

# Annual Marine Oil Pollution Report for the year 2022

- CleanSeaNet Satellite-Based Oil Spill Detection inside Icelandic Exclusive Economic Zone and Other Pollution or Potential Pollution Related Information Reported by the Icelandic Coast Guard

## Executive Summary

This report summarizes marine pollution notifications and observations within the Icelandic Exclusive Economic Zone. In 2022, the total number of satellite detections of possible oil-spills inside the Icelandic EEZ numbered to 74. Two of these were confirmed as linked to small amounts of mineral oil (light fuel and hydraulic) by the identified source vessels. By Icelandic law, acute oil pollution from ships shall be reported to the coast guard. In some cases, the source vessel may though not be the first to be aware of or have the initiative to report an oil spill, as it was the case on these two occurrences where the CleanSeaNet (CSN) satellite service detected and alerted the coast guard about the spills, who following contacted the vessels. On one occasion of a CSN notification, the fixed wing surveillance aircraft was sent to investigate a strong detection, which the identified source (a cruise vessel) had reported as likely to origin from discharging of grey water according to normal procedures and regulations. When the aircraft arrived 5 hours later with its equipment suite for detection of oil pollution, it was clear that the substance had dissolved, and the detection could be confirmed as a lookalike.

While the coast guard uses the CSN service to cue for likely oil spills and in that way focus the surveillance performed by manned aircraft, oil spills are also detected during patrols or by other resources than satellites. During one of those patrols, the helicopter spotted an oil sheen; however, it could not be aligned with any maritime traffic in the area. On another occasion, the Air Traffic Control relayed a reported oil spill in vicinity of Reykjavik, and the coast guard helicopter was dispatched to investigate. The pictures certainly revealed a thick brown oily substance but after a closer look, the substance was confirmed as seaweed. The best means for investigation of possible oil spills in a vast area, such as the Icelandic EEZ, is a maritime surveillance aircraft (MSA). The Coast Guard's MSA flew 63 hours of patrol in 2022 accounting for a decrease of 53% between years.

Several boats and ships stranded without causing any oil pollution; however, one small fishing boat sank off Breidarfjörður. The helicopter observed a rainbow sheen from the wreck in the area.

The report also takes to cooperation with several stakeholders for the purpose of tracing marine oil pollution. When a possible oil spill is reported, in most cases, the first to be contacted is the seafarer on any vessel, which may be aligned with, connected to, or be in the area of the detection. In many cases, a possible source vessel can provide in-situ observations helping to assess the likelihood of the detection being mineral oil or a lookalike. Nine times out of ten detections were, with relatively high confidence, assessed as lookalikes. In one case a notification was received from the CSN service showing a several miles long, strong detection of a possible oil spill, which was connected to the source vessel; however, the cause remained enigmatically unsolved until a picture of the vessel was forwarded to the coast guard a month later showing the vessel with a dead whale stuck on the bulb, which identified the culprit. In other cases, the Institute of Earth Sciences of the University of Iceland helps assess lookalikes caused by sea ice, algae, or other natural phenomena. The Police, port authorities, and the voluntary rescue association ICE-SAR also assisted with investigation of possible oil spills during the year. The coast guard heavily rely on these stakeholders to help assess and trace possible or actual marine oil pollution.

A functional joint marine environmental response exercise was conducted in year 2022 by the Environment Agency, the Icelandic Coast Guard, and the Icelandic Transport Authority together with the port of Westman Islands, the ICE-SAR Association, and the South Iceland Health Department.

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## Introduction

As agreed by the Environment Agency and the Icelandic Coast Guard, the latter shall annually collect, and by June 1<sup>st</sup>, disseminate to the Environment Agency statistical pollution control information for the previous year. The Environment Agency will subsequently present the information at the annual Copenhagen Agreement meeting. This report summarizes notifications and observations as relates to pollution at sea, more specifically within the Icelandic Exclusive Economic Zone. Air and sea surface surveillance assets of the Icelandic Coast Guard report any pollution observed at sea to the Coast Guard operations centre. In addition, the Coast Guard operations centre receives pollution notifications through satellite services like the EMSA CleanSeaNet service, directly from the polluter, or from other third party. The Icelandic Coast Guard subsequently informs the Environment Agency.

## CleanSeaNet

CleanSeaNet (CSN) is a European satellite-based oil spill and vessel detection service. It assists participating States with the following activities:

- identifying and tracing oil pollution on the sea surface
- monitoring accidental pollution during emergencies
- contributing to the identification of polluters

Iceland is a participating state through its membership of the EEA Agreement. The European Maritime Safety Agency (EMSA) is the provider of the CleanSeaNet Service and Iceland is contracting to the service through an agreement called „Conditions of use for receiving the EMSA Satellite Based Oil Spill and Vessel Detection Service CleanSeaNet“ (the conditions of use).

Iceland was set up for the service at the launching of the second generation of CleanSeaNet and successfully received the first Earth Observation Service (EOS) product on March 6<sup>th</sup>, 2011.

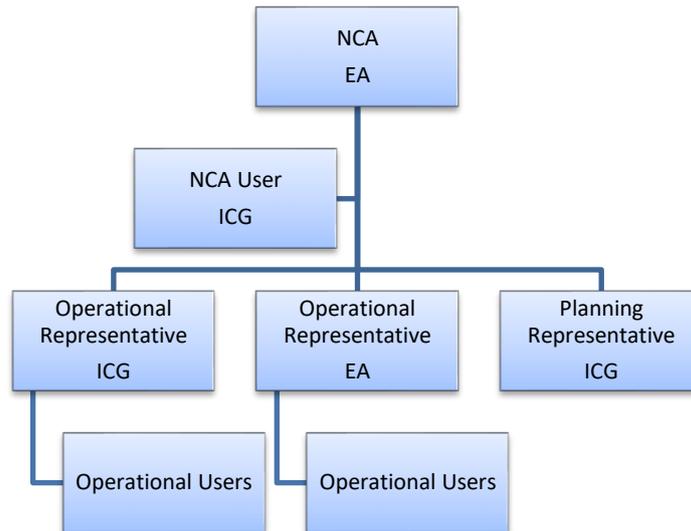
## Structure in Iceland

The Environment Agency of Iceland is the National Competent Authority (NCA) of CleanSeaNet in Iceland. The NCA has the overall responsibility and by agreement,<sup>1</sup> the Icelandic Coast Guard carries out the daily operation of the system. A task of the Icelandic Coast Guard is to carry out surveillance of the sea around Iceland as well as to receive and disseminate notifications and information on any acute pollution of the sea.

All users shall comply with the conditions of use. The structure of users in the system is shown below; EA being the Environment Agency of Iceland; ICG being the Icelandic Coast Guard. The Icelandic Coast Guard NCA User administrates the web-based system and oversees the allocation of earth observation scenes carried out by EMSA.

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<sup>1</sup> Samningur Umhverfisstofnunar og Landhelgisgæslu Íslands um samvinnu við eftirlit með mengun sjávar innan íslenskrar mengunarlögsögu, 29 November 2012.



## Organizations with Access to the CSN-Service

Organizations with access to the satellite-service (CSN) in Iceland comprise the Environment Agency of Iceland, the Icelandic Coast Guard, the Transport Authority, the Institute of Earth Sciences of the University of Iceland, Police and Customs.

## Clean Sea Net Statistical Information

### Key Figures 2018-2022

#### 2022

- 74 (8 class A, 66 class B) possible oil spills were detected by the CleanSeaNet service.
- Individual slicks numbered to 147 of which several slicks can be connected to the same possible oil spill.
- 2 possible oil spills were confirmed as linked to mineral oil by the source vessels caused by little amount of fuel oil overflowing through the air vent (case 31), and little amount of hydraulic oil pumped into the sea from the side thruster room (case 45).
- 1 possible oil spill was confirmed as originating from production of fish oil.
- 1 possible oil spill was investigated by surveillance aircraft, the likely cause of the detection was discharging of grey water from a cruise vessel conducted according to regulations, nothing was detected. 1 possible oil spill was investigated by the Police and by the voluntary association of search and rescue, ICE-SAR; nothing was detected. 2 possible oil spills were investigated by port authorities, likely causes were algae and the outlet of water mass of groundwater with different density than the surrounding sea water.
- 67 other detections were confirmed or assessed as lookalikes. Assessed/confirmed causes for lookalikes are included in the following chapter.
- For more detail and for information on incidents and notifications other than CSN, which are related to pollution or potential pollution, please see following chapter.

#### 2021

- 47 (2 class A, 45 class B) possible oil spills detected.
- No possible oil spill was assessed as linked to mineral oil.
- 2 possible spills were investigated by coast guard assets (1 by fixed wing close to sea ice, 1 by rotary wing and patrol boat).
- 46 possible oil spills were assessed as lookalikes of which 40 were linked to natural phenomena and 6 to fishing activity.

