

Meeting: 16th Mediterranean AIS Expert Working Group

Place and date: Italy, Rome, 12 December 2019

Agenda item: MAREΣ network activity and monitoring report

Document number: MAREΣ 16/4/1

Submitted by Italy

Summary	The document provides updates on the MAREΣ network and monitoring activities carried out in the period October 2018 – October 2019.
Action to be taken	As per paragraph 5.
Related documents	1) 15 th Mediterranean AIS Expert Working Group Workshop report (V.1.2). 2) MAREΣ 15/4/1 MAREΣ report (from October 2017 to September 2018)

1. Introduction

This report summarises the MAREΣ activities describing the services provided by the Regional AIS Server from October 2018 to October 2019.

During the reporting period, MAREΣ has been providing SafeSeaNet with AIS data gathered from the following participating Member States: Bulgaria, Croatia, Cyprus, France, Gibraltar (UK), Greece, Italy, Malta, Portugal (including Azores and Madeira), Romania, Slovenia and Spain.

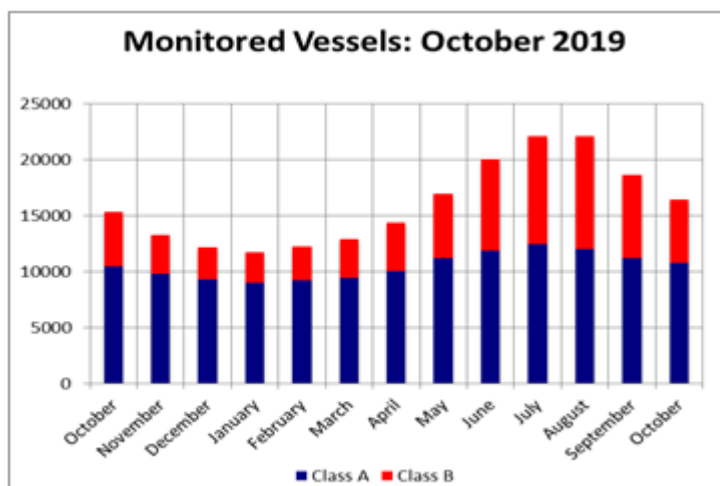
Furthermore, MAREΣ has been providing AIS information to the following Countries participating in the specific regional projects:

- **Montenegro**, in the context of a sharing environment implemented in the Adriatic Sea among Italy, Slovenia, Croatia and Montenegro;
- **Morocco** and **Jordan** in the framework of the SAFEMED IV project. **Tunisia** also participated since May 2019. The Tunisian Ministry of Transport, Shipping and Maritime ports (Office de la Marine Marchande et des Ports) has implemented a small network based on two base stations located in Biserta and La Goulette;
- **Ukraine** and **Georgia** in the framework of the BCSEA project. Ukraine was connected to MAREΣ in November 2018 and Georgia in January 2019.

2. Level of the activity

A high number of vessels was detected during summer which is justified due to the increased traffic during the summer period (presence of pleasure crafts) and the duct effect which boost the AIS radio coverage.

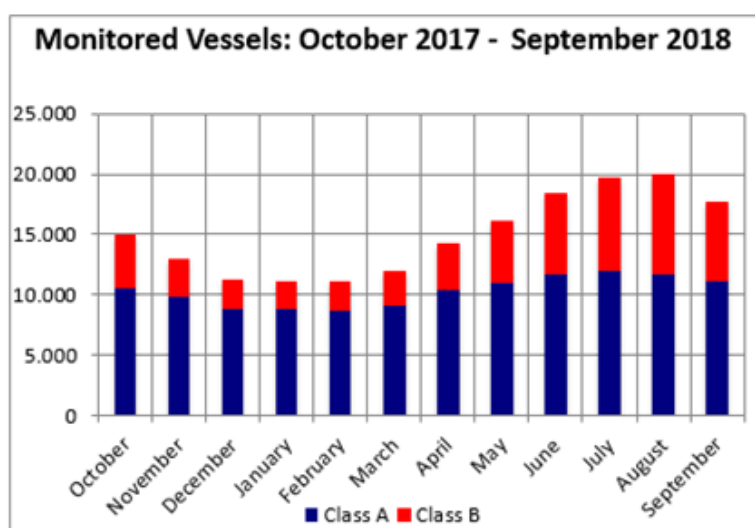
Fig. 1 shows the average number of vessels monitored in the reference period (October 2018 ÷ October 2019) daily. Ships carrying AIS Class A are indicated in blue and Class B in red.



OCTOBER 2019: 16,428
 SEPTEMBER 2019: 18,608
 AUGUST 2019: 22,095
 JULY 2019: 22,027
 JUNE 2019: 20,033
 MAY 2019: 16,931
 APRIL 2019: 14,331
 MARCH 2019: 12,895
 FEBRUARY 2019: 12,192
 JANUARY 2019: 11,698
 DECEMBER 2018: 12,112
 NOVEMBER 2018: 13,320
 OCTOBER 2018: 15,261

Fig. 1 – The average number of vessels monitored in period October 2018 - October 2019, calculated daily

The numbers of monitored vessels is coherent with the numbers of the previous reference period with a 10% increase during the summer months (see Fig. 2).



SEPTEMBER 2018: 17,641
 AUGUST 2018: 20,070
 JULY 2018: 19,767
 JUNE 2018: 18,423
 MAY 2018: 16,128
 APRIL 2018: 14,285
 MARCH 2018: 11,936
 FEBRUARY 2018: 11,084
 JANUARY 2018: 11,093
 DECEMBER 2017: 11,192
 NOVEMBER 2017: 12,989
 OCTOBER 2017: 14,943

Fig. 2 – The average number of vessels monitored daily during the period October 2017- September 2018

The current MAREΣ release is running since October 2014 and provides the total amount of the information collected by each participating Country, including all static, dynamic and voyage-related data. The filtering of duplicates is carried out by the Regional server.

Annex 1 presents the amount of the AIS information provided to MAREΣ by the participating Countries during the reference period. Annex 2 presents the amount of the AIS information delivered by MAREΣ to the participating Countries and to central SSN. Each diagram includes information on the down-sampling configuration and the area (if the latter is different from the sharing environment of the MAREΣ Countries).

According to the down-sampling policy (6 min.) established in the SLA between Italy and EMSA, the amount of the information provided by MAREΣ to SafeSeaNet during the reference period is **1.487.502.031**.

Italy, Slovenia, Croatia and Montenegro share information in Adriatic Sea without down sampling (full data rate, since 27th November 2015). In addition, Ukraine exchanges information with 6 minutes down-sampling (since November 2018), Georgia without down sampling (full data rate, since January 2019) and Tunisia with 1 minute down-sampling (since May 2019).

The amount of the AIS information delivered to MAREΣ by each of the participating Countries, calculated from October 2018 to October 2019, is shown in the Table 1.

Overall AIS information delivered by the participating Countries (Oct 2018 ÷ Oct 2019)						
BGR	CYP	ESP	FRA	GRC	HRV	ITA
792.093.341	52.667.852	1.586.469.199	114.142.858	158.230.897	1.453.119.489	4.691.040.194
MLT	MNE	PRT ISL	PRT	ROU	SVN	GIB
35.475.761	578.745.048	27.063.285	348.782.785	1.151.929.919	250.967.999	576.742.456
MOR	JDN	UKR	GEO	TUN		
60.974.429	16.436.303	287.022.774	24.994.980	58.469.055		

Table 1 - Overall AIS information delivered to MAREΣ in the reference period by participating Countries
The overall AIS information per month handled by MAREΣ in the same period is shown in the Table 2.

Overall AIS information per month handled by MAREΣ (Oct 2018 ÷ Oct 2019)						
Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019
4.487.532.227	3.937.201.926	3.878.424.380	3.754.612.383	3.514.429.855	4.102.940.897	4.195.974.955
May 2019	Jun 2019	July 2019	Aug 2019	Sept 2019	Oct 2019	
4.576.616.176	5.299.110.892	6.264.231.686	6.190.364.412	5.141.754.044	5.313.021.925	
Total: 60.656.215.758						

Table 2 - MAREΣ monthly workload in the reference period.

The average AIS messages per second shared by MAREΣ is presented in Table 3.

Messages per second handled by MAREΣ (Oct 2018 ÷ Oct 2019)						
Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019
~1.675 msg/s	~1.520 msg/s	~1.450 msg/s	~1.400 msg/s	~1.450 msg/s	~1.530 msg/s	~1.620 msg/s
May 2019	Jun 2019	July 2019	Aug 2019	Sept 2019	Oct 2019	
~1.710 msg/s	~1.980 msg/s	~2.340 msg/s	~2.310 msg/s	~1.980 msg/s	~1.980 msg/s	

Table 3 - MAREΣ monthly workload calculated in messages per second handles by the server.

Tables 2 and 3 are representing the overall MAREΣ workload.

3. MAREΣ network status

3.1. Network malfunctions/incidents

During the observed period 80 network malfunctions (incidents), involving National Proxies (NPRs) and requiring a human intervention to restore operations, were reported. The reported incidents (Table 4) were mainly due to breakdowns in communications between the:

- MAREΣ Core application and the National Proxies;
- National Proxy and the related AIS network.

All incidents affected the flows from the concerned participating Countries and the functioning of MAREΣ.

Submitted reports		
Month/Year	N. of reports	Involved networks
October 2018	11	Cyprus (1), Malta (1), Bulgaria (1), Gibraltar (8)
November 2018	2	Gibraltar (1), Malta (1)
December 2018	4	Portugal Islands (1), Gibraltar (1), France (1), Portugal (1)
January 2019	6	Malta (1), Portugal Islands (1), Gibraltar (2), Portugal (1), Italy (1)
February 2019	6	Croatia (2), Gibraltar (2), France (2)
March 2019	10	Croatia (1), Malta (1), Gibraltar (4), Cyprus (1), Slovenia (1), Romania (1), Spain (1)
April 2019	7	Portugal Islands (2), Portugal (2), Spain (1), France (1), Croatia (1)
May 2019	8	France (1), Portugal Islands (1), Portugal (1), Greece (2), Malta (1), Croatia (2)
June 2019	5	France (2), Portugal Islands (2), Portugal (1)
July 2019	5	Croatia (2), Cyprus (1), Portugal (1), Portugal Islands (1)
August 2019	4	Portugal (1), Greece (1), Croatia (1), Malta (1)
September 2019	7	Gibraltar (1), Greece (2), Croatia (1), Spain (2), Malta (1)
October 2019	5	Gibraltar (1), Slovenia (4)
Total	80	Gibraltar (20), Greece (5), Croatia (10), Spain (4), Malta (7), Slovenia (5), Portugal Islands (8), Portugal (8), Cyprus (3), Bulgaria (1), Italy (1), Romania (1), France (7)

Table 4 - Reported malfunctioning (incidents) during the reference period

All incidents, affecting the National Proxies of the participating Countries, were detected by the “core user monitoring” tool housed at the MAREΣ application (Fig. 3). The breakdown in the communication between MAREΣ and the National Proxy involved are indicated in red and between the national network and related National Proxy in yellow.

In all cases the national point of contact was contacted by the ICG requesting the re-establishment of the connection. All the incident reports were submitted to the EMSA MSS, including roots cause analyses (whenever provided by the national POC).

User name	Description	Status	ASIS msg/s to Pelagus	ASIS msg/s from Pelagus	is Connected	is Enabled To Send	is Enabled To Receive	is Area 20 Filter Enabled	Curr. ASIS msg from Ser.	OUT Kbps
EMSA_ECU	ROMANIA	OK	31.07 msg/s	39.5 msg/s	YES	YES	YES	YES	1	17.36 Kbps
EMSA_PTSL	PORTUGAL ISLANDS	OK	1.21 msg/s	110.21 msg/s	YES	YES	YES	YES	1	1.07 Kbps
EMSA_PRT	PORTUGAL	OK	8.64 msg/s	104.71 msg/s	YES	YES	YES	YES	1	5.61 Kbps
EMSA_BGR	BULGARIA	OK	15.57 msg/s	38.64 msg/s	YES	YES	YES	YES	1	8.99 Kbps
EMSA_GRC	GREECE	OK	2.71 msg/s	37.14 msg/s	YES	YES	YES	YES	1	2.04 Kbps
EMSA_MNE	MONTENEGRO	OK	7.93 msg/s	90.21 msg/s	YES	YES	YES	YES	1	5.76 Kbps
EMSA_HRV	CROATIA	OK	36.57 msg/s	64.07 msg/s	YES	YES	YES	YES	1	20.88 Kbps
EMSA_ISR	ISRAEL	OK	0 msg/s	41.93 msg/s	YES	YES	YES	YES	2	0 Kbps
EMSA_ESP	SPAIN	OK	47.14 msg/s	110.93 msg/s	YES	YES	YES	YES	1	27.48 Kbps
EMSA_SVN	SLOVENIA	OK	3.93 msg/s	296.22 msg/s	YES	YES	YES	YES	1	2.57 Kbps
EMSA_ITA	ITALY	OK	124.21 msg/s	87.5 msg/s	YES	YES	YES	YES	1	94.83 Kbps
EMSA_CYP	CYPRUS	OK	1.5 msg/s	37.71 msg/s	YES	YES	YES	YES	1	1.24 Kbps
EMSA_FRA	FRANCE	OK	3.36 msg/s	109.23 msg/s	YES	YES	YES	YES	1	2.43 Kbps
EMSA_MLT	MALTA	OK	0.57 msg/s	38.36 msg/s	YES	YES	YES	YES	2	0.48 Kbps

Fig. 3 - MAREΣ “core user monitoring” tool

The average numbers of incidents per month, observed during the past years are as follow:

- **EWG 11:** 86 incidents on a 11 months period (7.8 incident/month);
- **EWG 12:** 132 incidents (this peak was due to the transition forward MAREΣ 2.0 when all the National

- Proxies had to change their connections);
- **EWG 13:** 100 incidents on a 12 months period (8.3 incident/month);
- **EWG 14:** 178 incidents (on 24 months period), of which 97 incidents recorded from Oct 2015 – Sept 2016 (8 incident/month) and 81 during the period from Oct 2016 – Sept 2017 (6.7 incident/month);
- **EWG 15:** 60 incidents on a 12 months period (5 incident/month);
- **EWG 16:** 80 incidents on a 13 months period (6.1 incident/month).

3.2. Failure restoring and incident processing time

The availability of the links, the connection status of the National Proxies and the exchanging rate of the AIS information between NPRs and MAREΣ as well as between MAREΣ and the SSN central application was monitored.

The total elapsed time to restore all the failures registered during the reference period (i.e. the processing time of the incident) was **597.10 hours**, and it varied between 7.29 hours (June 2019) to 117.38 hours per month (October 2018) (see Tab. 5).

Month	Oct. 2018	Nov. 2018	Dec. 2018	Jan. 2019	Feb. 2019	Mar. 2019	Apr. 2019	May 2019	Jun. 2019	July 2019	Aug. 2019	Sept. 2019	Oct. 2019	Total
No. Incidents	11	2	4	6	6	10	7	8	5	5	4	7	5	80
Minutes	7,058	1,177	3,155	1,372	1,336	3,646	9,840	3,152	449	1,058	726	1,899	1,122	35,990
Hours (Est.)	117.38	19.37	52.35	22.52	22.16	60.46	164	52.32	7.29	17.38	12.06	31.39	18.42	597.10

Table 5 - Total elapsed time needed to restore the failures

The average total elapsed time needed to restore the failures is **7 hours and 46 sec.**

The numbers show that the situations have improved when comparing with the numbers presented at the 15th EWG (period from October 2017 to September 2018), when the total elapsed time to restore the failures was 764.9 hours and the average elapsed time to restore the failures 12.75 hours. This difference can be attributed to the tests on the proxy data buffering capabilities conducted with a few MSs (Slovenia, Romania and Cyprus) at the request of EMSA and the STAR Streaming Remote Hub (SSRH) tests preliminary to the migration from SSN-SI to the new interface.

