XX SBSR

Simpósio Brasileiro de Sensoriamento Remoto

Detecção de Manchas Suspeitas com Imagens Radar e Óticas

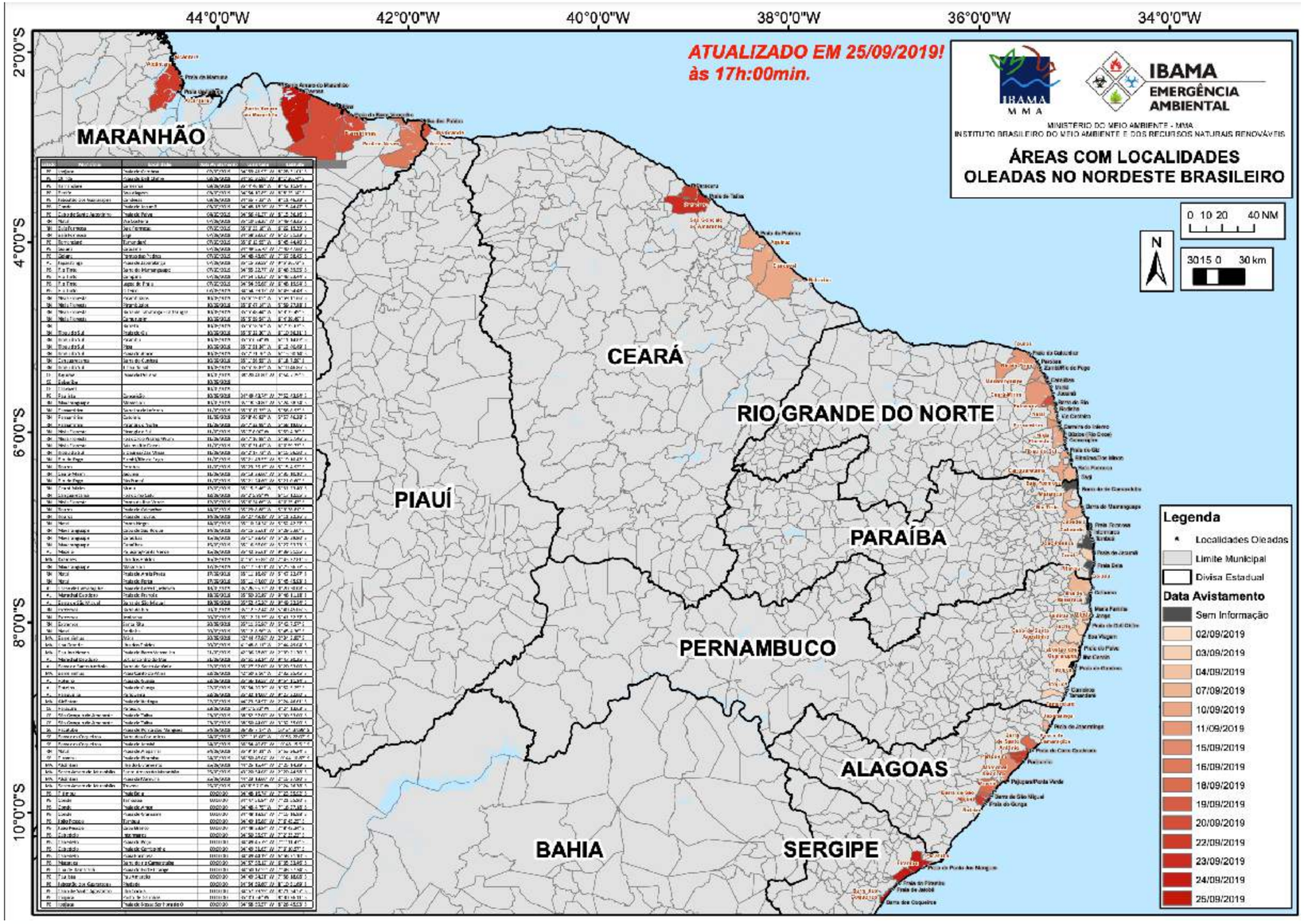
Laércio Massaru Namikawa
DIOTG - INPE

CNPq 440857/2020-1, CNPq/MCTI 06/2020
Pesquisa e Desenvolvimento para Enfrentamento de Derramamento de Óleo na Costa Brasileira

SESSÃO TEMÁTICA
Derrame de Óleo na Costa Brasileira em 2019: as Ferramentas de Observação e de Sensoriamento Remoto na Crise

4/Abril/2023

Histórico
Primeiras manchas em 30/Ago/2019 na Paraíba

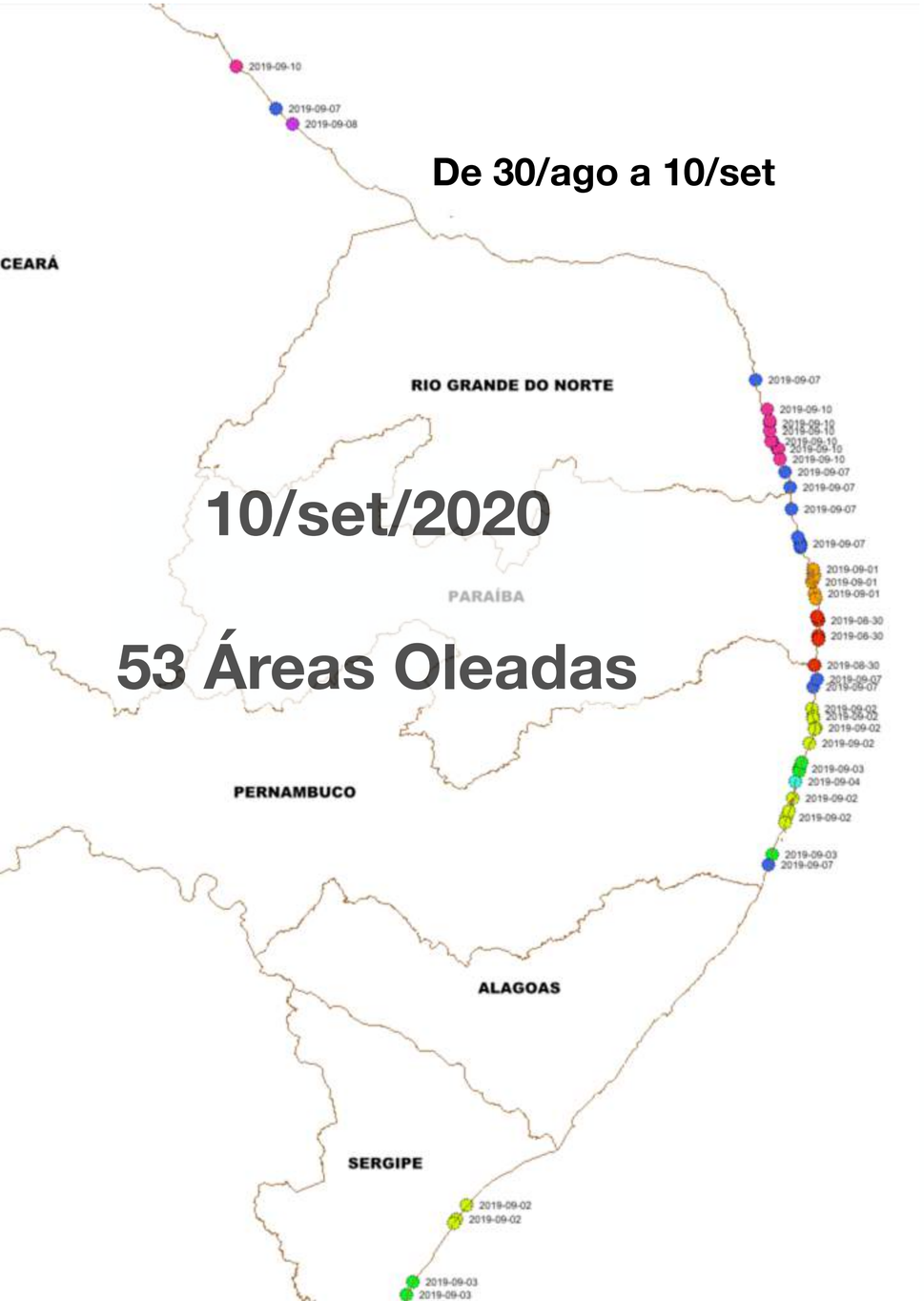


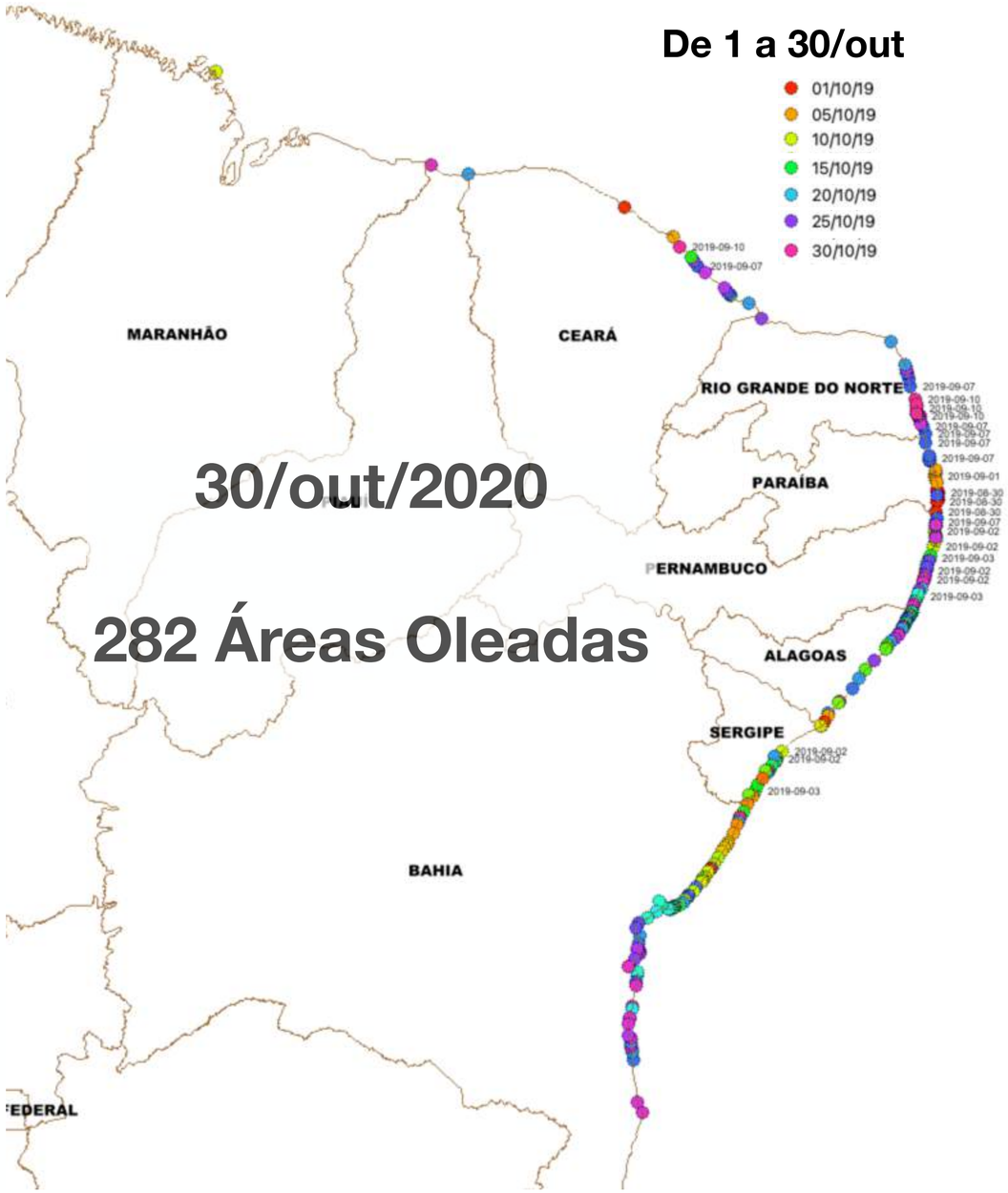
Manchas escuras apareceram na terça (3) na praia de Boa Viagem — Foto: Reprodução/WhatsApp

Piche foi observado em trecho entre praias de Manaíra e do Bessa, em João Pessoa, nesta segunda-feira (2) — Foto: TV Cabo Branco/Reprodução

PB-PE: 20190830 a 20190904

Praia do Paiv	2602902_4	Cabo de Sant	Pernambuco	PE	2019-09-04	2019-11-10	Oleada - Vest	8° 15' 28.81" S	34° 56' 33.77" W	
Candeias	2607901_4	Jaboatão dos	Pernambuco	PE	2019-09-03	2019-10-30	Oleada - Vest	8° 11' 41.28" S	34° 55' 4.497" W	
Piedade	2607901_2	Jaboatão dos	Pernambuco	PE	2019-09-03	2019-11-02	Óleo - Não Ot	8° 10' 39.39" S	34° 54' 57.43" W	
Boa Viagem	2611606_1	Recife	Pernambuco	PE	2019-09-03	2019-11-02	Óleo - Não Ot	8° 8' 38.27" S	34° 54' 15.30" W	
Abais	2802106_7	Estância	Sergipe	SE	2019-09-03	2019-11-02	Oleada - Vest	11° 18' 25.83"	37° 16' 18.77" W	
Carneiros	2614857_3	Tamandaré	Pernambuco	PE	2019-09-03	2019-11-09	Óleo - Não Ot	8° 42' 23.03" S	35° 4' 45.90" W	
Praia do Sacc	2802106_5	Estância	Sergipe	SE	2019-09-03	2019-11-04	Óleo - Não Ot	11° 23' 25.91"	37° 18' 34.15" W	
Praia de Dell (	2609600_1	Olinda	Pernambuco	PE	2019-09-02	2019-10-27	Óleo - Não Ot	8° 1' 39.46" S	34° 51' 28.65" W	
Porto de Galir	2607208_5	Ipojuca	Pernambuco	PE	2019-09-02	2019-10-31	Oleada - Vest	8° 30' 37.90" S	35° 0' 2.527" W	
Praia do Porto	2800605_4	Barra dos Cor	Sergipe	SE	2019-09-02	2019-11-11	Oleada - Man	10° 50' 39.28"	36° 56' 52.73" W	
Conceição	2610707_2	Paulista	Pernambuco	PE	2019-09-02	2019-10-30	Oleada - Vest	7° 52' 35.57" S	34° 49' 51.10" W	
Praia da Cost	2800605_5	Barra dos Cor	Sergipe	SE	2019-09-02	2019-11-03	Oleada - Vest	10° 55' 27.97"	37° 0' 38.12" W	
Pau Amarelo	2610707_4	Paulista	Pernambuco	PE	2019-09-02	2019-11-12	Óleo - Não Ot	7° 56' 13.37" S	34° 49' 22.79" W	
Praia de Noss	2607208_11	Ipojuca	Pernambuco	PE	2019-09-02	2019-10-28	Oleada - Vest	8° 26' 30.81" S	34° 58' 51.30" W	
Praia do Forte	2607604_17	Ilha de Itamar	Pernambuco	PE	2019-09-02	2019-11-08	Óleo - Não Ot	7° 48' 39.90" S	34° 50' 20.15" W	
Suape	2607208_7	Ipojuca	Pernambuco	PE	2019-09-02	2019-11-03	Oleada - Vest	8° 21' 37.46" S	34° 57' 31.16" W	
Maria Farinha	2610707_1	Paulista	Pernambuco	PE	2019-09-02	2019-11-12	Óleo - Não Ot	7° 51' 33.13" S	34° 50' 4.438" W	
Praia de Gam	2607208_1	Ipojuca	Pernambuco	PE	2019-09-02		Oleada - Vest	8° 28' 32.01" S	34° 59' 37.35" W	
Praia do Jang	2610707_3	Paulista	Pernambuco	PE	2019-09-02	2019-11-12	Óleo - Não Ot	7° 55' 41.36" S	34° 49' 14.32" W	
Atalaia Nova	2800605_29	Barra dos Cor	Sergipe	SE	2019-09-02	2019-11-12	Oleada - Vest	10° 56' 58.06"	37° 1' 34.05" W	
Praia de Tamt	2507507_1	João Pessoa	Paraíba	PB	2019-09-01	2019-11-09	Óleo - Não Ot	7° 6' 37.26" S	34° 49' 23.67" W	
Praia do Poço	2503209_2	Cabedelo	Paraíba	PB	2019-09-01	2019-11-08	Óleo - Não Ot	7° 1' 19.85" S	34° 49' 46.63" W	
Praia do Cabo	2507507_2	João Pessoa	Paraíba	PB	2019-09-01	2019-11-03	Óleo - Não Ot	7° 8' 33.22" S	34° 48' 49.43" W	
Praia de Cam	2503209_3	Cabedelo	Paraíba	PB	2019-09-01	2019-11-08	Óleo - Não Ot	7° 0' 18.62" S	34° 49' 32.49" W	
Praia de Inter	2503209_1	Cabedelo	Paraíba	PB	2019-09-01	2019-11-11	Óleo - Não Ot	7° 2' 45.68" S	34° 50' 26.87" W	
Praia Formosa	2503209_17	Cabedelo	Paraíba	PB	2019-09-01	2019-11-10	Óleo - Não Ot	6° 58' 5.464" S	34° 49' 47.31" W	
Praia de Jacu	2504603_2	Conde	Paraíba	PB	2019-08-30	2019-11-13	Óleo - Não Ot	7° 16' 48.85" S	34° 47' 57.13"	08:31:05
Praia Bela	2511905_2	Pitimbu	Paraíba	PB	2019-08-30	2019-11-08	Óleo - Não Ot	7° 23' 47.14" S	34° 48' 15.86" W	
Praia de Gran	2504603_3	Conde	Paraíba	PB	2019-08-30	2019-11-11	Óleo - Não Ot	7° 15' 11.17" S	34° 48' 21.93" W	
Praia de Tamt	2511905_1	Pitimbu	Paraíba	PB	2019-08-30	2019-11-13	Óleo - Não Ot	7° 22' 9.569" S	34° 47' 54.76"	10:36:15


De 30/ago a 10/set
CEARÁ
RIO GRANDE DO NORTE
PARAÍBA
PERNAMBUCO
ALAGOAS
SERGIPE
10/set/2020
53 Áreas Oleadas


De 1 a 30/out
01/10/19
05/10/19
10/10/19
15/10/19
20/10/19
25/10/19
30/10/19
MARANHÃO
CEARÁ
RIO GRANDE DO NORTE
PARAÍBA
PERNAMBUCO
ALAGOAS
SERGIPE
BAHIA
30/out/2020
282 Áreas Oleadas


ATUALIZADO EM: 19/3/2020 - 12h
Ilha Maiaú
Ilha Caçacueira
Ilha Caçacueira
Ilha Maiaú
Ilha do Livramento
Travosa
Praia de Itatinga
Av. Litorânea
Caburé
Atins
Tutoia
Canárias
Axixá
Moitas
Malheda
Paracuru
Caponga
Morro Branco
Canoa Quebrada
Praia do Gado Bravo
Praia de Almofala
Praia de Mundaú
Praia de Cumbuco
Praia da Prainha
Barra de Sucatinga
Barra Grande
Upanema
Praia de Zumbi
Praia de Graçandu
Praia do Pontal
Praia do Sagi
Barra do Rio Mamanguape
Praia Bela
Pontal do Jaguaribe
Praia de Tambaba
Praia de Porto de Galinhas
São José da Coroa Grande
Costa dos Corais
Ipioca
Praia do Gunga
Miaí de Baixo
Praia Pirambu
Praia da Costa
Viral
Jandaíra
Poça
Praia de Siribinha
Praia do Forte
Pituba
Praia do Garcez
Quinta Praia (Praia do Encanto)
Ponta dos Tubarões
Praia de Piracanga
Praia de Mamoã
Praia de Jairi
Ilha de Comandatuba (Barra Norte e Barra Sul)
Praia de Atalaia (Barra Sul de Canavieiras)
Praia da Costa
Praia da Costa
Praia de Arakakaí
Praia de Cumuruxatiba
Praia da Paixão
Praia do Corumbau
Praia da Barra (Novo Prado)
Praia da Costa Doûrada
Praia de Guriri
Praia de Urussuquara
Praia do Degredo
Barra do Sahy
Praia Formosa
Praia da Costa
Praia das Castanheiras
Praia da Barra
Praia do Morro
Grussaí
Grussaí
Praia de Touros
Praia de Porto Mirim
Praia de Búzios
Baía Formosa
Barra do rio Camaratuba
Praia de Intermares
Praia do Amor
Praia do Sossego
Pau Amarelo
Ilha do Francês/Suape
Ilha de Santo Aleixo
Praia da Pedra
Praia do Antunes
Maragogi
Praia de Porto da Rua
Lagoa Azeda
Praia do Toco
Praia de Pontal do Peba (sul)
Coqueirinho
Praia de Mangue Seco
Praia Costa Azul
Foz do Rio Subauma
Rio Pojuca
Praia de Stella Maris
Praia dos Artistas
Praia de Cueira
Praia de Jeribucaçu
São Domingos
Praia de Back Door
Praia do Poxim
Praia da Costa
Ilha de Comandatuba (Barra Norte e Barra Sul)
Praia da Costa
Praia de Trancoso
Coroa Vermelha
Praia dos Coqueiros
Praia da Ponta da Baleia
Praia do Centro
Ilha Redonda (abrolhos
Praia de Mucuri
Praia de Urussuquara
Praia do Degredo
Praia de Regência
Praia do Degredo
Praia Costa Bela
praia califa
Praia da Costa
Praia da Areia Preta
Praia dos Sonhos
Grussaí
Praia dos Sonhos
Grussaí
Grussaí
Campos dos Goytacazes
19/mar/2020
1009 Áreas Oleadas
-48°0'0"
-46°0'0"
-44°0'0"
-42°0'0"
-40°0'0"
-38°0'0"
-36°0'0"
-34°0'0"
-32°0'0"
-30°0'0"
-28°0'0"
-2°0'0"
-4°0'0"
-6°0'0"
-8°0'0"
-10°0'0"
-12°0'0"
-14°0'0"
-16°0'0"
-18°0'0"
-20°0'0"
-22°0'0"
-52°0'0"
-50°0'0"
IBAMA
EMERGÊNCIA AMBIENTAL
IBAMA MMA
MINISTÉRIO DO MEIO AMBIENTE - MMA
INSTITUTO BRASILEIRO DO MEIO AMBIENTE E DOS RECURSOS NATURAIS RENOVÁVEIS-IBAMA
0 100 200 300 km
0 50 100 150 NM
Sistema de Coordenadas Geográficas
DATUM SIRGAS 2000
LOCALIDADES OLEADAS NO LITORAL BRASILEIRO IDENTIFICADAS A PARTIR DE 30/ AGOSTO/2019
LEGENDA
Total de áreas oleadas desde 30/08 [1009]
Oleada - Manchas (mais que 10% de contaminação) [0]
Oleada - Vestígios/Esparsos (até 10% de contaminação) [135]
Praias limpas (óleo não observado) [874]
LIMITES ESTADUAIS
OpenStreetMap
Obs.: O conceito de localidade utilizado neste mapeamento se restringe a uma área de 1km ao longo da costa. Portanto uma praia com uma faixa de areia com 10km possui 10 localidades.
TABELA QUANTITATIVA
Estados Afetados -11
Municípios Afetados - 130
Localidades Afetadas - 1009
Fontes:
IBAMA/NMI-CE, IBAMA/SISCOM, IBGE, OpenstreetMap
Vistorias em campo realizadas por IBAMA, ICMBio, Marinha do Brasil, Defesa Civil, Prefeituras Municipais e Instituições Parceiras
Elaboração:IBAMA-Emergência Ambiental,NMI-CE
Data de Elaboração: Data: 19/3/2020

02 March 2023

Oil Spill in Philippines

The MT Princess Empress was carrying 800,000 liters of industrial oil when the tanker sank near Naujan, Oriental Mindoro on Feb. 28.

https://www.pna.gov.ph/articles/1197824

https://disasterscharter.org/web/guest/activations/-/article/oil-spill-in-philippines-activation-807-

Charter activations

02 MARCH 2023

Oil spill in Philippines

Browse activations on map

Type of Event:	Oil Spill
Location of Event:	Philippines
Date of Charter Activation:	2023-03-02
Time of Charter Activation:	15:56
Time zone of Charter Activation:	UTC+09:00
Charter Requestor:	ADRC on behalf of Philippine Space Agency (PhilSA)
Activation ID:	807
Project Management:	Jamaica Pangasinan
Value Adding:	Roel de la Cruz, Machele Felicen

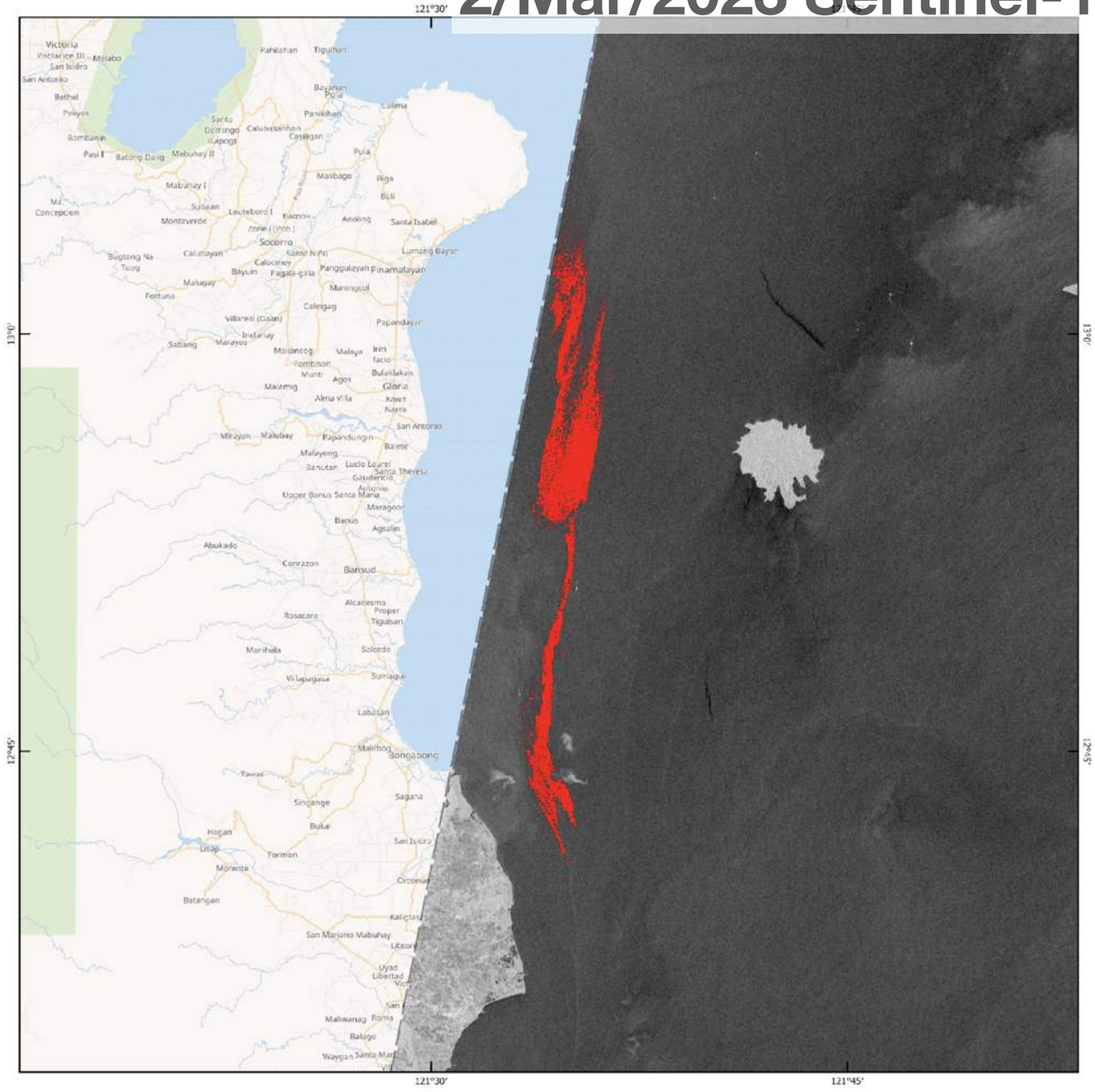
The Philippine Coast Guard reported late Tuesday afternoon, February 28 an oil spill from the oil tanker MT Princess Empress that capsized earlier in the day off the coast of Naujan, Oriental Mindoro. The spill did not involve the 800,000 liters of crude oil that the tanker was ferrying from the port of Limay in Bataan to the port of Iloilo.

Reports are saying the fuel leaked from the stricken vessel has created a 500-meter wide slick and the Department of Environment and Natural Resources (DENR) said it is also monitoring the area for any potential harm to life and livelihoods due to its distance from the shoreline.

The MT Princess Empress sailed from Bataan en route to Iloilo with 20 crew members on board, they were safely rescued and brought to shore.

The submerged vessel is continuously being monitored by officials.

2/Mar/2023 Sentinel-1



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
02 March 2023, 05:39 AM

Datum: WGS 84

0 5 10 15 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spillage extent in the coast of Oriental Mindoro as observed in satellite imagery. These depict areas that satellite analysts believe might be affected by oil spillage but are unconfirmed. The map is still subject to validation and the interpretation of remote sensing experts.