<ul style="list-style-type: none"> <li>• 1 possible oil spill could not be categorized (case 44).</li> </ul>
<p>2020</p> <ul style="list-style-type: none"> <li>• 57 (17 class A, 40 class B) possible oil spills in 42 separate cases.</li> <li>• 6 possible oil spills were assessed as linked to mineral oil (1, 2, 7, 9, 30, 39). Assessed causes: Bilge water and hydraulic oil.</li> <li>• 3 cases were investigated by ICG assets (fixed and rotary).</li> <li>• 46 of 57 possible oil spills were assessed as lookalikes of which 33 were linked to natural phenomena and 13 to fishing activity.</li> <li>• 5 possible oil spills could not be categorized<sup>2</sup>.</li> </ul>
<p>2019</p> <ul style="list-style-type: none"> <li>• 74 (8 class A, 29 class B) possible oil spills in 37 occurrences/cases.</li> <li>• 2 cases assessed as linked to mineral oil of which one was caused by a malfunctioning oily water separator (case 5) and the other by a hydraulic leak (case 33).</li> <li>• 1 case was investigated by ICG assets (Coast guard vessel boarded the source vessel, case 5)</li> <li>• 33 cases assessed as lookalikes of which 13 were linked to natural phenomena, 10 to normal operation of ship (e.g., fisheries, cleaning of deck), 1 confirmed false positive, and 9 lookalikes not specified.</li> <li>• The cause could not be categorized/ specified in 2 cases.</li> </ul>
<p>2018</p> <ul style="list-style-type: none"> <li>• 48 (15 class A, 33 class B) possible oil spills in 32 occurrences/cases.</li> <li>• 1 case assessed as linked to mineral oil (hydraulic oil).</li> <li>• 3 cases investigated by ICG assets (2 by MSA, 1 by helo).</li> <li>• 16 cases assessed as lookalikes/natural phenomena like sea ice and current fronts.</li> <li>• 11 cases assessed as linked to fishing activity such as processing/capelin/liver + guts.</li> <li>• The cause could not be categorized/ specified in 4 cases.</li> </ul>

## Overview of Oil Spills and Possible Oil Spills 2022

The area of interest in this report is the Icelandic Exclusive Economic Zone. The area for which Iceland receives satellite imagery, analyses, and notifications for detection of possible oil-spills is somewhat larger of size but is not included in this report. In 2022, 499 satellite images intersecting the areas of interest of Iceland, and with the purpose of detecting oil pollution were delivered. Additionally, 393 images were received for the purpose of detecting vessels. In total the coast guard received 892 satellite images of relevance of various sizes. All imagery was radar imagery from the following satellites: SENTINEL-1, SENTINEL-1A, SENTINEL-1B, RADARSAT-2, TERRASAR-X, PAZ1, TANDEM-X.

Red notification symbolizes possible oil spills of high likelihood (class A) and green symbolizes low likelihood (class B). Likelihood is assessed by the service provider and classes (A/B) are per Icelandic configuration.

Total detections by the CleanSeaNet service of possible oil-spills (OS) inside the Icelandic EEZ numbered to 74 (8 class A, 66 class B). Individual slicks numbered to 147 where several slicks can be connected to the same possible oil spill. Two possible oil spills were confirmed as linked to mineral oil by the source vessels. In one case, little amount of fuel oil had overflowed through the air vent (case 31), in the other case, little amount of hydraulic oil had been pumped into the sea from the side thruster room (case 45). One possible oil spill was confirmed as originating from production of fish oil. A hose, connecting tanks, broke and 30-50 litres leaked onto the deck and from there into to the sea

<sup>2</sup> "Not categorized" cases are cases where no reasonable circumstances could be articulated about the cause. These cases could be lookalikes caused by e.g., algae bloom or leaking wrecks or they could be suspect cases linked to a possible polluter.

through a bilge pump. One possible oil spill was investigated by surveillance aircraft, the likely cause of the detection was discharging of grey water from a cruise vessel conducted according to regulations, and nothing was detected. One possible oil spill was investigated by the Police and by the voluntary association of search and rescue, ICE-SAR; nothing was detected. Two possible oil spills were investigated by port authorities, likely causes were algae and water mass of groundwater from ashore with different density than the surrounding sea water. Additionally, 67 possible oil pollution detections were confirmed or assessed as lookalikes. Causes for lookalikes include:

- fishing activity: specifically, Greenland halibut, mackerel, blue whiting, herring, capelin, coalfish, shrimps; production of fish oil; fatty liver used as bait;
- water masses with different densities such as cold water close to sea ice and groundwater outlet from shore;
- algae and organic matter;
- windless areas;
- water with production residues pumped from holds and bilges of fishing vessels;
- deck washing;
- release of fluid/oil from seabed;
- In one case a dead whale, stuck on the bulb of a vessel for several hours of sailing, was the culprit (case 36).
- Islands or land mass (case 3).

There were no cases in 2022 where the receiving organisations of the service disagreed to the CSN service analysis of possible oil spills, i.e., cases where oil spills or possible oil spills should have been detected by the service provider (so called false negatives).

This report as well include a summary of marine incidents and notifications from other sources than CSN, which are related to pollution or potential pollution including stranded and sunk ships. The Air Traffic Control reported a possible oil spill about 5 nm from shore in vicinity of Reykjavik. The coast guard helicopter was dispatched to investigate the possible oil spill, which was assessed as seaweed (see pictures in referred summary). A rather thin possible oil sheen was also detected by the coast guard helicopter during a patrol flight. Maritime traffic in the area couldn't be aligned with the detected possible oil spill. One small fishing boat sank at sea in position 65°18 47N 25° 04 31W. The helicopter later searched the area and observed a rainbow-coloured oil sheen, which is a key indicator for mineral oil.

The numbered possible oil spills in figure 1 refer to the list of feedback.

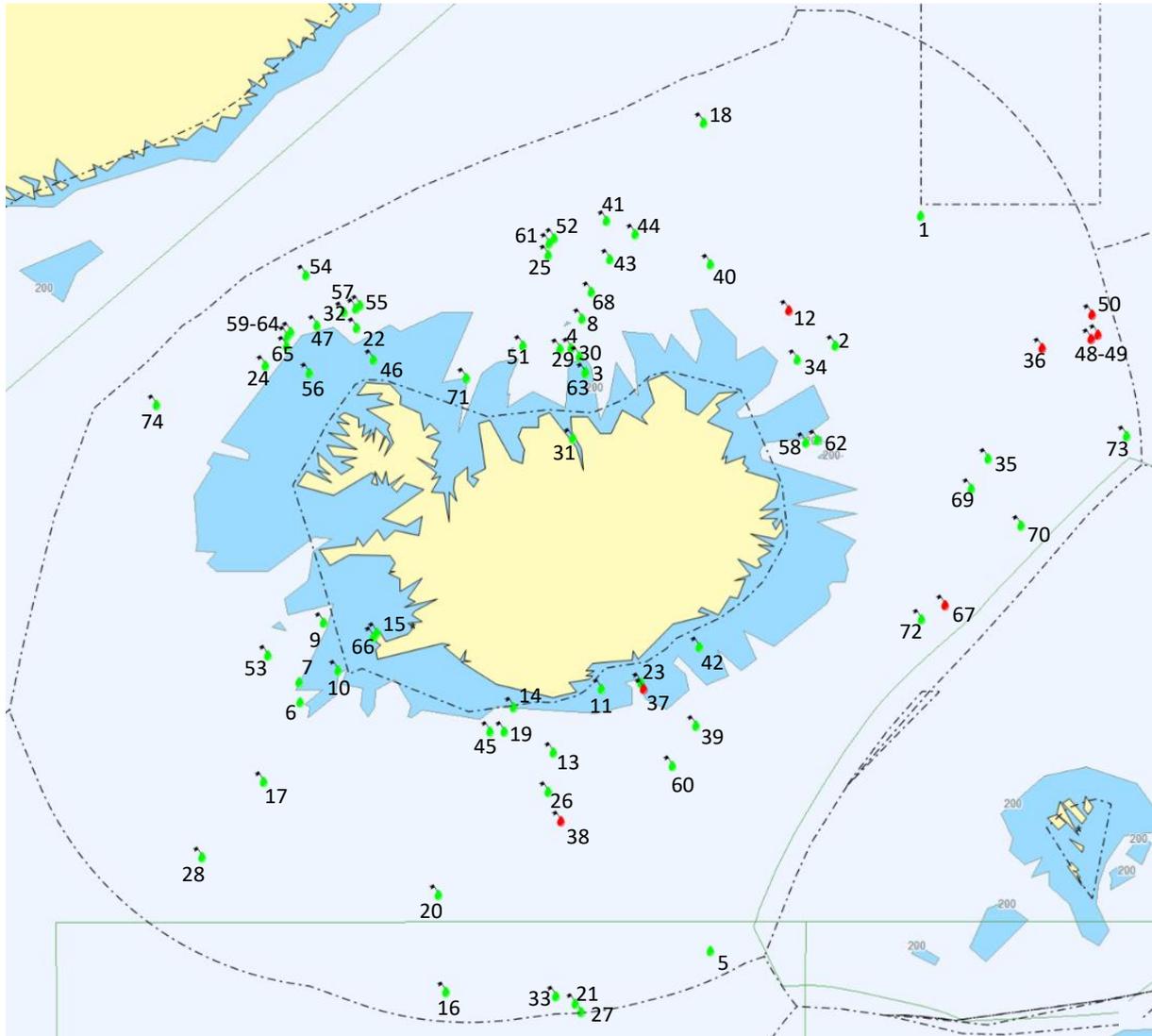
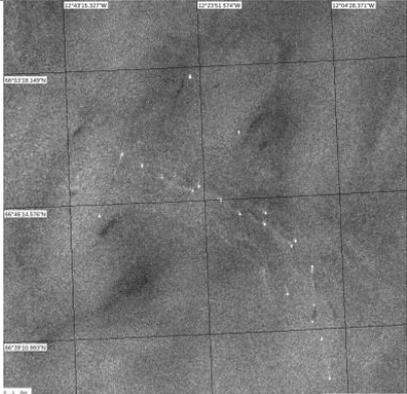
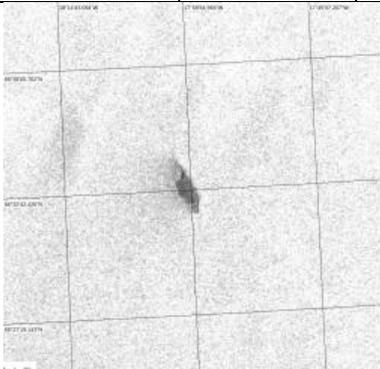
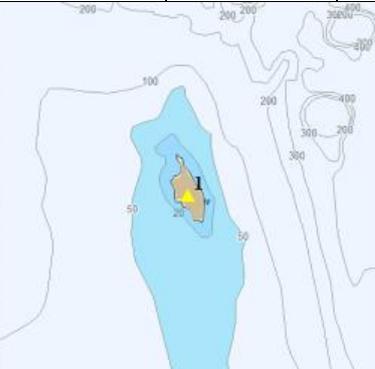
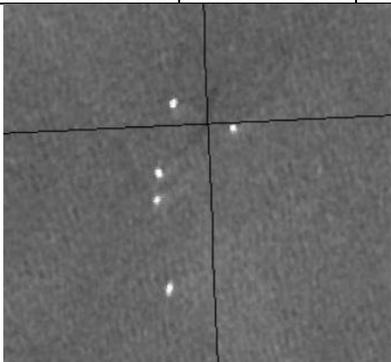