The following Table presents the reported failures and incidents, affecting the indicated National Proxies and the incident processing time, as defined by the SLA between ICG and EMSA¹, exceeded the maximum time for restoring the AIS data transfer from the national proxies to MAREΣ:

¹ Estimated time necessary for the resolution of the reported incident, after the incident is reported to the Regional Server by phone or e-mail or detected by a SSN user or EMSA or Regional Server operator staff. This covers the time for acknowledgement and analysis, as well as the intervention time. In case an incident is classified with a priority level higher than 2 (i.e. normal, low, scheduled), the calculation of the processing time considers only the "Office hours", during normal working days of ICG staff.

Report Date	MAREΣ incident number	Participant Country involved	Processing time	Root cause of incidents
2018 October 04 th	20181002-1	Gibraltar	4 ^d 2 ^h 8 ^m	NIL
2018 November 16 th	20181114-1	Gibraltar	18 ^h 48 ^m	NIL
2018 December 4 th	20181202-1	Portugal Islands	1 ^d 12 ^h 56 ^m	NIL
2018 December 20 th	20181220-1	Portugal	14 ^h 07 ^m	Proxy software failure
2019 January 15 th	20190114-1	Portugal Islands	15 ^h 45 ^m	Proxy restarting
2019 February 11 th	20190209-1	Croatia	12 ^h 07 ^m	NIL
2019 March 11 th	20190309-1	Malta	11 ^h 35 ^m	NIL
2019 March 27 th	20190325-1	Spain	01 ^d 19 ^h 38 ^m	NIL
2019 April 16 th	20190413-1	Portugal	03 ^d 05 ^h 44 ^m	Issue on external power surge in Portugal facilities
2019 April 16 th	20190413-2	Portugal Islands	03 ^d 05 ^h 44 ^m	Issue on external power surge in Portugal facilities
2019 May 09 th	20190507-2	Portugal Islands	01 ^d 09 ^h 19 ^m	The firewall of the Portugal network crashed and the reprogramming of several rules was required
2019 July 22 th	20190718-1	Croatia	10 ^h 51 ^m	NIL
2019 September 05 th	20190904-1	Greece	12 ^h 46 ^m	NIL
2019 October 28 th	20191025-1	Slovenia	13 ^h 20 ^m	NIL

In most of the cases, information about the incident root cause was not provided. MAREΣ participants are requested to investigate the root cause of the incident and provide information on the failure occurred after restoring the connection between National Proxy and the Regional Server.

3.3. MAREΣ/SSN-SI incidents

No incidents affected MAREΣ SSN-SI in the reference period.

3.4 Link availability

Diagrams in Annex 3 present the link availability for each NPR of the participating Country during the reference period. The availability is affected by the incidents involving the National Proxy, the breakdown in communication and, if occurred, the MAREΣ inactivity periods.

4. MAREΣ upgrading

4.1 VDL Analyzer Module

ICG adopted a centralized tool to monitor the VHF Data Link (VDL) status associated to the AIS base stations of the national network. As a step for further enhancement of the Regional system, has been integrated to MAREΣ. The tool is compliant to the IALA A-124 recommendation “*on the AIS service*”. The tool acquires automatically the base stations to monitor and all the information required to analyze the VDL, directly from the AIS data stream by the:

- VDM + VSI and the VDO + VSI pair of strings;
- Comment/ Tag block described in the technical standards IEC 61162-1 and 62320-1.

According to the ITU-R recommendation M.1371, for each base station and for every single minute, the tool identifies:

- the number of slots reserved by the observed BS, as detected by the Data Link Management messages transmitted and received;
- the number of slots reserved by other BSs, as detected by the Data Link Management messages received;
- the number of slots used by AIS messages transmitted and received by the radio BSs;
- the number of slots used by AIS messages received from other BSs;
- the number of slots used by AIS messages received from AIS mobile stations (Class A, Class B, SART, SAR aircraft, AtoN, etc.);
- the conflicts identified among their own and other reservations and among their own and other transmission.

The VDL load, obtained by all the above-mentioned information for both the channel AIS1 and AIS2, are presented graphically using the “slot map” shown in Fig. 4, which is a grid of 2x2250 squares (one for each slot in the TDMA AIS frame). Each slot is colored according to its status, as illustrated in the picture on the right side.



Fig. 4 – VDL ANALYZER tool: “Slots Map”

Furthermore, the application can display the status of the AIS Base Stations also basing upon alarm and status messages (ALR, TXT and ADS, FSR, as defined in the IEC 61162-1 and 62320-1 standards).

At the end of each one-minute frame, the tool stores the information acquired for a configurable period of time, a history of the aggregated values calculated (absolute values and load-channel percentages and relative contributions, according to the types of above-mentioned slots), together with the summary of the alarm status of the BSs and allows their extraction over time. When the persistence period expires, this information is automatically deleted, and this event is recorded in the system logs.

The application also allows to configure an interval/period for data retrieval, providing on graphs the evolution over time of some parameters (e.g.: VDL load/overload; percentages of Rx/Tx slots and reserved slots, etc., see Fig. 5 – “Time Statistics” window):



Fig. 5 – VDL ANALYZER tool: “Time Statistics” window

The use of the tool requires national networks able to deliver all the sentences mentioned above together with an upgrade of the national proxy (currently able only to manage the VDM).

4.2 Data Buffering Test

Following the SSN/LRIT Workshop 4 (Lisbon, 23 October 2018) and the MAREΣ 15th EWG meeting, ICG conducted the AIS data buffering and retransmission tests, in cooperation with EMSA and participating Countries. The objective of these tests was to verify if the data buffering and retransmission were performed properly by NPRs installed at the MSs side, following the test scenario presented below (Fig. 6):



Fig. 6 – NPR’s data buffering test scenario

Member States, ICG (MAREΣ) and EMSA checked the amount of data (number of messages, in average) delivered/received before the disconnection period (09:30 – 10:00 UTC). The link indicated as No 2 in Fig. 6 (i.e. NPR connection with RS) was disconnected (or disabled) by the MAREΣ administrator, allowing NPR to buffer the received data for a specified period (10:00 – 10:30 UTC).

Following the NPR re-connection, the ICG and EMSA compared the amount of data delivered/received before and after the disconnection period. The tests were conducted from March 2019 to June 2019 and

involved all the MSs. The results were positive in most of the cases because AIS data were buffered during the downtime and retransmitted when the connection was re-established.

A few issues need further investigations (e.g.: amount of data retransmitted higher during the testing period than before and after; low throughput; additional small gap after the initial period noted also with re-transmission, etc.). The testing results are presented in Annex 4.

4.3 Star Streaming Remote Hub SW testing and migration from SSN-SI

EMSA developed a new SSN-SI called "STAR Streaming remote hub". During last months the ICG and EMSA carried out the migration from the SSN-SI to the "STAR Streaming Remote Hub" application and after a period of test and settings the new streaming Interface went into production on last October 30th, 2019.

Both the SSN-SI and STAR Streaming Remote Hub (pre-production and production) environments are working in parallel, until the decision to phase out SSN-SI will be taken.

4.4 Coverage Analyzer Tool

ICG is developing a specific tool to analyze the AIS coverage of the MAREΣ national networks. The tool will be integrated in the Regional server, possibly, in the first half of 2020.

The participant Countries will access to the information provided by the coverage tools in the comment block associated to every VDM string, where is reported the probability to receive the AIS information in that position by a M2M interface acquiring the layer provided by a dedicate WMS and by using the MAREΣ GUI.

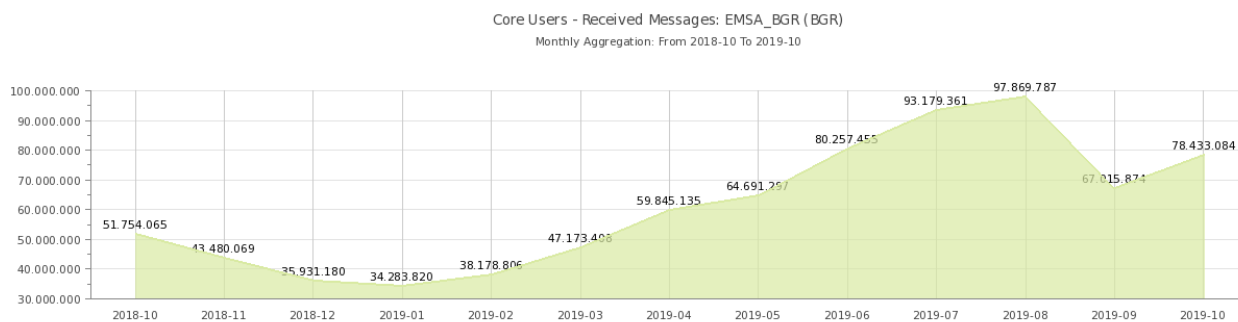
The coverage is calculated using the AIS information acquired by MAREΣ, according to the Lapinski-Isenor estimation algorithm.

5. Action required

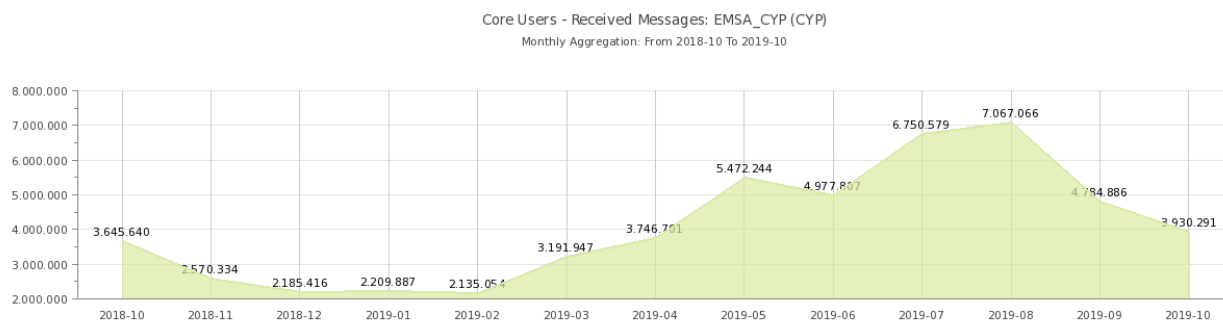
Participating Countries are invited to note the submitted information.

Annex 1

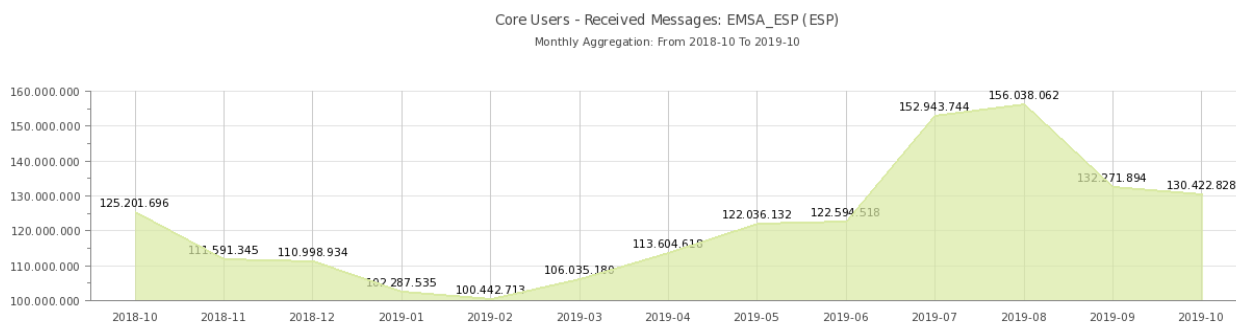
AIS information provided to MAREΣ by the participating Countries



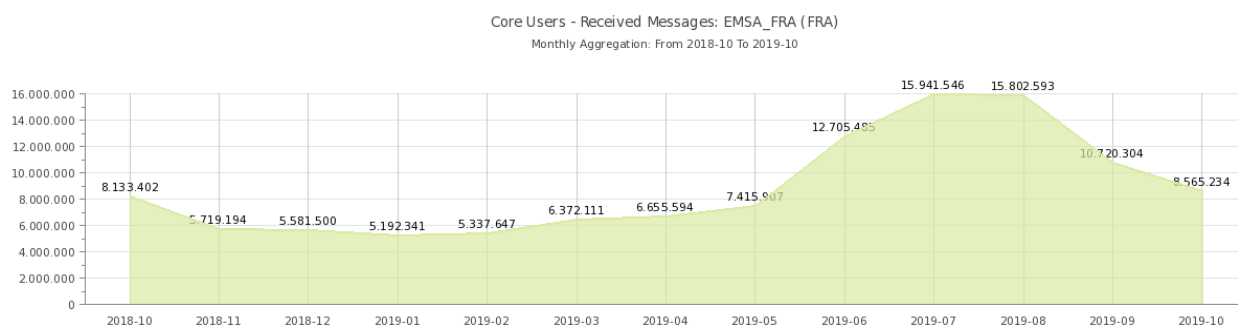
AIS information delivered by Bulgaria (full data rate since December 2016)



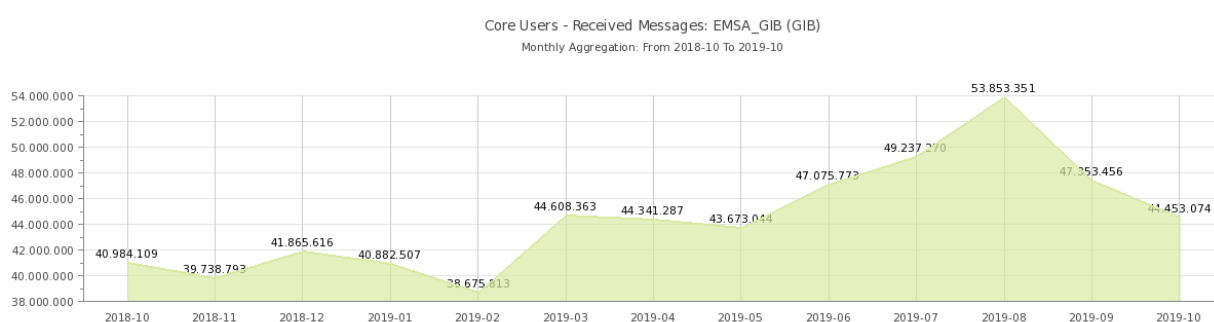
AIS information delivered by Cyprus (down-sampling 6 min)



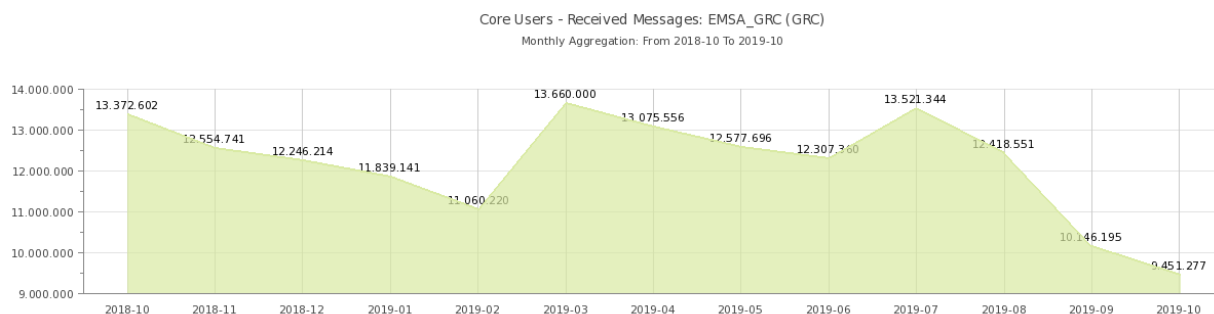
AIS information delivered by Spain (down- sampling 1 min)