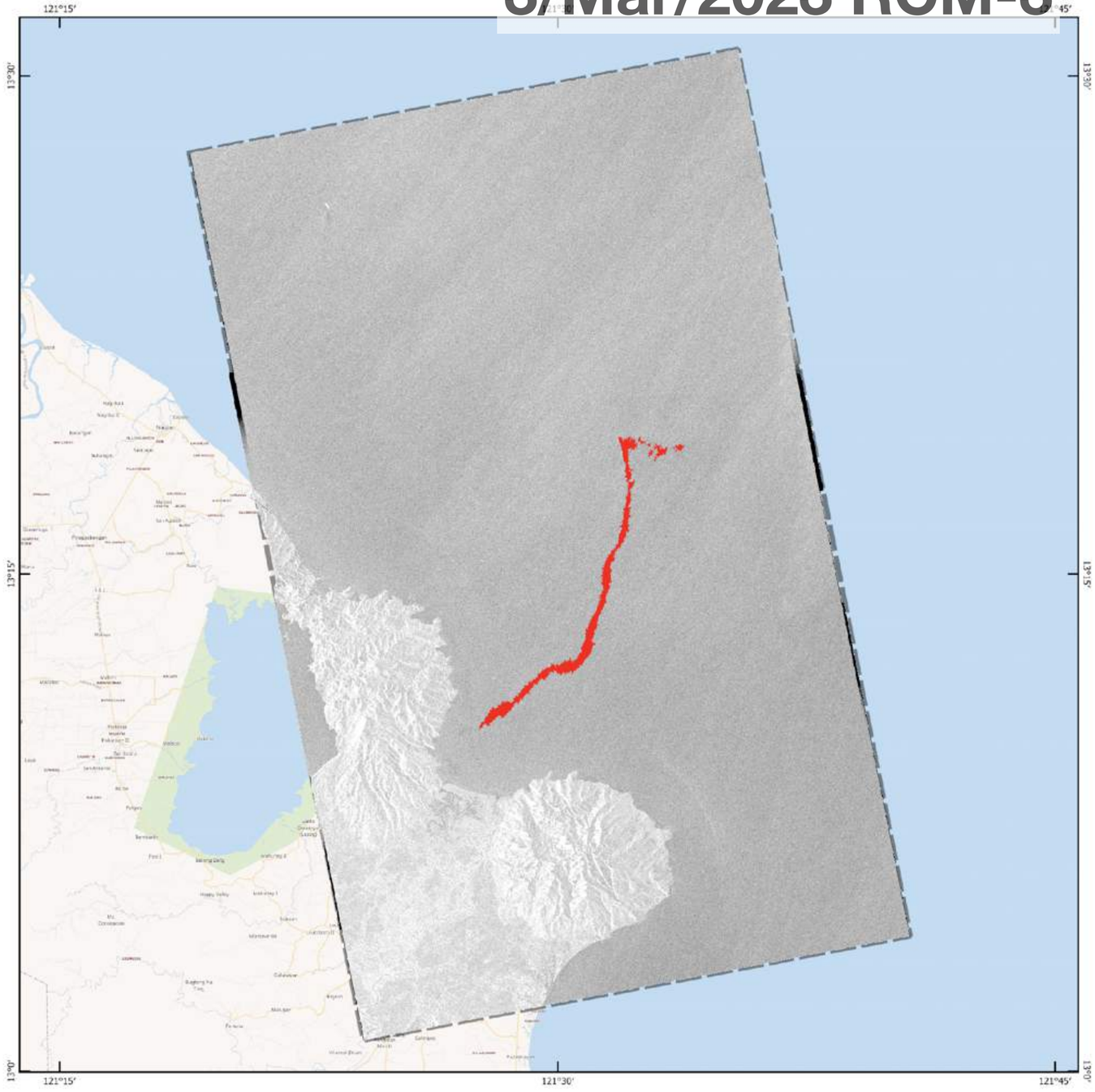
Total Area Affected (approximate): 66 square kilometers

Data Sources

Contains modified Copernicus Sentinel data [2023] captured on March 02, 2023 at approximately 05:39 AM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters. Basemaps by Wikimedia Maps.

GENERATED 03 MARCH 2023 BY PHILSA

3/Mar/2023 RCM-3



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
03 March 2023, 05:59 PM

Datum: WGS 84

0 5 10 15 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spillage extent in the coast of Oriental Mindoro as observed in satellite imagery. This map depicts areas that satellite analysts believe might be affected by oil spillage but are unconfirmed. The map is still subject to validation and the interpretation of remote sensing experts.

Total Area Affected (approximate): 8 square kilometers

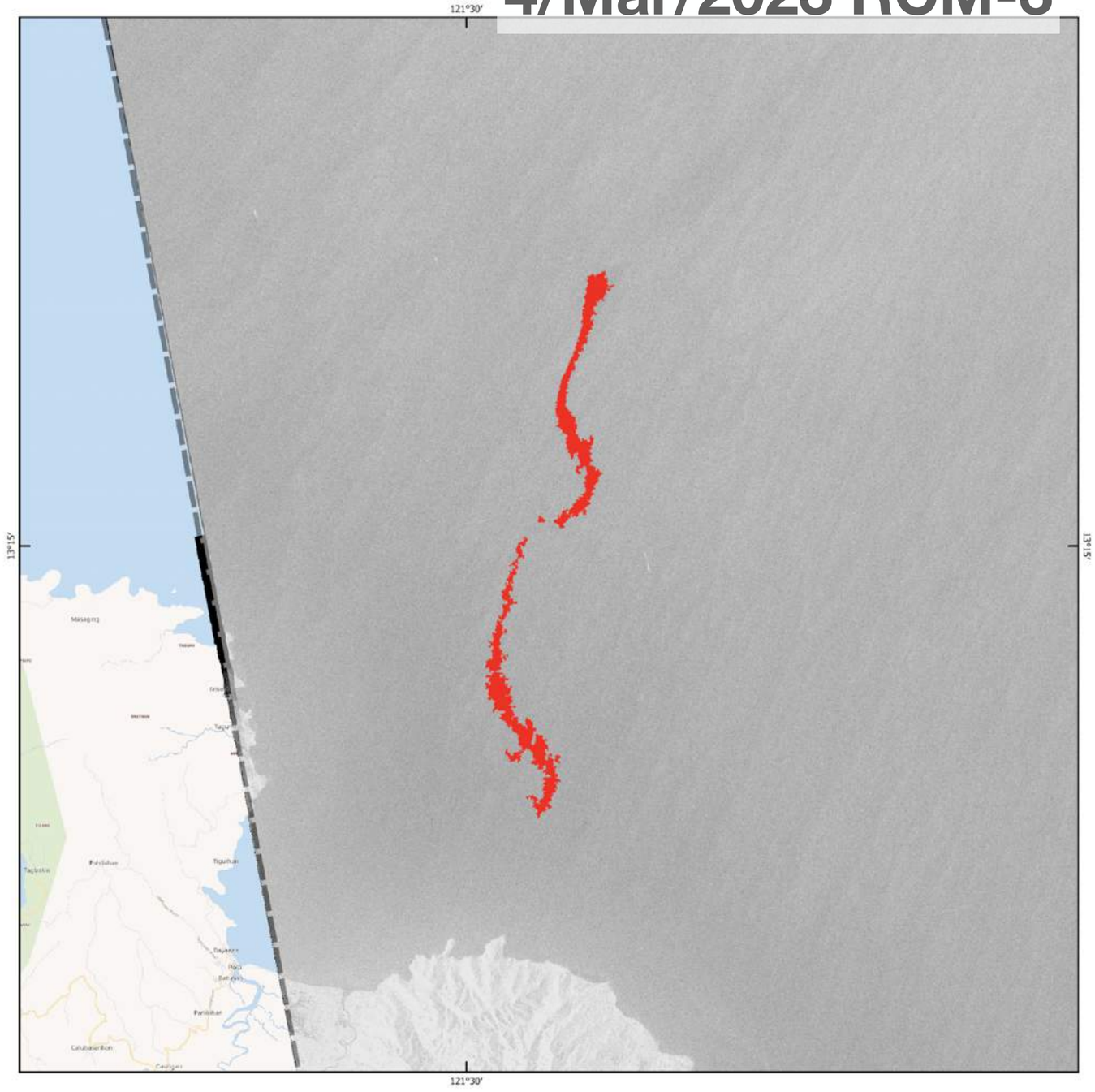
Data Sources

Copyright: RADARSAT Constellation Mission Imagery © Government of Canada (2023) - RADARSAT is an official mark of the Canadian Space Agency. RCM3 image captured on March 03, 2023 at approximately 05:59 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters. Basemaps by Wikimedia Maps.

CSA ASC

GENERATED 04 MARCH 2023 BY PHILSA

4/Mar/2023 RCM-3



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
04 March 2023, 06:07 PM

Datum: WGS 84

0 2 4 6 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from RCM3 SAR image captured on March 4, 2023.

The detected oil spill covers 5 square kilometers.

Note: Not ground validated.

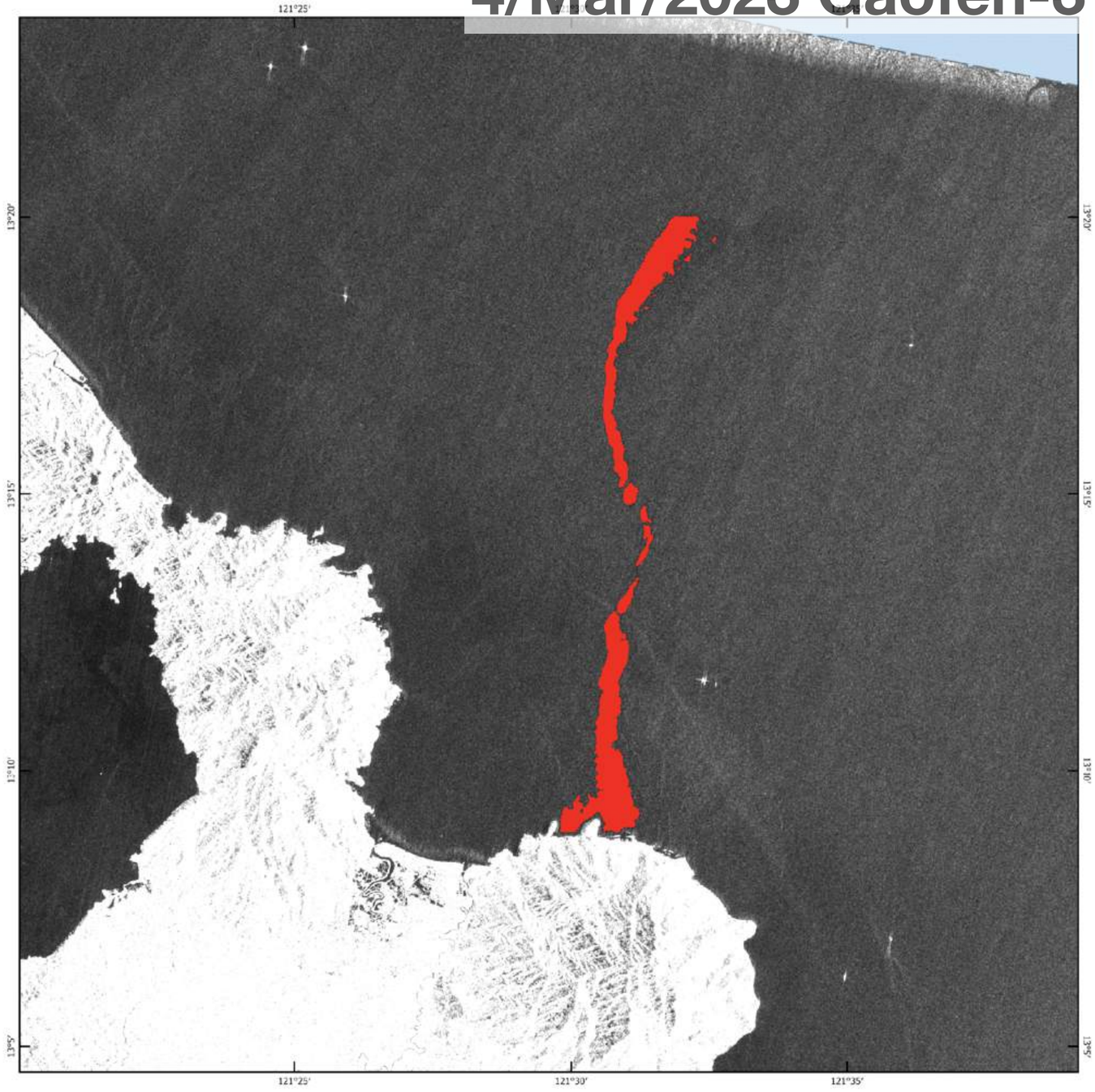
Data Sources

RCM3 SAR image captured on March 04, 2023 at approximately 06:07 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 05 MARCH 2023 BY PHILSA

4/Mar/2023 Gaofen-3



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
04 March 2023, 05:42 AM

Datum: WGS 84

0 2 4 6 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from Gaofen-3 SAR image captured on March 4, 2023.

The detected oil spill covers 13 square kilometers.

Note: Not ground validated.

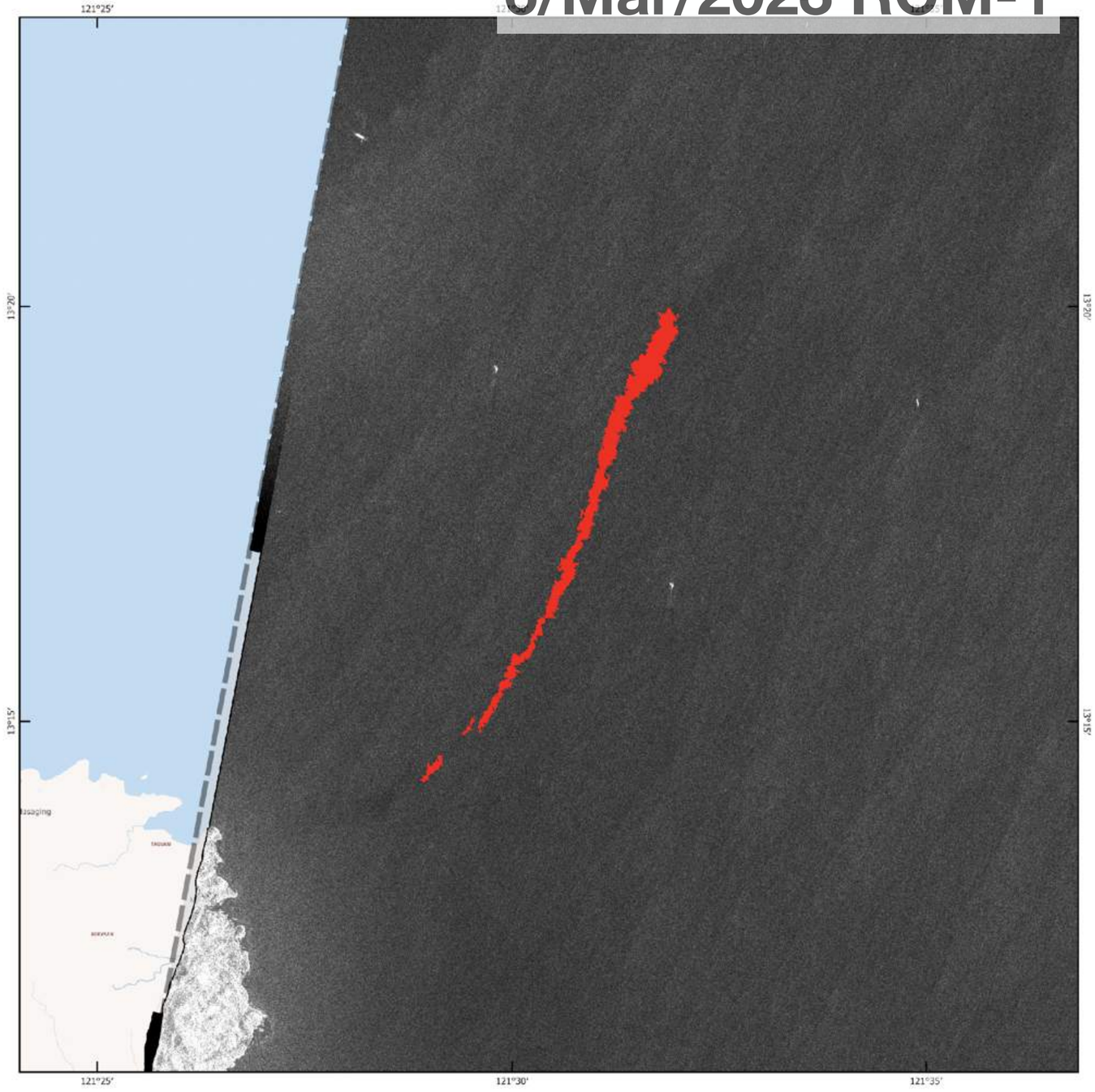
Data Sources

Gaofen-3 SAR image ©CNSA/CRESDA (2023) captured on March 04, 2023 at approximately 05:42 AM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 08 MARCH 2023 BY PHILSA

6/Mar/2023 RCM-1



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
06 March 2023, 05:40 AM

Datum: WGS 84

0 2 4 6 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from RCM-1 SAR image captured on March 6, 2023.

The detected oil spill covers 3 square kilometers.

Note: Not ground validated.

Data Sources

RCM-1 SAR image captured on March 06, 2023 at approximately 05:40 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 06 MARCH 2023 BY PHILSA

6/Mar/2023 Sentinel-1

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/7/2023 0712 (UTC)

IMAGE DATE/TIME: 3/6/2023 2147 (UTC)
DATA SOURCE: SENTINEL1A
MODE: Interferometric Wide (IW) VV
RESOLUTION: 5X20 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source: [13°19'11" N/121°31'36" E]

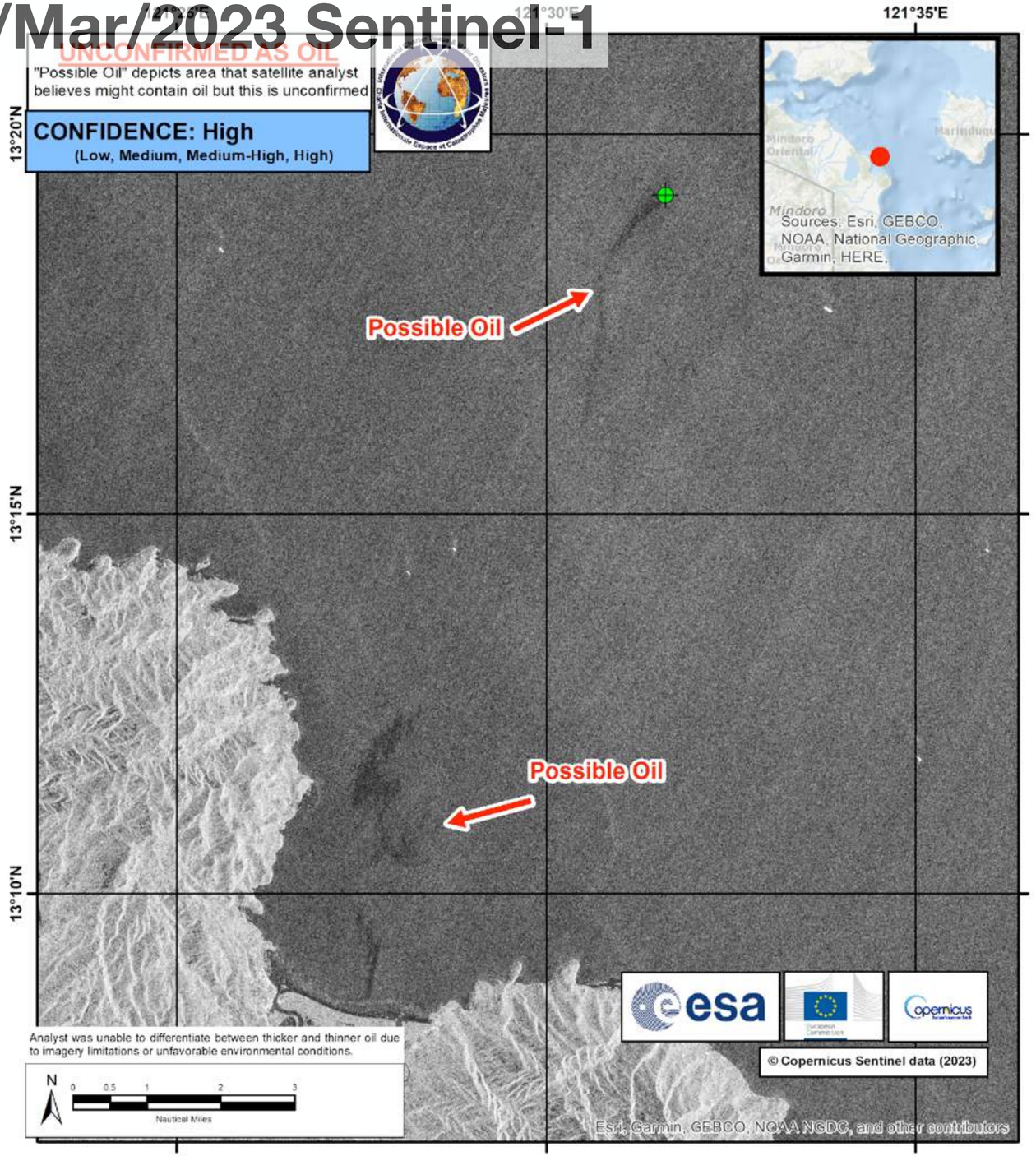
4.99 km² Total Area of Possible Oil

AREA/BLOCK: N/A

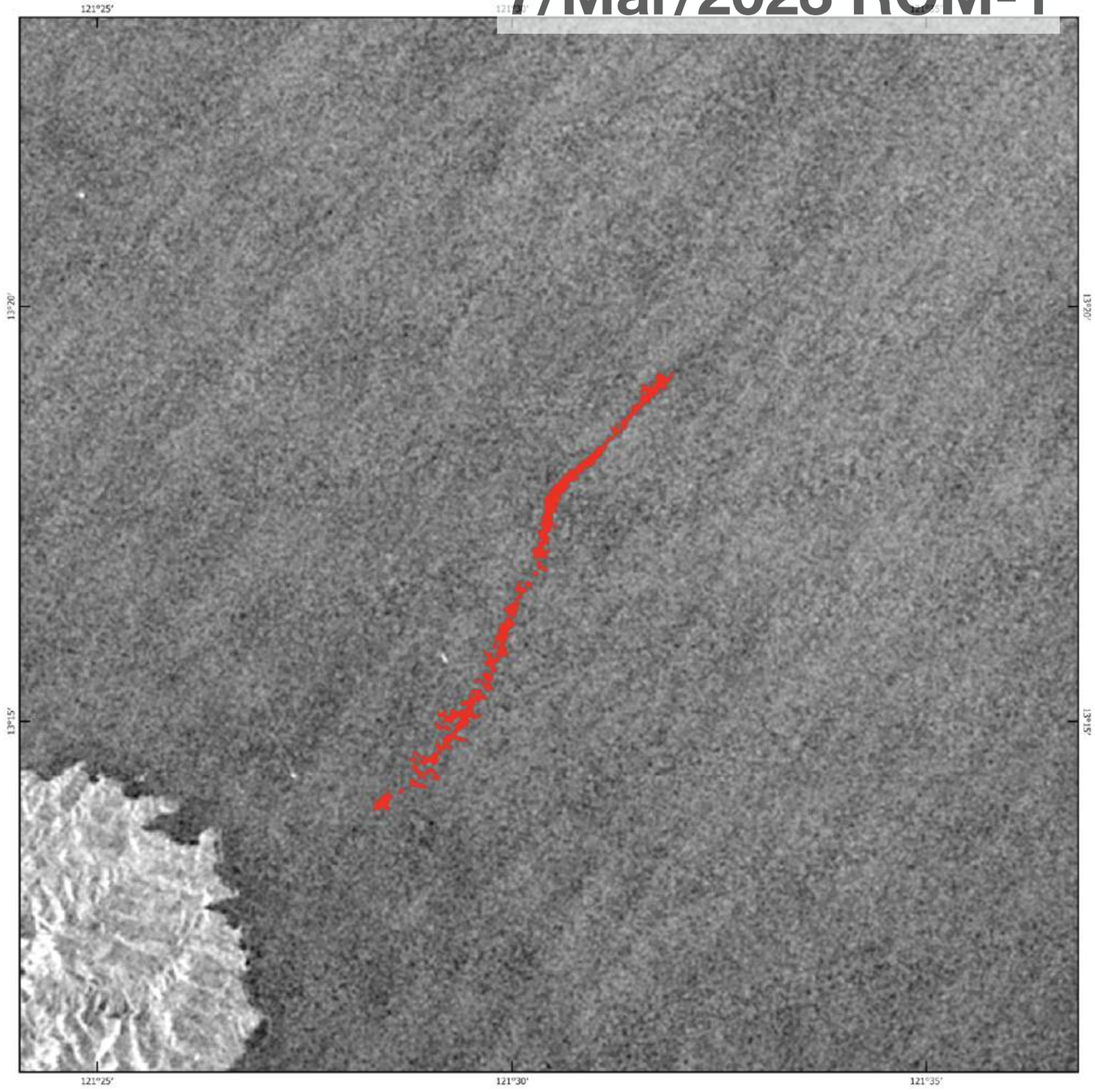
REMARKS: Possible, unconfirmed oil was observed in satellite imagery. A linear anomaly was observed 8.6 nautical miles Northwest of Pola, Mindoro Island, the Philippines. Spanning a length of 3.5 nautical miles and a rough width of 0.07 nautical miles, the potential slick was seen emanating near the location where the MT Princess Empress had recently sank on February 28th, 2023.The potential slick had strong contrast with the surrounding water and portrayed additional traits such as feathering (characteristics of oil dispersal over water) . Winds at the time are not available. Confidence for this area is High.

A potential second oil slick was observed less than 1 nautical mile off the immediate coast. The previous report from March 3rd showed the slick extending roughly 9 nautical miles from the MT Princess Empress to Pola's coastline. It is possible that this second area is a segment of the original slick that broke off and is now settled within the bay area. Confidence for this oil area is Medium.

UNCERTAINTIES: None



7/Mar/2023 RCM-1



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
07 March 2023, 05:59 PM

Datum: WGS 84

0 2 4 6 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from RCM-1 SAR image captured on March 7, 2023.

The detected oil spill covers 2 square kilometers.

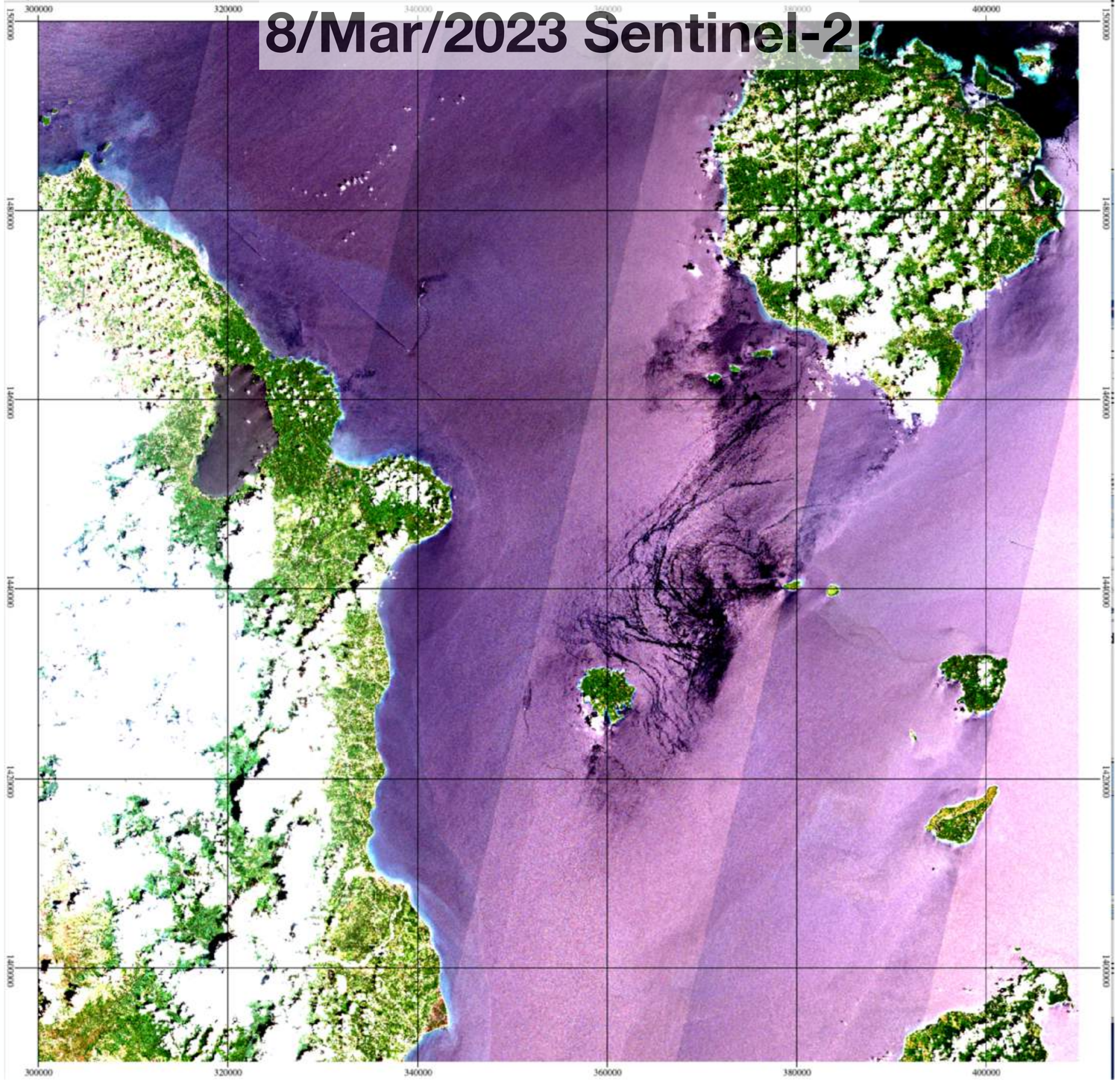
Note: Not ground validated.