Figure 1: Overview of detected possible oil spills within the Icelandic Exclusive Economic Zone. Only detections inside the EEZ are numbered and provided feedback to in this report. EMSA (2023).

**List of feedback on CleanSeaNet detections inside Icelandic Exclusive Economic Zone**

OS	Acquisition Start	Lat (Center)	Long (Center)	Area (km2)	# of slicks	Class	Comments
1	2022-01-23 07:26:32Z	67°54.09'N	010°30.6'W	5.525654	1	B	<b>Reason for no verification:</b> Considered as a lookalike
2	2022-01-30 07:18:20Z	66°46.99'N	012°26.32'W	3.121083	6	B	<b>Reason for no verification:</b> Considered as a lookalike. Capelin fisheries.

							
3	2022-02-17 08:07:15Z	66°32.71'N	018°00.22'W	3.979488	1	B	<b>Reason for no verification:</b> Considered as a lookalike. The island of Grimsey.
	 						
4	2022-02-26 07:42:47Z	66°44.94'N	018°19.39'W	0.238629	1	B	<b>Reason for no verification:</b> Considered as a lookalike. 5 vessels fishing for coalfish, which has fed on capelin.
							
In this timeframe several images were either cancelled or not received due to a Sentinel-1B anomaly.							
5	2022-04-01 18:31:06Z	60°45.92'N	015°12.35'W	1.752311	2	B	<b>Reason for no verification:</b> Considered as a lookalike. No vessels in area.
6	2022-04-01 07:59:05Z	63°23.87'N	024°23.37'W	1.673235	4	B	<b>Reason for no verification:</b> Considered as a lookalike. Fishing vessel was contacted.

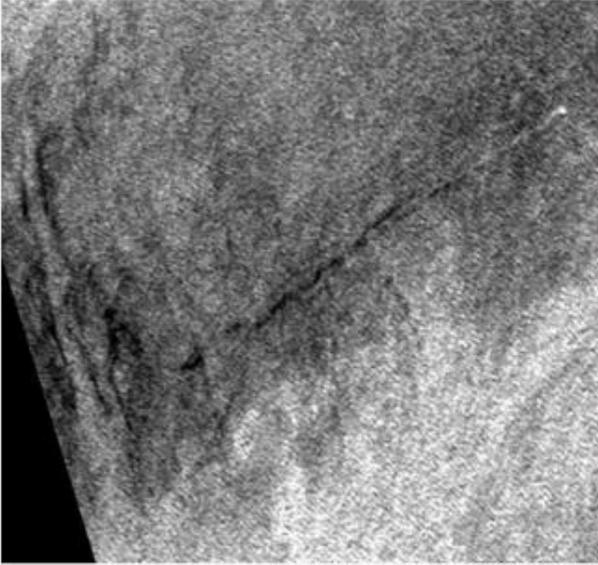
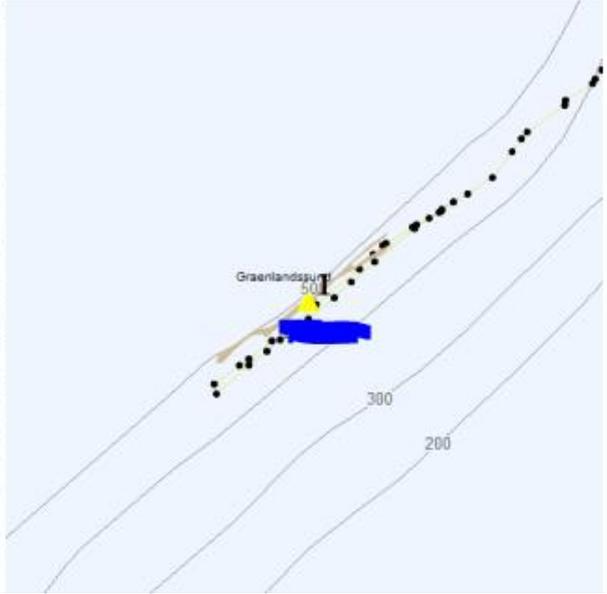
7	2022-04-01 07:59:05Z	63°34.9'N	024°23.34'W	0.616067	1	B	<b>Reason for no verification:</b> Considered as a lookalike. Several fishing vessels in area.	
8	2022-04-24 18:35:30Z	67°00.56'N	018°04.42'W	0.264322	1	B	<b>Reason for no verification:</b> Considered a lookalike. Two fishing vessels contacted, one (catching shrimps) had washed down the deck between catches, which correlates with the detection.	
9	2022-05-09 18:59:26Z	64°10.89'N	023°50.77'W	0.063955	1	B	<b>Reason for no verification:</b> Considered a lookalike. Water discharged from hold of trawler.	
10	2022-05-09 18:59:18Z	63°42.73'N	023°30.95'W	0.080512	1	B	<b>Reason for no verification:</b> Considered a lookalike. Water discharged from hold of long liner.	
11	2022-05-16 07:34:45Z	63°31.99'N	017°38.93'W	4.304466	2	B	<b>Reason for no verification:</b> Considered a lookalike. A steaming fishing vessel aligned 1,5 h's earlier was contacted.	
12	2022-05-18 07:18:22Z	67°04.23'N	013°24.89'W	27.986157	4	A	<b>Reason for no verification:</b> Considered a lookalike. No vessel in area.	

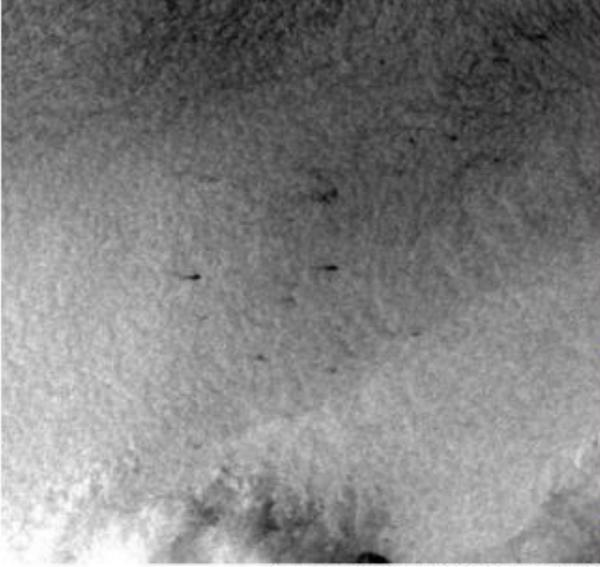
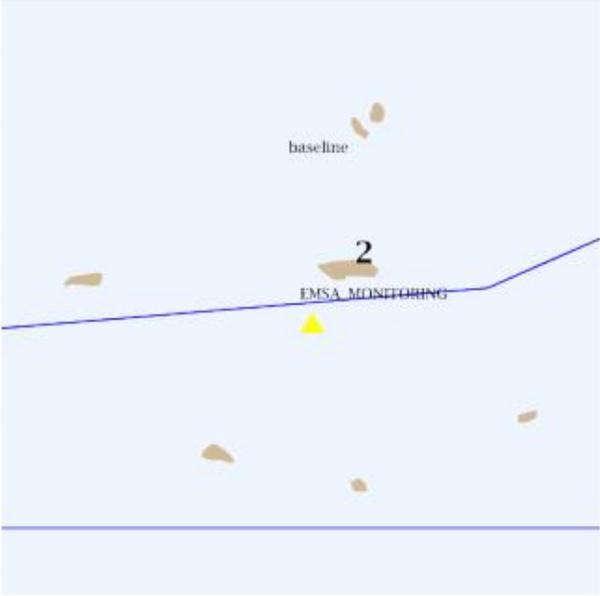
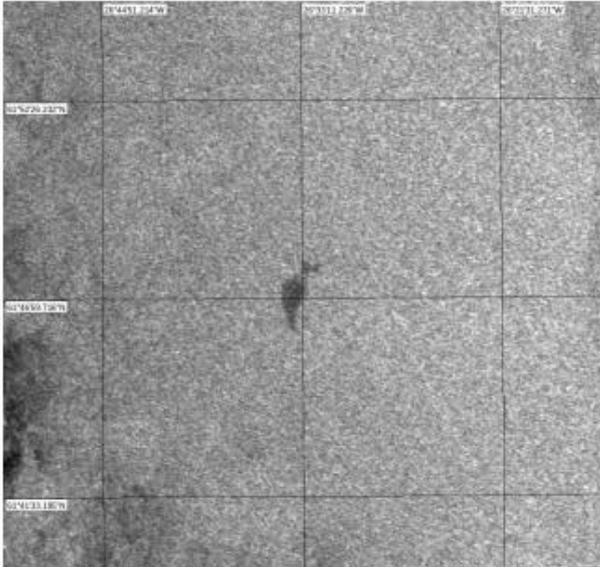
13	2022-05-28 18:50:48Z	62°52.7'N	018°42.94'W	0.486477	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessel in area.
14	2022-05-28 18:50:56Z	63°20.24'N	019°35.96'W	2.992989	1	B	<b>Reason for no verification:</b> Considered a lookalike. Vessel aligned with detection was contacted.