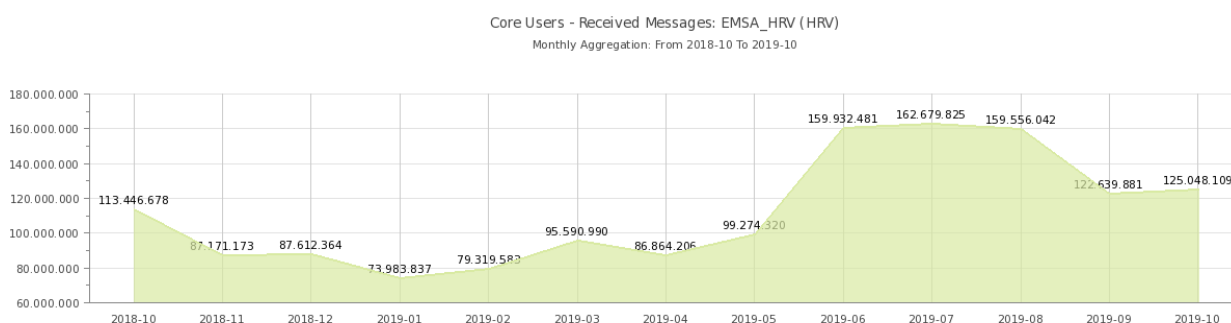
AIS information delivered by France (down-sampling 1 min)



AIS information delivered by Gibraltar² (full data rate)

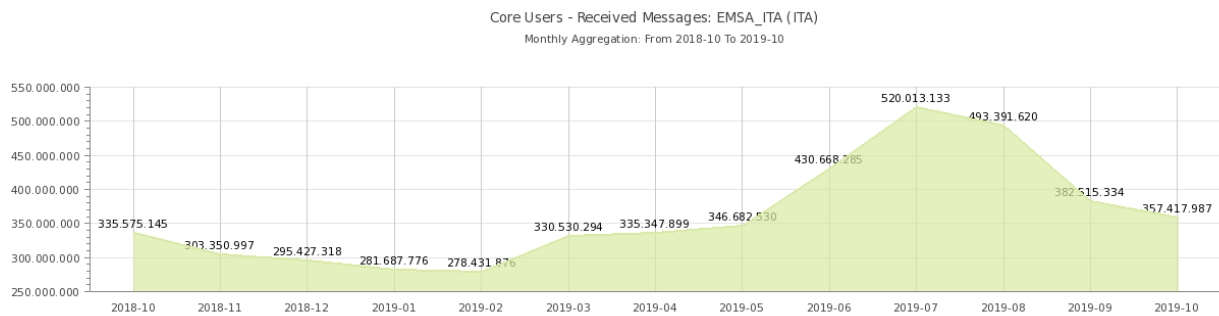


AIS information delivered by Greece (down-sampling 6 min)

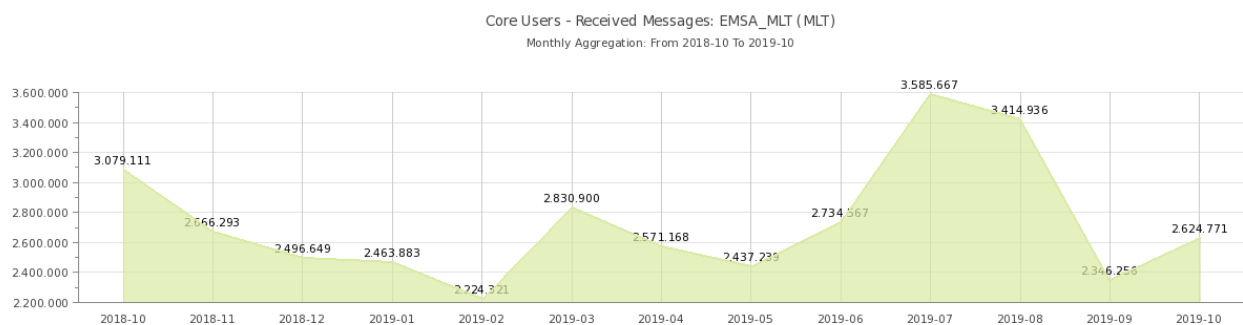


AIS information delivered by Croatia (full data rate since December 2015)

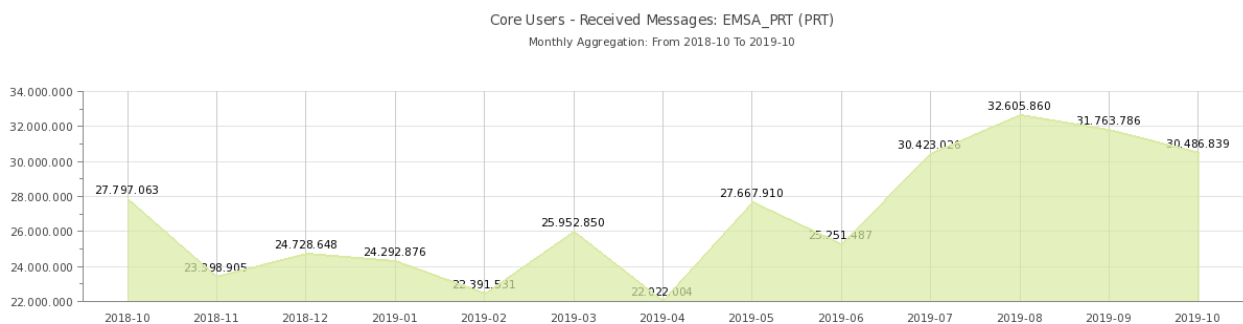
² Since September 1st 2018, Gibraltar implemented a new NAISP.



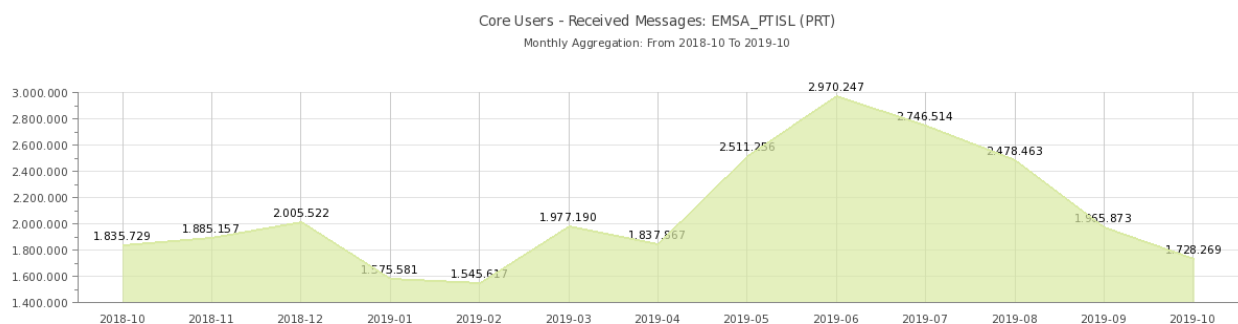
AIS information delivered by Italy (full data rate since February 2016)



AIS information delivered by Malta (down-sampling 6 min)

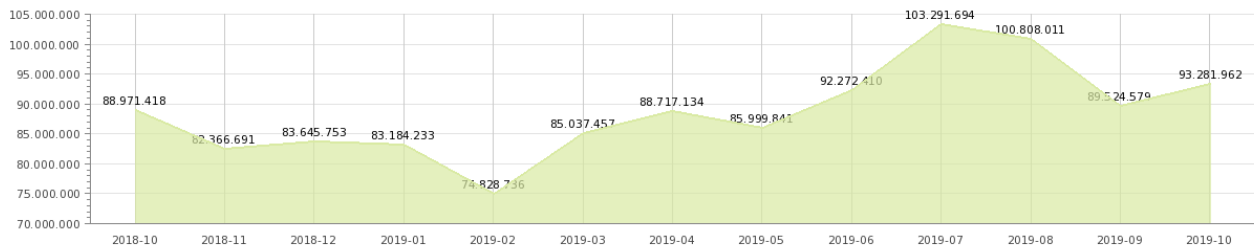


AIS information delivered by Portugal mainland (down-sampling 1 min)



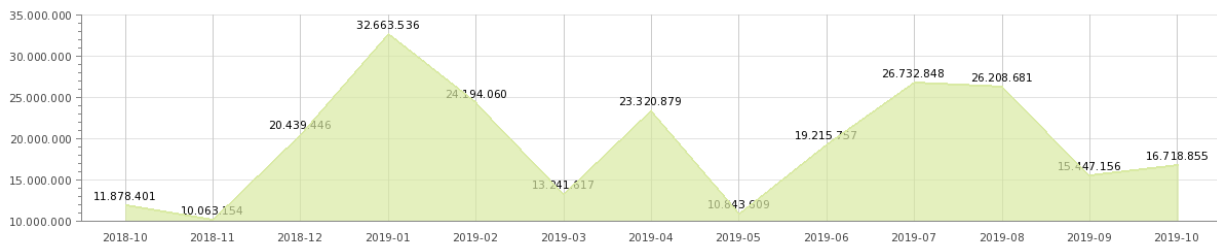
AIS information delivered by Portugal Azores and Madeira (down-sampling 1 min)

Core Users - Received Messages: EMSA_ROU (ROU)
Monthly Aggregation: From 2018-10 To 2019-10



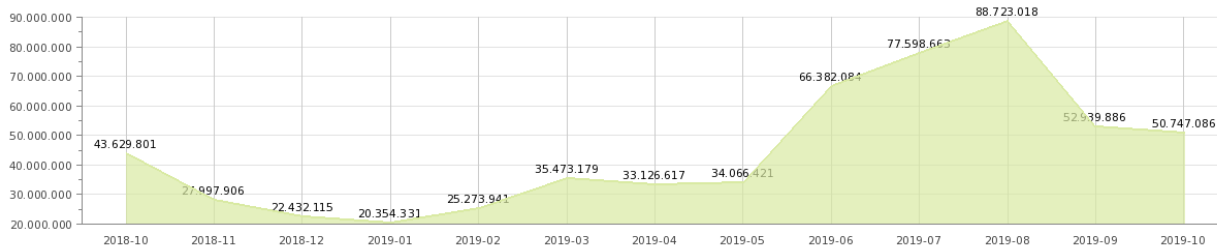
AIS information delivered by Romania (full data rate since December 2016)

Core Users - Received Messages: EMSA_SVN (SVN)
Monthly Aggregation: From 2018-10 To 2019-10



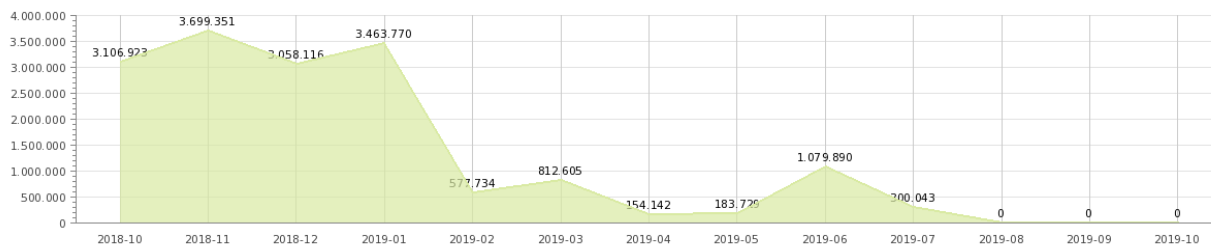
AIS information delivered by Slovenia (full data rate since December 2015)

Core Users - Received Messages: EMSA_MNE (MNE)
Monthly Aggregation: From 2018-10 To 2019-10

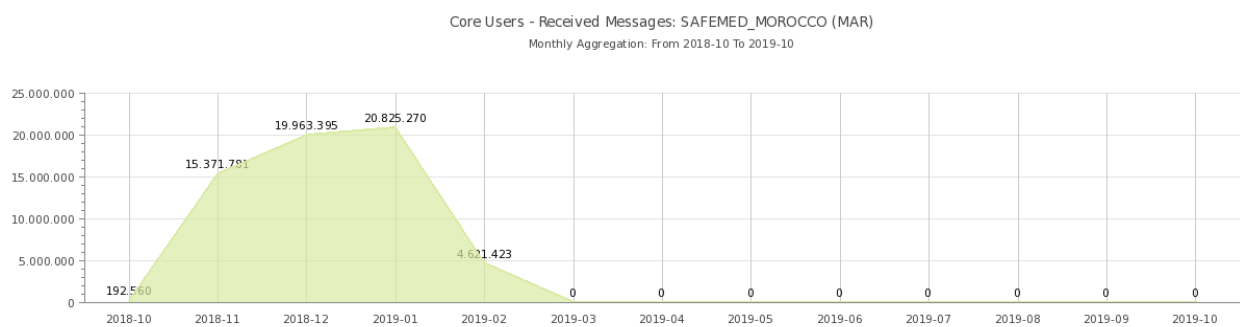


AIS information delivered by Montenegro
(sharing within the Adriatic Region, full data rate since December 2015)

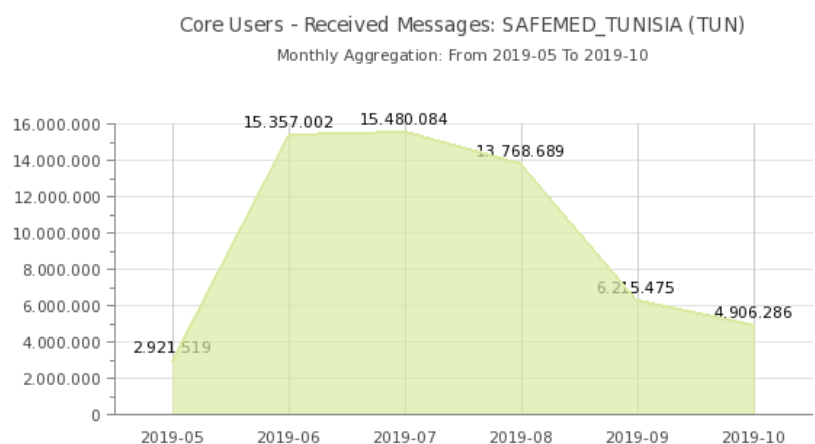
Core Users - Received Messages: SAFEMED_JORDAN (JOR)
Monthly Aggregation: From 2018-10 To 2019-10



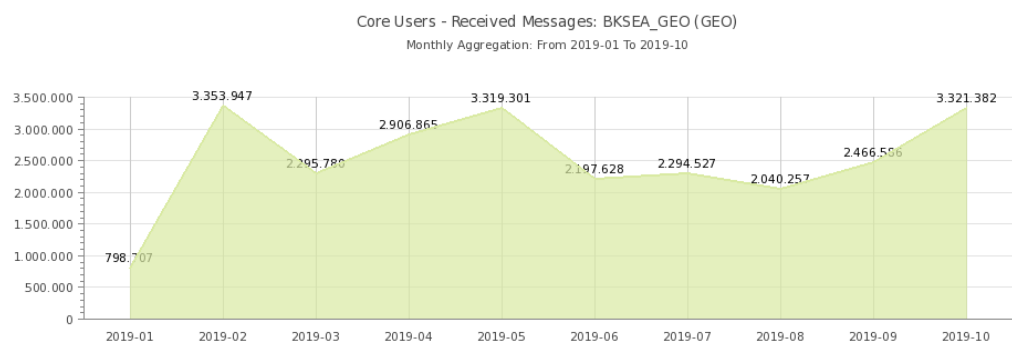
AIS information delivered by Jordan (sharing among SafeMed countries, full data rate)



AIS information delivered by Morocco (sharing among SafeMed countries, full data rate)

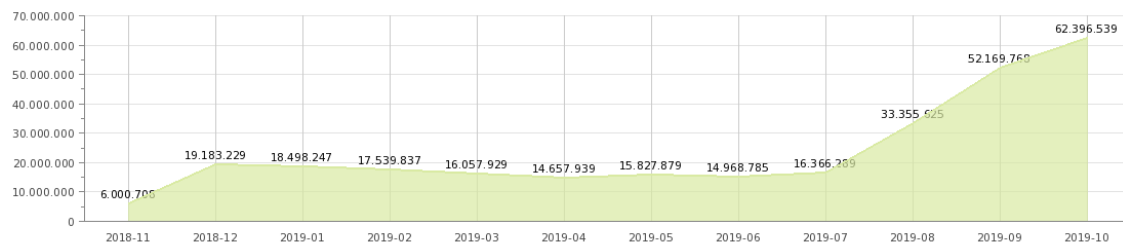


AIS information delivered by Tunisia (sharing among SafeMed countries, full data rate)



AIS information delivered by Georgia (sharing among BCSEA countries, full data rate)