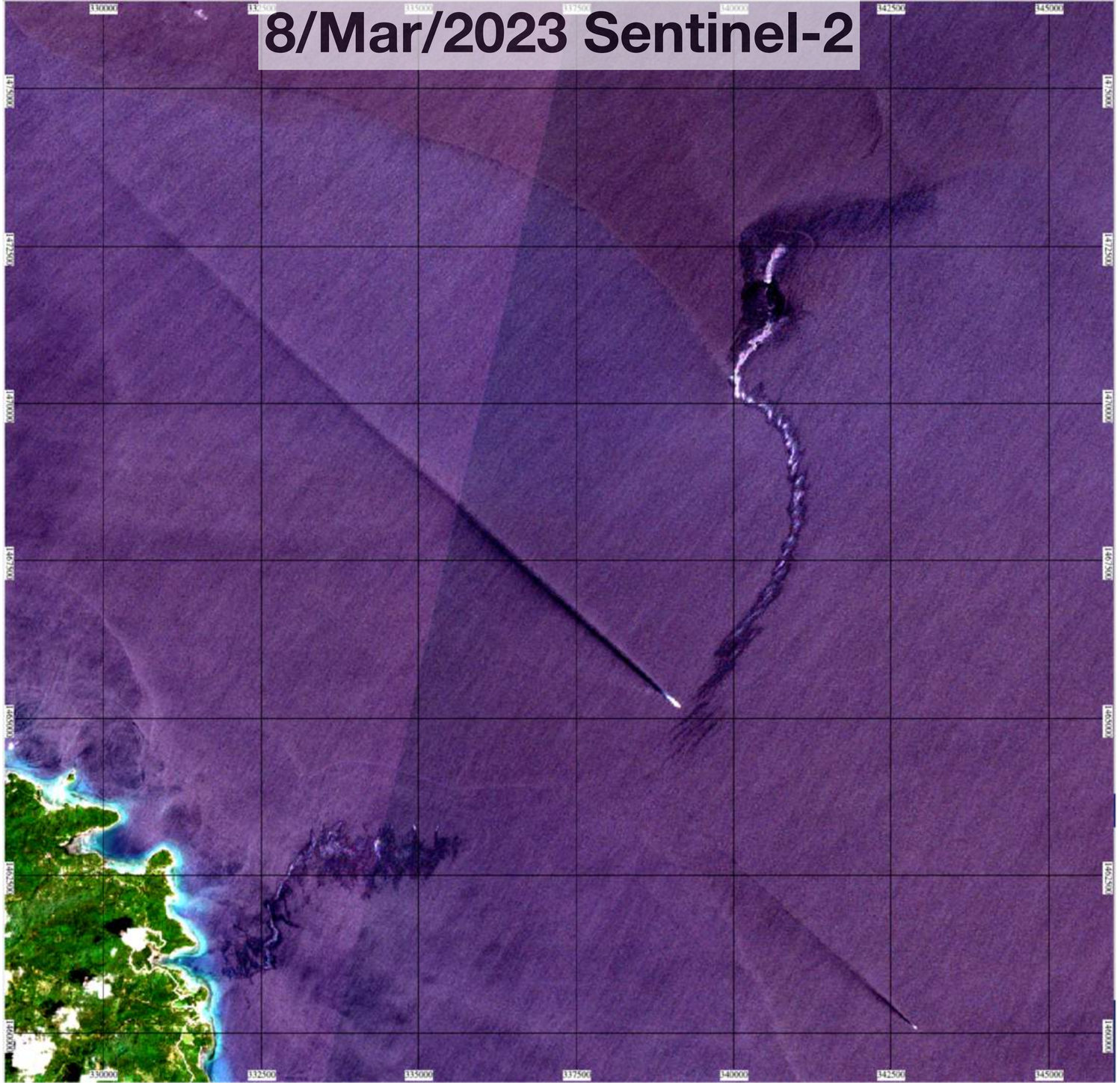
Data Sources

RCM-1 SAR image captured on March 07, 2023 at approximately 05:59 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 10 MARCH 2023 BY PHILSA


8/Mar/2023 Sentinel-2
300000
320000
340000
360000
380000
400000
1500000
1480000
1460000
1440000
1420000
1400000


8/Mar/2023 Sentinel-2

8/Mar/2023 Sentinel-2

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/8/2023 1500 (UTC)

IMAGE DATE/TIME: 3/8/2023 0215 (UTC)
DATA SOURCE: SENTINEL2B
MODE: Multispectral
RESOLUTION: 10 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source: [13°18'58" N/121°31'48" E]

8.78 km² Total Area of Possible Oil

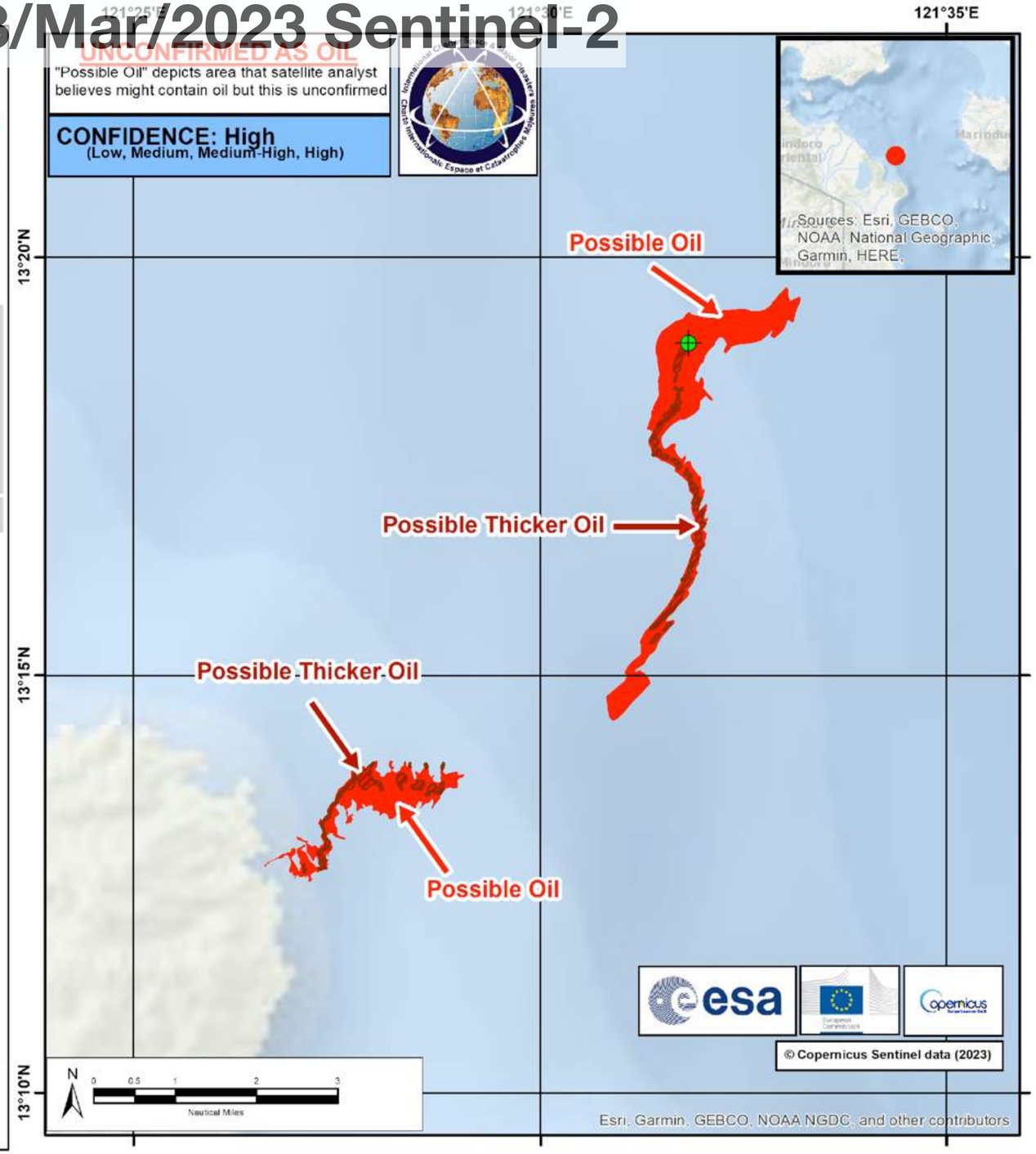
AREA/BLOCK: N/A

REMARKS: Possible, unconfirmed oil was observed in satellite imagery. The segmented anomalies were believed to be emanating near the location where the MT Princess Empress had recently sank on February 28th. The most southern segmented oil slick was observed less than 0.31 nautical mile off the immediate coast. It is believed that this slick was a segment of the original slick that broke off and has now settled within the bay area. They were located approximately 6.75 nm NE from Pola, Mindoro Island, the Philippines. As a whole, the anomalies spanned roughly a length of 10.96 nm and 1.86 nm at its widest. The potential slicks had strong contrast with the surrounding water and exhibited relatively thicker oil (white colored portions). Winds near the time of the image were coming from the NE at 10 kts which aligned well with the orientation of the slick.

UNCERTAINTIES: It was difficult to determine if the slick had actually reached the coast since the bay results in higher chance of false positives.

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)



9/Mar/2023 TERRA - MODIS

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/9/2023 2043 (UTC)

IMAGE DATE/TIME: 3/9/2023 0222 (UTC)
DATA SOURCE: TERRA MODIS
MODE: Multispectral
RESOLUTION: 250 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source:
[13°18'54" N/121°31'53" E]

46.43 km² Total Area of Possible Oil

AREA/BLOCK: N/A

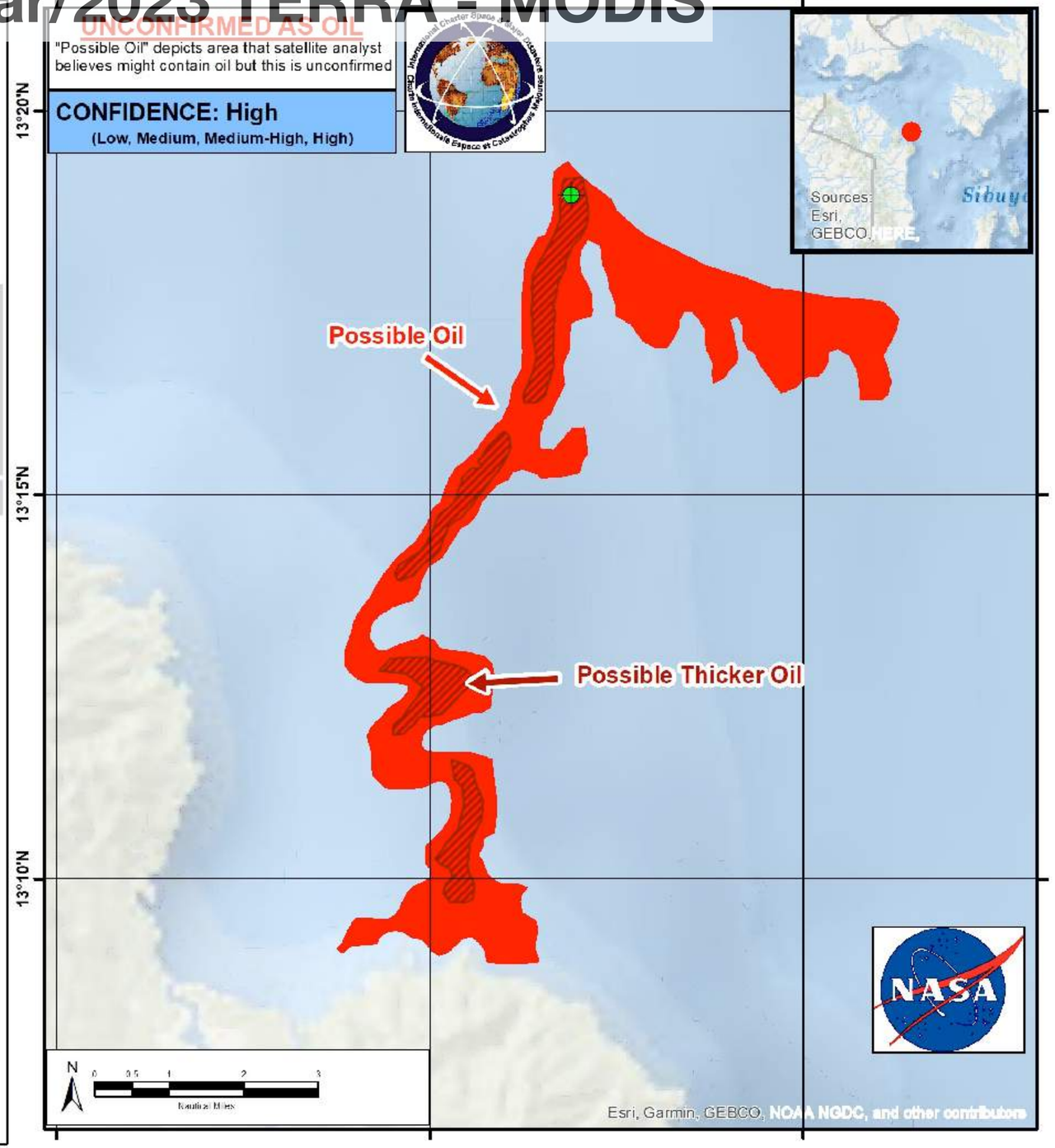
REMARKS: Possible, unconfirmed oil was observed in satellite imagery. An anomaly was observed starting 11.65 nautical miles Northeast of Pola (Mindoro Island, the Philippines) and stretched a rough length of 12.2 nautical miles South to the immediate shore. The potential slick had strong contrast with the surrounding water and had metallic sheens which indicated segments of thicker oil. Winds at the time were blowing in a Southeastern direction at 8 knots. The Confidence for this report is High.

UNCERTAINTIES: None

UNCONFIRMED AS OIL

"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)



11/Mar/2023 ICEYE

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/11/2023 1500 (UTC)

IMAGE DATE/TIME: 3/11/2023 0621 (UTC)
DATA SOURCE: ICEYE
MODE: SCAN VV
RESOLUTION: 15 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source: [13°19'03" N/121°31'50" E]

8.12 km² Total Area of Possible Oil

AREA/BLOCK: N/A

REMARKS: Possible, unconfirmed oil was observed in satellite imagery. The segmented anomalies were believed to be emanating near the location where the MT Princess Empress had recently sank on February 28th near Pola, Mindoro Island, the Philippines. It is believed that the smaller slick was a segment of the original slick that broke off and has now settled within the immediate coast of the bay area. The larger slick was approximately 8.12 nm in length and 0.98 nm at its widest. The potential slicks had strong contrast with the surrounding water. Winds near the time of the image were coming from the NE at 11 kts which aligned well with the orientation of the slick.

UNCERTAINTIES: None

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)

12/Mar/2023 ICEYE

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/12/2023 1948 (UTC)

IMAGE DATE/TIME: 3/12/2023 1310 (UTC)
DATA SOURCE: ICEYE
MODE: SCAN VV
RESOLUTION: 15 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source: [13°19'02" N/121°31'51" E]

7.11 km² Total Area of Possible Oil

AREA/BLOCK: N/A

REMARKS: Possible, unconfirmed oil was observed in satellite imagery. The segmented anomalies were believed to be emanating near the location where the MT Princess Empress had recently sank on February 28th. The largest oil segment, spanning a length of 7.69 nautical miles, was observed 5.76 nautical miles Northwest of Pola, Mindoro Island, the Philippines. A suspected secondary oil slick was observed on the immediate shores of Pola. It is believed that this slick was a segment of the original slick that broke off and has now settled within the bay area. The slicks had strong contrast with the surrounding water and demonstrated signs of feathering (an attribute of oil dispersal over water). Winds at the time were blowing in a Southwesterly direction at 9 knots. The confidence for this report is High.

UNCERTAINTIES: None

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)

12/Mar/2023 WORLDVIEW-3

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/14/2023 1630 (UTC)

IMAGE DATE/TIME: 3/12/2023 0223 (UTC)
DATA SOURCE: WORLDVIEW3
MODE: Multispectral
RESOLUTION: 1.24 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source:
[13°19'02" N/121°31'49" E]

1.12 km² Total Area of Possible Oil

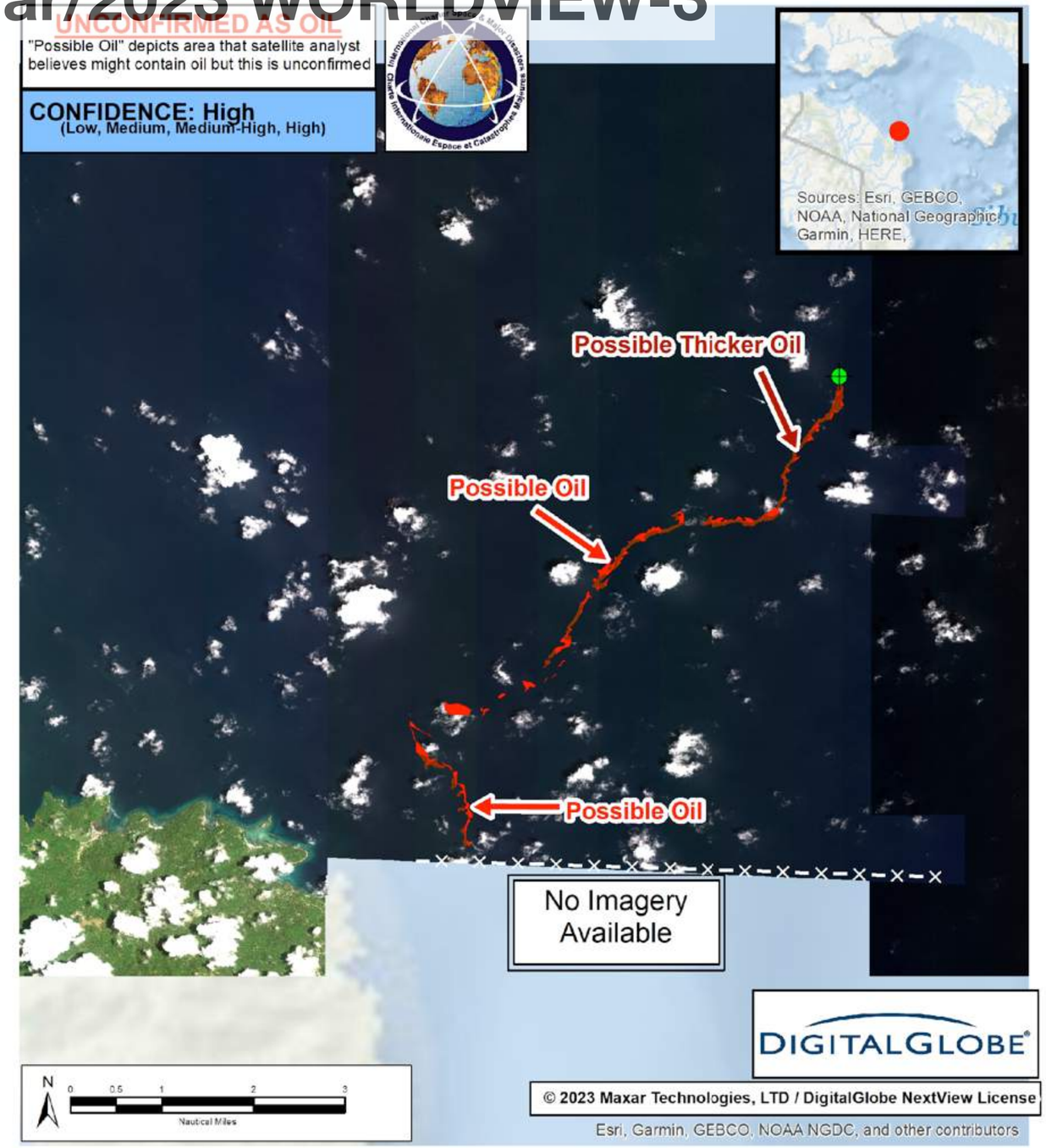
AREA/BLOCK: N/A

REMARKS: Possible, unconfirmed oil was observed in satellite imagery. Numerous surface anomalies believed to be oil slicks were detected, meandering just to the southwest of the suspected location of the sunken Princess Empress wreck. The anomalies were about 8nm in length. They consisted of areas of sheening as well as patches of brown thicker and emulsified oil. The wind at the time was from NE at 10-15kt at the time the image was taken, which aligned well with the anomaly orientation relative to the suspected source. A separate MPSR based on a WV pass just south of this imagery was issued earlier, which depicted the oil anomaly in the south and closer to the shoreline.

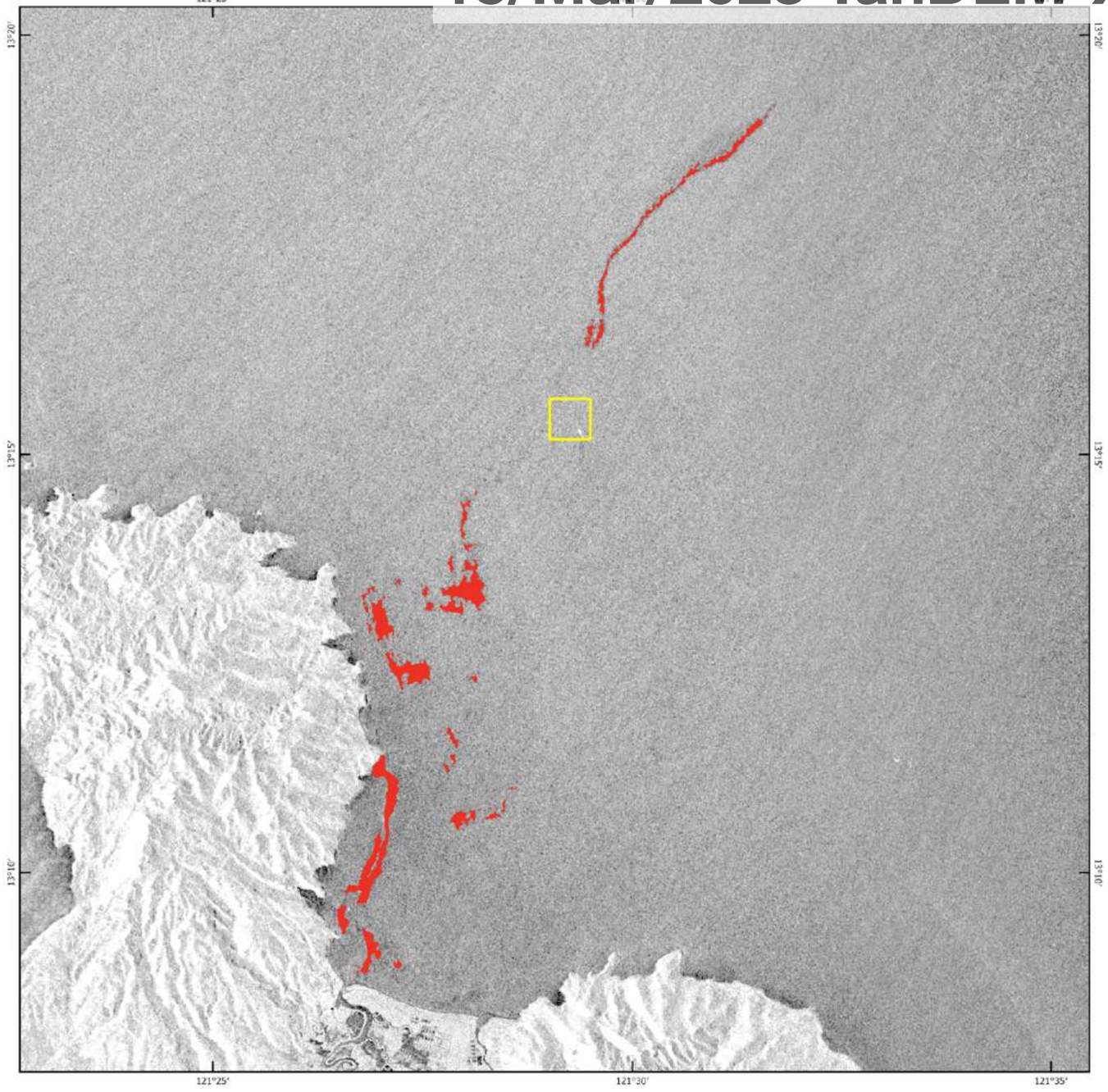
UNCERTAINTIES: There were small scattered clouds present, so oil slick drawn around the cloud was a approximation.

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)



15/Mar/2023 TanDEM-X



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
15 March 2023, 05:58 PM

Datum: WGS 84

0 2 4 6 km

N

Legend

- Possible Oil Spill
- Data Coverage
- Ships

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from TanDEM-X SAR image captured on March 15, 2023.

The detected oil spill covers approx. 3 square kilometers.

A ship can be seen near the oil spill areas.

Note: Not ground validated.

Data Sources

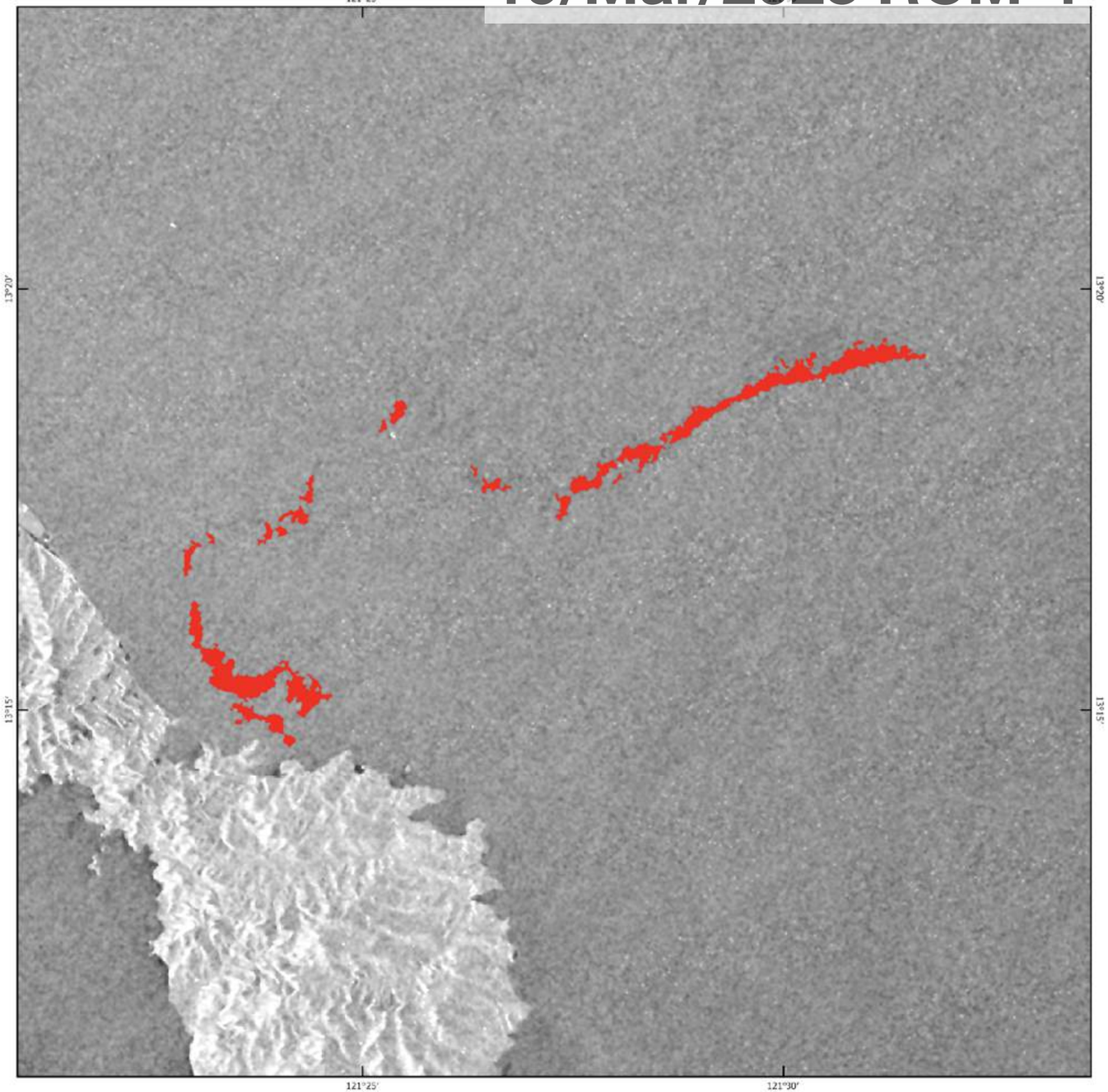
TanDEM-X SAR image captured on March 15, 2023 at approximately 05:58 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

DLR

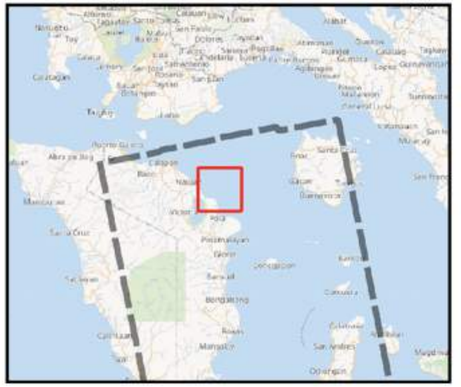
GENERATED 16 MARCH 2023 BY PHILSA

19/Mar/2023 RCM-1



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
19 March 2023, 05:59 PM



Datum: WGS 84

0 2 4 6 km

N

Legend

Possible Oil Spill
Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from RCM-1 SAR image captured on March 19, 2023.

The detected oil spill covers approx. 5 square kilometers.

Note: Not ground validated.

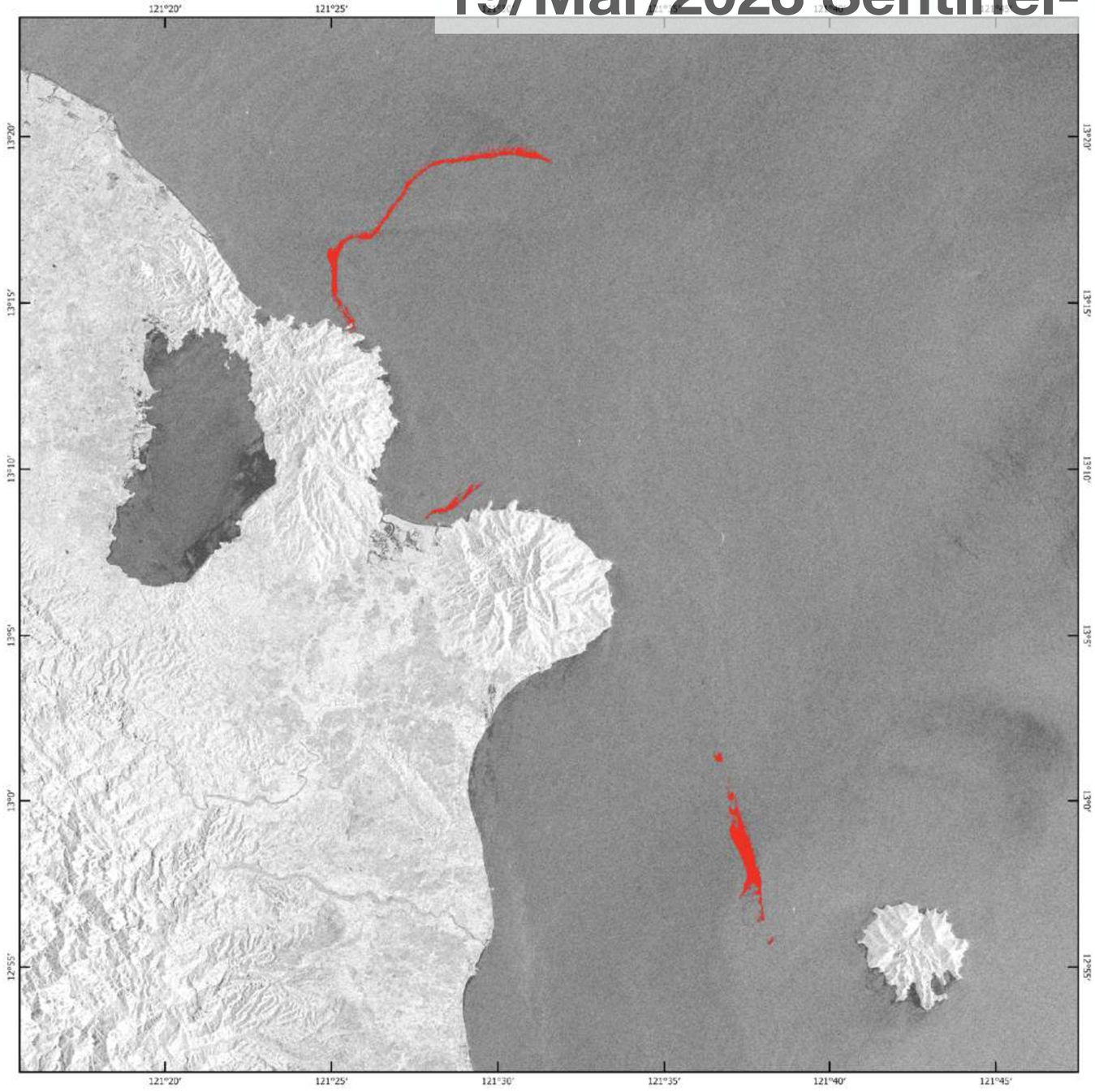
Data Sources

RCM-1 SAR image captured on March 19, 2023 at approximately 05:59 PM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 20 MARCH 2023 BY PHILSA

19/Mar/2023 Sentinel-1



Marine Pollution
Due to Oil Spillage

Oriental Mindoro, Philippines
19 March 2023, 05:47 AM

Datum: WGS 84

0 5 10 15 km

N

Legend

Possible Oil Spill

Data Coverage

Map Information

This map shows possible oil spill extent in the coast of Oriental Mindoro as observed from Sentinel-1 SAR image captured on March 19, 2023.

The detected oil spill covers approx. 9 square kilometers.