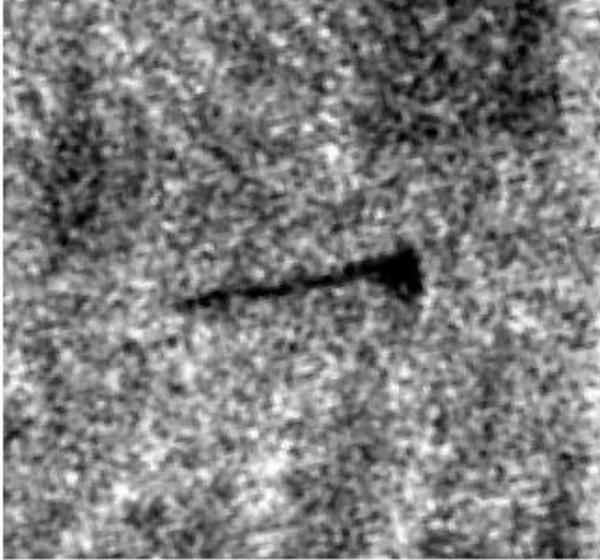
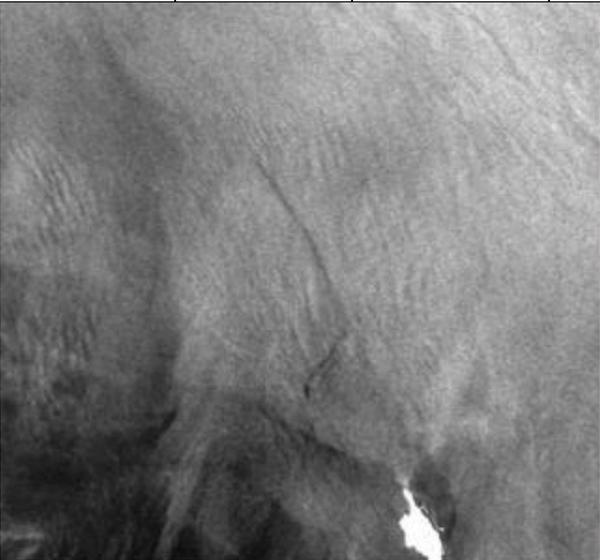
15	2022-06-02 18:59:24Z	64°05.11'N	022°39.05'W	0.945063	2	B	<p><b>On-Site Observation:</b> The police were informed who sent a patrol car to the area, which reported a likely smell of oil. A voluntary rescue ship was dispatched, which did not find anything unusual. Port captain and relevant authorities were informed.</p>
16	2022-06-02 18:58:21Z	60°18.67'N	021°06.32'W	0.980727	1	B	<p><b>Reason for no verification:</b> Considered a lookalike. No vessel could be aligned with the detection.</p>

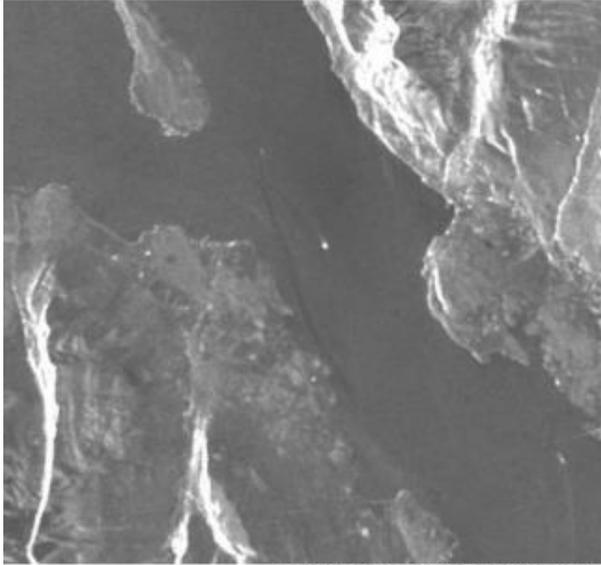
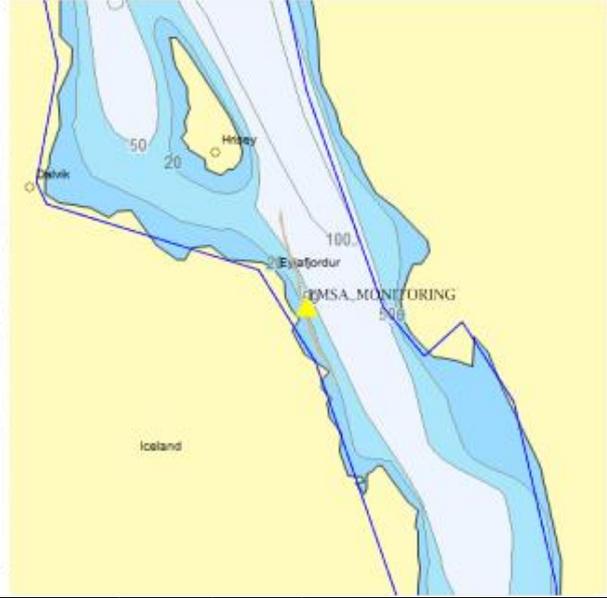
17	2022-06-04 08:16:58Z	62°34.66'N	025°10.61'W	0.425621	1	B	<b>Reason for no verification:</b> Considered a lookalike. A longliner aligned with detection said that liver used as bait on board might be the source.
18	2022-06-08 18:11:39Z	68°42.33'N	015°16.77'W	18.418307	7	B	<b>Reason for no verification:</b> Considered a lookalike. Natural phenomenon.
19	2022-06-14 18:59:05Z	63°05.36'N	019°48.6'W	0.268713	2	B	<b>Reason for no verification:</b> Considered a lookalike. No vessel could be aligned with the detection.
20	2022-06-26 18:58:40Z	61°22.46'N	021°17.21'W	0.332191	1	B	<b>Reason for no verification:</b> Considered a lookalike. Natural phenomenon. No vessels in area.
21	2022-06-26 18:58:16Z	60°10.5'N	018°09.23'W	5.367983	20	B	<b>Reason for no verification:</b> Considered a lookalike. Natural phenomenon. No vessels

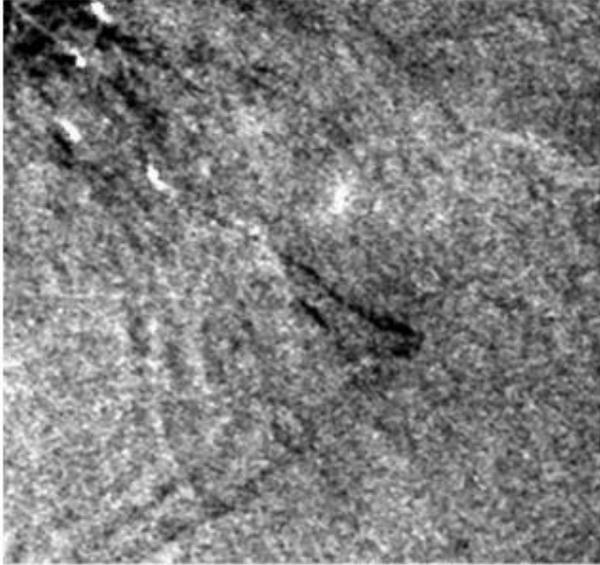
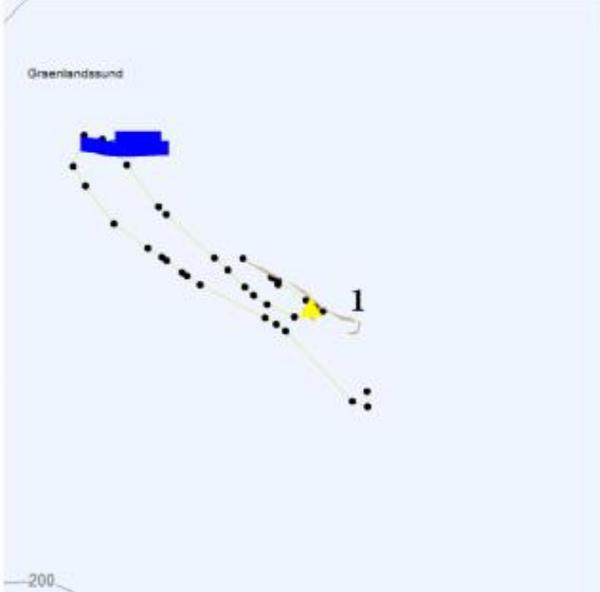
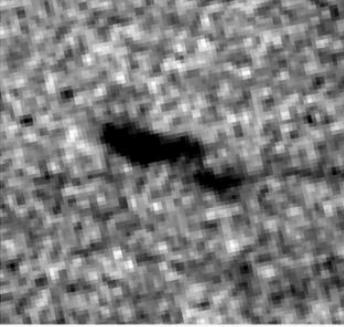
							in area.
22	2022-07-03 18:52:02Z	66°55.66'N	023°06.88'W	0.058317	1	B	<b>Reason for no verification:</b> Considered a lookalike. A fishing vessel was identified as the possible source, which informed it had been taking the trawl containing coalfish and Greenland halibut. No oil pollution was reported.
<p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>							
23	2022-07-05 18:34:37Z	63°35.2'N	016°45.4'W	0.336522	1	B	<b>Reason for no verification:</b> Considered a lookalike. A fishing vessel, connected to the detection, checked if any oil could have come from the vessel, which was not the case. All winches on board were electric.
<p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>							
24	2022-07-08	66°35.67'N	025°09.39'W	2.036875	1	B	<b>Reason for no</b>