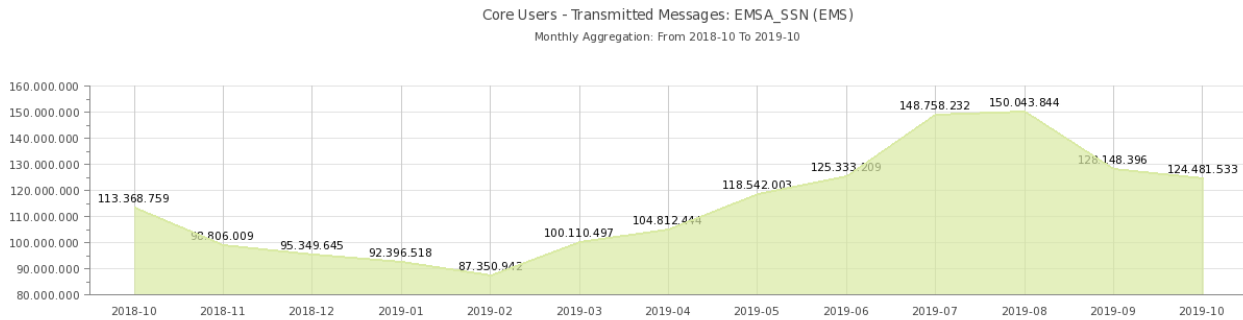
Core Users - Received Messages: BKSEA_UKR (UKR)
Monthly Aggregation: From 2018-11 To 2019-10



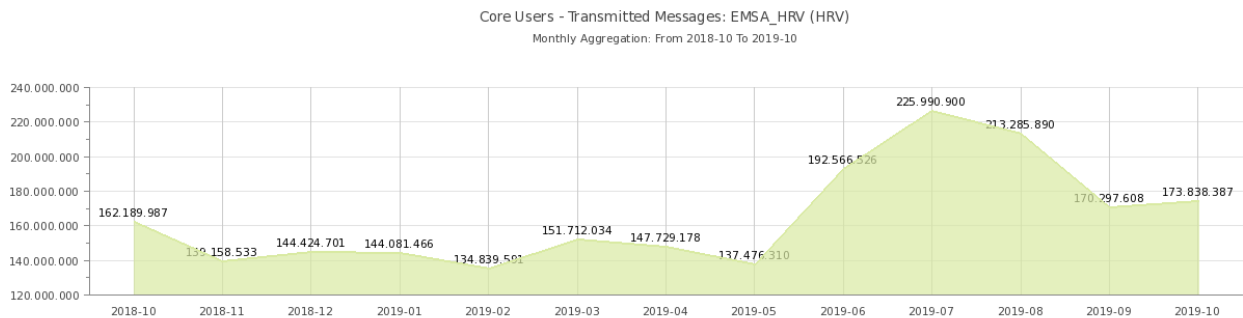
AIS information delivered by Ukraine (sharing among BCSEA countries, full data rate)

Annex 2

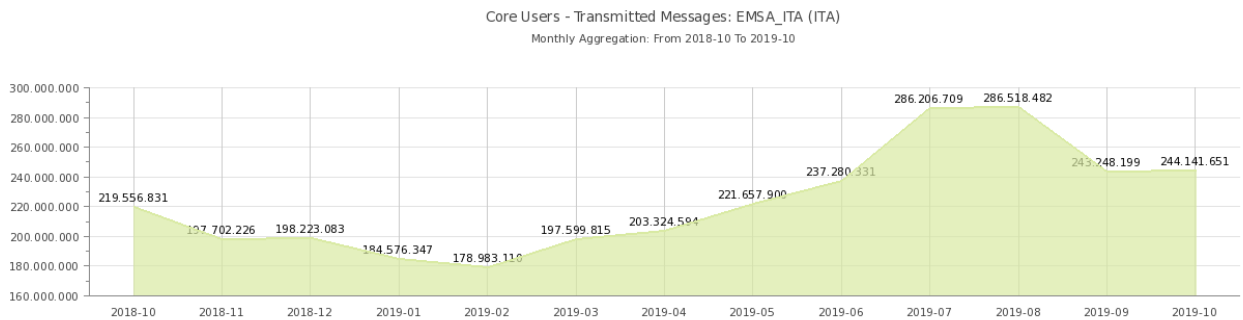
AIS information delivered by MAREΣ



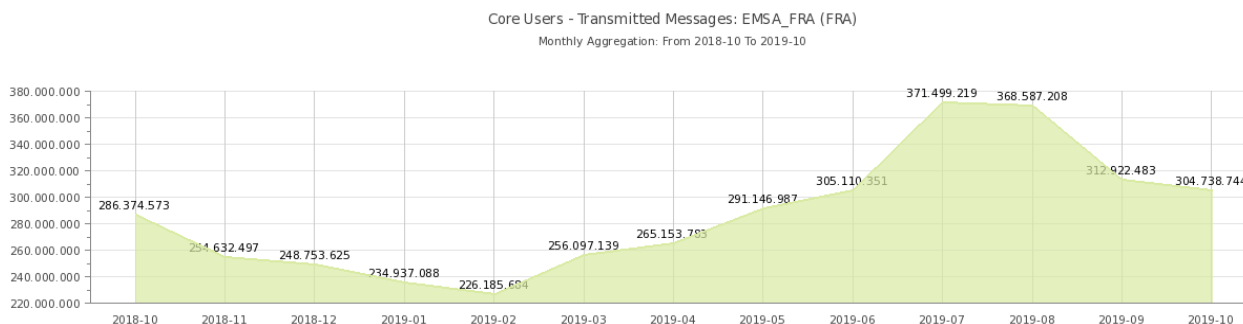
AIS information delivered to SafeSeaNet (down-sampling 6 min)



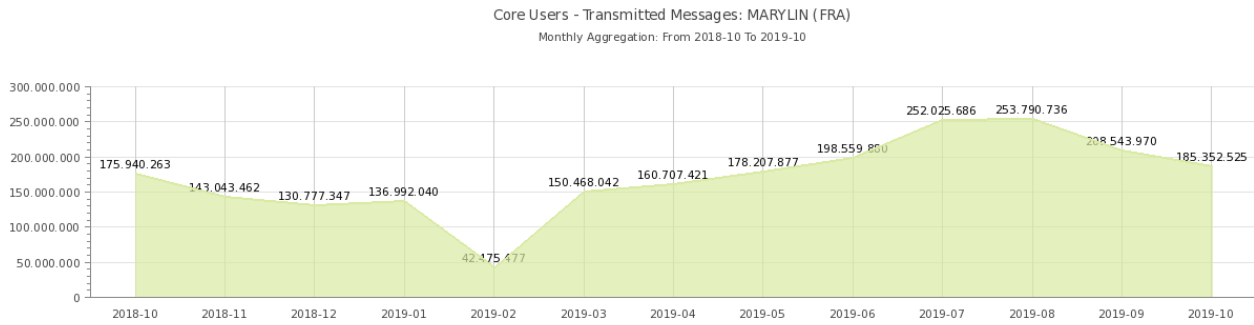
AIS information delivered to Croatia (Adriatic Region - full data rate since December 2015)



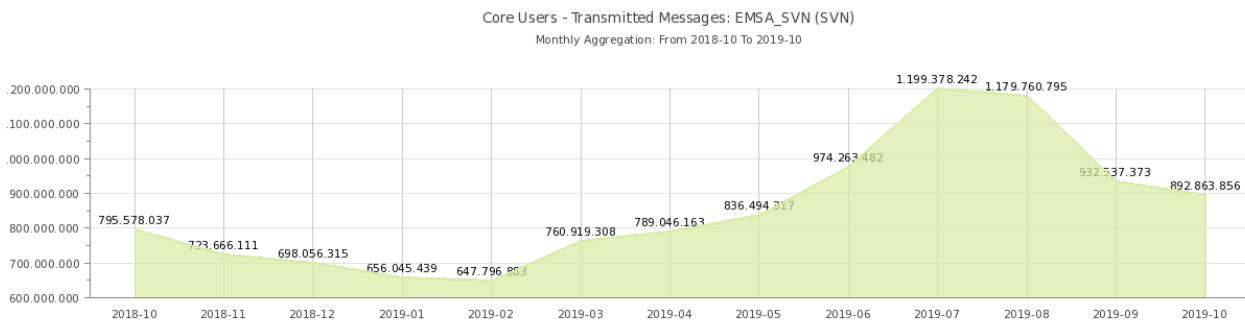
AIS information delivered to Italy (down-sampling 1 min)



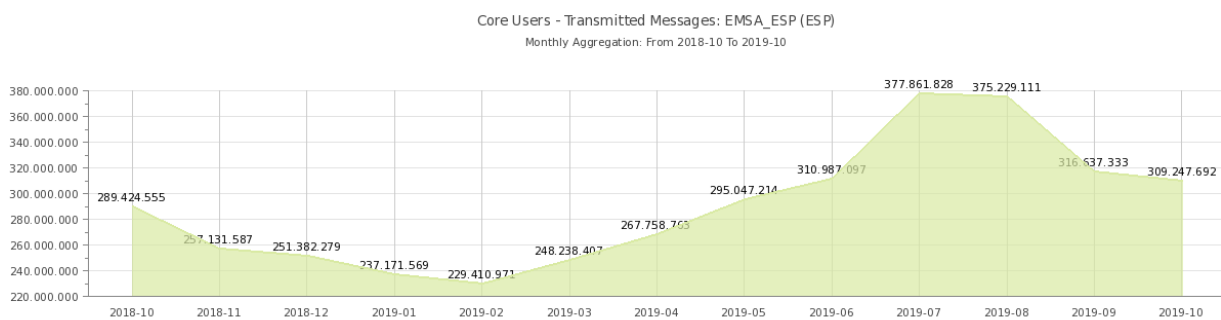
AIS information delivered to France (down-sampling 1 min)



AIS information delivered to France (for needs of the Marylin project – full data rate)

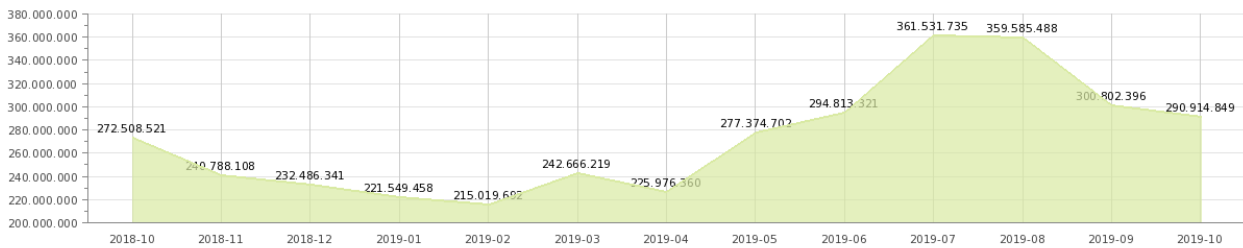


AIS information delivered to Slovenia (Adriatic Region - full data rate)



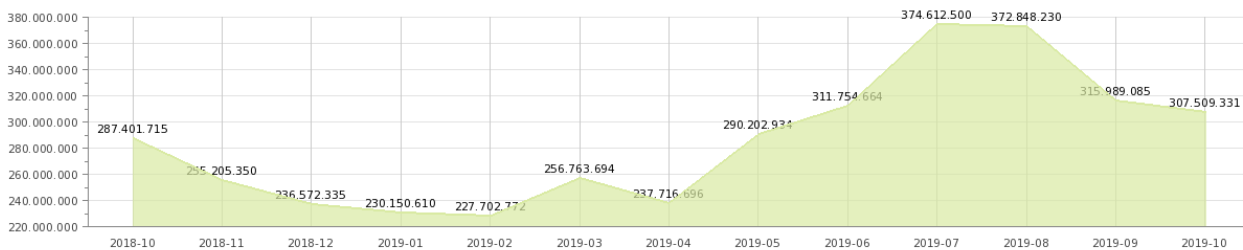
AIS information delivered to Spain (down-sampling 1 min)

Core Users - Transmitted Messages: EMSA_PRT (PRT)
Monthly Aggregation: From 2018-10 To 2019-10



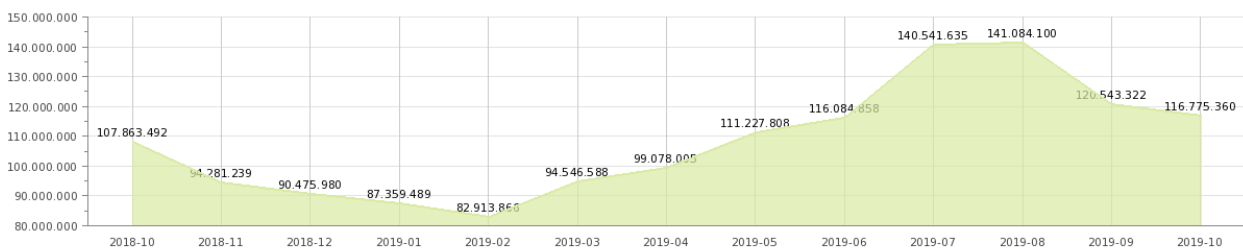
AIS information delivered to Portugal mainland (down-sampling 1 min)

Core Users - Transmitted Messages: EMSA_PTISL (PRT)
Monthly Aggregation: From 2018-10 To 2019-10



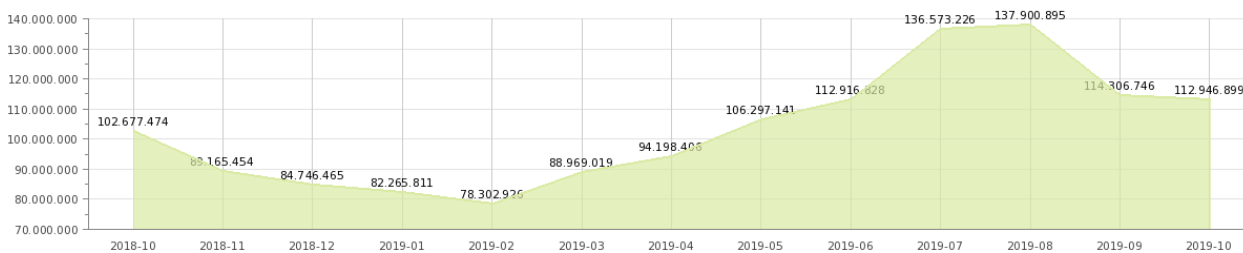
AIS information delivered to Portugal Island (down-sampling 1 min)

Core Users - Transmitted Messages: EMSA_CYP (CYP)
Monthly Aggregation: From 2018-10 To 2019-10



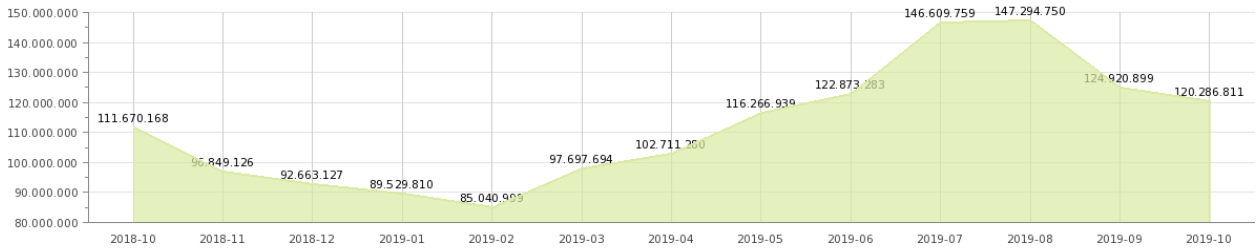
AIS information delivered to Cyprus (down-sampling 6 min)

Core Users - Transmitted Messages: EMSA_GRC (GRC)
Monthly Aggregation: From 2018-10 To 2019-10



