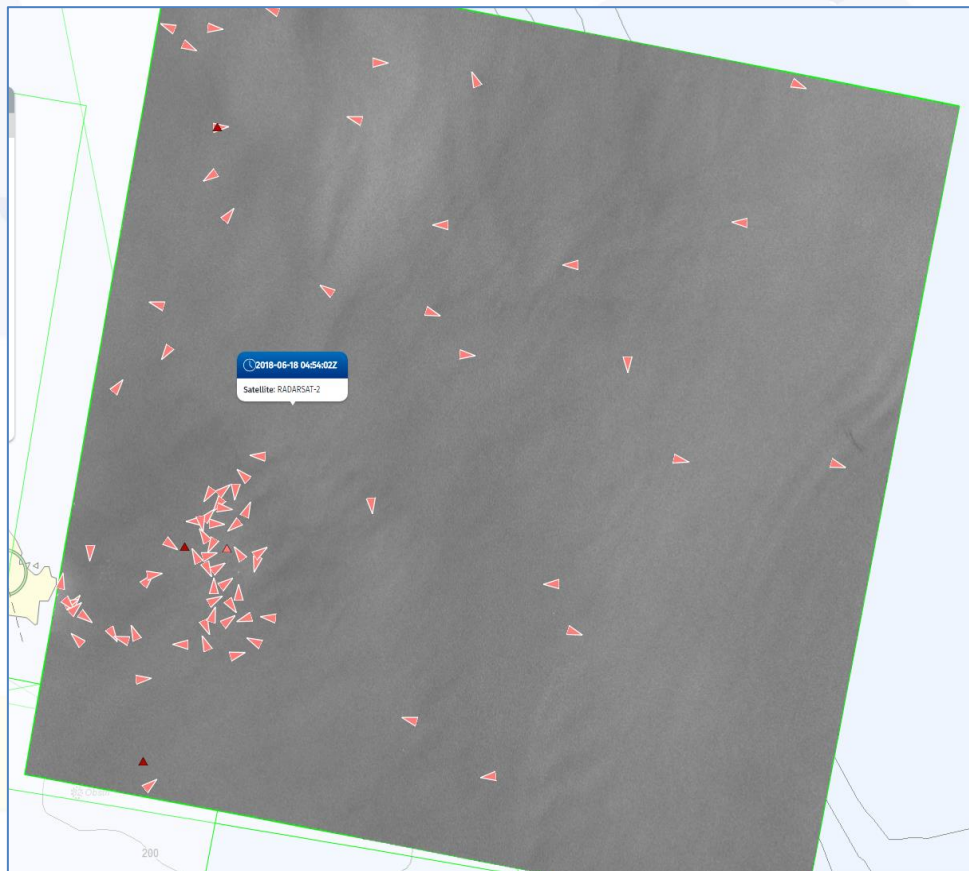




Conclusion...



- CMS services are in high demand
- Incorporated in operational framework
- Additional value from enhanced analysis
- Quality of automated processes need to be monitored (feedback)
- Need for careful planning and selection of AOI (added value & availability)
- Use of HR optical needs to be further explored



Thank you

Copernicus@efca.europa.eu