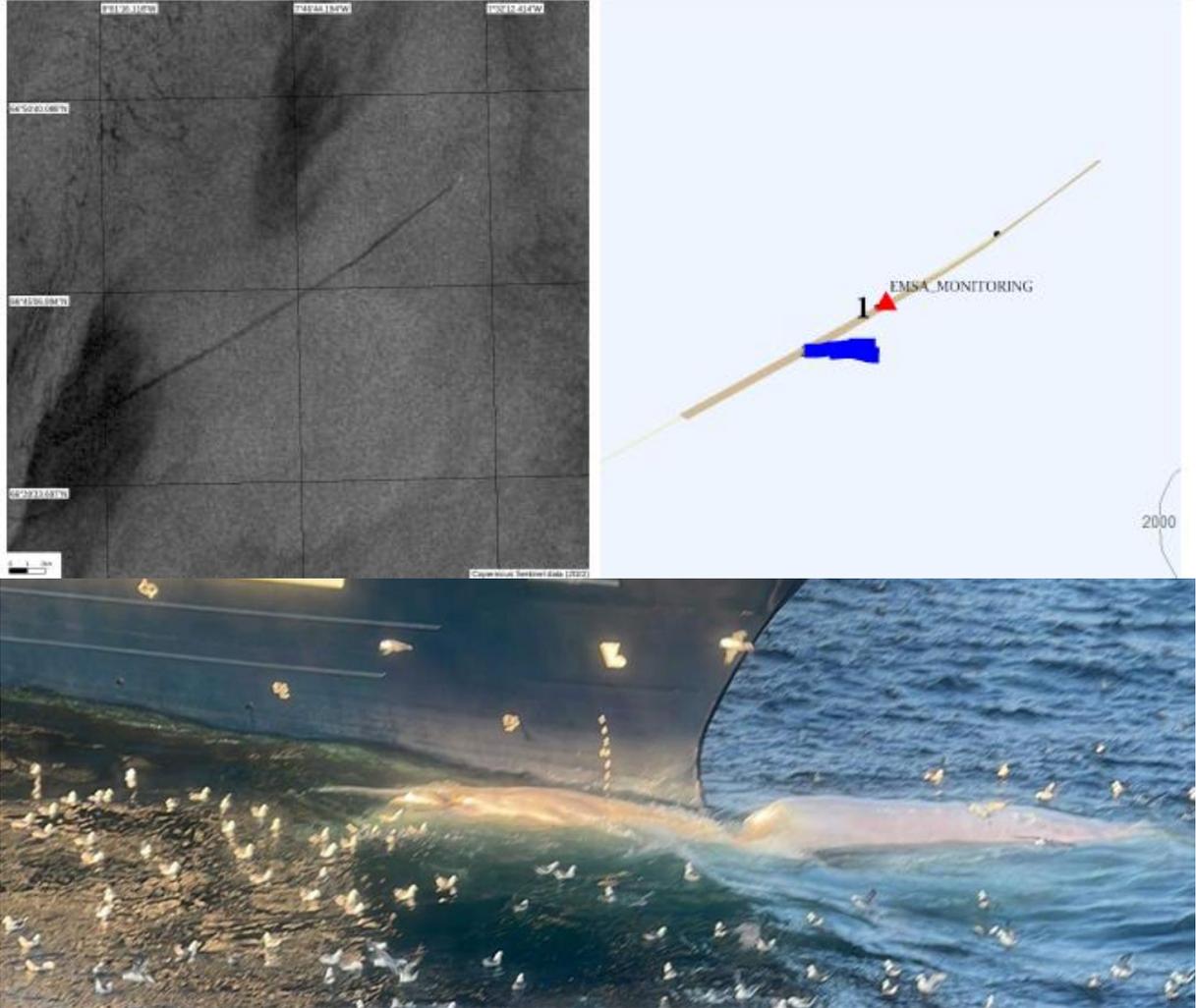
	19:00:11Z						<b>verification:</b> Considered a lookalike. A fishing vessel, connected to the detection, checked if any oil could have come from the vessel, which was not the case.
	 <p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>						
25	2022-07-17 18:35:45Z	67°33.89'N	018°50.07'W	2.687633	1	B	<b>Reason for no verification:</b> Considered a lookalike. A fishing vessel, connected to the detection, checked if any oil could have come from the vessel, which was not the case. The vessel had been processing the catch of Greenland halibut.
	 <p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>						
26	2022-08-01	62°27.95'N	018°49.68'W	0.352939	2	B	<b>Reason for no</b>

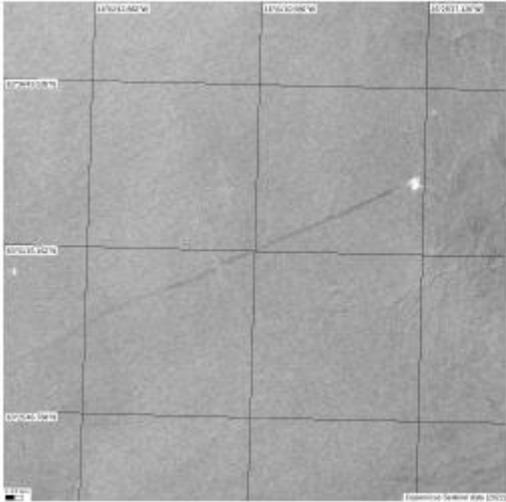
	18:58:56Z						<b>verification:</b> Considered a lookalike. Natural phenomenon.
27	2022-08-01 18:58:15Z	60°05.29'N	018°04.44'W	4.131446	7	B	<b>Reason for no verification:</b> Considered a lookalike. Institute of Earth Sciences of the University of Iceland commented that the pattern looked like the source could be at the bottom of the sea.
							
		<small>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</small>					
28	2022-08-04 08:23:55Z	61°47.27'N	026°33.19'W	3.117287	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessels in area.
							
		<small>Data and Products © STECOPROUD, INSTITUTE OF EARTH SCIENCES OF THE UNIVERSITY OF ICELAND AND ASSOCIATES LTD 2022 - All Rights Reserved EMSA/KSAT is an official track of the Columbus Space Agency</small>					
29	2022-08-08 18:51:55Z	66°44.53'N	018°33.91'W	0.460306	1	B	<b>Reason for no verification:</b> Considered a

							<p>lookalike. The aligned fishing vessel had discharged water from the hold while underway. The detection is assessed to stem from fishing activity.</p>
			<p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>				
30	2022-08-08 18:51:53Z	66°40.7'N	018°07.9'W	4.122014	1	B	<p><b>Reason for no verification:</b> Considered a lookalike. The aligned fishing vessel stated that nothing was leaking or had been discharged from the vessel.</p>
			<p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>				
31	2022-08-10 18:35:20Z	65°55.91'N	018°17.59'W	0.968717	1	B	<p><b>Mineral oil confirmed.</b> The vessel connected to</p>

							the detection confirmed that fuel oil had overflowed through the air vent and following been discharged. Amount discharged was estimated about 1-10 liters.
							
32	2022-08-13 19:00:17Z	67°04'N	023°23.19'W	0.695079	6	B	<b>Fish oil confirmed.</b> Captain of the fishing vessel connected to the detection called back and informed that they were producing fish oil on board and when a hose, connecting tanks, broke, 30-50 liters had leaked onto the deck and from there to the sea through the bilge pump.