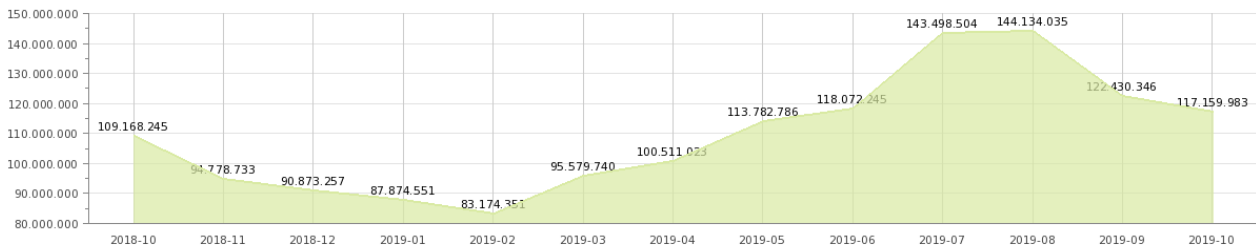
AIS information delivered to Greece (down-sampling 6 min)

Core Users - Transmitted Messages: EMSA_ROU (ROU)
Monthly Aggregation: From 2018-10 To 2019-10



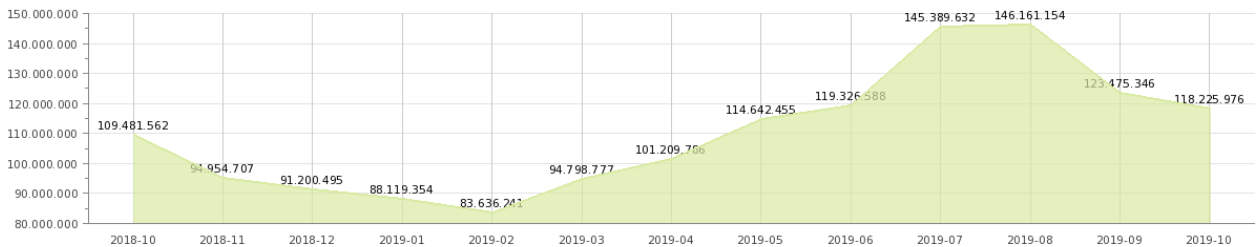
AIS information delivered to Romania (down-sampling 6 min)

Core Users - Transmitted Messages: EMSA_BGR (BGR)
Monthly Aggregation: From 2018-10 To 2019-10



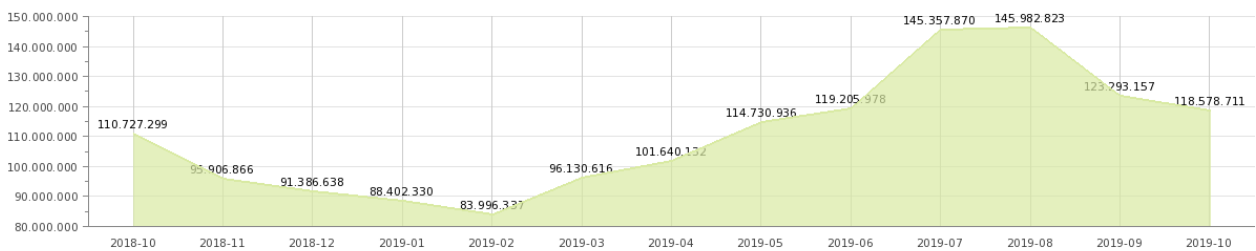
AIS information delivered to Bulgaria (down-sampling 6 min)

Core Users - Transmitted Messages: EMSA_MLT (MLT)
Monthly Aggregation: From 2018-10 To 2019-10

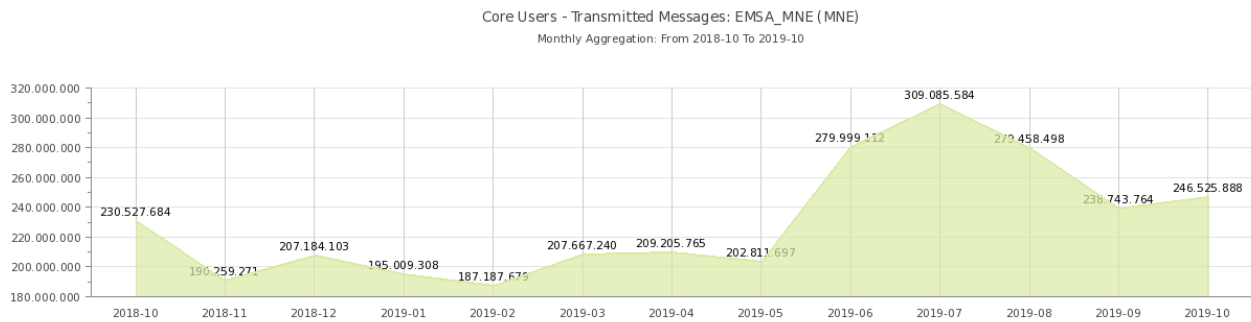


AIS information delivered to Malta (down-sampling 6 min)

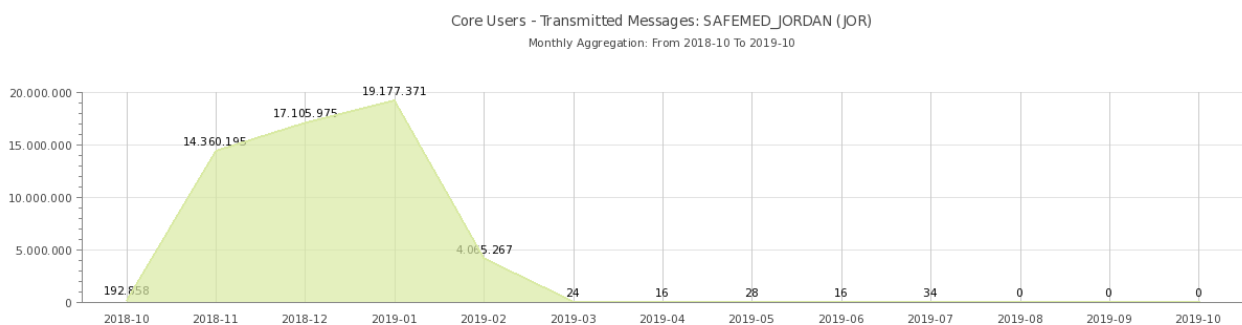
Core Users - Transmitted Messages: EMSA_GIB (GIB)
Monthly Aggregation: From 2018-10 To 2019-10



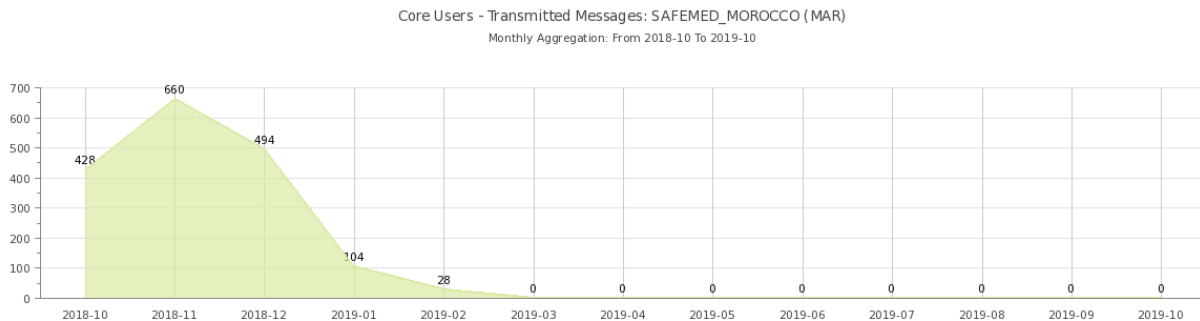
AIS information delivered to Gibraltar (down-sampling 6 min)



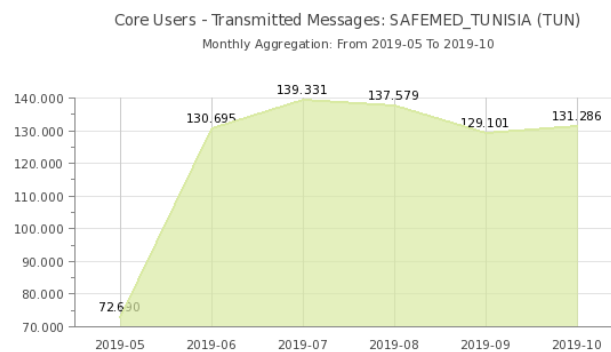
AIS information delivered to Montenegro
(Adriatic Region – full data rate since December 2015)



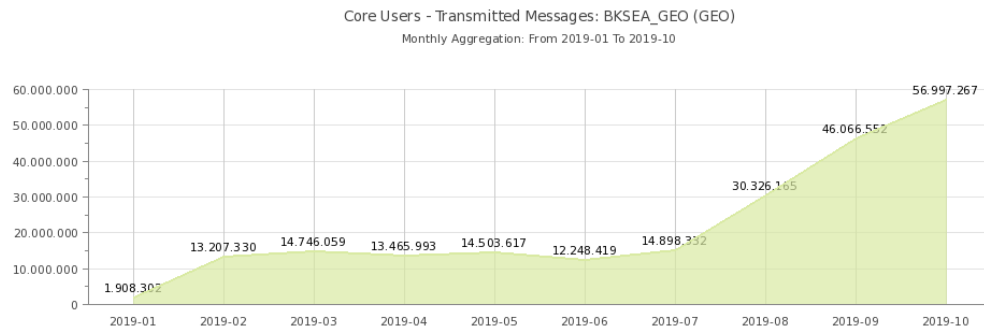
AIS information delivered to Jordan (SAFEMED – full data rate)



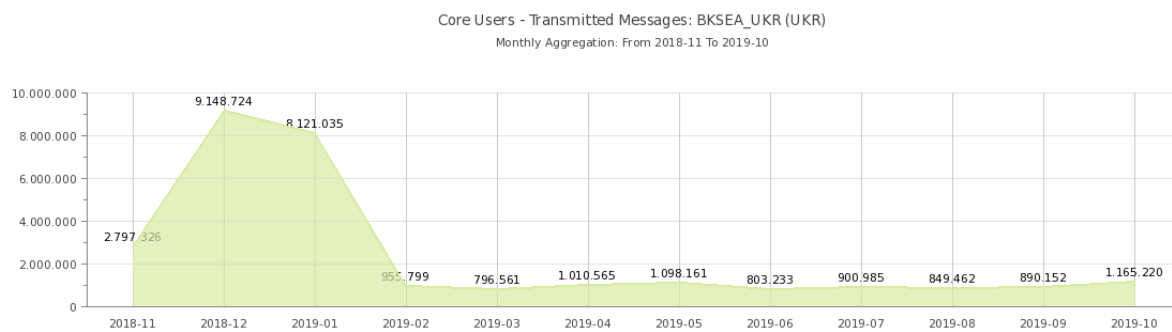
AIS information delivered to Morocco (SAFEMED – full data rate)



AIS information delivered to Tunisia (SAFEMED – 1 minute down sampling)



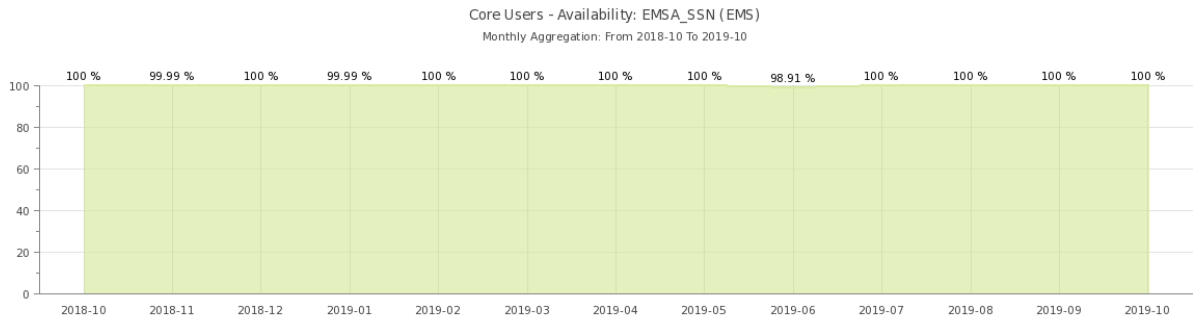
AIS information delivered to Georgia (BCSEA – Full Data rate)



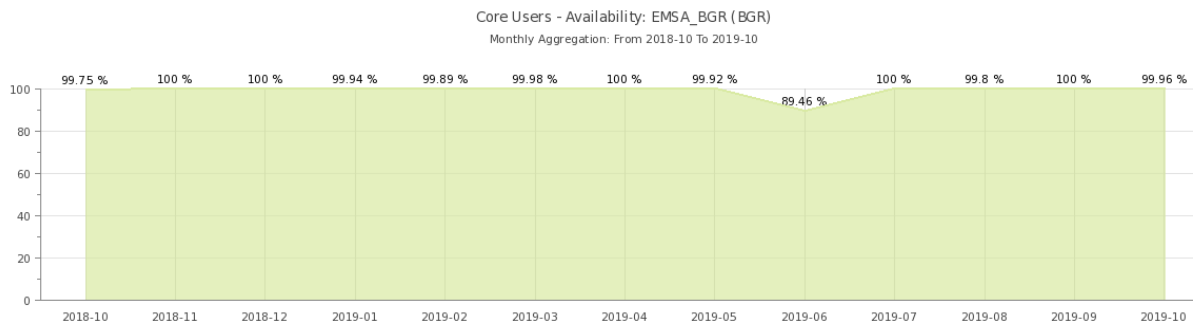
AIS information delivered to Ukraine (BCSEA – Full Data Rate)