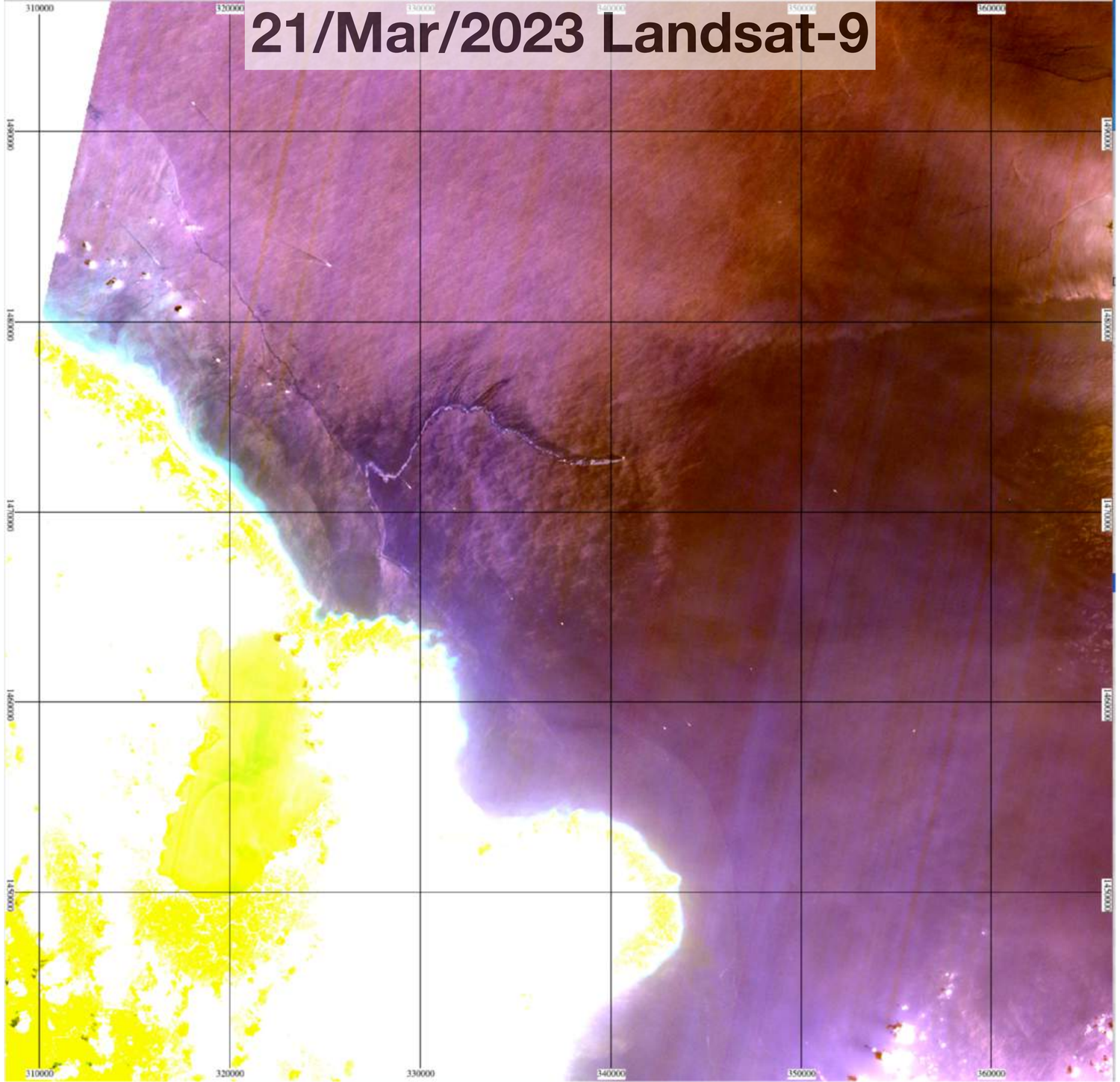
Note: Not ground validated.

Data Sources

Contains modified Copernicus Sentinel data [2023] captured on March 19, 2023 at approximately 05:47 AM Philippine Standard Time, retrieved from the International Charter Space and Major Disasters.

Basemaps by Wikimedia Maps.

GENERATED 20 MARCH 2023 BY PHILSA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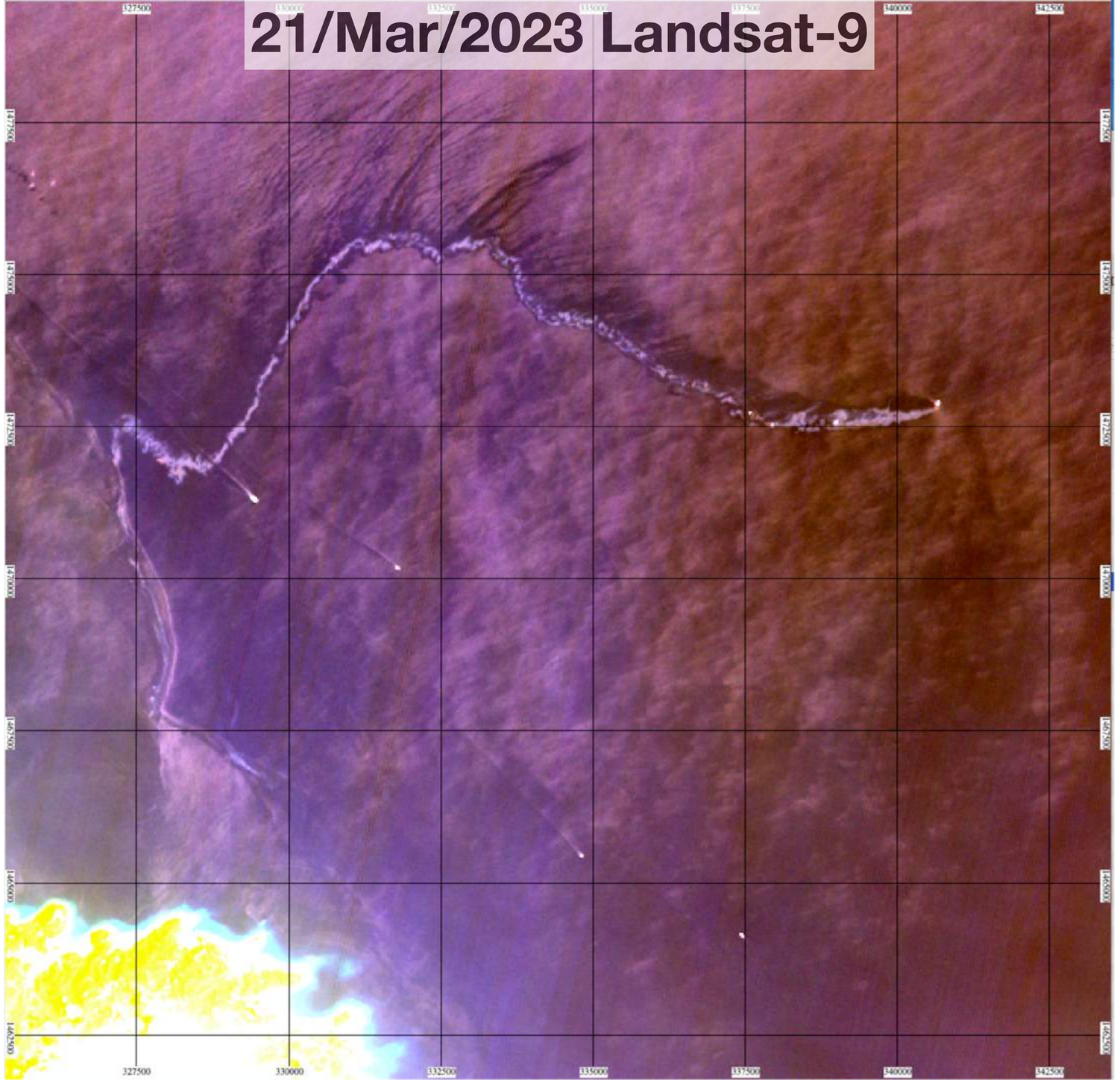
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1462500

21/Mar/2023 Landsat-9

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/21/2023 2255 (UTC)

IMAGE DATE/TIME: 3/21/2023 0211 (UTC)
DATA SOURCE: LANDSAT9 OLI
MODE: Multispectral
RESOLUTION: 30 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source:
[13°19'03" N/121°31'47" E]

37.84 km² Total Area of Possible Oil

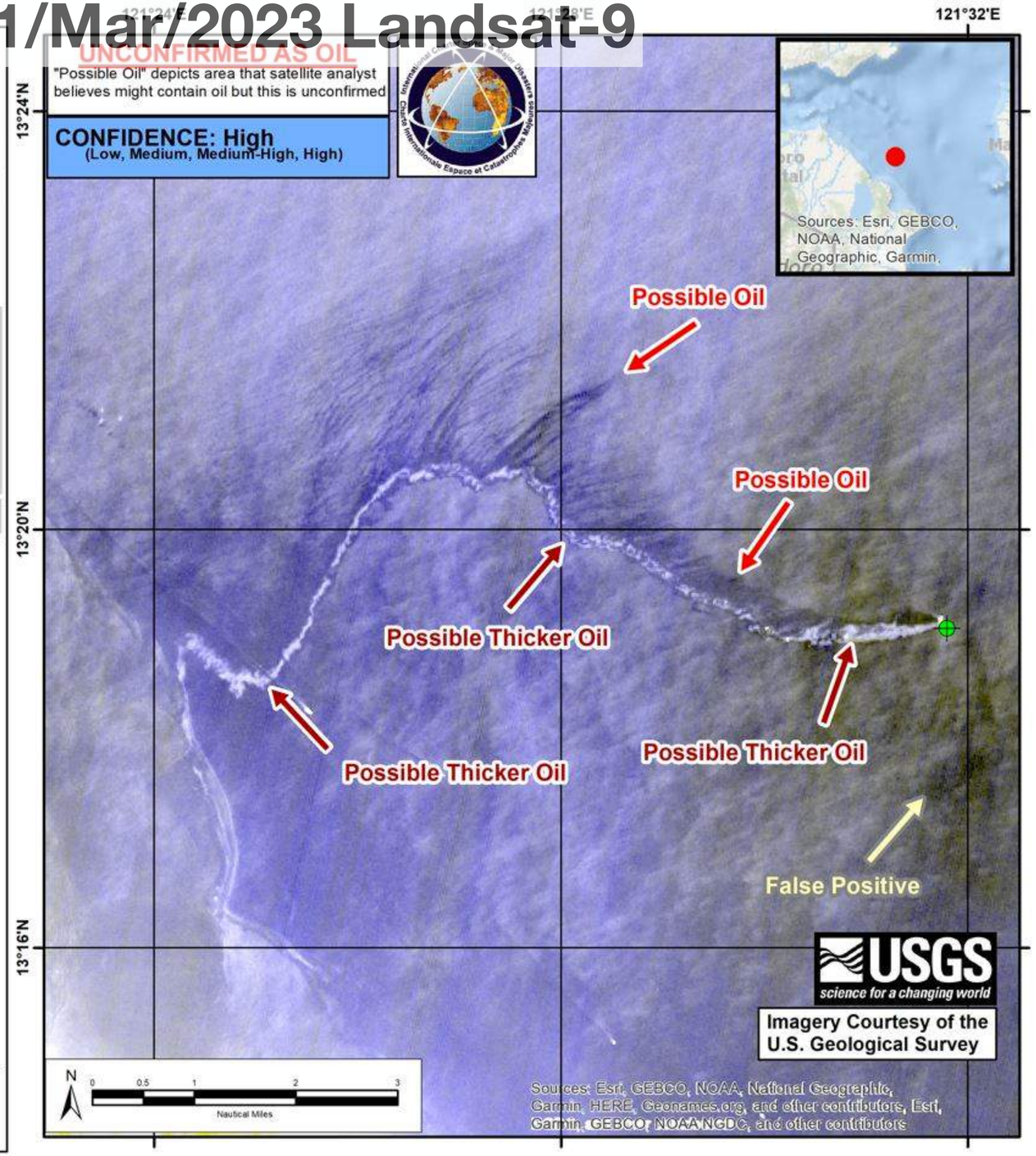
AREA/BLOCK: N/A

REMARKS: Possible, unconfirmed oil was observed in satellite imagery. The slick emanated from the sunken tanker, M/T Princess Empress off the NE coast of Mindoro Island in the Philippines. The slick was approximately 13.1nm in length, and 0.23nm at the widest point. There were several areas of brighter returns which are indications of possible thicker oil. Winds were out of the northeast at 5kts which aligned well with the feathering of the slick and the movement of the slick.

UNCERTAINTIES: The area of feathering could not be definitively defined. False positives were south and east of the sunken vessel location.

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)



21/Mar/2023 Landsat-9

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/21/2023 2255 (UTC)

IMAGE DATE/TIME: 3/21/2023 0211 (UTC)
DATA SOURCE: LANDSAT9 OLI
MODE: Multispectral
RESOLUTION: 30 meter

Possible Oil

Possible Thicker Oil

Suspected Point Source:
[13°19'03" N/121°31'47" E]

37.84 km² Total Area of Possible Oil

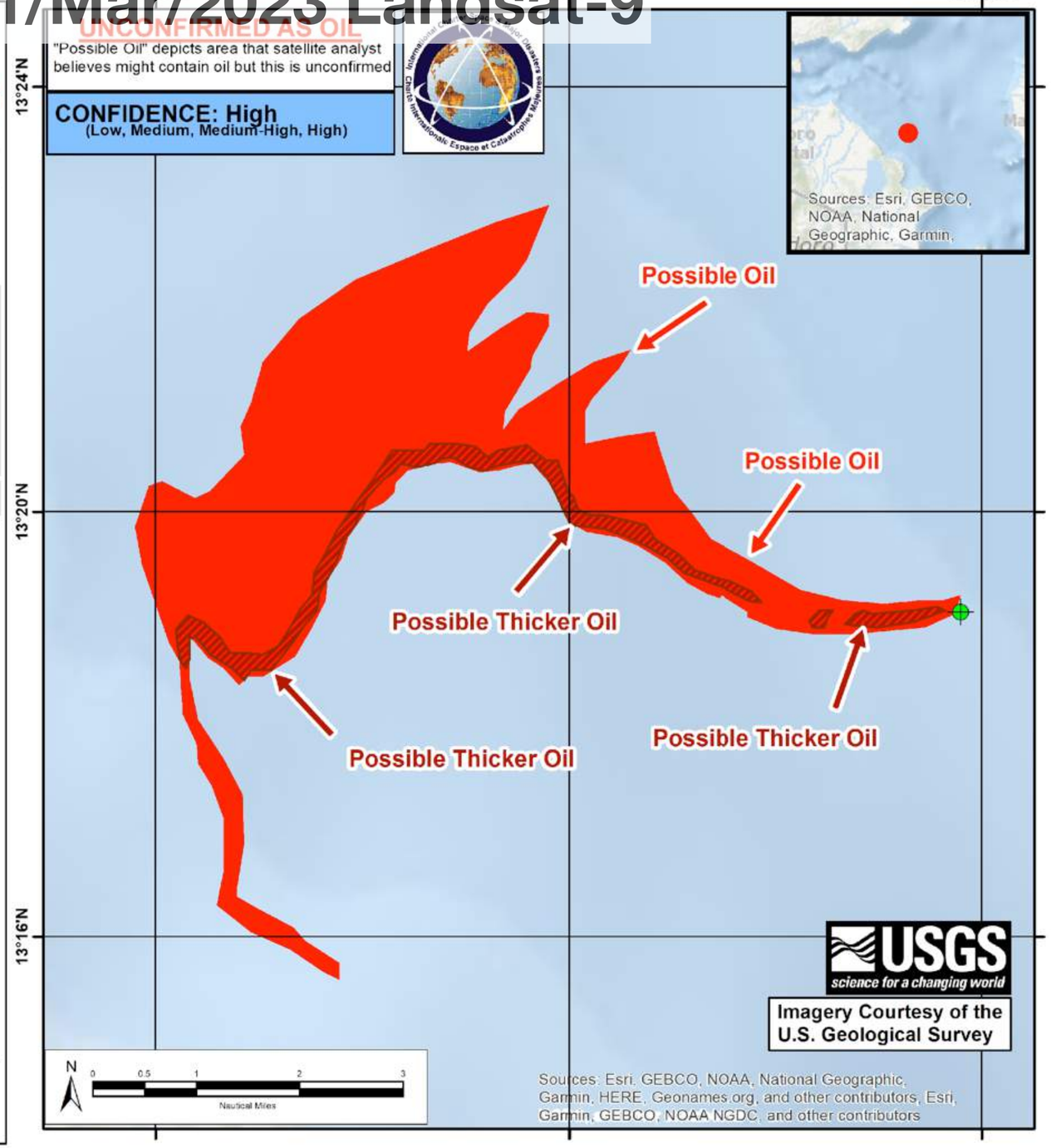
AREA/BLOCK: N/A

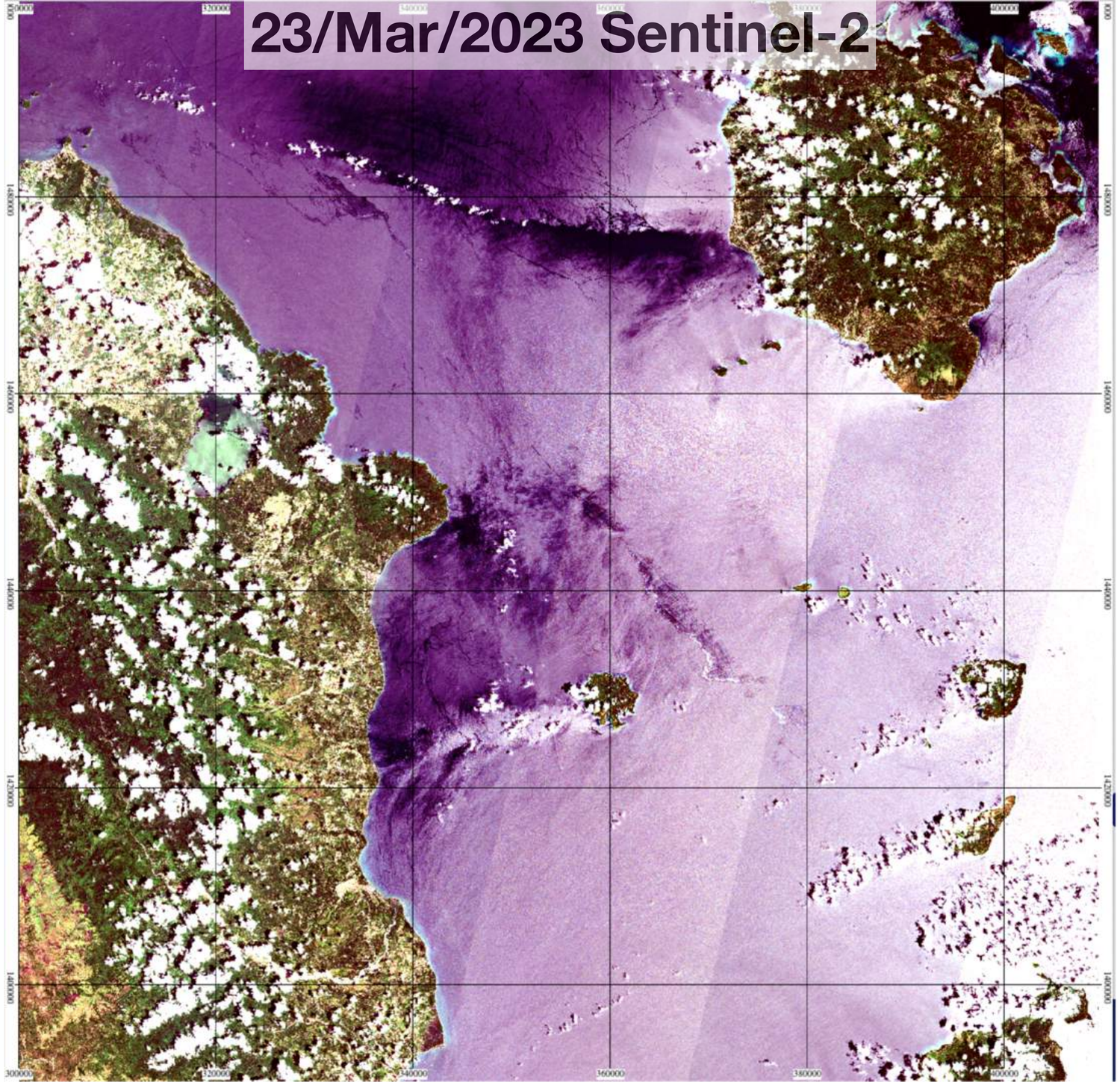
REMARKS: Possible, unconfirmed oil was observed in satellite imagery. The slick emanated from the sunken tanker, M/T Princess Empress off the NE coast of Mindoro Island in the Philippines. The slick was approximately 13.1nm in length, and 0.23nm at the widest point. There were several areas of brighter returns which are indications of possible thicker oil. Winds were out of the northeast at 5kts which aligned well with the feathering of the slick and the movement of the slick.

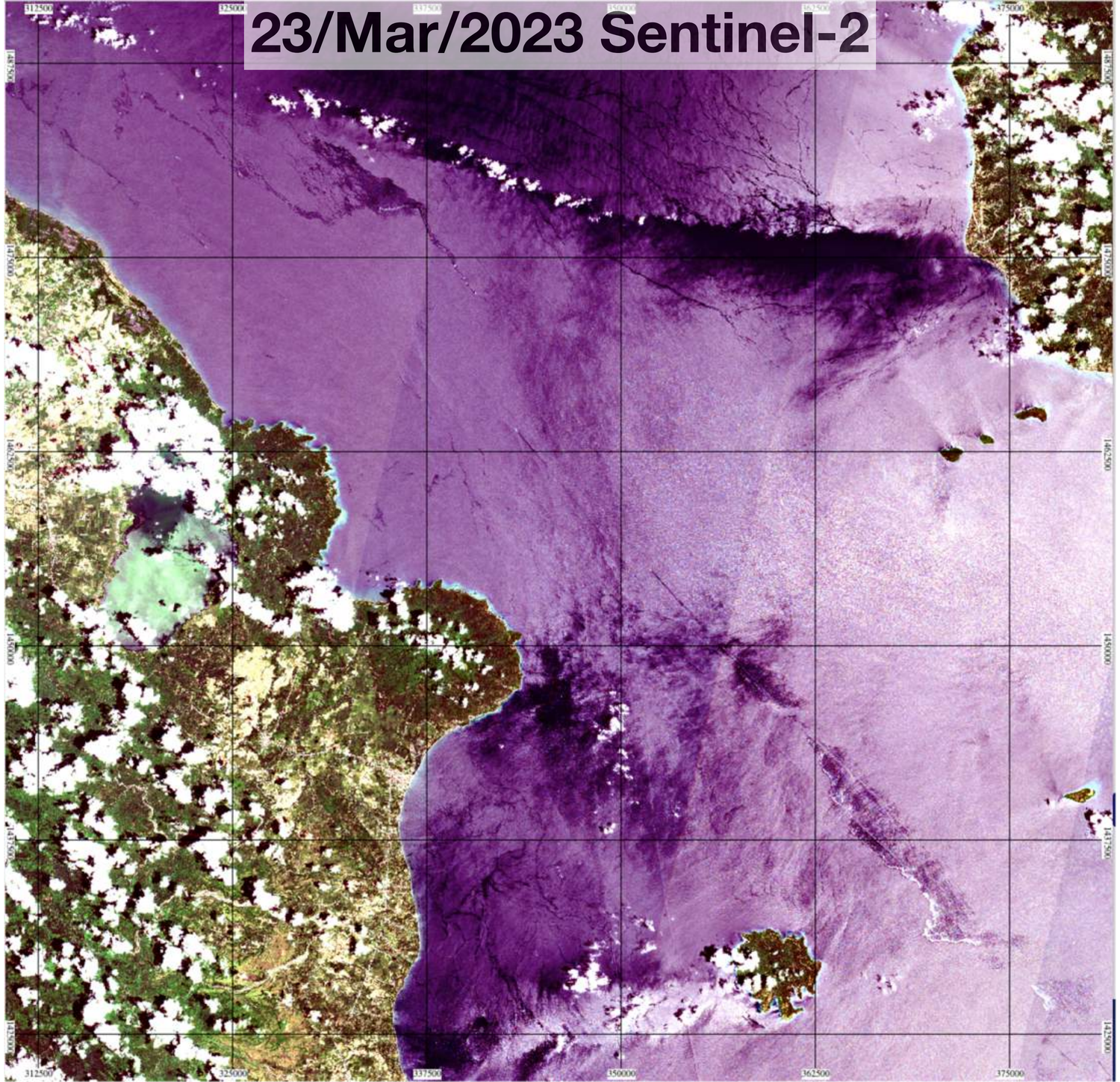
UNCERTAINTIES: The area of feathering could not be definitively defined. False positives were south and east of the sunken vessel location.

UNCONFIRMED AS OIL
"Possible Oil" depicts area that satellite analyst believes might contain oil but this is unconfirmed

CONFIDENCE: High
(Low, Medium, Medium-High, High)




23/Mar/2023 Sentinel-2


23/Mar/2023 Sentinel-2
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23/Mar/2023 Sentinel-2

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by: The National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)

REPORT DATE/TIME: 3/23/2023 1430 (UTC)

IMAGE DATE/TIME: 3/23/2023 0215 (UTC)
DATA SOURCE: SENTINEL2A
MODE: Multispectral
RESOLUTION: 10 meter

Possible Oil

Possible Thicker Oil

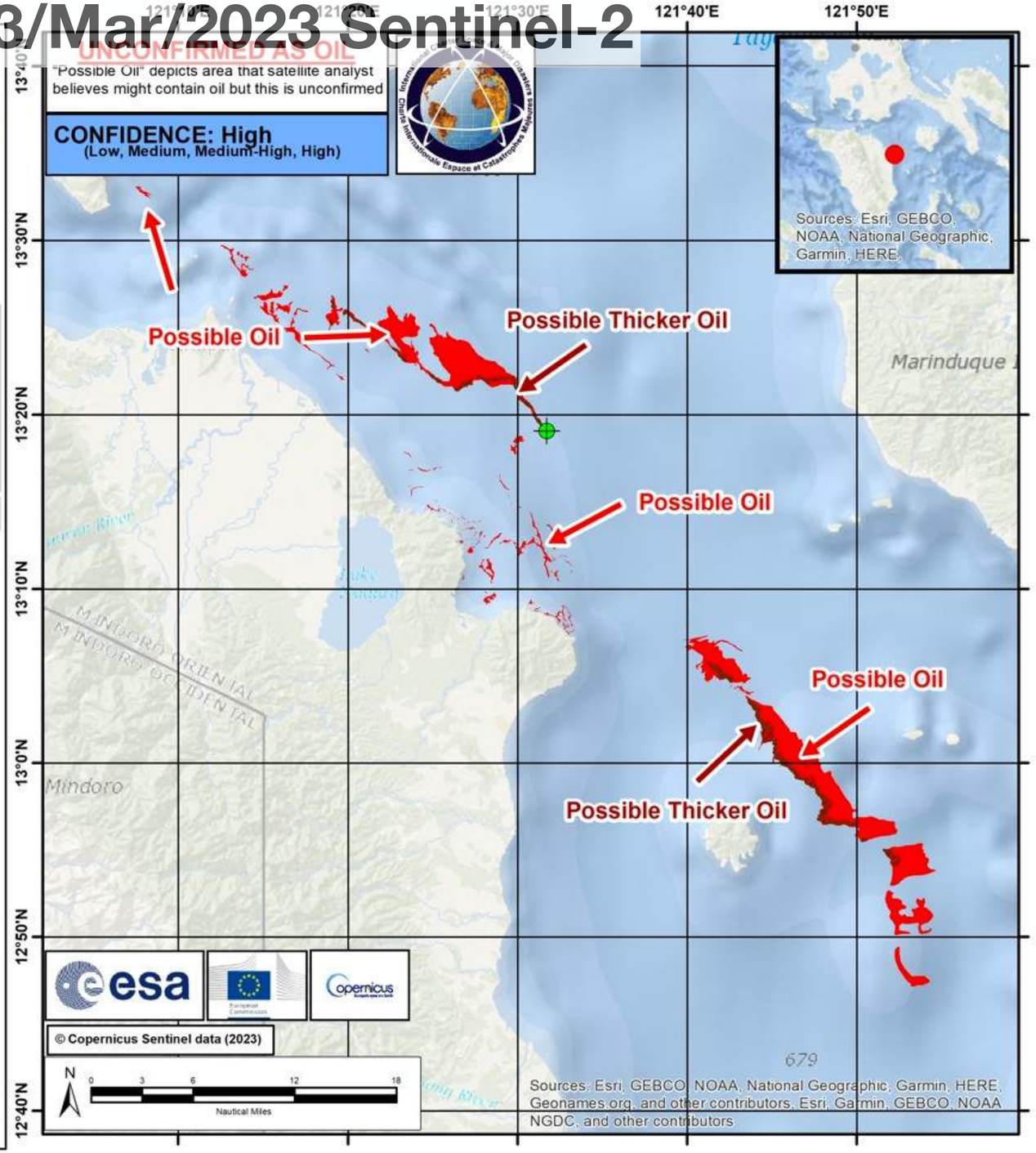
Suspected Point Source: [13°19'02" N/121°31'44" E]

162.60 km² Total Area of Possible Oil

AREA/BLOCK: N/A

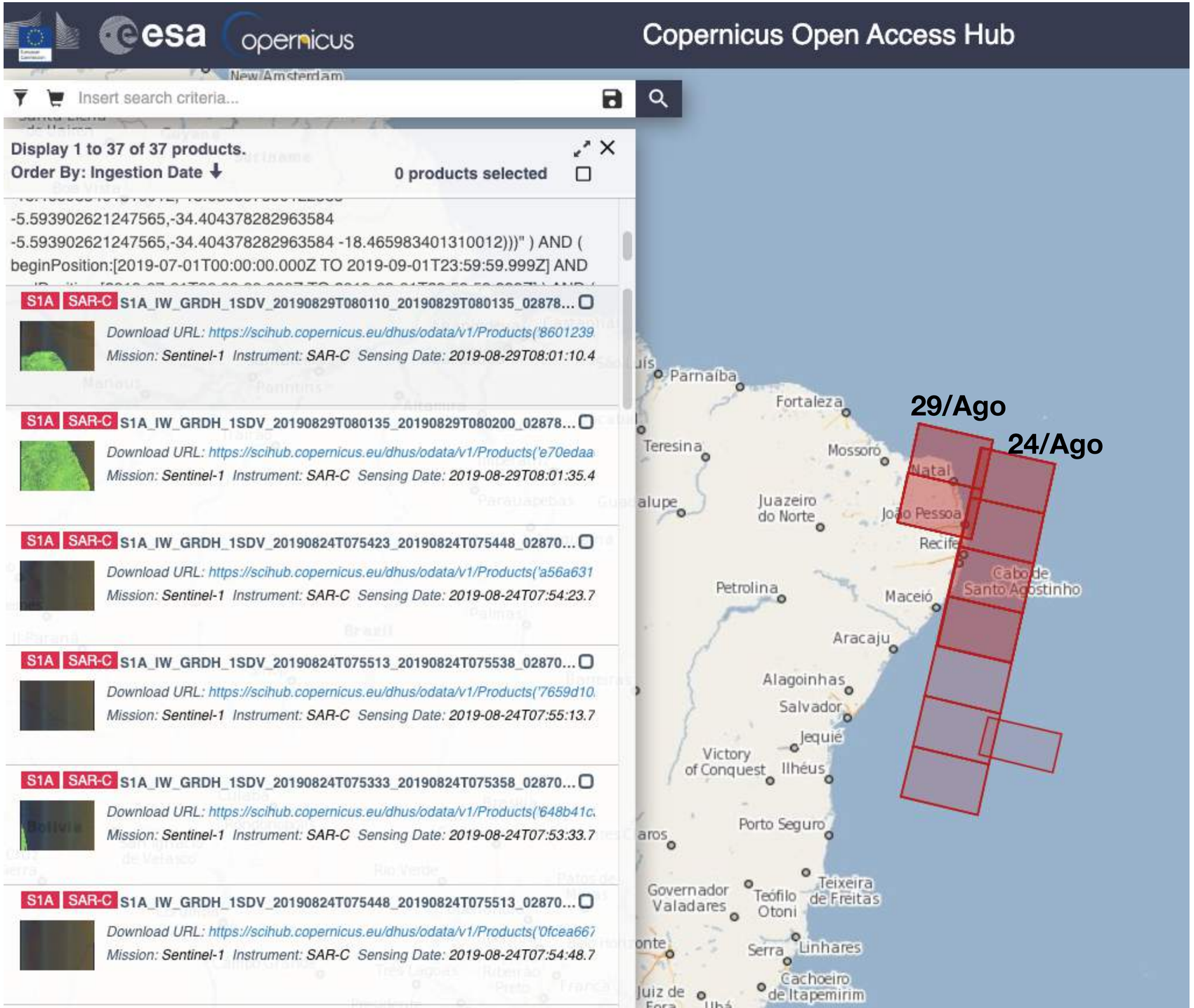
REMARKS: Possible, unconfirmed oil was observed in satellite imagery. Discrete oil slicks were detected WNW to about 29 nm and SE to about 40 nm from the suspected Princess Empress shipwreck location. Sections of relatively thicker oil were located primarily along the western edges of the slicks, as expected given winds were around 5 kt from the east around the time of the image. Oil was also detected near the coast of Calima and along the base of Mount Dumali. A small, discrete patch was also detected near Verde Island. The satellite pass included imagery stretching south of Mindoro, but no oil slicks were detected despite cloud-free skies.