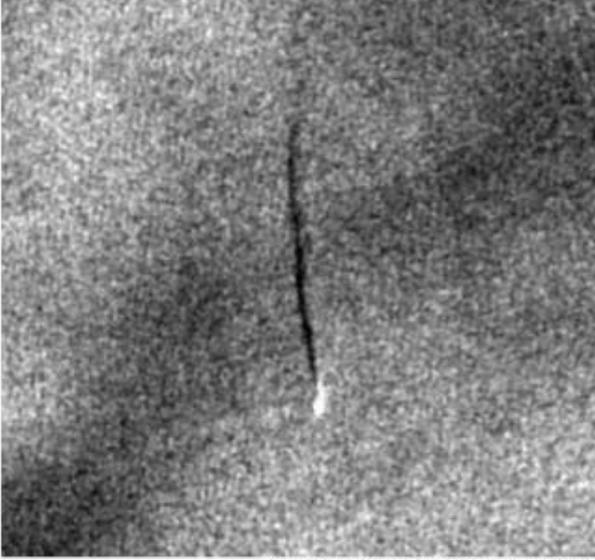
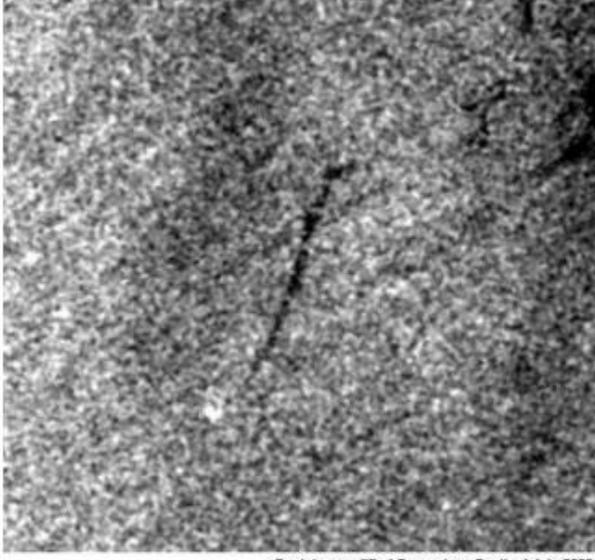
								
33	2022-08-13 18:58:21Z	60°15.54'N	018°39'W	0.387395	2	B	<b>Reason for no verification:</b> Considered a lookalike. No vessels in area.	
								
34	2022-08-14 18:03:28Z	66°39.01'N	013°14.7'W	3.843445	1	B	<b>Reason for no verification:</b> Considered a lookalike and no assets available.	
35	2022-08-14 18:03:28Z	65°45.11'N	008°59.15'W	2.290673	1	B	<b>Reason for no verification:</b> Considered a lookalike and no assets available.	
36	2022-08-15 07:26:37Z	66°45.81'N	007°43.41'W	5.496343	1	A	<b>Reason for no verification:</b> Considered a lookalike. A month later, the vessel connected to the detected possible oil spill sent a picture and explanation to the course of the detection. The vessel had collided with a whale, which had gotten stuck on the bulb. Oil from the whale is	

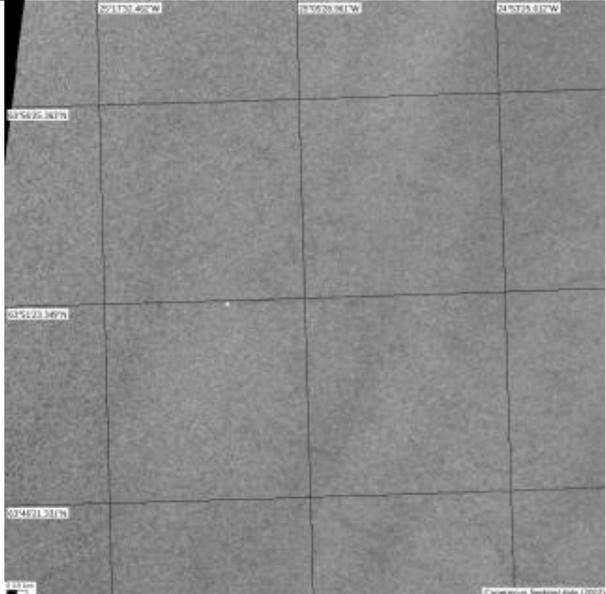
							assessed as the most possible course.
							
37	2022-08-20 07:34:51Z	63°30.49'N	016°44.59'W	5.482589	1	A	<p><b>On-site observation.</b> Nothing observed. A cruise vessel connected to the possible oil spill detection was identified. The vessel had been discharging grey water (from accommodation, laundry, galley) and food waste according to MARPOL. The fixed wing surveillance aircraft TF-SIF was dispatched and after a slight delay due to a search and rescue case, it proceeded to the position and took a SLAR image on-site about 5 hours after the image was taken. Nothing was observed.</p>

							
38	2022-08-20 18:50:41Z	62°09.84'N	018°33.06'W	0.222752	2	A	<b>Reason for no verification:</b> Considered a lookalike. No vessel could be aligned with the detection.
							
39	2022-08-22 18:34:31Z	63°08.93'N	015°31.86'W	0.171092	1	B	<b>Reason for no verification:</b> Considered a lookalike.
40	2022-08-22 18:35:41Z	67°29.05'N	015°12.54'W	0.679235	1	B	<b>Reason for no verification:</b> Considered a lookalike.
41	2022-08-22 18:35:50Z	67°51.74'N	017°31.99'W	0.469783	2	B	<b>Reason for no verification:</b> Considered a lookalike.
42	2022-08-22 18:34:44Z	63°56.31'N	015°27.47'W	4.663505	6	B	<b>Reason for no verification:</b> Considered a lookalike.
43	2022-08-22 18:35:45Z	67°31.66'N	017°27.37'W	0.451584	2	B	<b>Reason for no verification:</b> Considered a lookalike.
44	2022-08-22 18:35:47Z	67°44.77'N	016°52.58'W	0.596987	1	B	<b>Reason for no verification:</b> Considered a

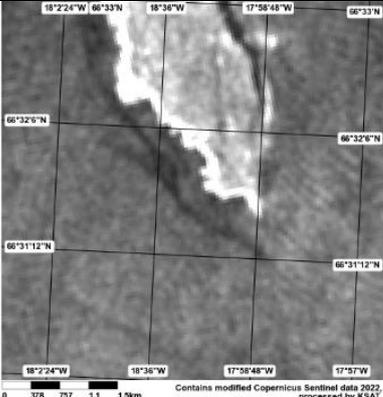
							lookalike.
45	2022-08-27 18:41:53Z	63°05.48'N	020°07.21'W	1.954381	2	B	<b>Mineral oil confirmed:</b> The fishing vessel aligned with the detection informed that it had had a hydraulic leak connected to a breakdown of its side thruster. Estimated 2-3 litres of hydraulic oil had accidentally been pumped overboard from the side thruster room. It was not considered operationally relevant to investigate by aircraft.
46	2022-08-28 08:07:23Z	66°38.69'N	022°44.34'W	0.324156	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessel in the area.
47	2022-08-28 08:21:42Z	66°57.2'N	024°00.15'W	2.715439	1	B	<b>Reason for no verification:</b> Considered a lookalike. The fishing vessel aligned with the detection had taken the trawl, which is considered the likely cause.

48	2022-08-29 07:10:21Z	66°49.98'N	006°41.82'W	0.611974	2	A	<b>Reason for no verification:</b> Considered a lookalike. Several pelagic fishing vessels are in the area fishing for mackerel with some blue whiting with fatty liver as by-catch.
49	2022-08-29 07:10:21Z	66°52.33'N	006°33.11'W	0.689989	2	A	<b>Reason for no verification:</b> Considered a lookalike. Several pelagic fishing vessels are in the area fishing for mackerel with some blue whiting with fatty liver as by-catch.
50	2022-08-29 07:10:21Z	67°02.77'N	006°40.38'W	1.967895	1	A	<b>Reason for no verification:</b> Considered a lookalike. Several pelagic fishing vessels are in the area fishing for mackerel with some blue whiting with fatty liver as by-catch.
51	2022-09-01 18:51:58Z	66°46.35'N	019°23.57'W	0.522336	1	B	<b>Reason for no verification:</b> Considered a lookalike. The fishing vessel aligned with the detection says that approximately 10 liters of fish liver had gone overboard through the pump.