Annex 3

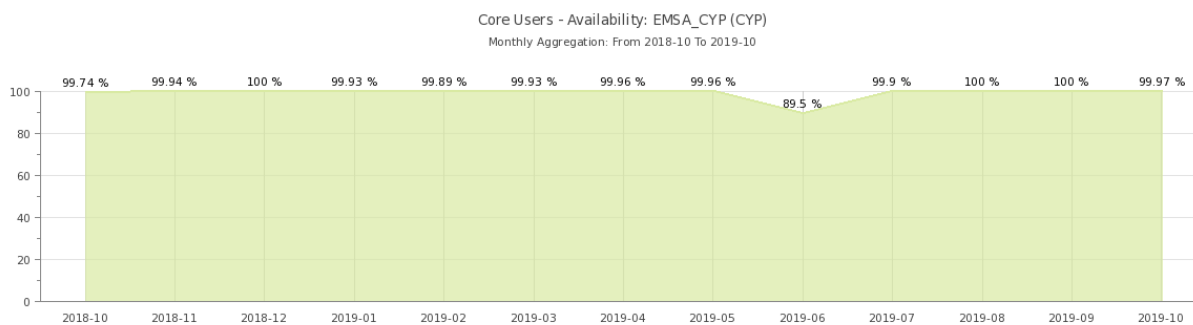
Link availability



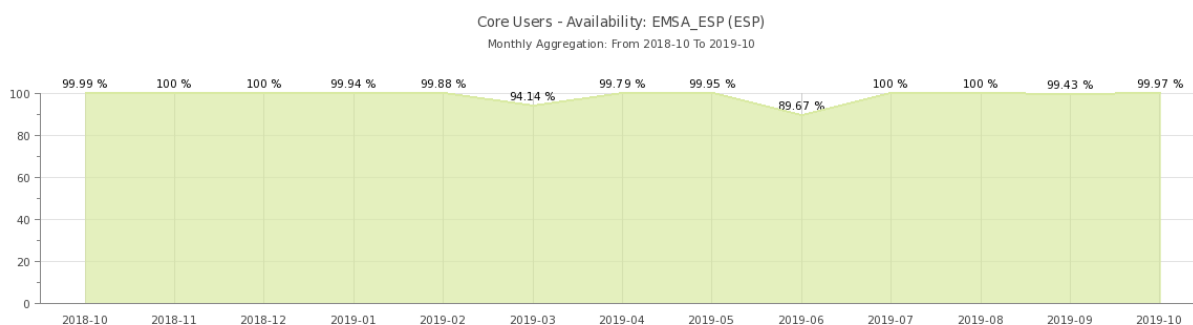
SSN_SI



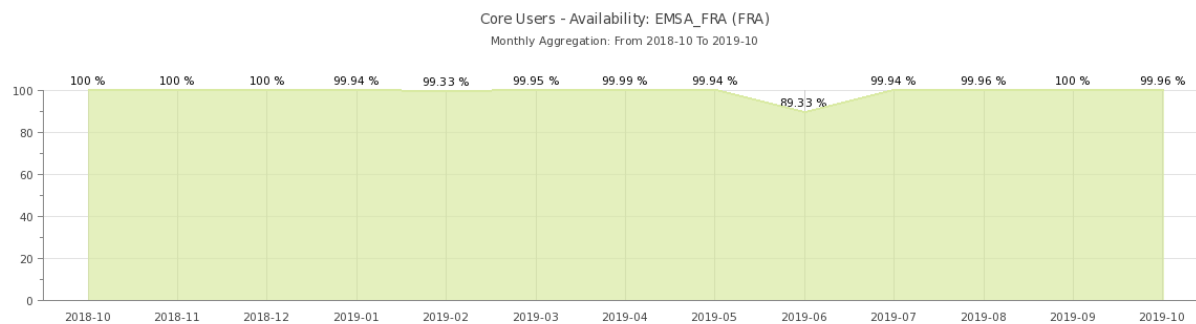
Bulgaria



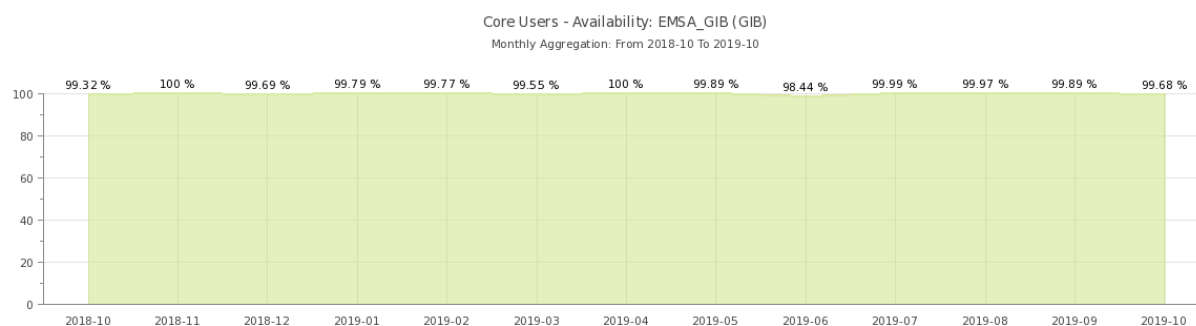
Cyprus



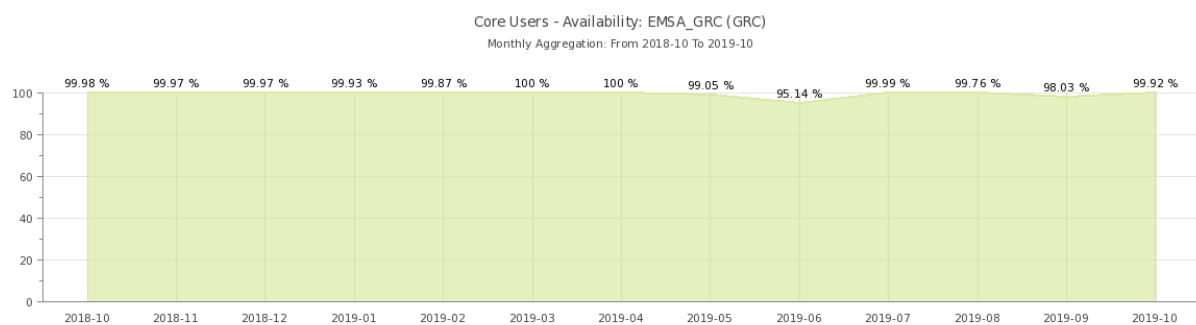
Spain



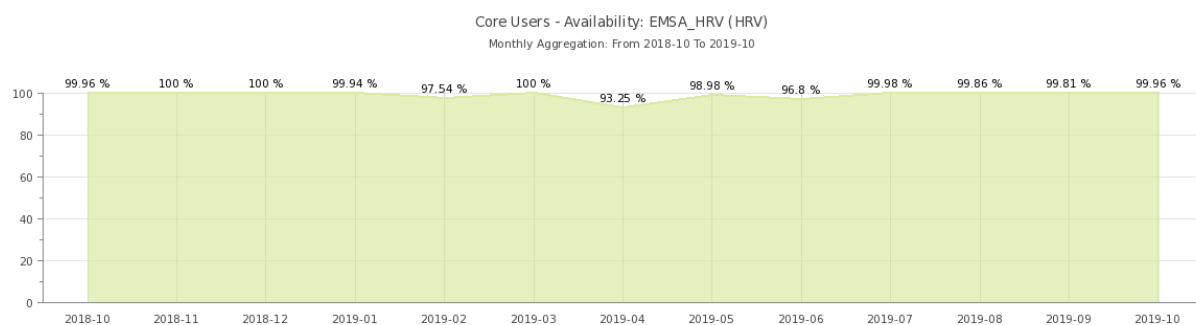
France



Gibraltar³

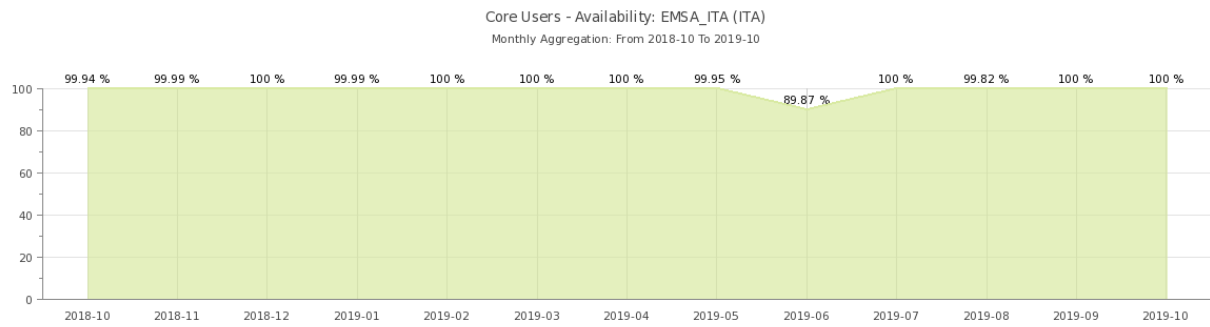


Greece

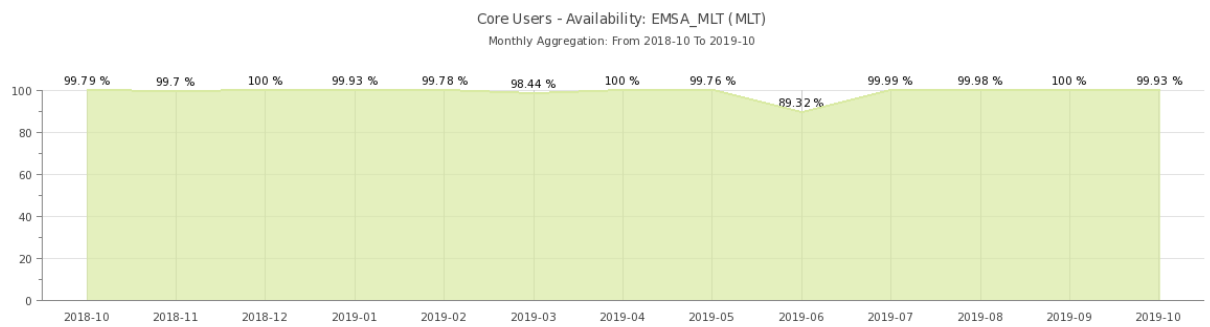


Croatia

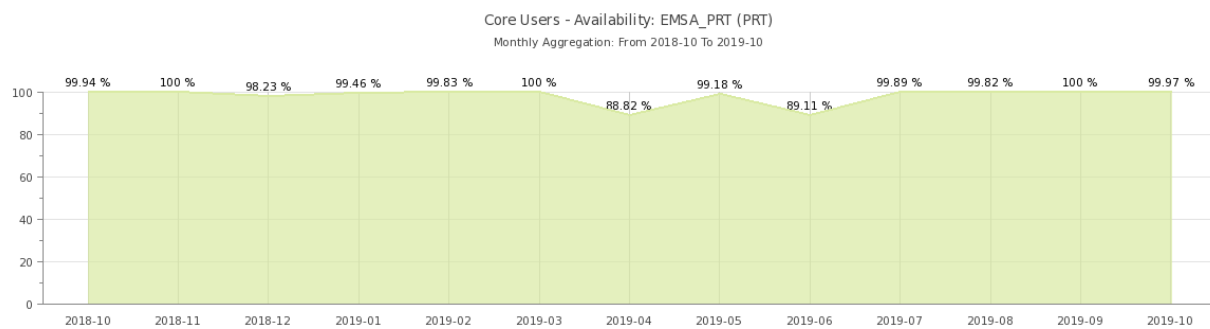
³ Since September 19th 2018, Gibraltar implemented a new NAISP.



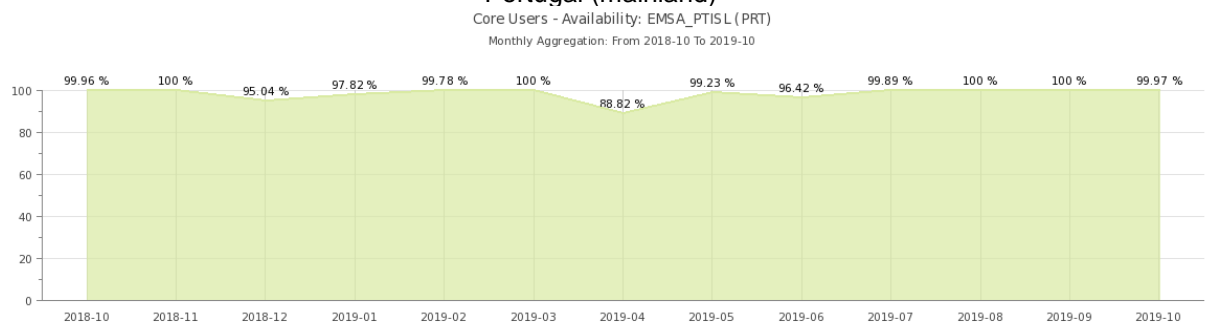
Italy



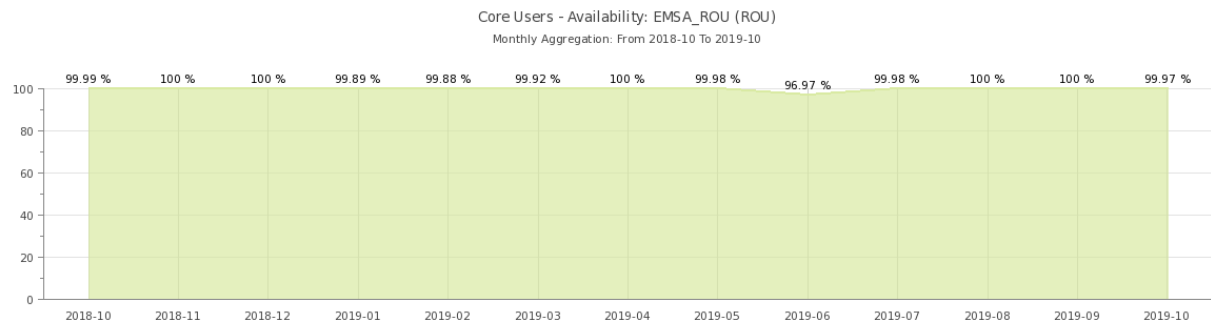
Malta



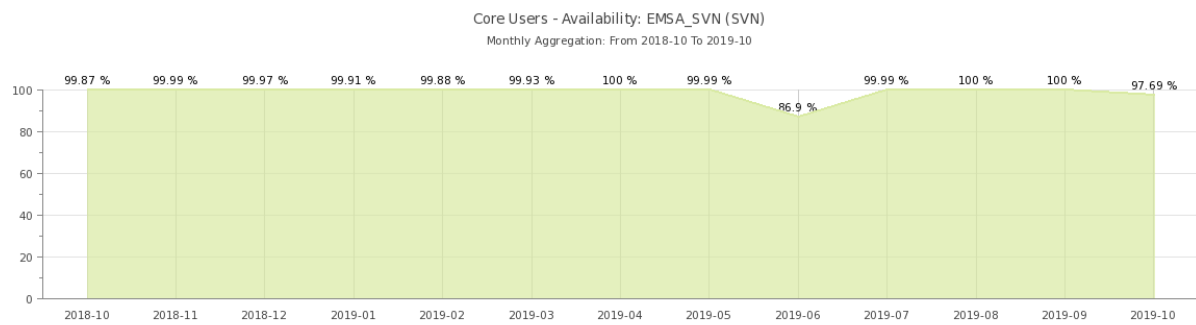
Portugal (mainland)



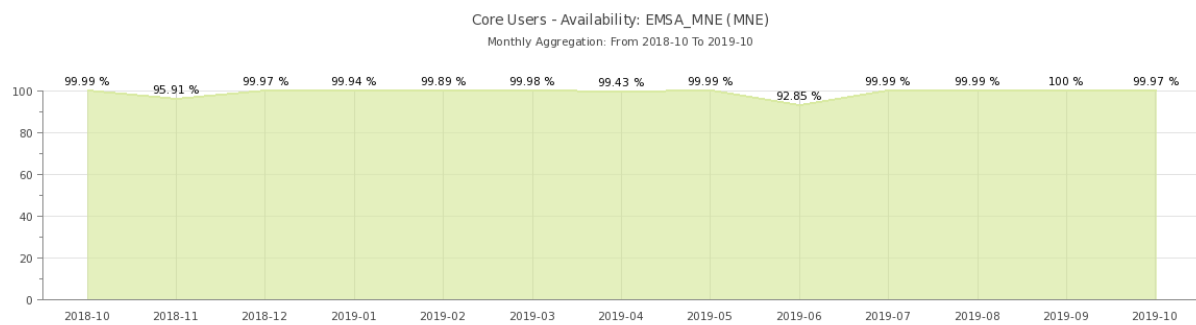
Portugal (Azores and Madeira)