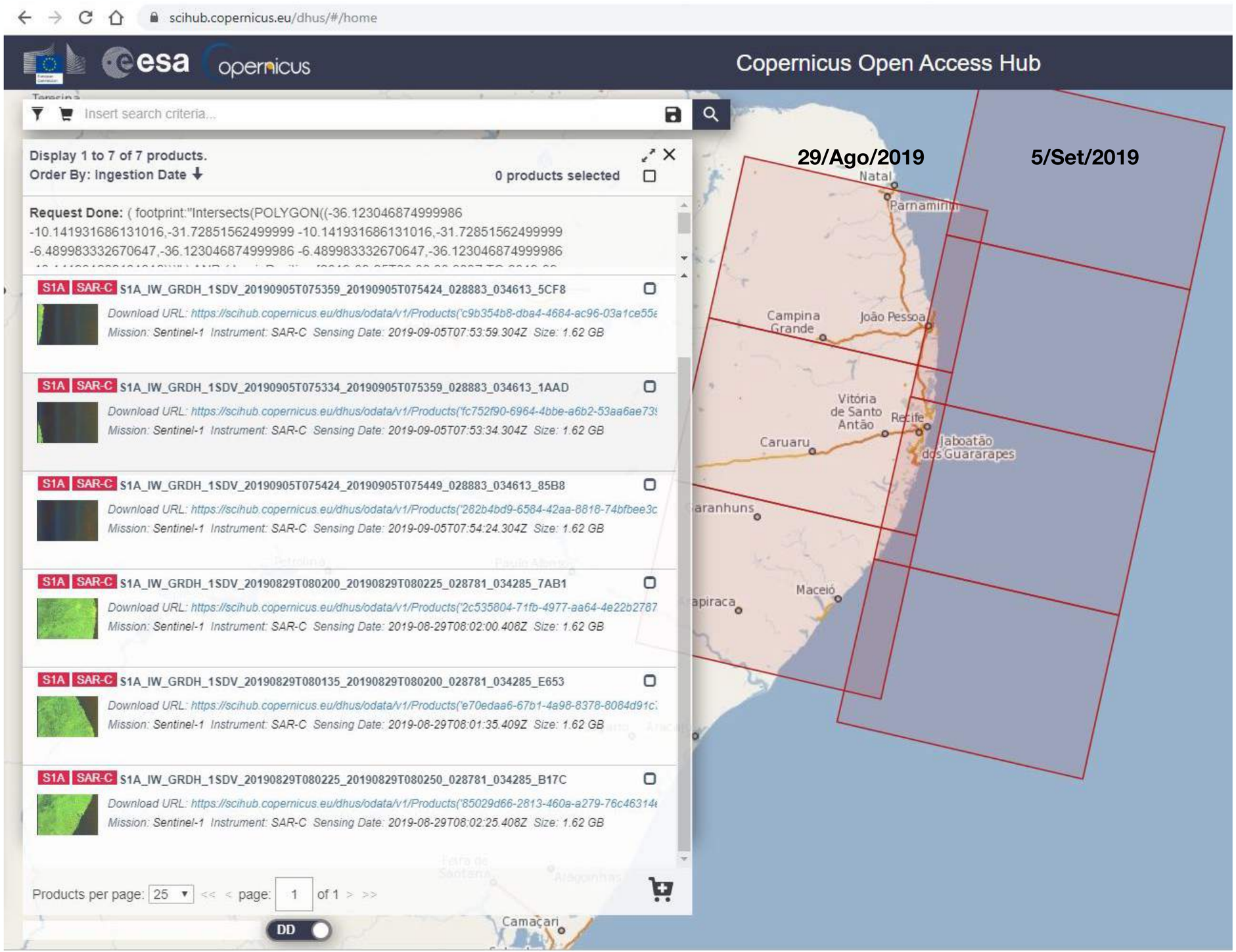
UNCERTAINTIES: Due to the limitations related to manual detection and delineation of the slicks found in the satellite imagery, in addition to the presence of false positives in the vicinity of the slicks, the total area of possible oil presented here is imprecise.



Imagens Disponíveis Sentinel-1

Aquisições Regulares

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Display 1 to 7 of 7 products.
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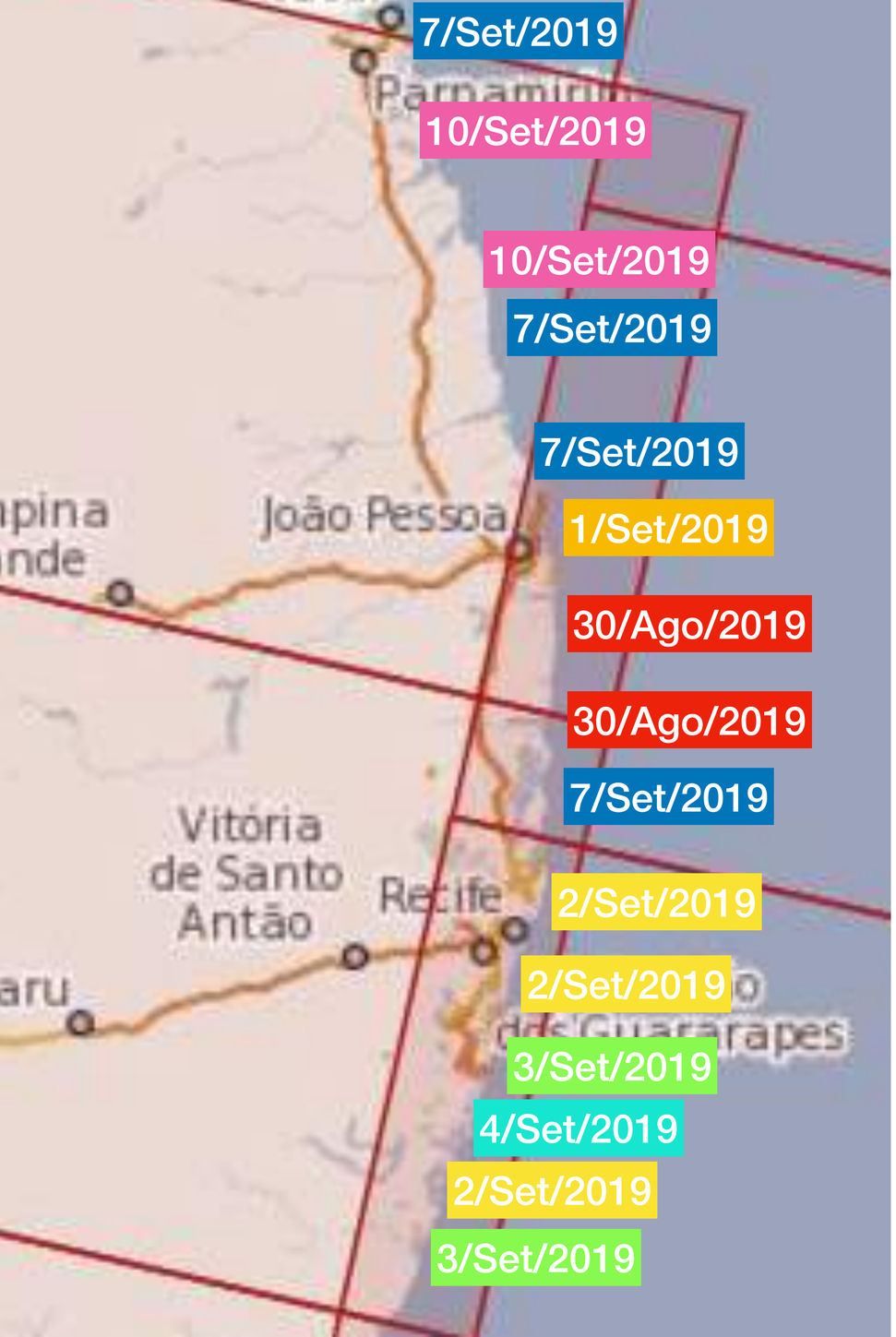
Maceió
Camaçari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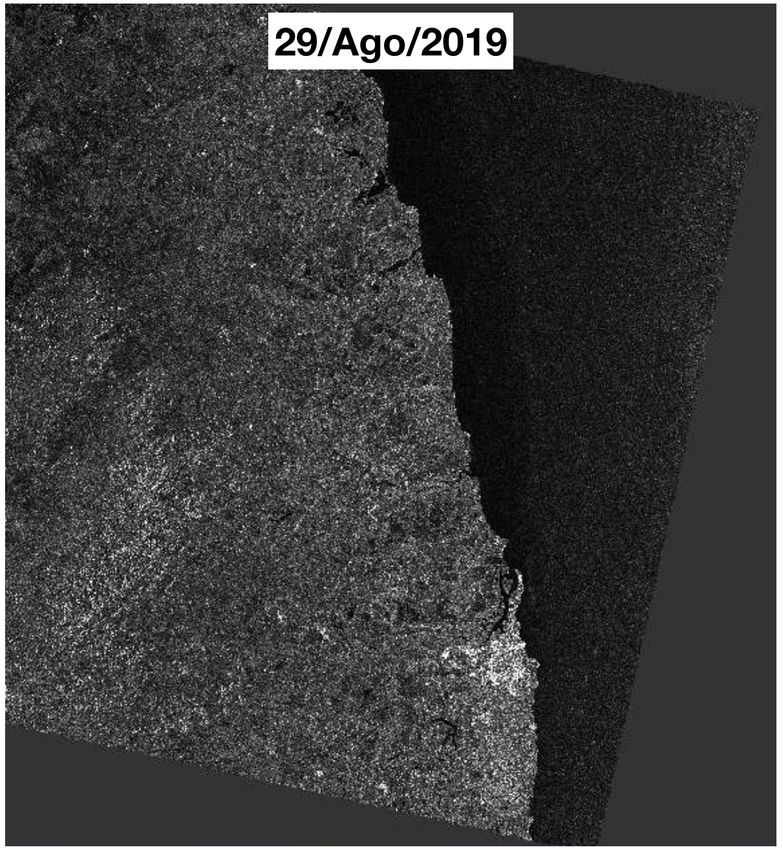
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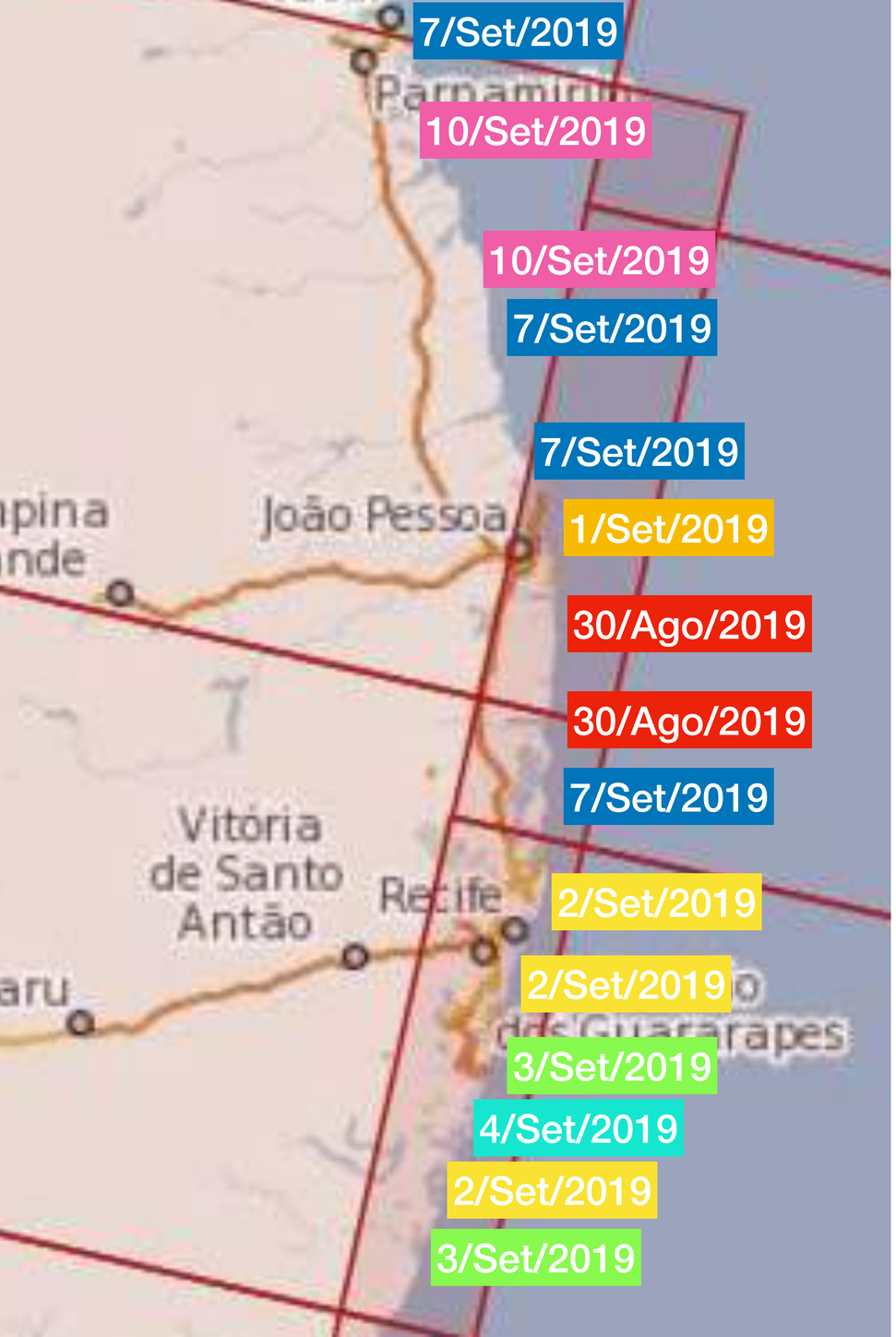
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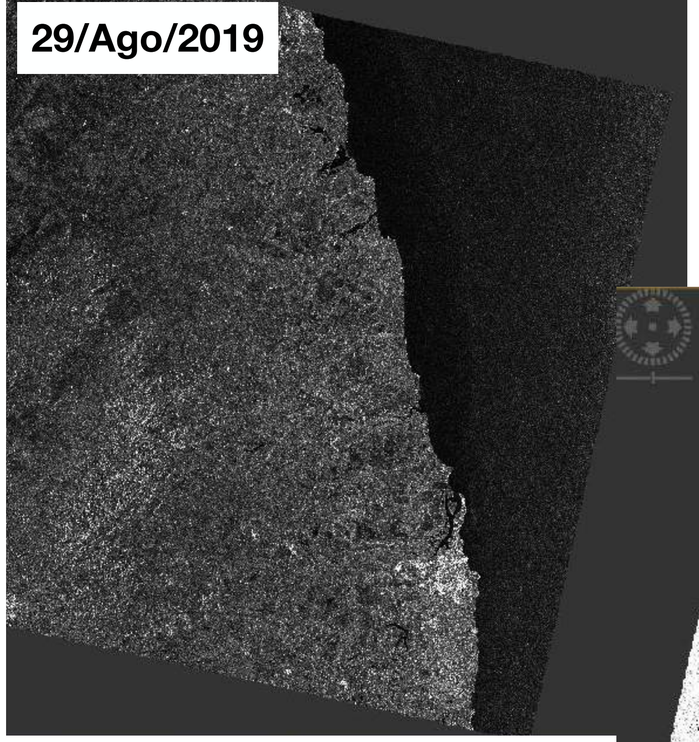
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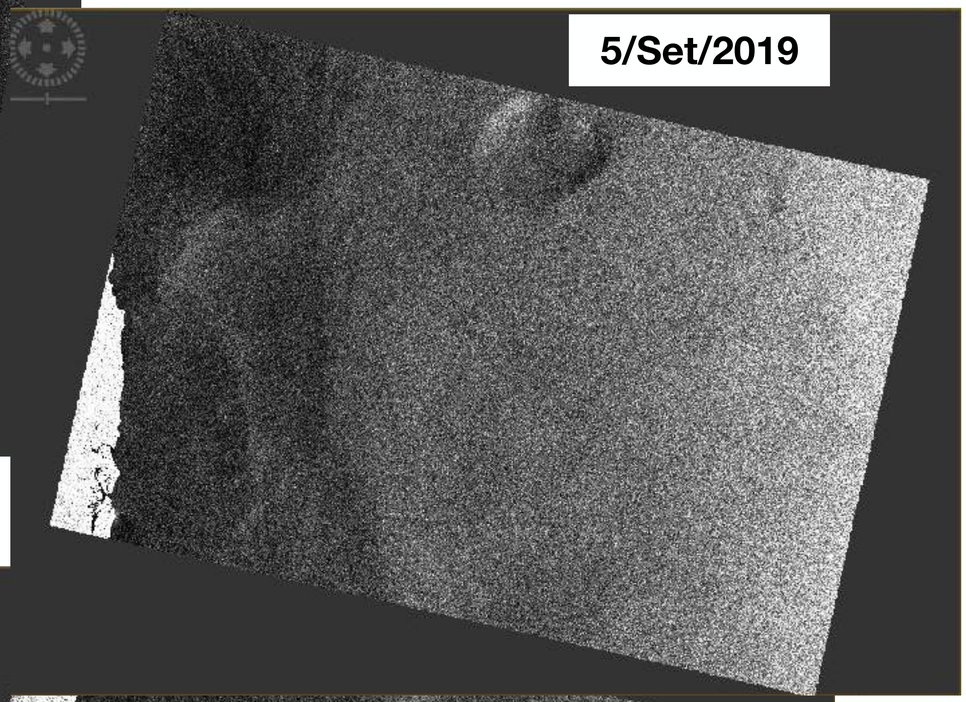
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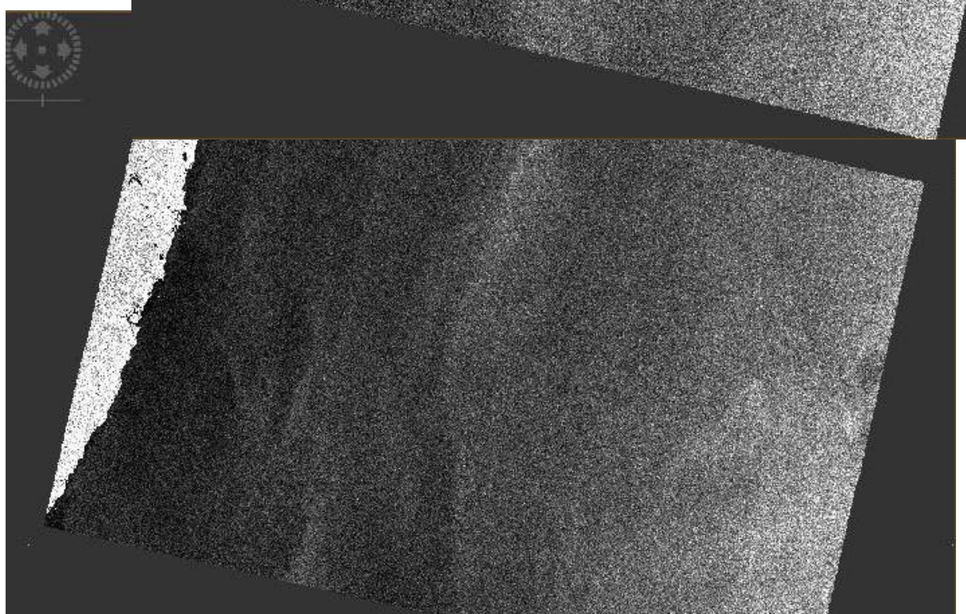