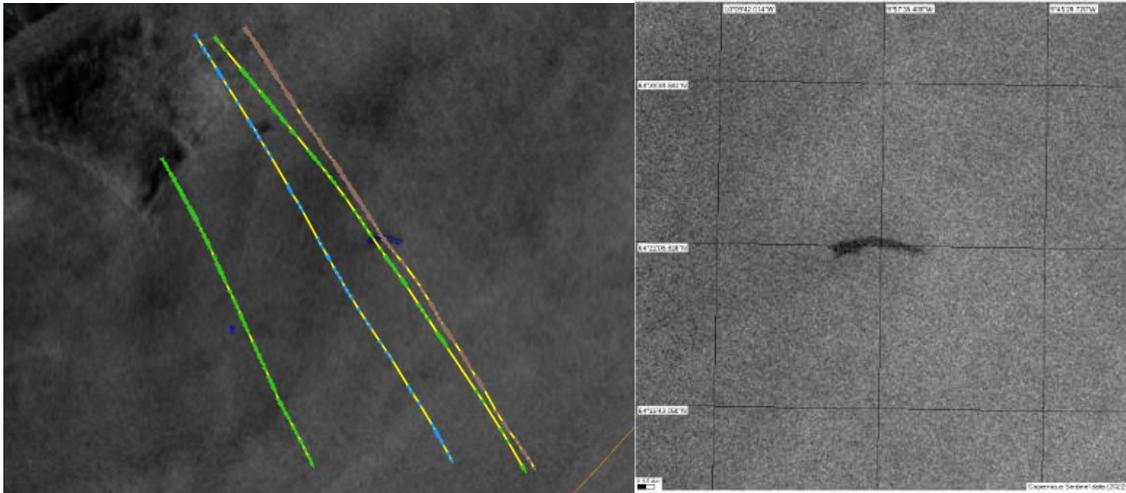
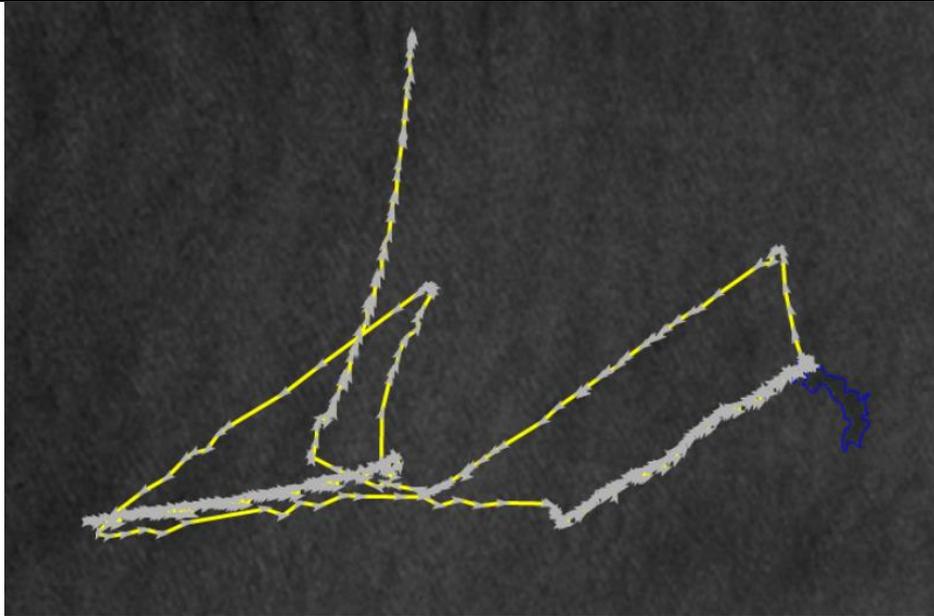
	 <p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>						
52	2022-09-03 18:35:50Z	67°42.44'N	018°41.88'W	0.85519	1	B	<p><b>Reason for no verification:</b> Considered a lookalike. The fishing vessel aligned with detection had been processing the catch, which is considered the most likely cause. Three hours earlier the vessel had been discharging bilge water through its oily water separator.</p>
	 <p>Contains modified Copernicus Sentinel data 2022, processed by KSAT.</p>						
53	2022-09-04 07:59:14Z	63°51.34'N	025°05.8'W	1.315456	1	B	<p><b>Reason for no verification:</b> Considered a lookalike. The longliner aligned with the detection investigated but did not find any</p>

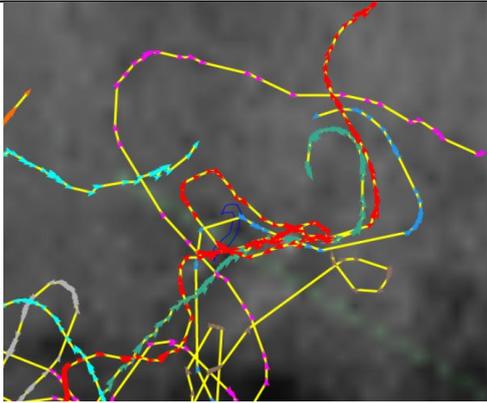
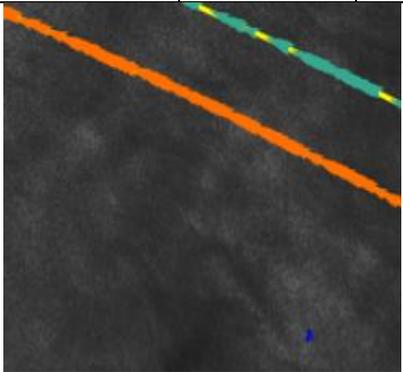
							reason for the detection. The Institute of Earth Sciences of the University of Iceland assessed that the current conditions with very little wind and clear signs of organic matter in the ocean could easily course false positives.
							
54	2022-09-04 08:17:25Z	67°23.68'N	024°14.05'W	1.19242	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessel in area.
55	2022-09-06 19:00:20Z	67°07.79'N	023°02.19'W	2.340126	1	B	<b>Reason for no verification:</b> Considered a lookalike. Several fishing vessels in area cause detections. Environmental conditions seem favourable to detect lookalikes.
56	2022-09-06 19:00:12Z	66°31.82'N	024°09.83'W	0.588679	1	B	<b>Reason for no verification:</b> Considered a lookalike. Several fishing vessels in area cause detections. Environmental conditions seem favourable to detect lookalikes.
57	2022-09-06 19:00:19Z	67°06.15'N	023°08.45'W	1.182485	4	B	<b>Reason for no verification:</b> Considered a lookalike. Several fishing vessels in area cause detections.

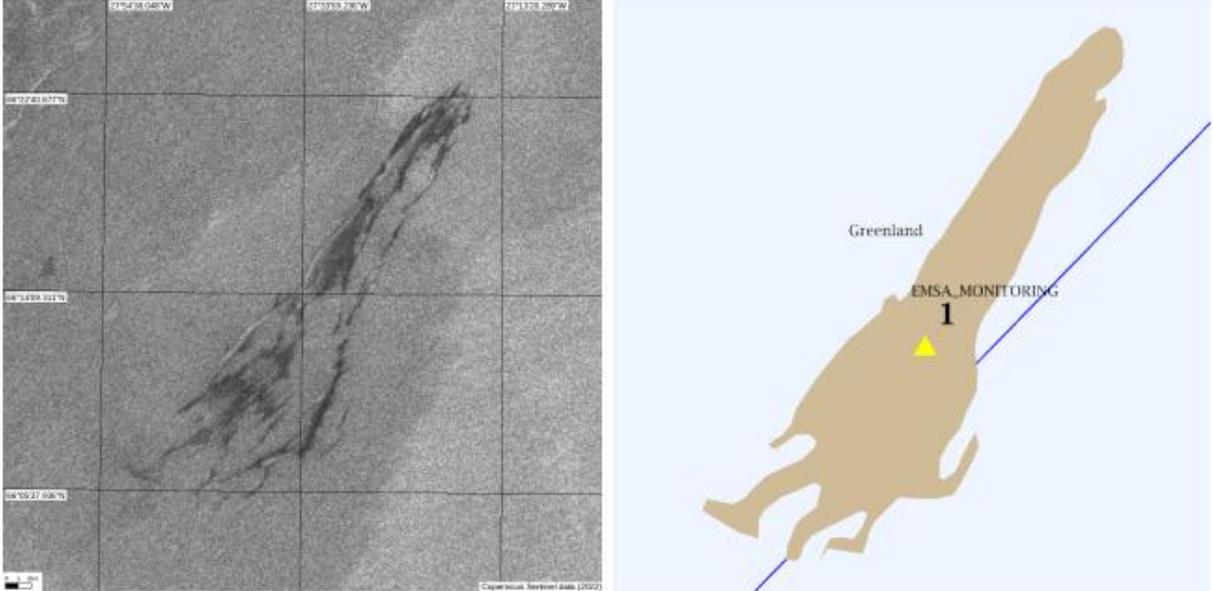
							Environmental conditions seem favourable to detect lookalikes.
58	2022-09-13 07:34:52Z	65°54.35'N	013°07.02'W	2.447029	4	B	<b>Reason for no verification:</b> Considered a lookalike. Several pelagic fishing vessels fishing for herring in area.
59	2022-09-18 19:00:17Z	66°51.64'N	024°39.56'W	1.598905	1	B	<b>Reason for no verification:</b> Considered a lookalike. Fishing vessel aligned with detection found a minor leak of hydraulic oil from a winch; however, it hadn't washed overboard. More likely cause is that sea water from lower water levels mix with surface water during normal fishing activity.
60	2022-09-27 18:34:27Z	62°44.16'N	016°03.16'W	0.158829	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessel in area.
61	2022-09-27 18:35:50Z	67°40.03'N	018°48.47'W	0.76174	1	B	<b>Reason for no verification:</b> Considered a lookalike. The trawler aligned with the detection was taking the trawl and started processing of fish just before the time the of acquisition.

62	2022-10-02 07:26:40Z	65°55.06'N	012°49.05'W	1.535485	1	B	<b>Reason for no verification:</b> Considered a lookalike. The pelagic fishing vessel aligned with the detection was pumping it's catch on board at the time the of acquisition.
63	2022-10-21 18:35:31Z	66°31.62'N	018°00.08'W	0.515271	1	B	<b>Reason for no verification:</b> Considered a lookalike. No ships' traffic aligned with detection. The port in Grimsey hadn't observed any pollution but reported a lot of algae in the area.
 <p>Contains modified Copernicus Sentinel data 2022, processed by KSAI.</p>							
64	2022-10-22 08:17:33Z	66°53.34'N	024°34.01'W	4.471254	2	B	<b>Reason for no verification:</b> Considered a lookalike. Several fishing vessels in area were contacted. No oil reported. Processing of coalfish. Many whales were reported. Sea surface temperature around 0°C. A picture was forwarded by a fishing vessel of the ocean fronts.