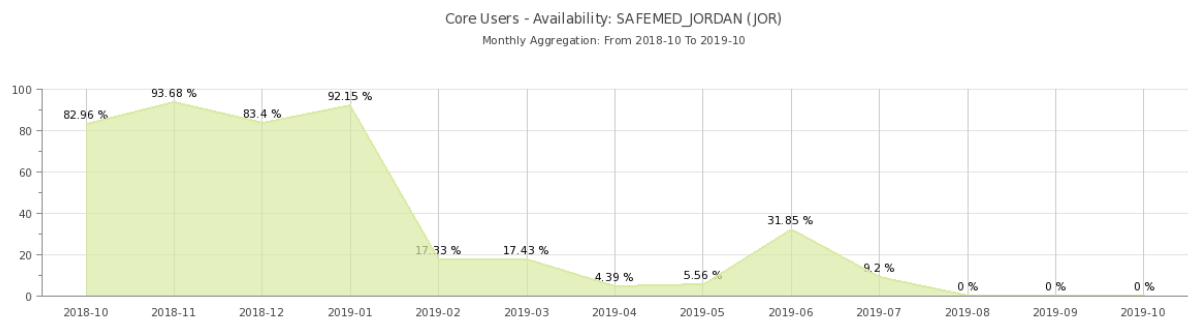
Romania



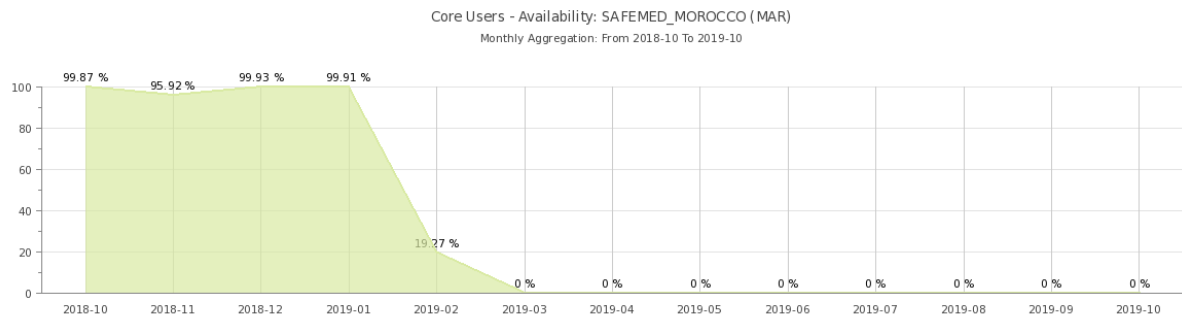
Slovenia



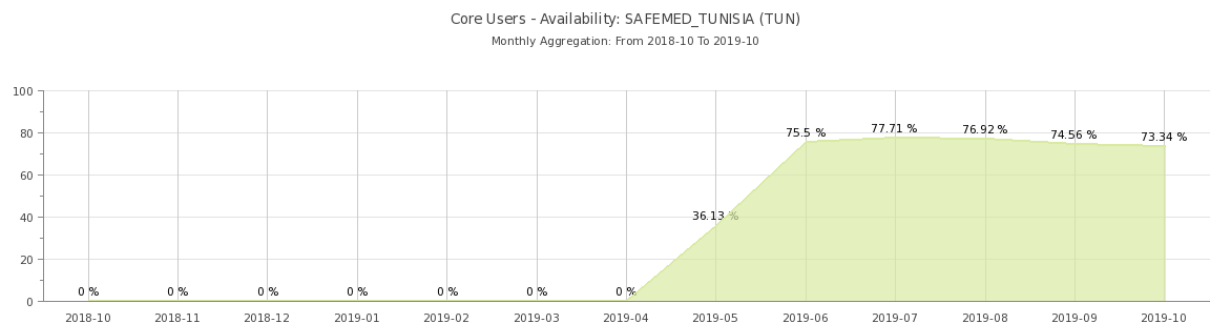
Montenegro



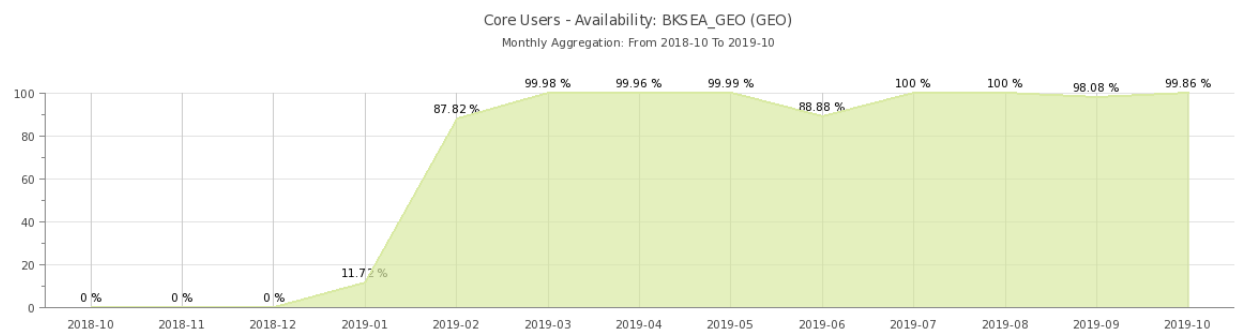
Jordan



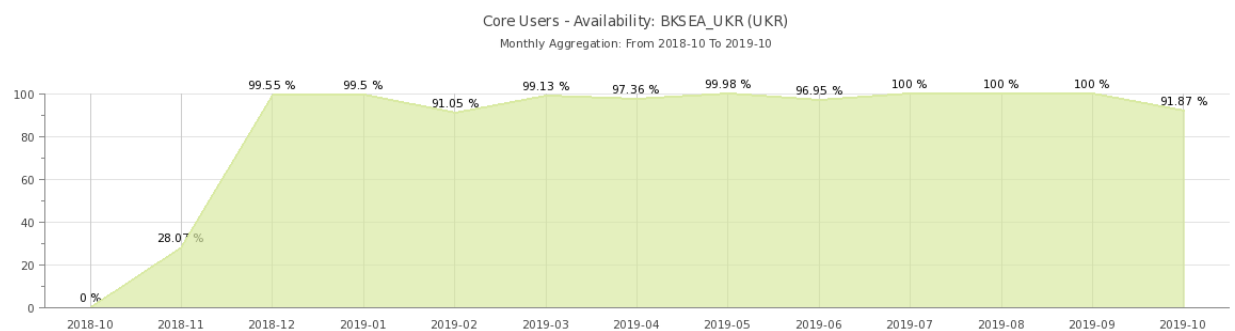
Morocco



Tunisia



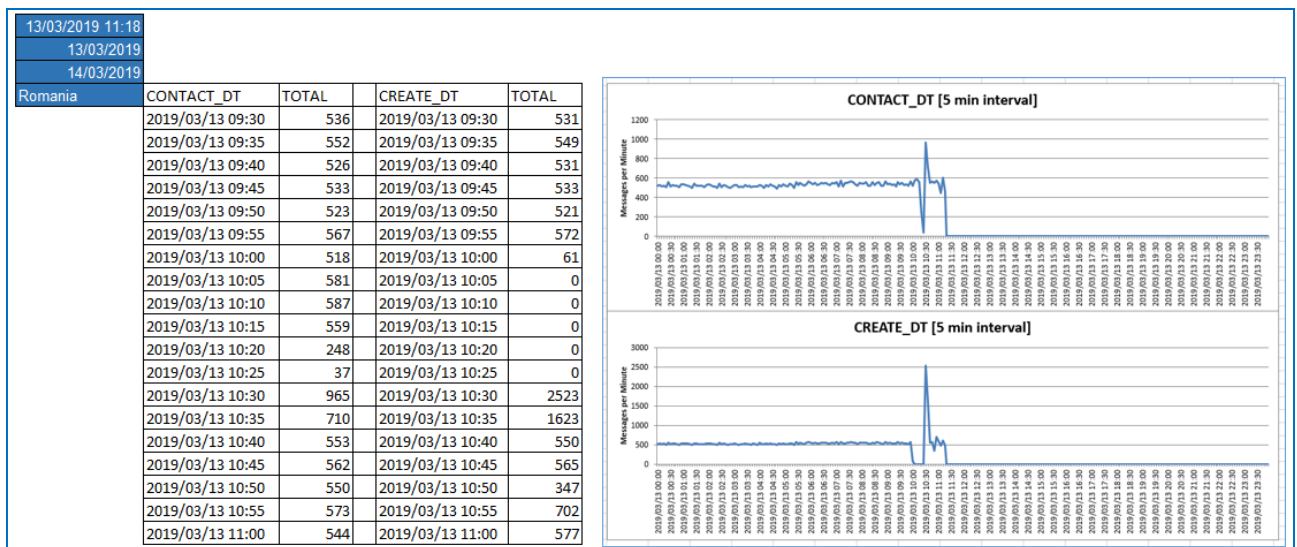
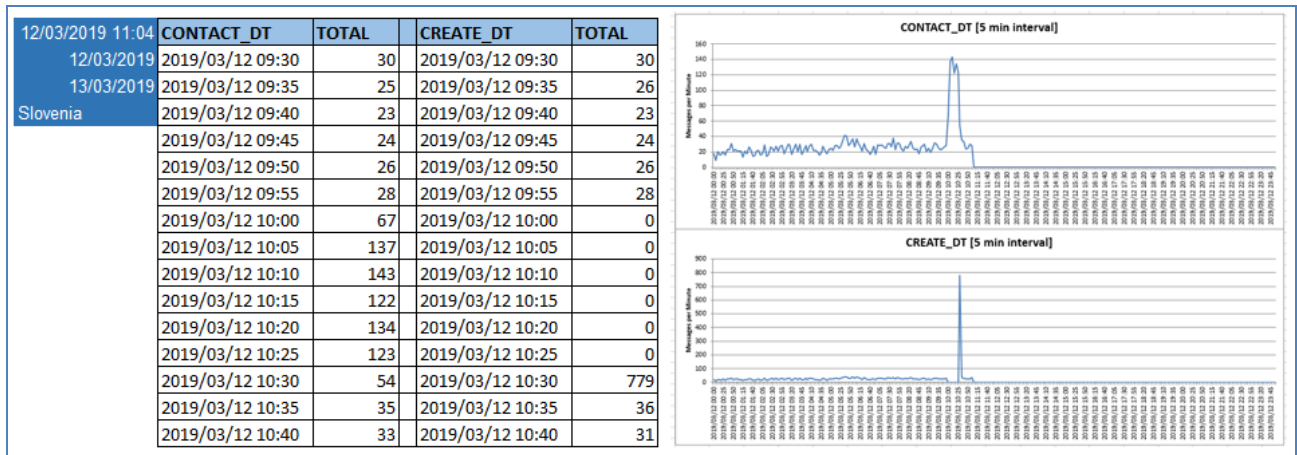
Georgia

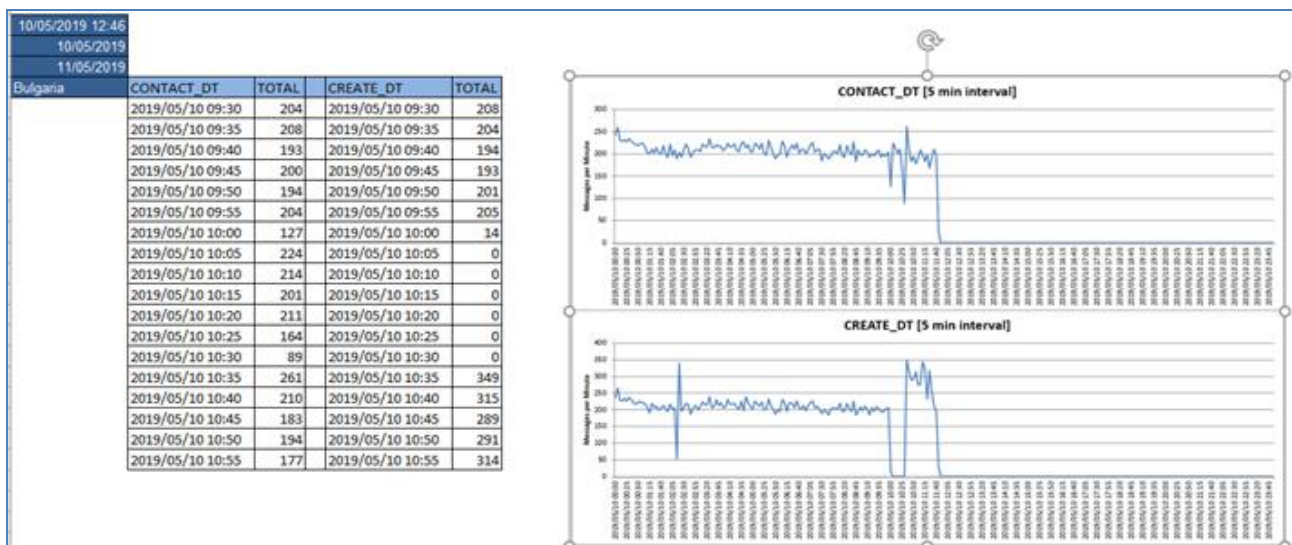
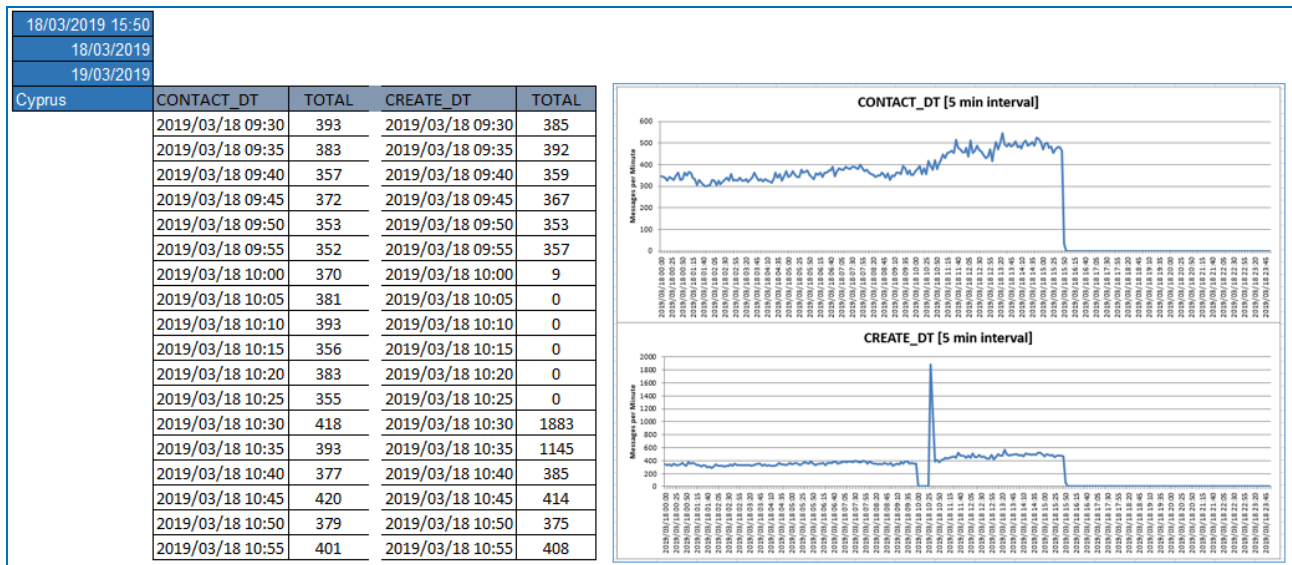