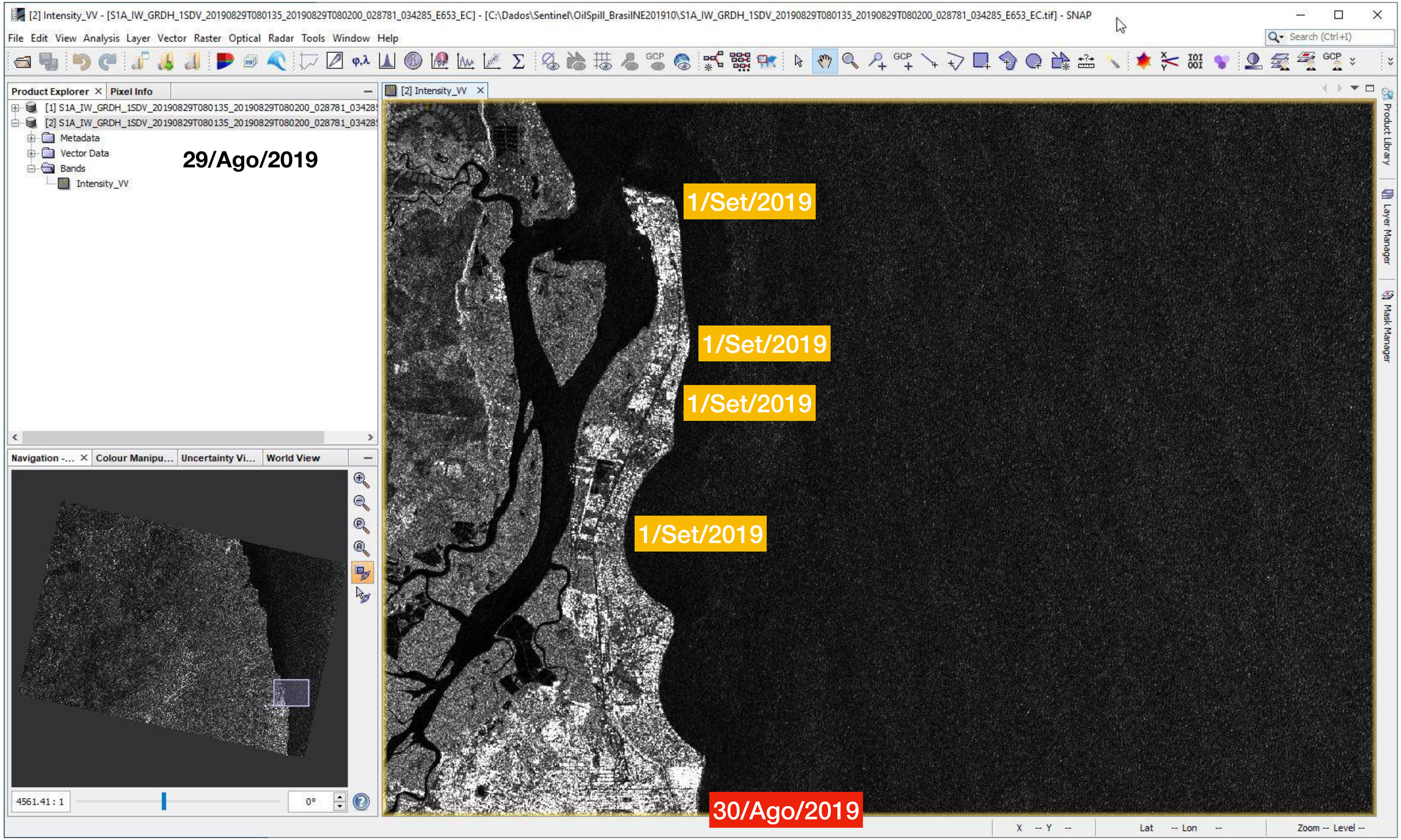
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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help
Search (Ctrl+I)
Product Explorer
Pixel Info
[1] S1A_IW_GRDH_1SDV_20190829T080135_20190829T080200_028781_034285
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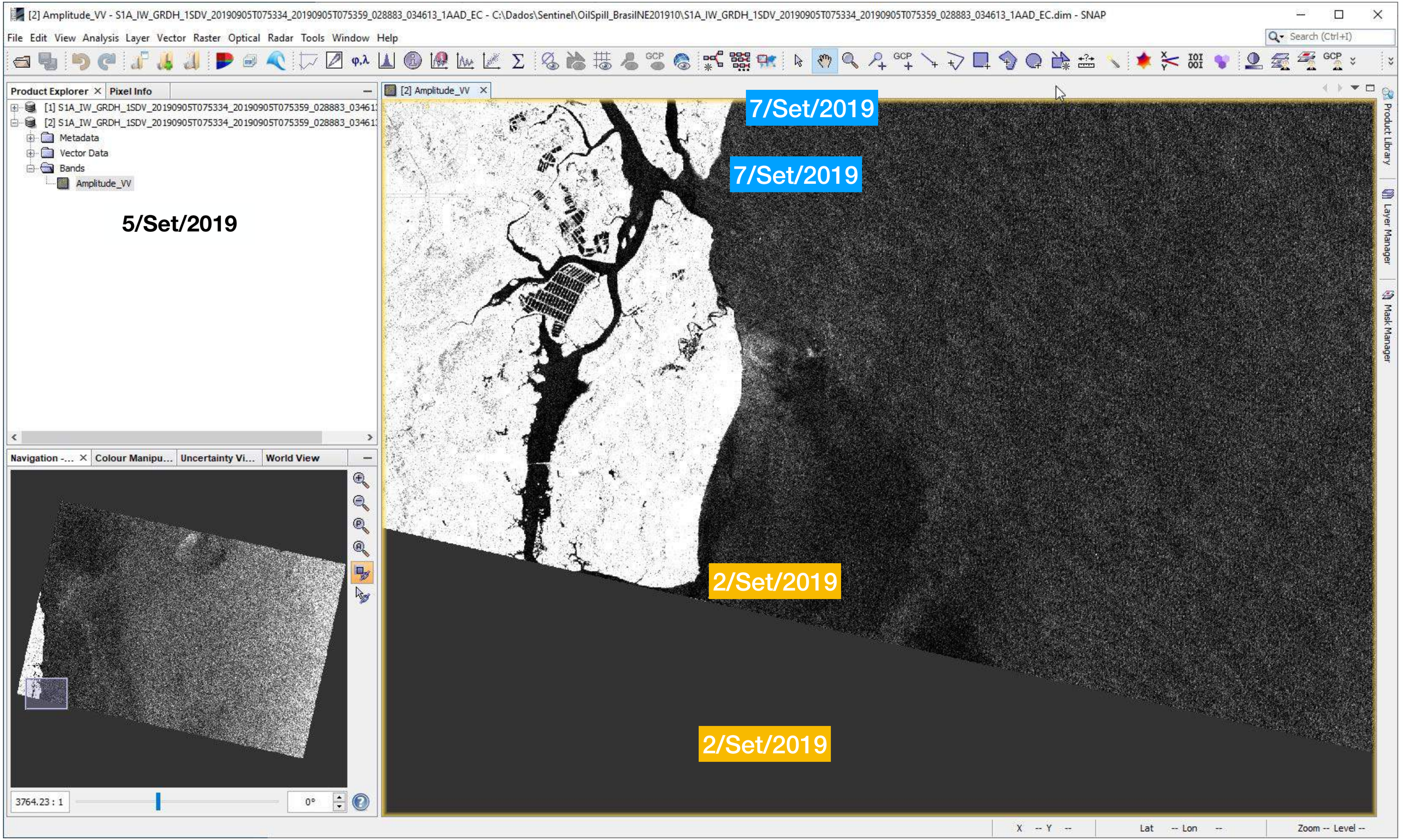
Metadata
Vector Data
Bands
Intensity_VV
29/Ago/2019
Navigation -...
Colour Manipu...
Uncertainty Vi...
World View
4561.41 : 1
0°
[2] Intensity_VV
1/Set/2019
1/Set/2019
1/Set/2019
1/Set/2019
30/Ago/2019
Product Library
Layer Manager
Mask Manager
X -- Y --
Lat -- Lon --
Zoom -- Level --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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help
Search (Ctrl+I)
Product Explorer
Pixel Info
[1] S1A_IW_GRDH_1SDV_20190905T075334_20190905T075359_028883_034613
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Vector Data
Bands
Amplitude_VV
5/Set/2019
Navigation -...
Colour Manipu...
Uncertainty Vi...
World View
3764.23 : 1
0°
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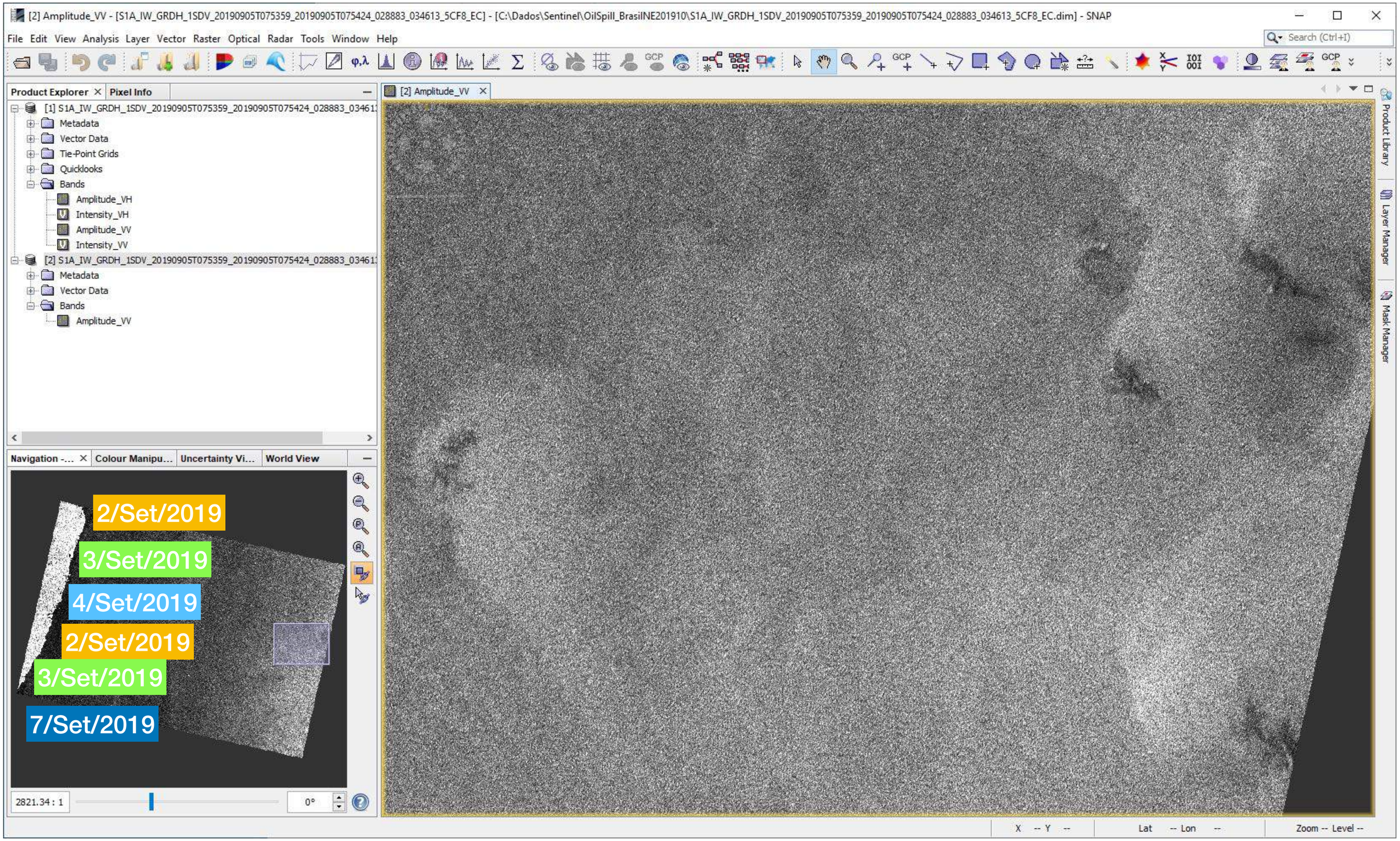
7/Set/2019
7/Set/2019
2/Set/2019
2/Set/2019
Product Library
Layer Manager
Mask Manager
X -- Y --
Lat -- Lon --
Zoom -- Level --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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help
Search (Ctrl+I)
Product Explorer
Pixel Info
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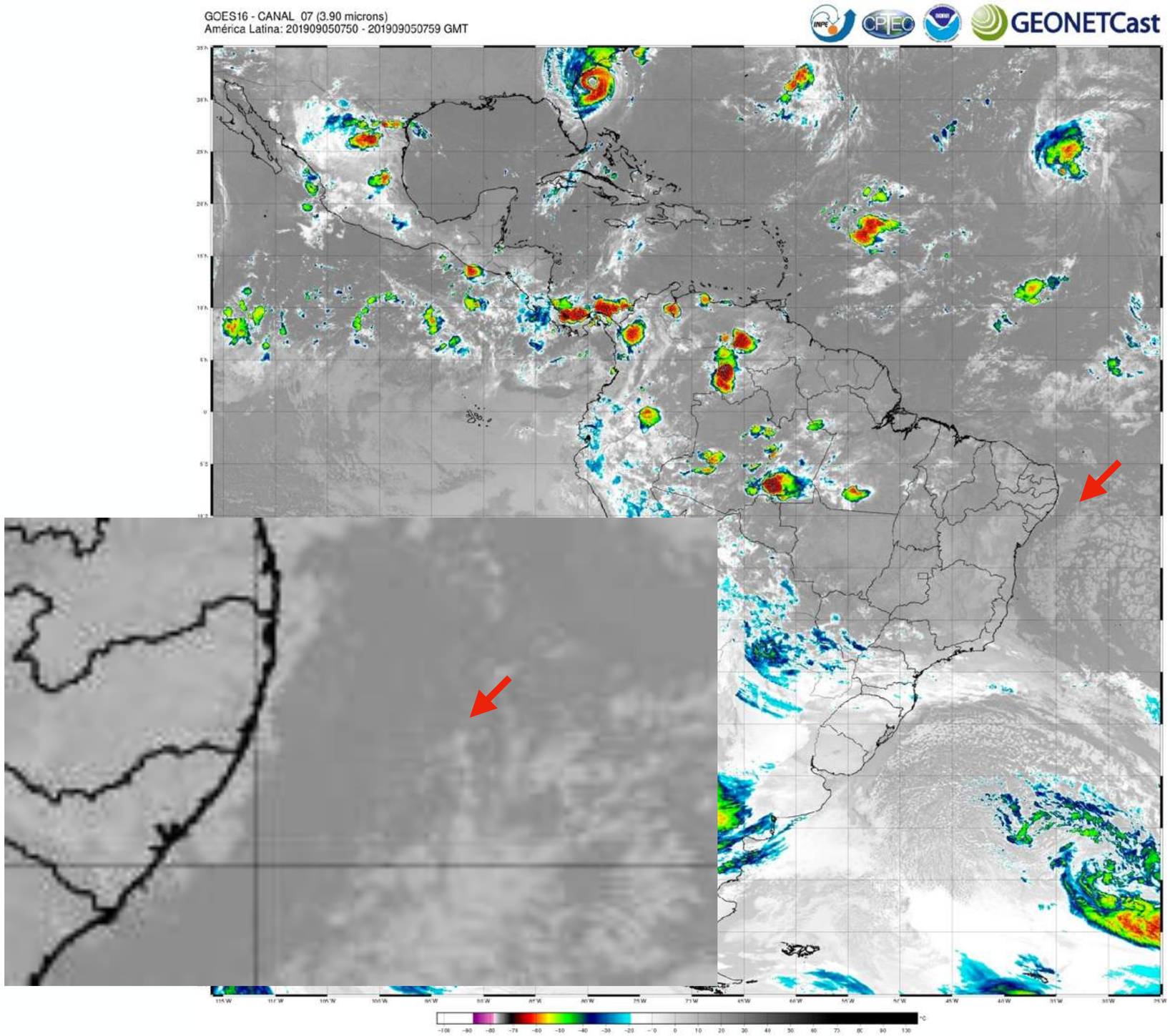
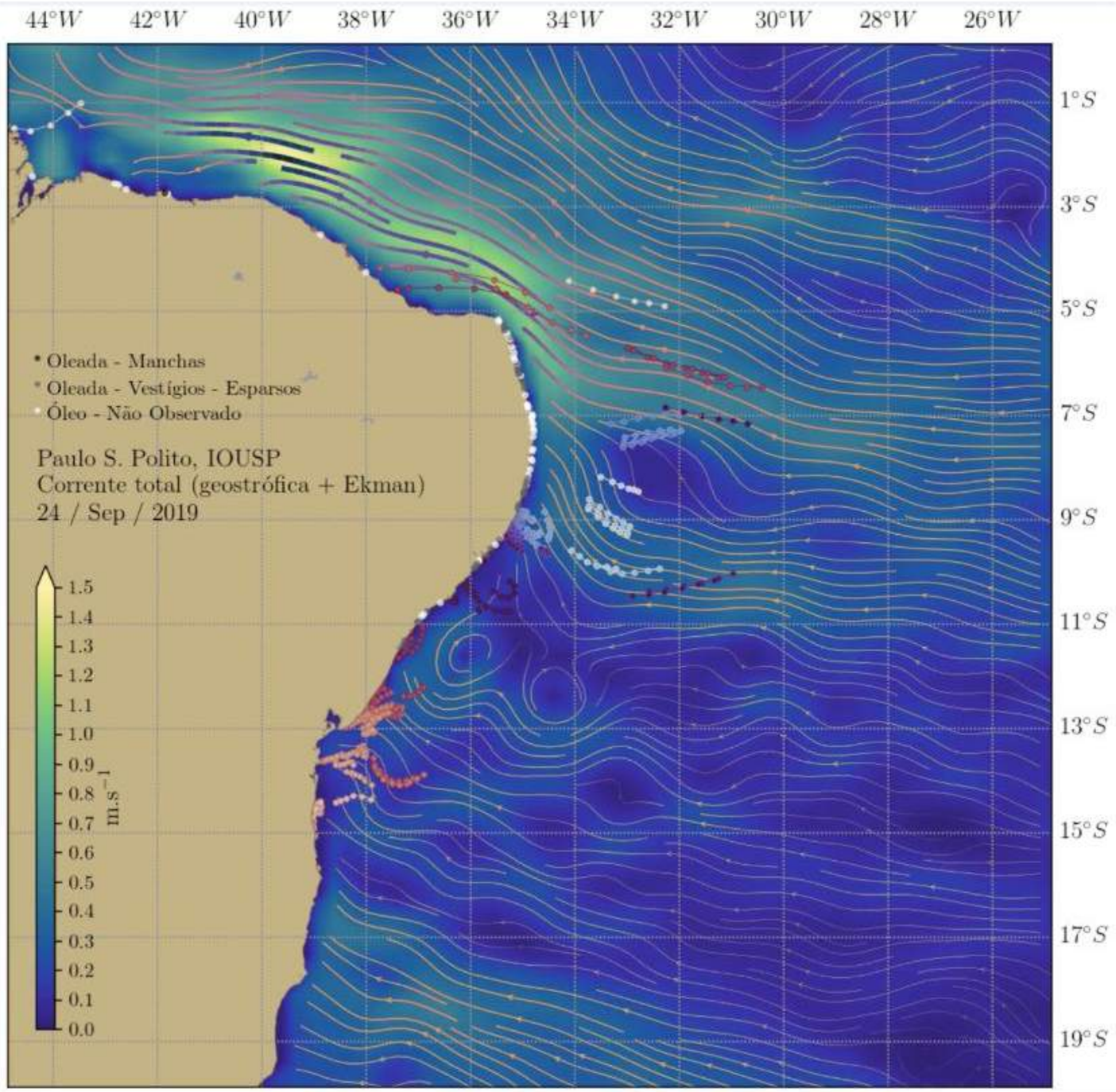
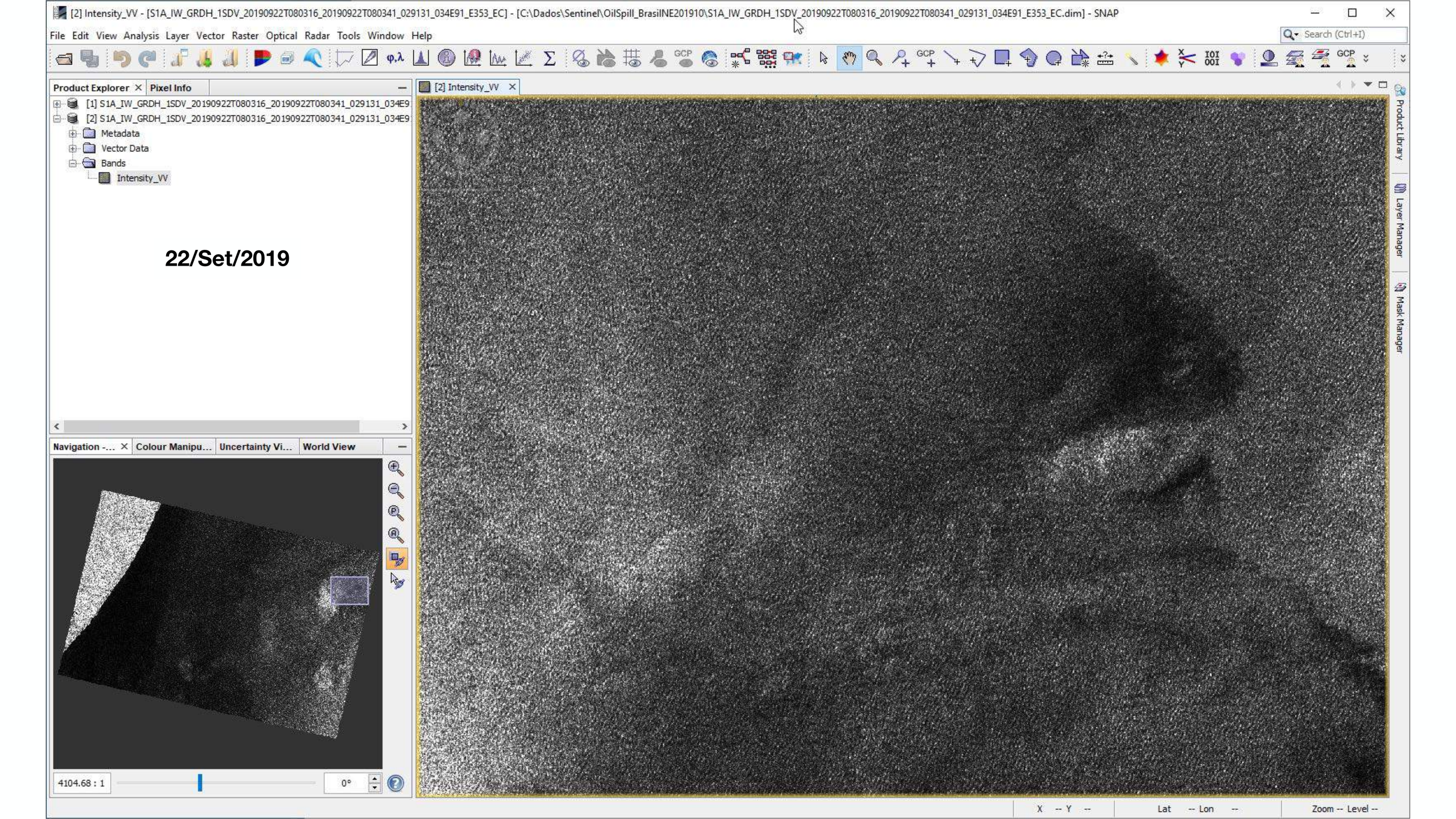
Metadata
Vector Data
Tie-Point Grids
Quicklooks
Bands
Amplitude_VH
Intensity_VH
Amplitude_VV
Intensity_VV
[2] S1A_IW_GRDH_1SDV_20190905T075359_20190905T075424_028883_034613
Metadata
Vector Data
Bands
Amplitude_VV
[2] Amplitude_VV
Navigation -...
Colour Manipu...
Uncertainty Vi...
World View
2/Set/2019
3/Set/2019
4/Set/2019
2/Set/2019
3/Set/2019
7/Set/2019
2821.34 : 1
0°
Product Library
Layer Manager
Mask Manager
X -- Y --
Lat -- Lon --
Zoom -- Level --


GOES16 - CANAL 07 (3.90 microns)
América Latina: 201909050750 - 201909050759 GMT
GEONETCast

Simulação


44°W
42°W
40°W
38°W
36°W
34°W
32°W
30°W
28°W
26°W
1°S
3°S
5°S
7°S
9°S
11°S
13°S
15°S
17°S
19°S
Oleada - Manchas
Oleada - Vestígios - Esparsos
Óleo - Não Observado
Paulo S. Polito, IOUSP
Corrente total (geostrófica + Ekman)
24 / Sep / 2019
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
m.s⁻¹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File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help
Search (Ctrl+I)
Product Explorer
Pixel Info
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[2] S1A_IW_GRDH_1SDV_20190922T080316_20190922T080341_029131_034E9
Metadata
Vector Data
Bands
Intensity_VV
22/Set/2019
Navigation -...
Colour Manipu...
Uncertainty Vi...
World View
4104.68 : 1
0°
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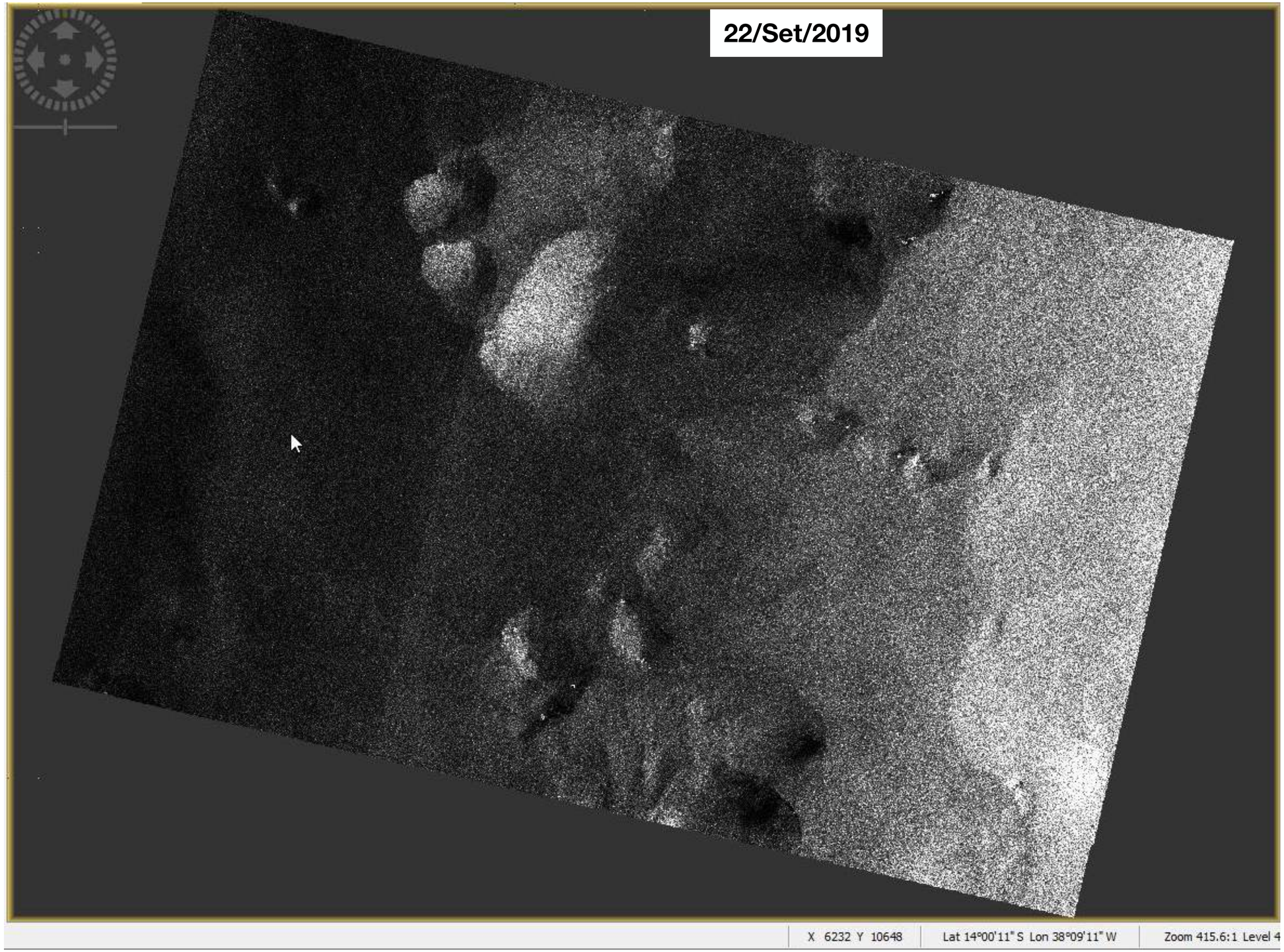
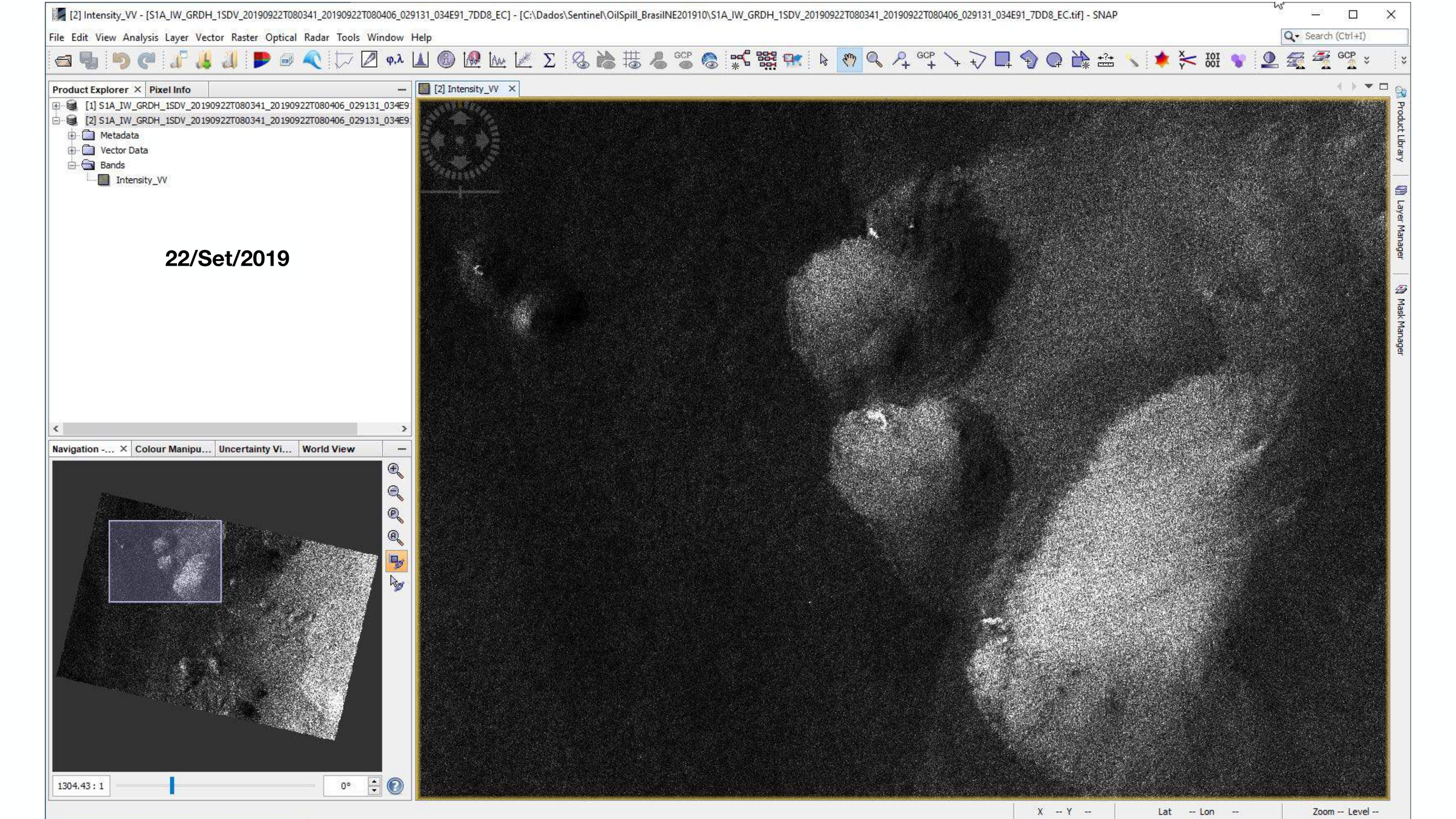
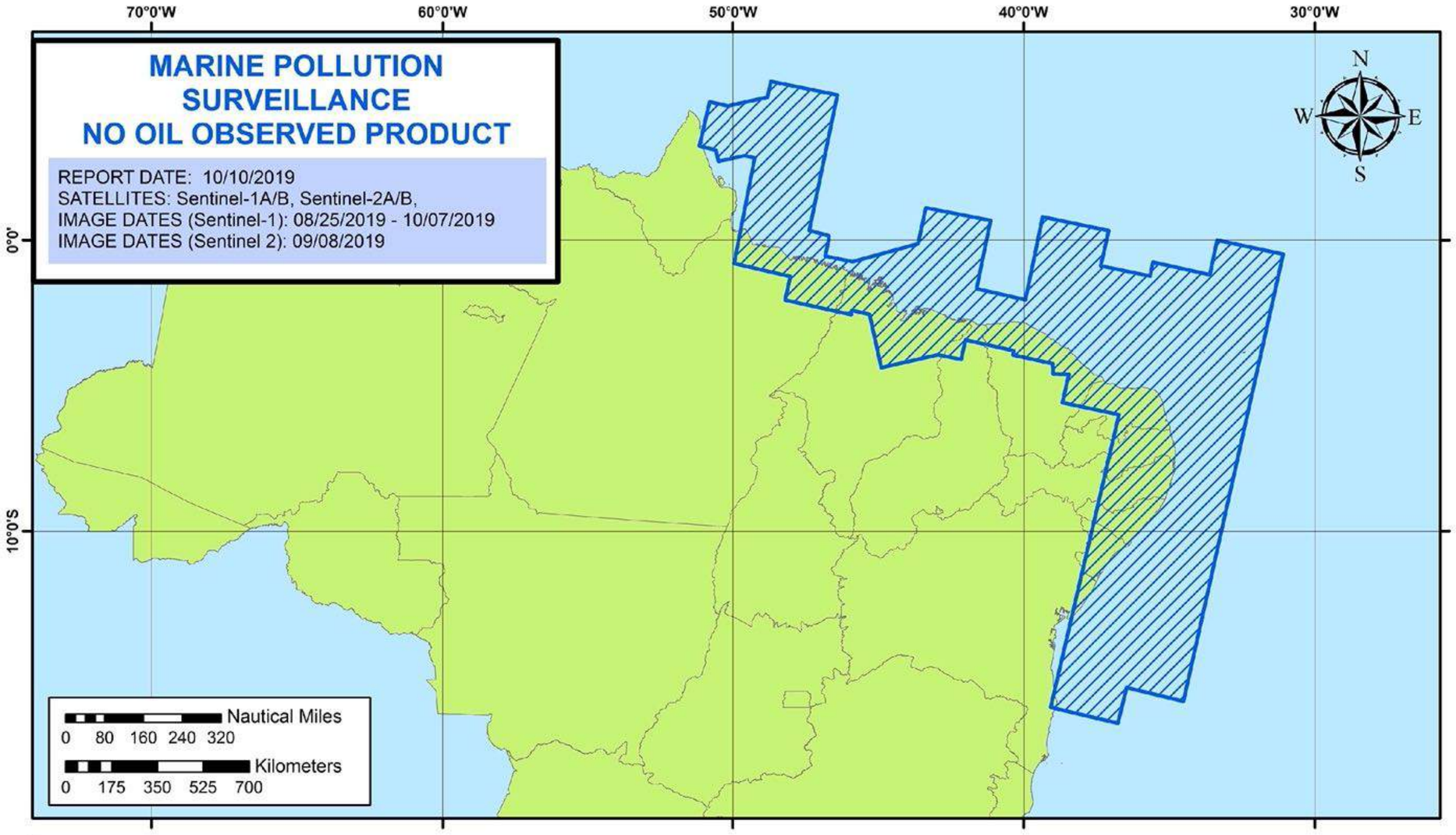
Product Library
Layer Manager
Mask Manager
X -- Y --
Lat -- Lon --
Zoom -- Level --


22/Set/2019
X 6232 Y 10648
Lat 14°00'11"S Lon 38°09'11"W
Zoom 415.6:1 Level 4


[2] Intensity_VV - [S1A_IW_GRDH_1SDV_20190922T080341_20190922T080406_029131_034E91_7DD8_EC] - [C:\Dados\Sentinel\OilSpill_BrasilNE201910\S1A_IW_GRDH_1SDV_20190922T080341_20190922T080406_029131_034E91_7DD8_EC.tif] - SNAP
File Edit View Analysis Layer Vector Raster Optical Radar Tools Window Help
Search (Ctrl+I)
Product Explorer
Pixel Info
[1] S1A_IW_GRDH_1SDV_20190922T080341_20190922T080406_029131_034E9
[2] S1A_IW_GRDH_1SDV_20190922T080341_20190922T080406_029131_034E9
Metadata
Vector Data
Bands
Intensity_VV
22/Set/2019
Navigation -...
Colour Manipu...
Uncertainty Vi...
World View
1304.43 : 1
0°
[2] Intensity_VV
Product Library
Layer Manager
Mask Manager
X -- Y --
Lat -- Lon --
Zoom -- Level --



Remarks:

No oil anomalies were observed in the shaded area. Imagery coverage on any given day was limited to a small portion of the indicated area, including some days with no coverage.