65	2022-10-22 08:17:36Z	66°46'N	024°40.38'W	10.141798	3	B	Same as above.
66	2022-11-05 18:59:29Z	64°02.5'N	022°43.99'W	0.492885	1	B	<b>On-site observation:</b> Considered a lookalike. The detection was connected to the North side of Sandgerdi port. Port authorities did not observe anything abnormal. They sent pictures from the area showing a groundwater outlet. Different densities of water is likely to have caused the detection.
67	2022-11-09 07:10:21Z	64°21.05'N	009°58.79'W	4.341148	1	A	<b>Reason for no verification:</b> No assets available. The coast guard surveillance aircraft TF-SIF was deployed abroad. Two vessels on a SE

							course sailed through this class A possible oil spill 7-8 hours earlier. The detection was 6 km long and 1,5 km wide.
	 <p>SafeSeaNet Ecosystem GUI EMSA, CleanSeaNet, Sentinel 1</p>						
68	2022-11-12 18:52:04Z	67°14.75'N	017°52.03'W	0.792905	1	B	<b>Reason for no verification:</b> Considered a lookalike. The aligned gillnetter was fishing for Greenland halibut had been washing the deck. The Greenlandic halibut is considered a fatty fish.
	 <p>SafeSeaNet Ecosystem GUI EMSA, CleanSeaNet, Sentinel 1A</p>						
69	2022-11-26 07:18:29Z	65°27.89'N	009°22.24'W	0.558651	1	B	<b>Reason for no verification:</b> Considered a lookalike. Several pelagic fishing vessels fishing for herring in the area.

							
	SafeSeaNet Ecosystem GUI EMSA, CleanSeaNet, Sentinel 1						
70	2022-11-26 07:18:29Z	65°07.24'N	008°16.25'W	0.574143	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessels in area.
71	2022-11-29 19:00:06Z	66°29'N	020°39.61'W	0.088249	1	B	<b>Reason for no verification:</b> Considered a lookalike. The vessels in the area were too far away to align with the possible oil spill. Distance 5 nm; time 1,3 h. On 2 December, the Icelandic Coast Guard helicopter was sent on patrol to the area, where it observed sharp differences in temperature of water masses in the area. Observations were conducted with infrared camera.
							
	SafeSeaNet Ecosystem GUI EMSA, CleanSeaNet, Sentinel 1A						
72	2022-12-03 07:10:21Z	64°13.08'N	010°29.17'W	0.458057	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessels in area.
73	2022-12-03 07:10:21Z	65°57.49'N	005°54.32'W	0.163406	1	B	<b>Reason for no verification:</b> Considered a lookalike. No vessels in

							area.
74	2022-12-17 08:31:49Z	66°11.53'N	027°34.84'W	233.590056	1	B	<b>Reason for no verification:</b> Considered a lookalike. Institute of Earth Sciences of the University of Iceland sourced the detection to the new ice in the area after having compared to other satellite imagery.
							

## Incidents and Notifications other than CSN Related to Pollution or Potential Pollution

Maritime Incidents, Stranded or Sunk Ships and Marine Pollution Reported (not included above)	
Date	Event
26 Jan	Open boat stranded at Engøy, the boat was towed to port. No pollution reported.
18 Feb	Confirmed lookalike. Air Traffic Control reported a possible oil spill about 5 nm from shore in vicinity of Reykjavik. The coast guard helicopter investigated the possible oil spill, which was assessed as seaweed. Considered a lookalike.
	

19 Feb	Possible marine pollution reported in Dyrafjordur connected to dead salmon from fish farm washing up on the beach. The Environment Agency and the Food and Veterinary Authority were informed.
23 Mar	A possible oil sheen was detected by helicopter during a patrol flight. Maritime traffic in the area couldn't be aligned with the detected possible oil spill. 
22 Apr	Small boat stranded in Berufjordur. Could manoeuvre by itself. A boat of opportunity came to follow the damaged boat to harbour. No pollution was reported.
28 Apr	Some oil leaked accidentally from a vessel while pumping bilge in Reykjavik harbour. Reported by source vessel.
23 May	A 43-meter-long fishing ship stranded for a short while when approaching Rif harbour. No pollution was reported.
9 June	Small fishing boat stranded and towed to harbour at Talknafjordur by boat of opportunity. No pollution reported.
4 July	Small boat stranded at Skagastrond. No pollution reported.
13 July	Small fishing boat sank in position 65°18 47N 25° 04 31W off Breidarfjordur. The helicopter later searched the area and observed a thin rainbow coloured oil sheen.
23 July	Fishing vessel fishing with Danish seine stranded at Hofn. No pollution reported.
26 Aug	Small fishing boat stranded, Faxi Bay. No leak and no pollution reported. The boat returned to harbour in Keflavik.
25 Sep	26-meter-long fishing boat sank inside the harbour of Stykkisholmur.
25 Sep	Small boat stranded in harbour of Sandgerði. No pollutions reported.
6 Oct	Fishing vessel stranded at the oversea rock at Geirfuglasker southwest of Vestman Island. No leakage and no pollution reported.
31 Oct	Lookalike confirmed. Coast Guard vessel reported possible oil pollution off Sauðanes, North Iceland. The maritime traffic in vicinity of the position was analysed and a vessel, which was in the area earlier the same day, was contacted. The vessel reported that it had observed something too. The Coast Guard vessel soon reported other observations confirmed as a natural phenomenon (jelly fish).
8 Nov	Lookalike confirmed. Possible oil pollution was reported on beach at Olafsvik. Later confirmed as a natural phenomenon.
13 Nov	Cargo vessel stranded on sandy seabed when departing Hofn. No pollution. Transport Authority was informed.
28 Nov	Trawler stranded on sandy seabed at Neskaupstad. No pollution reported.

## Aerial Surveillance

Icelandic Coast Guard maritime surveillance aircraft (MSA) and helicopters perform aerial surveillance inside of the Icelandic Exclusive Economic Zone. The MSA is of type “Dash 8, Q-300” and surveillance means include SLAR, search radar, EO/IR, and AIS receiver.

Surveillance is dedicated to pollution patrols but as well other law enforcement tasks and sea ice patrols. Below table and graph show the surveillance flight hours performed during the years 2017 to 2022. A VTOL RPAS, Camcopter S-100 deployed by EMSA, conducted 183 flight hours in direct line of sight from the coast guard vessels THOR and FREYJA. The helicopters conducted 120 hours of patrol, accounting for an increase of 76% between years. The fixed wing aircraft conducted 63 hours of patrol, accounting for a decrease of 53%. In total 366 hours of surveillance/patrol was performed in 2022.

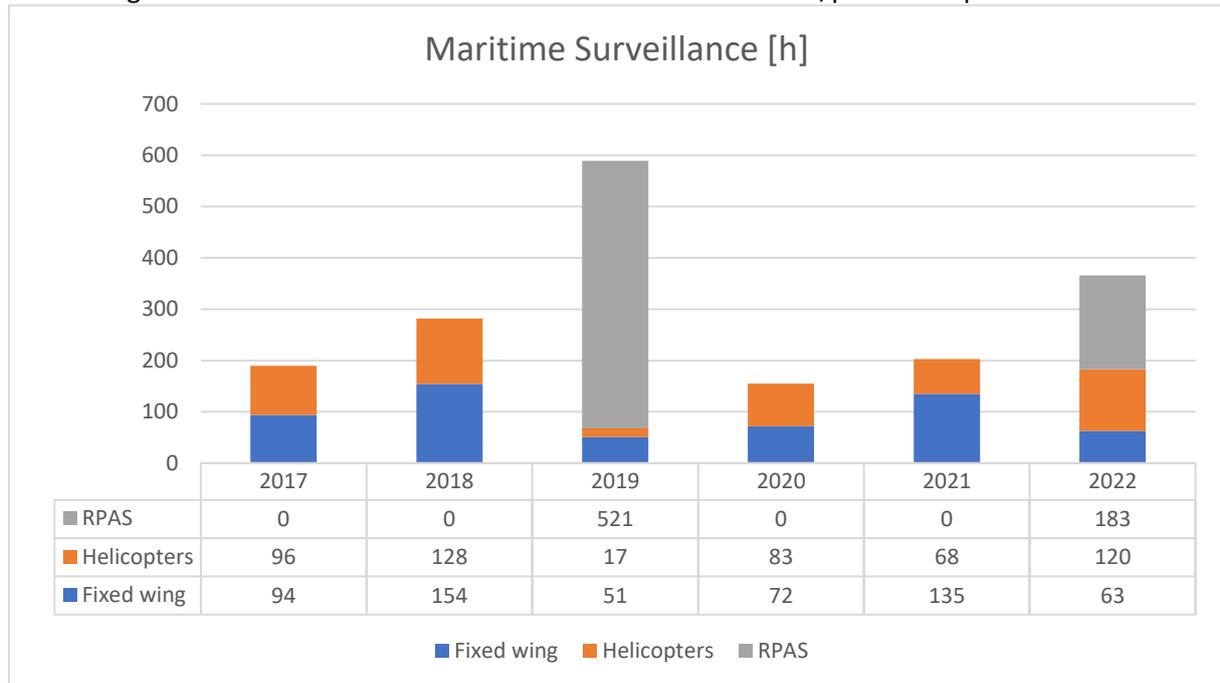


Figure 2, Schiebel Camcopter S100 on ICGV FREYJA, 2022

## Marine Environmental Response Exercises

As per directive on marine and coastal acute pollution response no. 1010/2012, the Environment Agency, the Icelandic Coast Guard, and the Icelandic Transport Authority have made a contingency plan also addressing exercises. At least once a year an exercise between the agencies should be conducted.

<p>2 Jun</p>	<p>The Environment Agency, the Icelandic Coast Guard, and the Icelandic Transport Authority conducted the yearly functional exercise together with the port of Westman Islands, the ICE-SAR Association, and the South Iceland Health Department.</p>  <p><i>Figure 3, (Mengunarvarnaæfing 2022, www.ust.is, 8. June 2022).</i></p>
<p>22 Sep</p>	<p>Communication exercise with MRCC Faroe Islands including pollution warning and pollution reporting.</p>

## Annexes

None