Ukraine

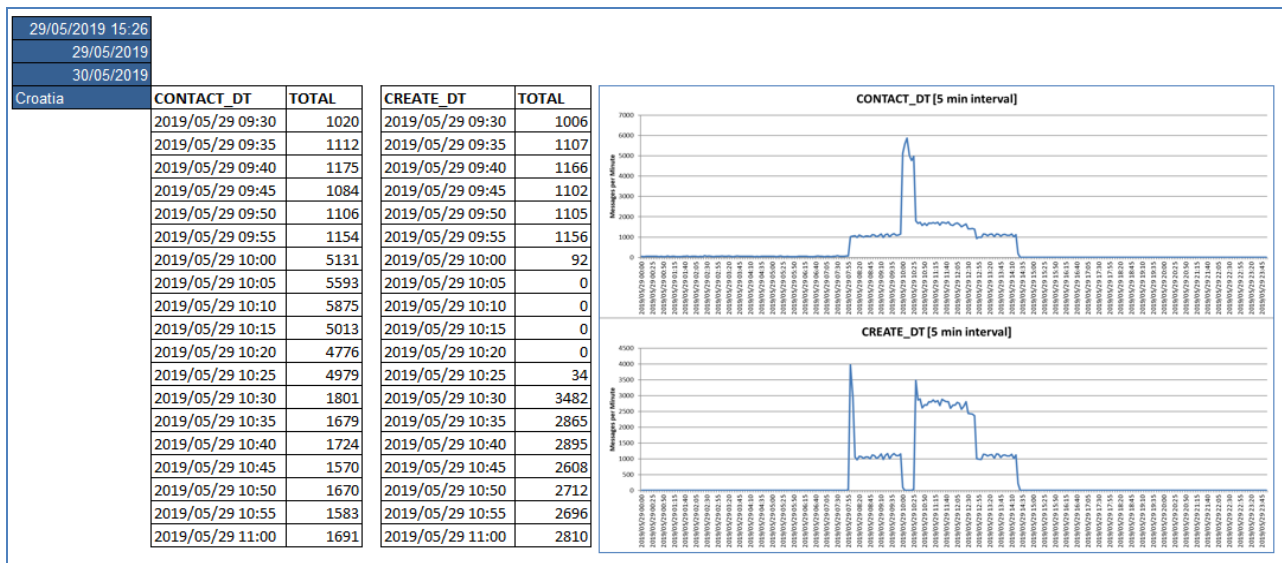
Annex 4

NPRs testing

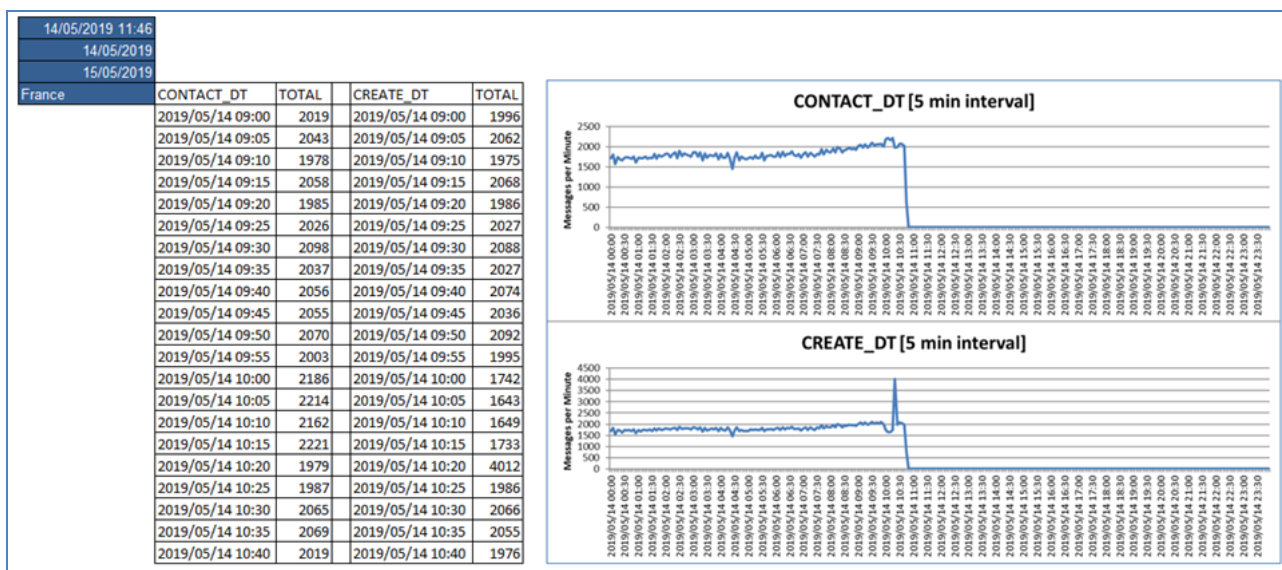




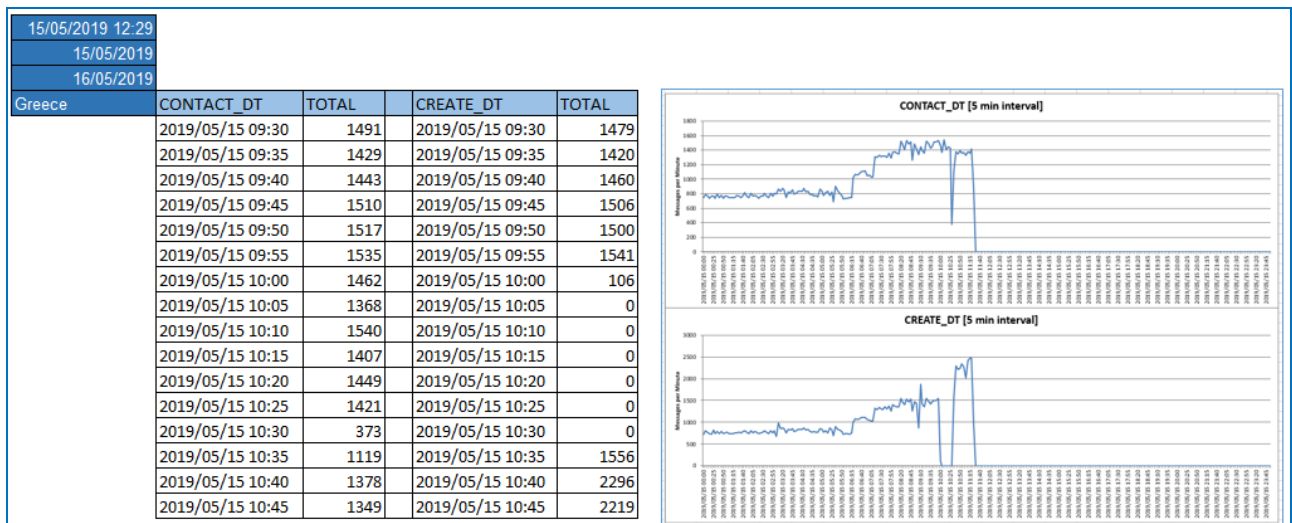
Comment: The data retransmission by Bulgarian proxy was done for every minute of the downtime. However, it took too long time to fully retransmit the buffered data.



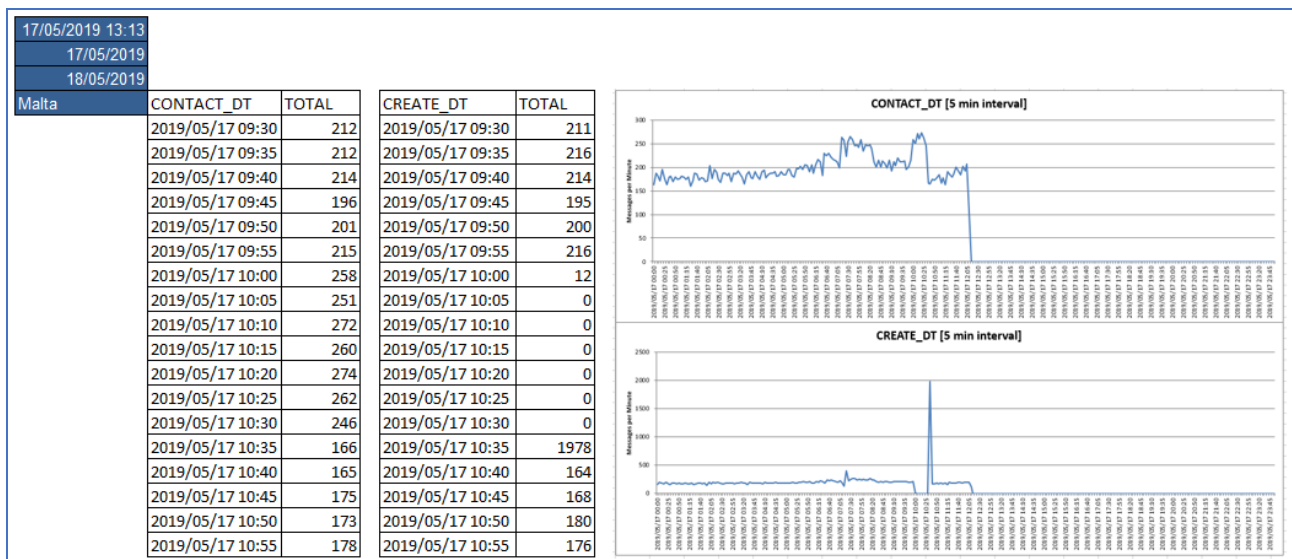
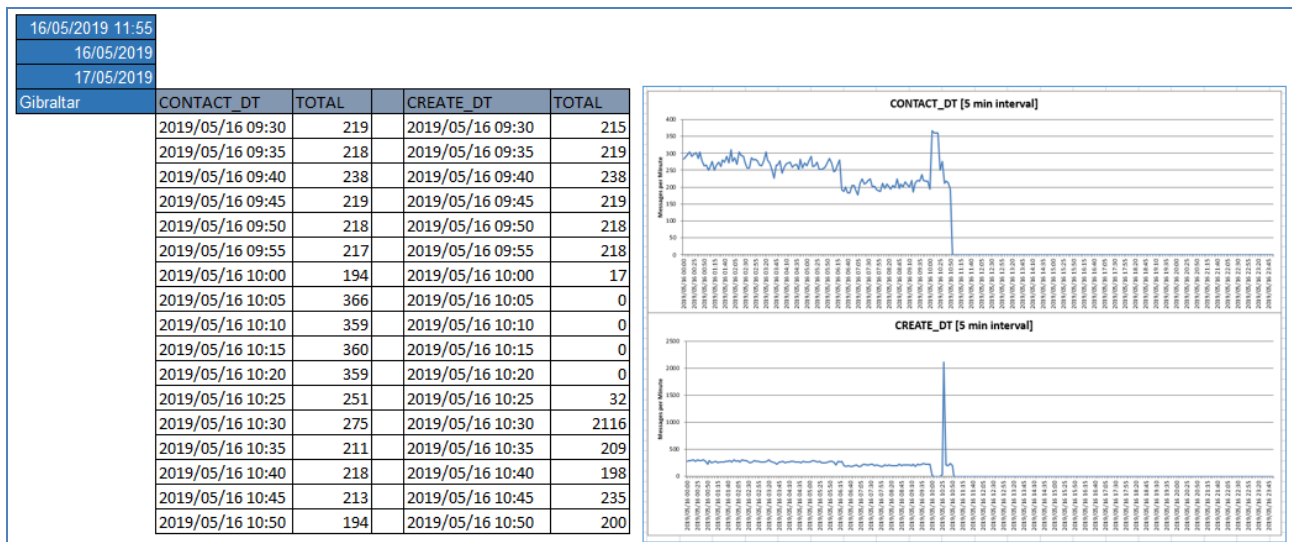
Comment: The retransmitted data volume from Croatia has increased by several times. The ICG identified the problem requiring aligning the Croatian Proxy settings with the other MSs proxies.

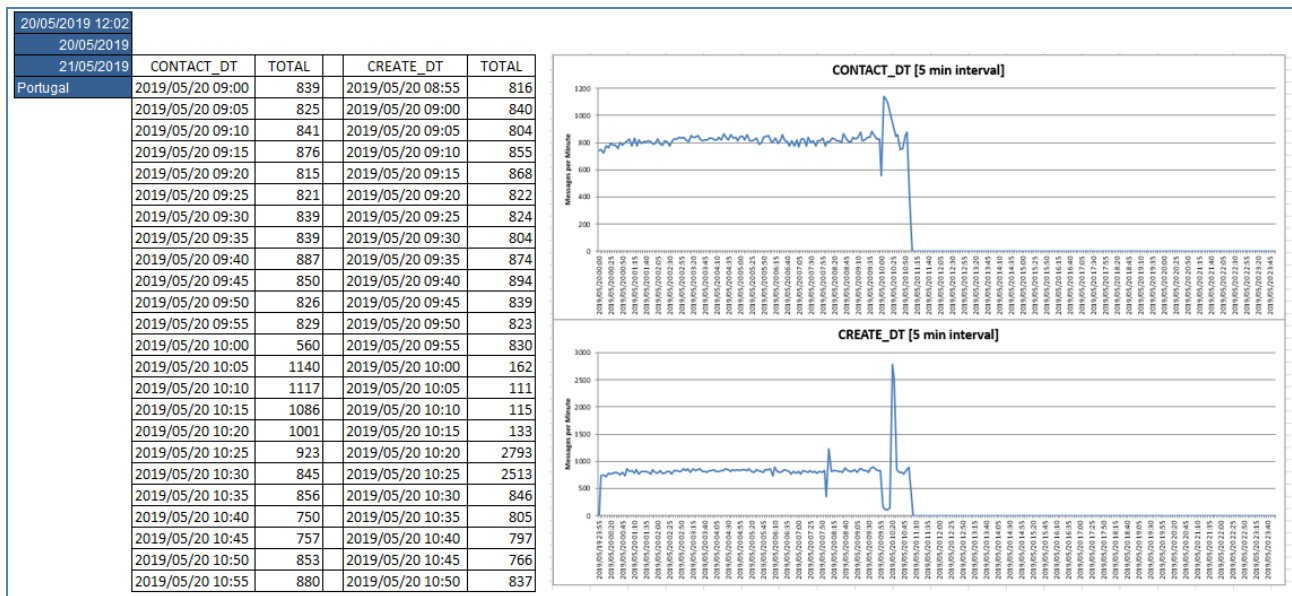


Comment: The MSS attested the exercise was successful. A clear full downtime is not reflected as France reports to 2 different regional proxies (MARES and North Sea/Atlantic) so the data flow was not fully interrupted in MSS monitoring.

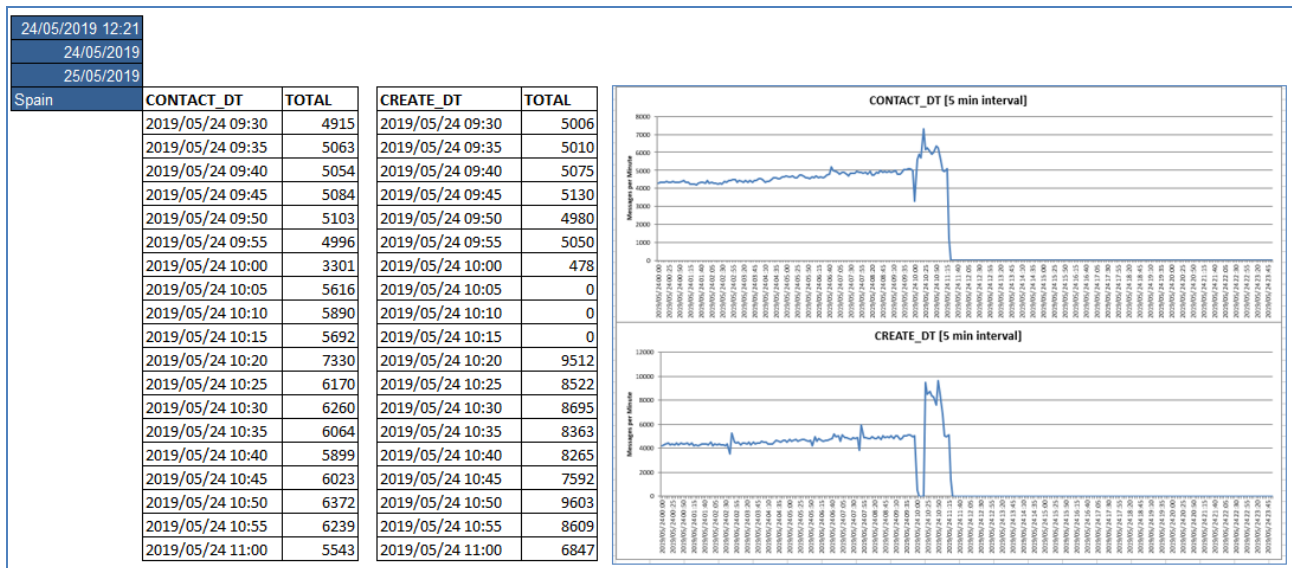


Comment: EMSA's Splunk chart indicated a slow data retransmission after the downtime.





Comment: The monitoring results show that NPR was buffering and retransmitting the data. A full downtime was not observed because the data from MARES are transmitted through a single proxy for both, the mainland and islands systems. However, the buffering/retransmission is visible in the number of messages transmitted



27/05/2019 12:28

27/05/2019

28/05/2019

Italy

CONTACT_DT	TOTAL	CREATE_DT	TOTAL
2019/05/27 09:30	3814	2019/05/27 09:25	3775
2019/05/27 09:35	3663	2019/05/27 09:30	3728
2019/05/27 09:40	3810	2019/05/27 09:35	3813
2019/05/27 09:45	3835	2019/05/27 09:40	3809
2019/05/27 09:50	3725	2019/05/27 09:45	3857
2019/05/27 09:55	3757	2019/05/27 09:50	3750
2019/05/27 10:00	2399	2019/05/27 09:55	3724
2019/05/27 10:05	4091	2019/05/27 10:00	255
2019/05/27 10:10	4211	2019/05/27 10:05	0
2019/05/27 10:15	4110	2019/05/27 10:10	0
2019/05/27 10:20	1927	2019/05/27 10:15	0
2019/05/27 10:25	6062	2019/05/27 10:20	1491
2019/05/27 10:30	6063	2019/05/27 10:25	11029
2019/05/27 10:35	5699	2019/05/27 10:30	11363
2019/05/27 10:40	3711	2019/05/27 10:35	10418
2019/05/27 10:45	3853	2019/05/27 10:40	3715
2019/05/27 10:50	3096	2019/05/27 10:45	3879
2019/05/27 10:55	3660	2019/05/27 10:50	2693
2019/05/27 11:00	4003	2019/05/27 10:55	4034