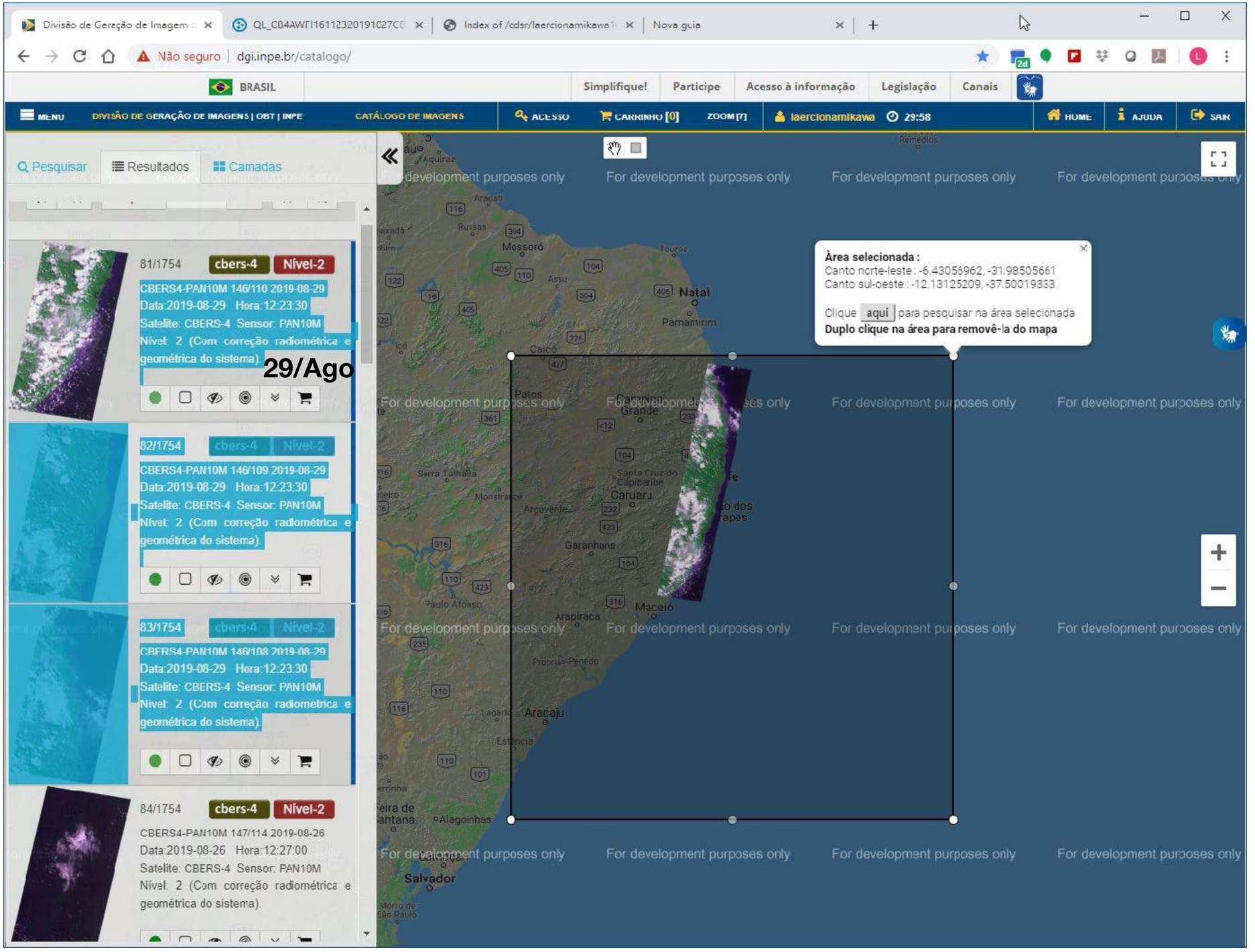
Legend

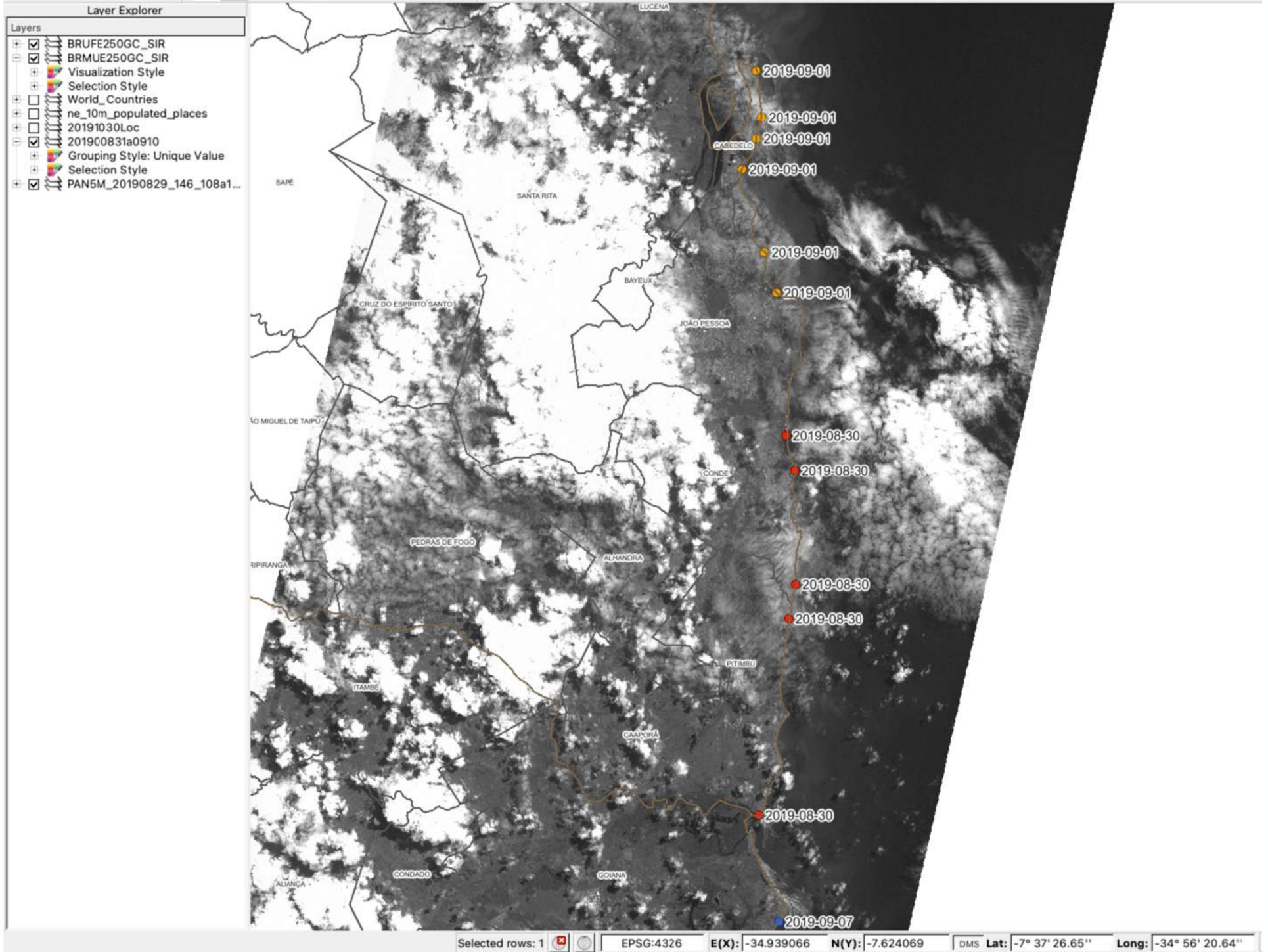
Satellite Image Footprint

Analysis Provided by: The National Oceanic and Atmospheric Administration/National Environmental Satellite, Data and Information Service (NOAA/NESDIS)

Imagens Disponíveis CBERS4

Aquisições Regulares

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Layers
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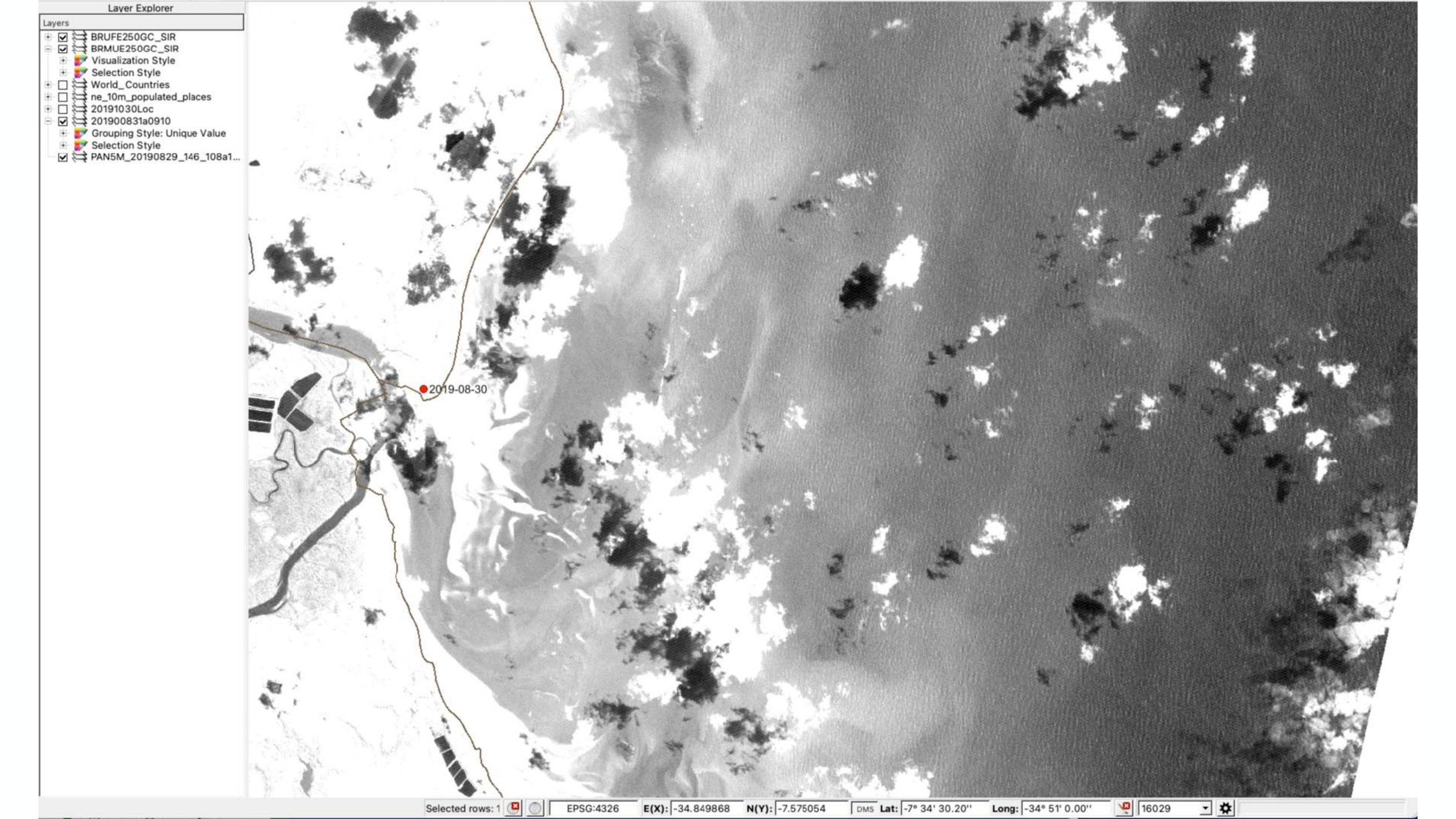
BRMUE250GC_SIR
Visualization Style
Selection Style
World_Countries
ne_10m_populated_places
20191030Loc
201900831a0910
Grouping Style: Unique Value
Selection Style
PAN5M_20190829_146_108a1...
LUCENA
CABEDELO
SAPÉ
SANTA RITA
BAYEUX
CRUZ DO ESPIRITO SANTO
JOÃO PESSOA
CONDE
PEDRAS DE FOGO
ALHANDRA
PITIMBU
ITAMBÉ
CAAPORÃ
CONDADO
GOIANA
ALIANÇA
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-08-30
2019-08-30
2019-08-30
2019-08-30
2019-08-30
2019-09-07
Selected rows: 1
EPSG:4326
E(X): -34.939066
N(Y): -7.624069
DMS
Lat: -7° 37' 26.65''
Long: -34° 56' 20.64''


Layer Explorer
Layers
BRUFE250GC_SIR
BRMUE250GC_SIR
Visualization Style
Selection Style
World_Countries
ne_10m_populated_places
20191030Loc
201900831a0910
Grouping Style: Unique Value
Selection Style
PAN5M_20190829_146_108a1...
2019-08-30
Selected rows: 1
EPSG:4326
E(X): -34.849868
N(Y): -7.575054
DMS
Lat: -7° 34' 30.20''
Long: -34° 51' 0.00''
16029


Layer Explorer
Layers
BRUFE250GC_SIR
BRMUE250GC_SIR
Visualization Style
Selection Style
World_Countries
ne_10m_populated_places
20191030Loc
201900831a0910
Grouping Style: Unique Value
Selection Style
PAN5M_20190829_146_108a1...
MUX_20190829_146_108a111...
2019-08-30
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EPSG:4326
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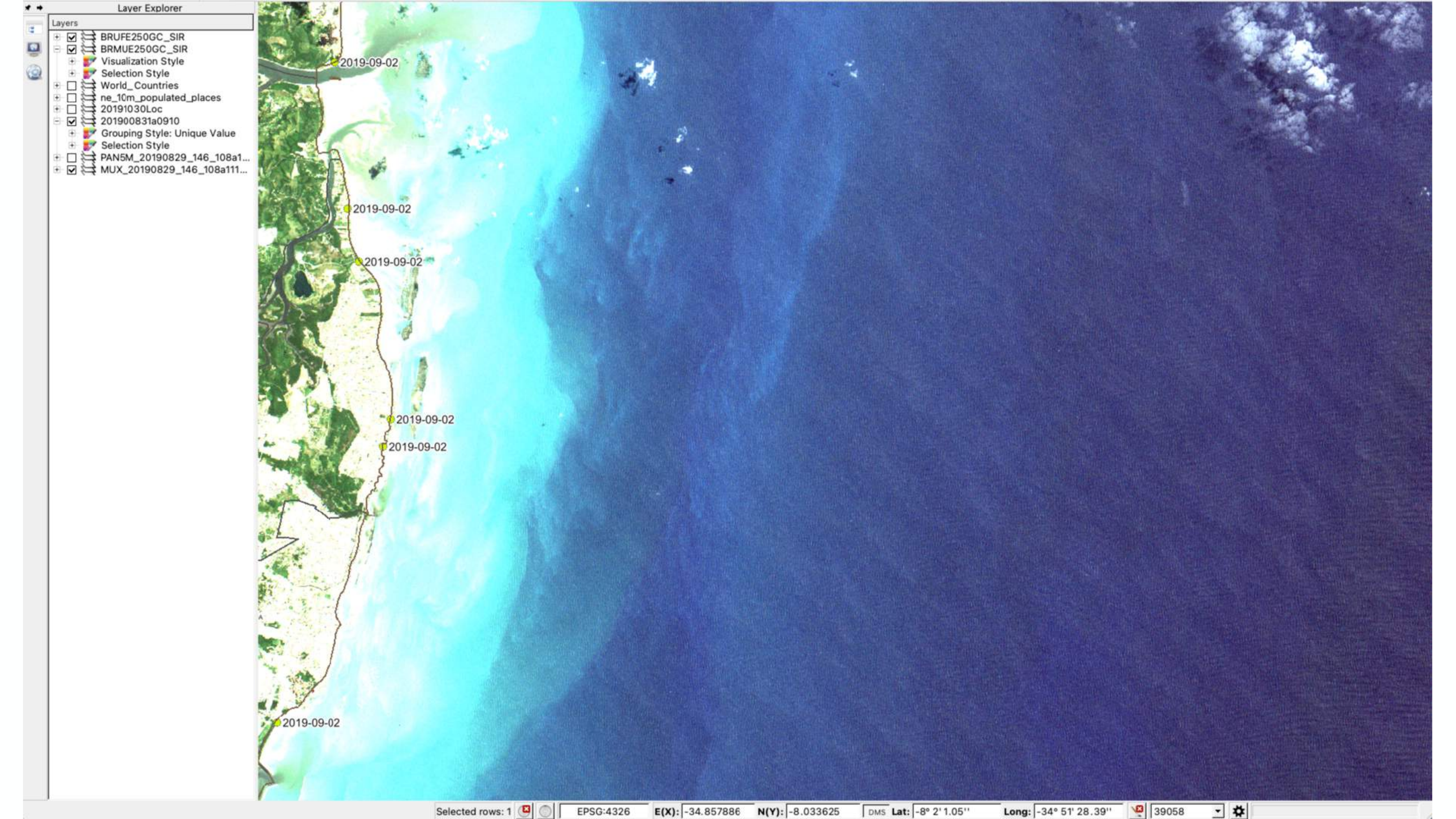
DMS
Lat: -7° 36' 13.28''
Long: -34° 49' 16.44''
16029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Layers
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BRMUE250GC_SIR
Visualization Style
Selection Style
World_Countries
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20191030Loc
201900831a0910
Grouping Style: Unique Value
Selection Style
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MUX_20190829_146_108a111...
2019-09-02
2019-09-02
2019-09-02
2019-09-02
2019-09-02
2019-09-02
Selected rows: 1
EPSG:4326
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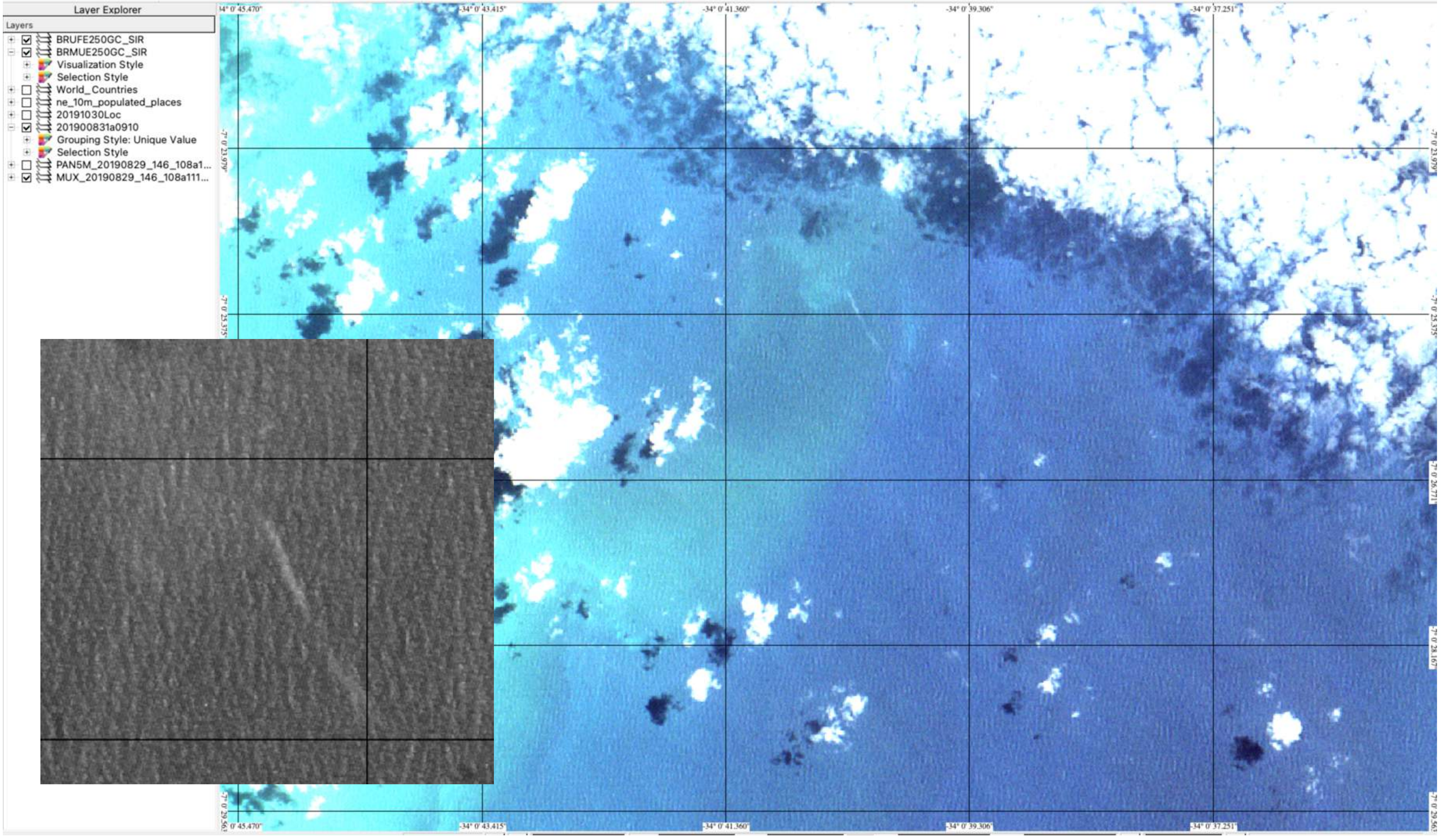
Long: -34° 51' 28.39''
39058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World_Countries
ne_10m_populated_places
20191030Loc
201900831a0910
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Selection Style
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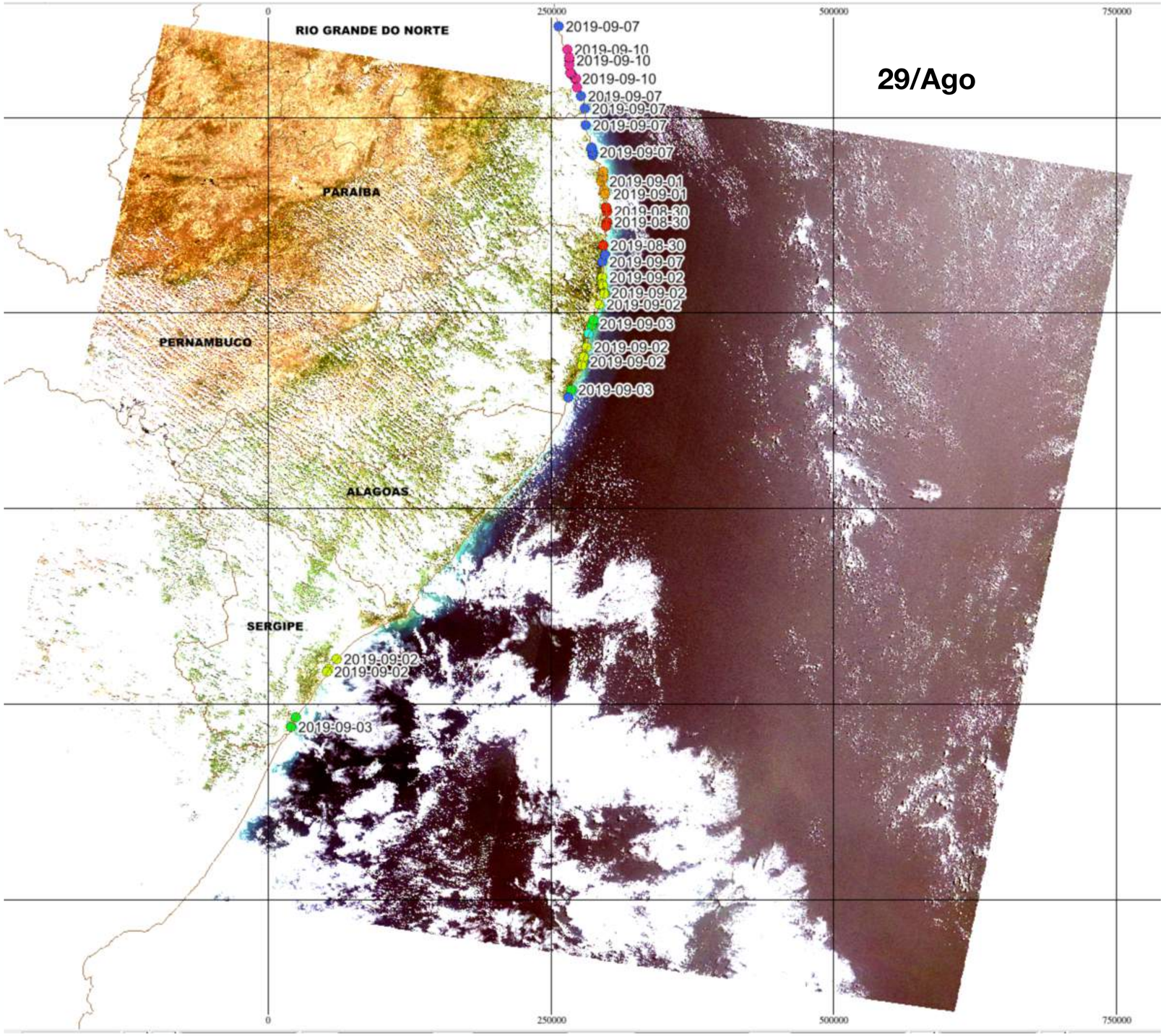
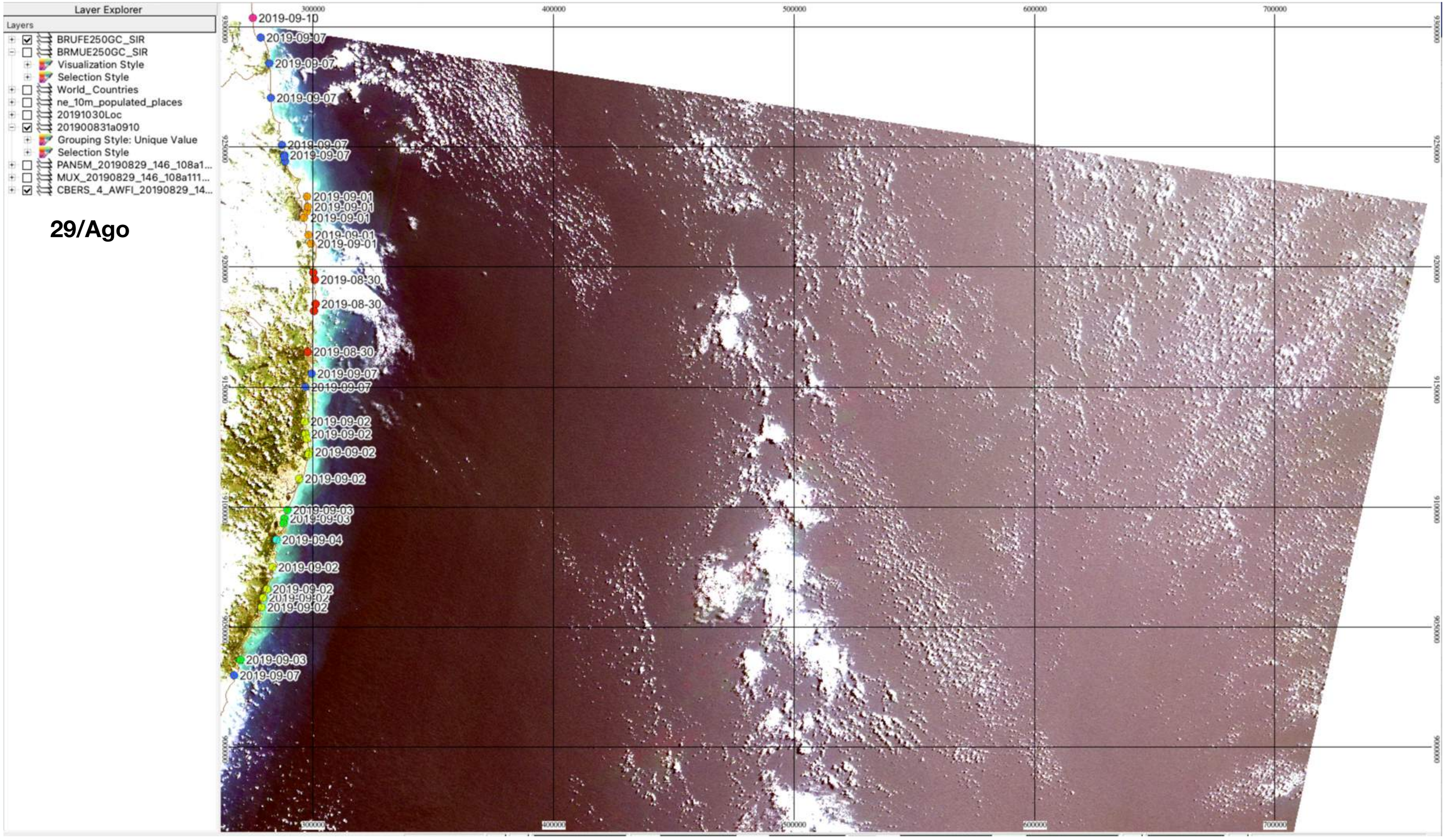
-34° 0' 43.415"
-34° 0' 41.360"
-34° 0' 39.306"
-34° 0' 37.251"
-7° 0' 23.979"
-7° 0' 25.375"
-7° 0' 26.771"
-7° 0' 28.167"
-7° 0' 29.563"

Imagens Disponíveis CBERS4 AWFI

Aquisições Regulares

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CBERS_4_AWFI_20190829_14...
29/Ago
2019-09-10
2019-09-07
2019-09-07
2019-09-07
2019-09-07
2019-09-07
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-08-30
2019-08-30
2019-08-30
2019-09-07
2019-09-07
2019-09-02
2019-09-02
2019-09-02
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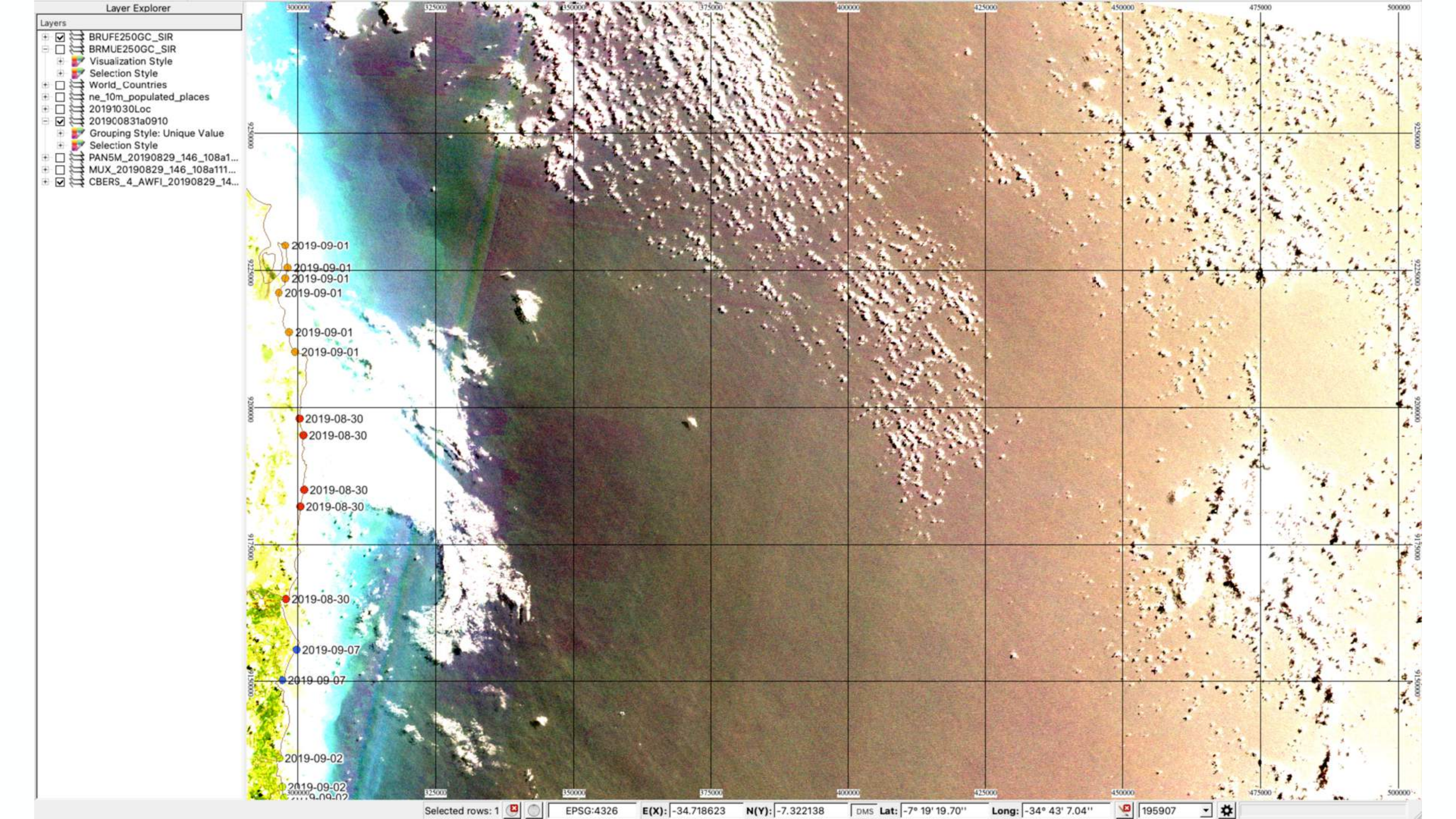
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Selection Style
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2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-09-01
2019-08-30
2019-08-30
2019-08-30
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N(Y): -7.322138
DMS
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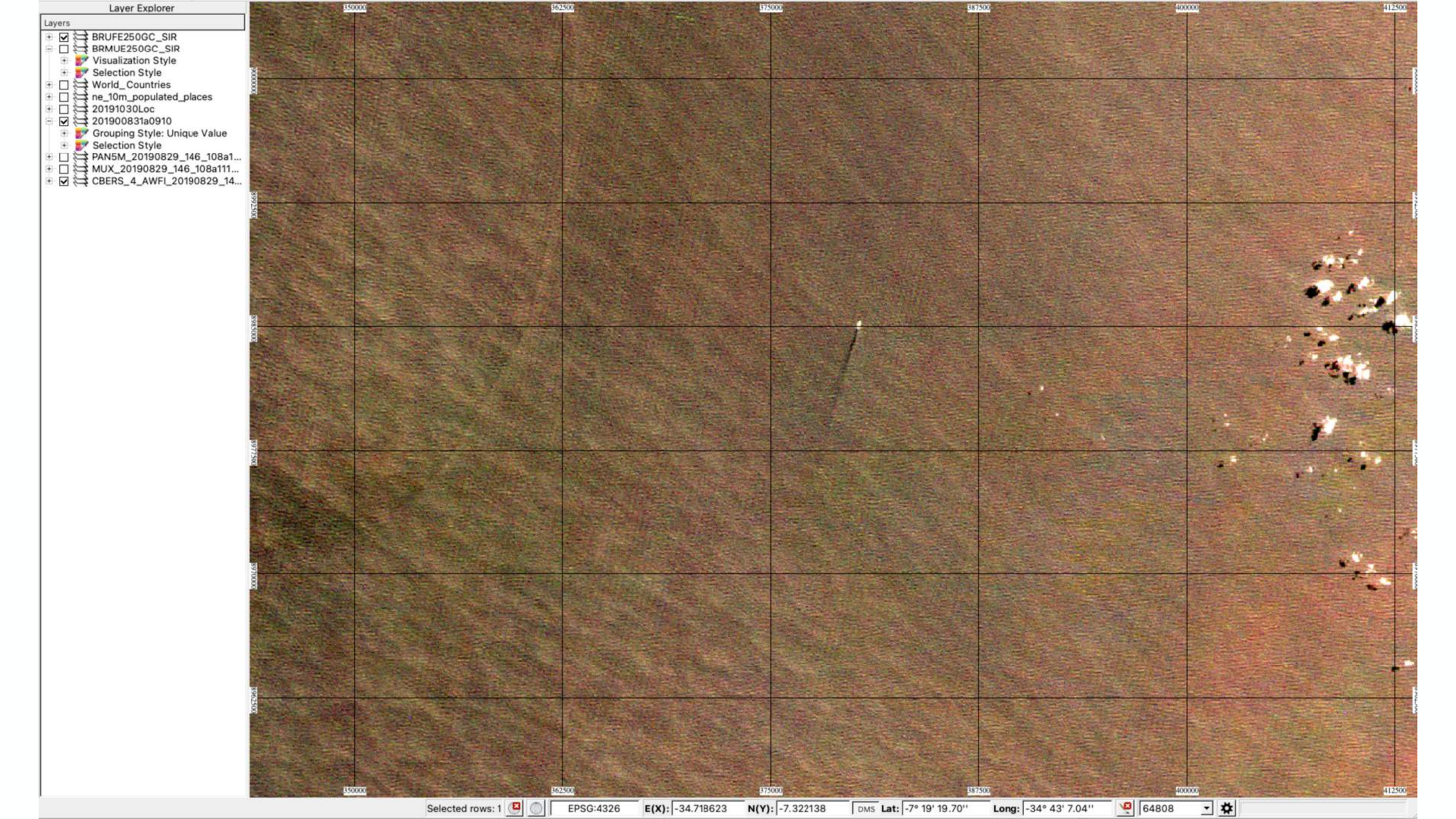
Long: -34° 43' 7.04''
195907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BRMUE250GC_SIR
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20191030Loc
201900831a0910
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Selection Style
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MUX_20190829_146_108a111...
CBERS_4_AWFI_20190829_14...
350000
362500
375000
387500
400000
412500
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EPSG:4326
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N(Y): -7.322138
DMS
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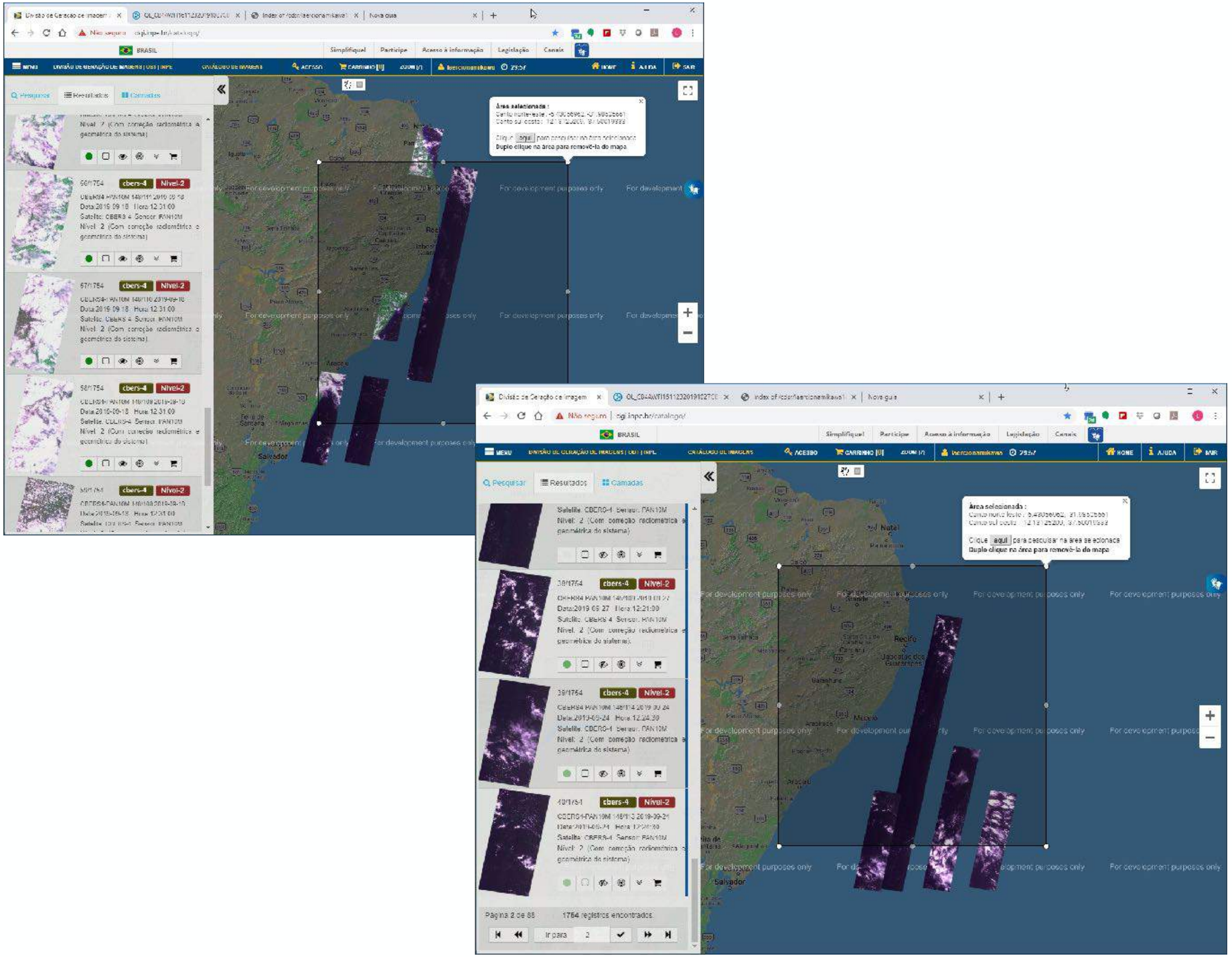
Long: -34° 43' 7.04''
64808

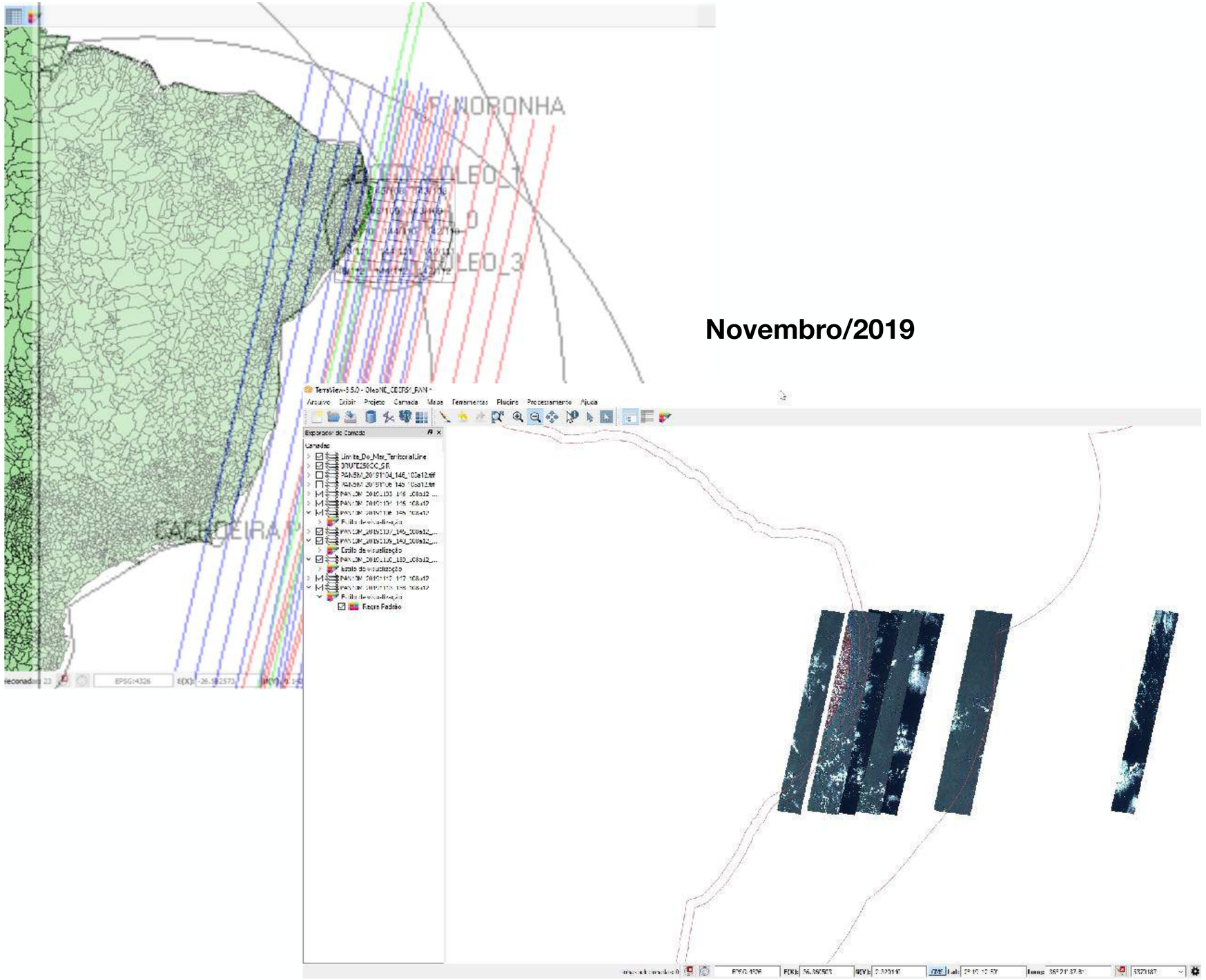
Imagens Disponíveis CBERS4

Aquisições Regulares

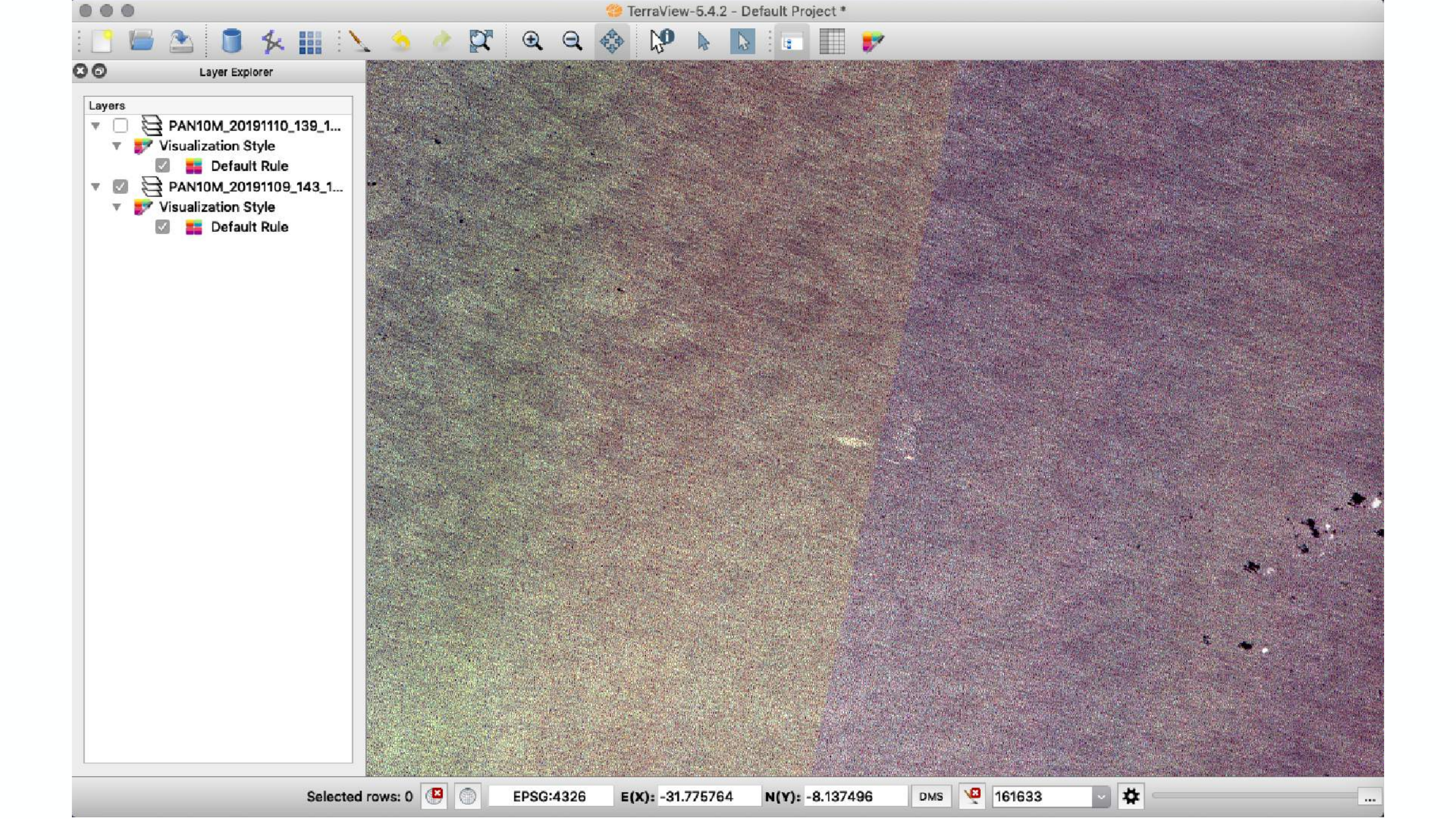


Imagens Disponíveis CBERS4

Aquisições Especiais



Novembro/2019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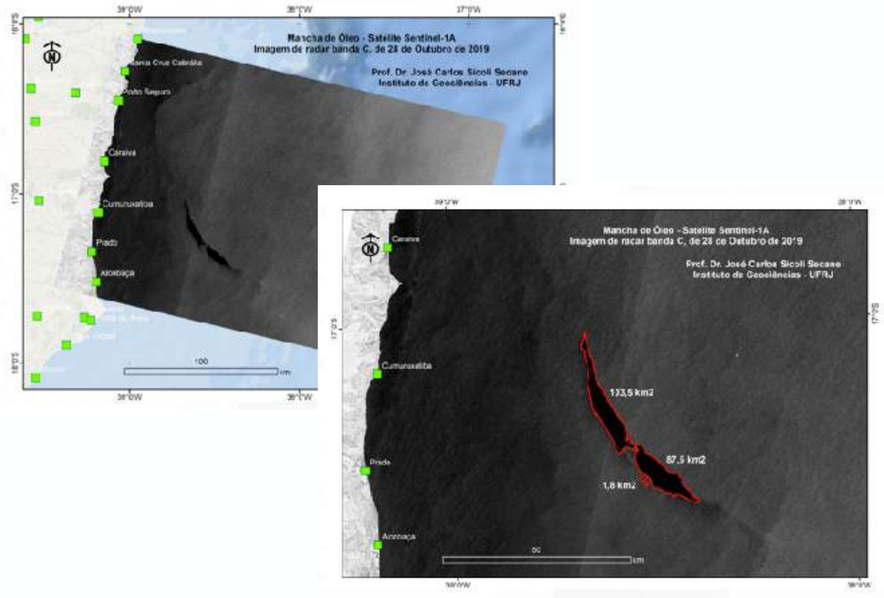
Default Rule
PAN10M_20191109_143_1...
Visualization Style
Default Rule
Selected rows: 0
EPSG:4326
E(X): -31.775764
N(Y): -8.137496
DMS
161633

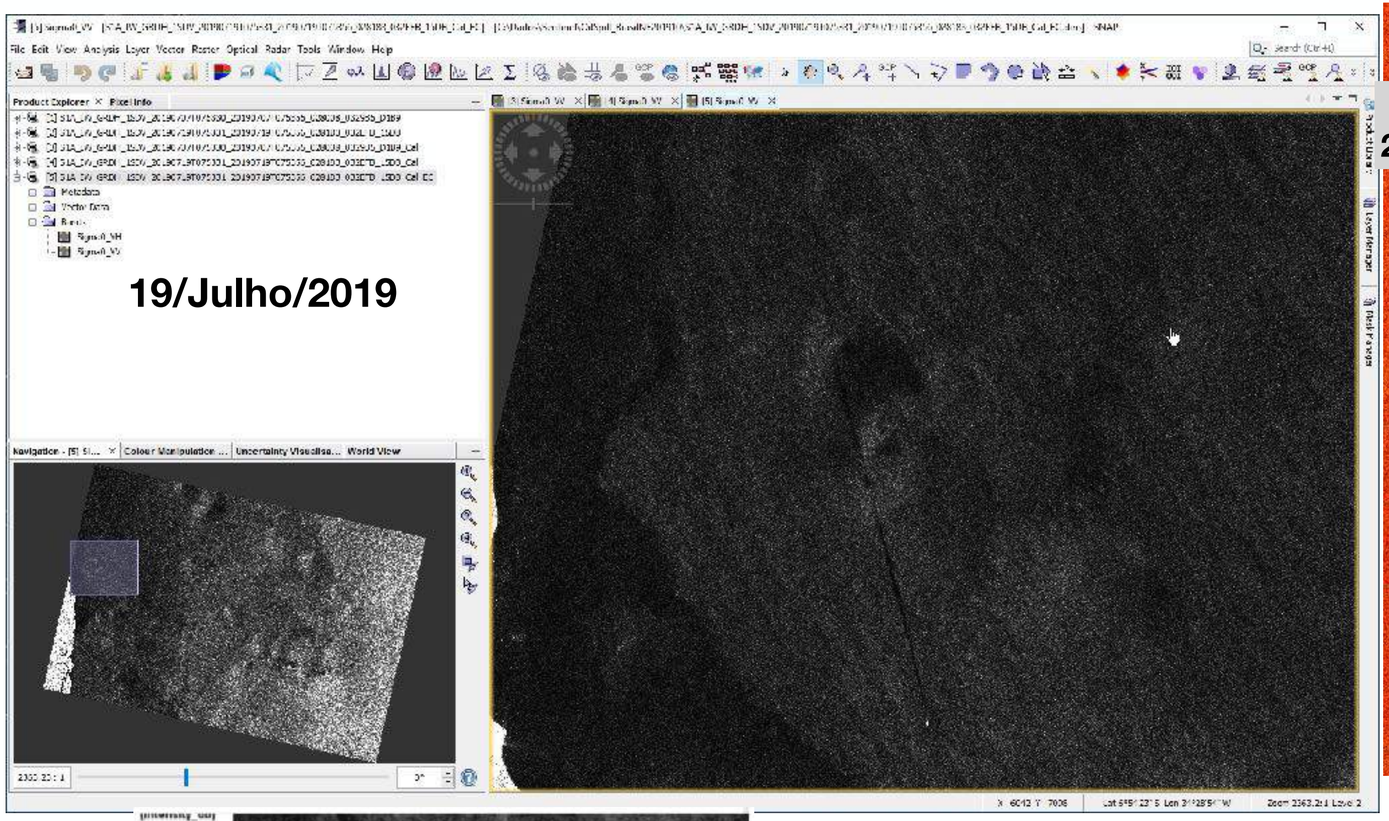
Manchas Suspeitas

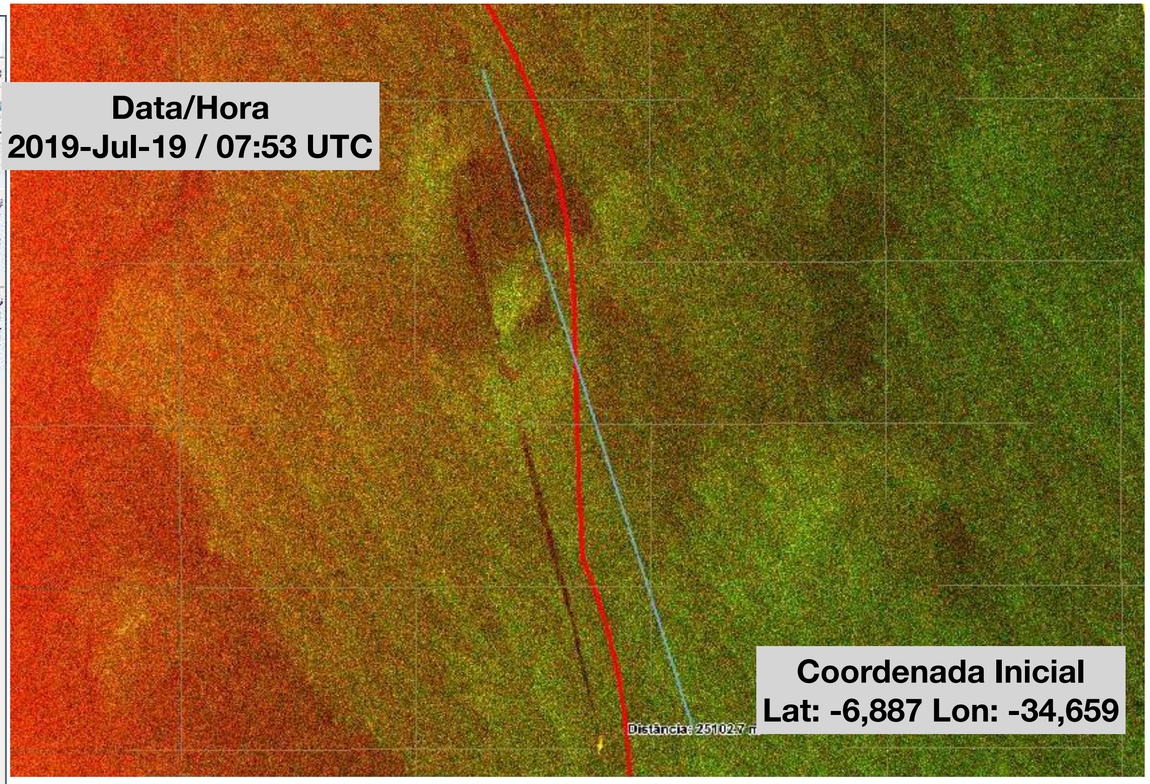
Curtido por **fernando_diehl** e **outras pessoas**

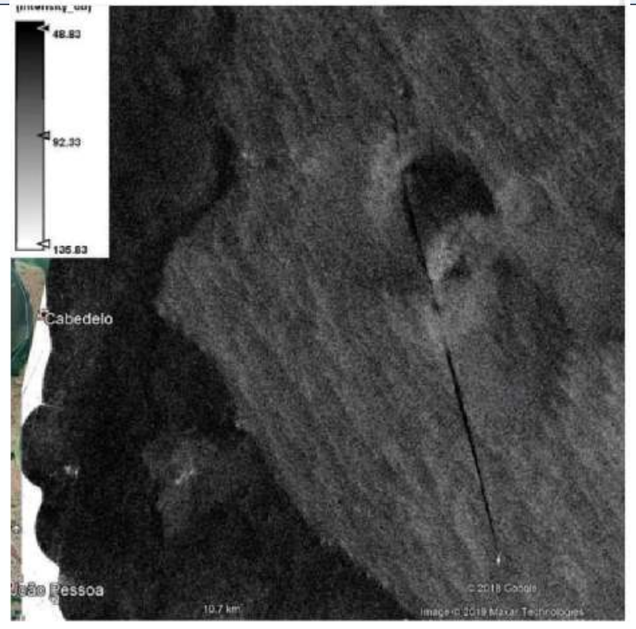
_gmreuss Imagens Sentinel-1 (7/7/19 e 19/7/19) processadas no Laboratório de Oceanografia da UESC, mostrando possíveis manchas de óleo em frente à costa de Pernambuco e Paraíba. A imagem do dia 19 mostra claramente o rastro escuro de óleo deixado pelo navio.

ID	DATA DE AQUISIÇÃO	HORA UTC	CAMPO DE VENTO (m/s)	LATITUDE	LONGITUDE	AREA (m2)	PERIMETRO (m)	AREA (km2)	COMPRIMENTO (km)	DISTÂNCIA DA COSTA	PROFUNDIDADE (m)
24	21/10/2019	8:11:31	3.61	-13.294582	-38.750432	1765950.57	17645.96	1.76595	2.87	16.4	-150









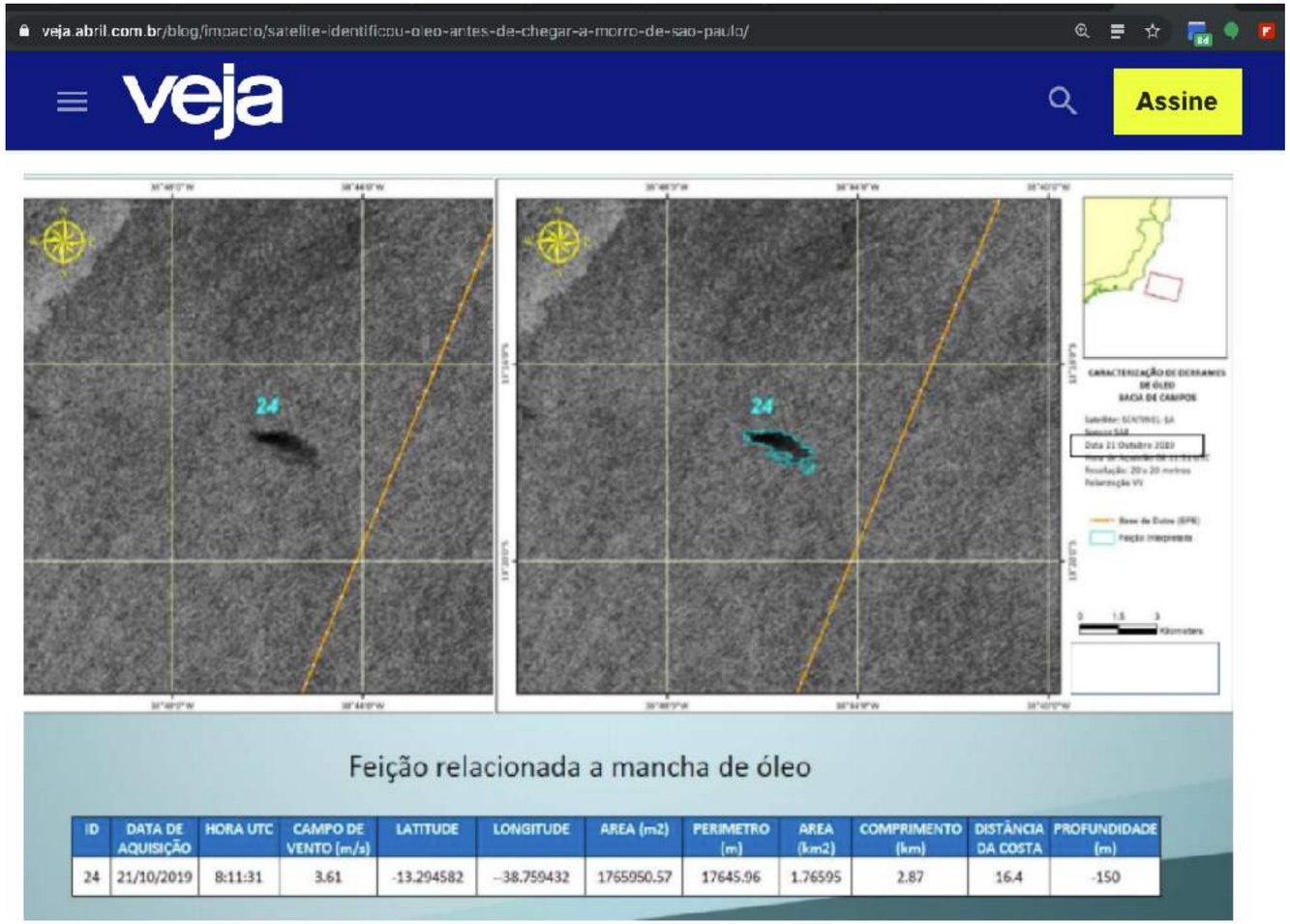
What is a long ship wake? Long ship wake is a turbulent wake and turbulent wake is the most common wake type on SAR images. Through statistical analysis of 71 ENVISAT Advanced Synthetic Aperture Radar (ASAR) images, we obtained probability tables (Table 1) for the four types of observed wakes (Table 1). From these results, the ship wake in an ASAR image is dominated by the turbulent wake and Kelvin wake, where the turbulent wake is 84% and the Kelvin wake is 14.6%. Narrow-V wakes and internal wave wakes have little probability of occurrence.
Therefore, turbulent wakes are the most common wake type in SAR images. Turbulent wakes usually appear as a dark narrow line, but sometimes appear as a bright narrow line, or both. Observed turbulent wakes generally include one of three characteristics: one dark narrow line, one bright narrow line, or an oil spill dark line. Figure 1 presents the images of three typical turbulent wakes.

The formation mechanism of a dark turbulent wake includes two types of sea surface flows resulting from the ship's movement: hull vortex caused by the flow on both sides of the route of the current, and backward flow. These two streams suppress sea surface Bragg waves, thereby weakening the backscattering energy in this region, making it appear as a dark wake in SAR images (Lyden et al., 1988).

In theory, due to the impact of waves, dark turbulence wakes exist for only a short period of time and are thus relatively shorter in length. However, when the vessel discharges, a large amount of oil film gathers on the wake. Because of its strong viscosity, the oil film inhibits Bragg waves, weakening the backscattered energy and resulting in a dark line. In contrast, oil film effects last longer, and the wakes are usually longer. After analyzing these wakes, the main differences are that long ship wakes for oil spills are thin and long, with clear edges, and markedly lower backscattering than the surrounding sea. The average length of an oil spill long wake is more than 10 km, whereas that of a common turbulent wake is about 5 km.

Journal of Oceanology and Limnology
Vol. 37 No. 5, P. 1523-1532, 2019 https://doi.org/10.1007/s00343-019-8221-y
Rapid detection to long ship wake in synthetic aperture radar satellite imagery*
CHEN Peng**, LI Xiunan, ZHENG Gang
Second Institute of Oceanography, Ministry of Natural Resources, Hangzhou 310012, China

21/Outubro/2019



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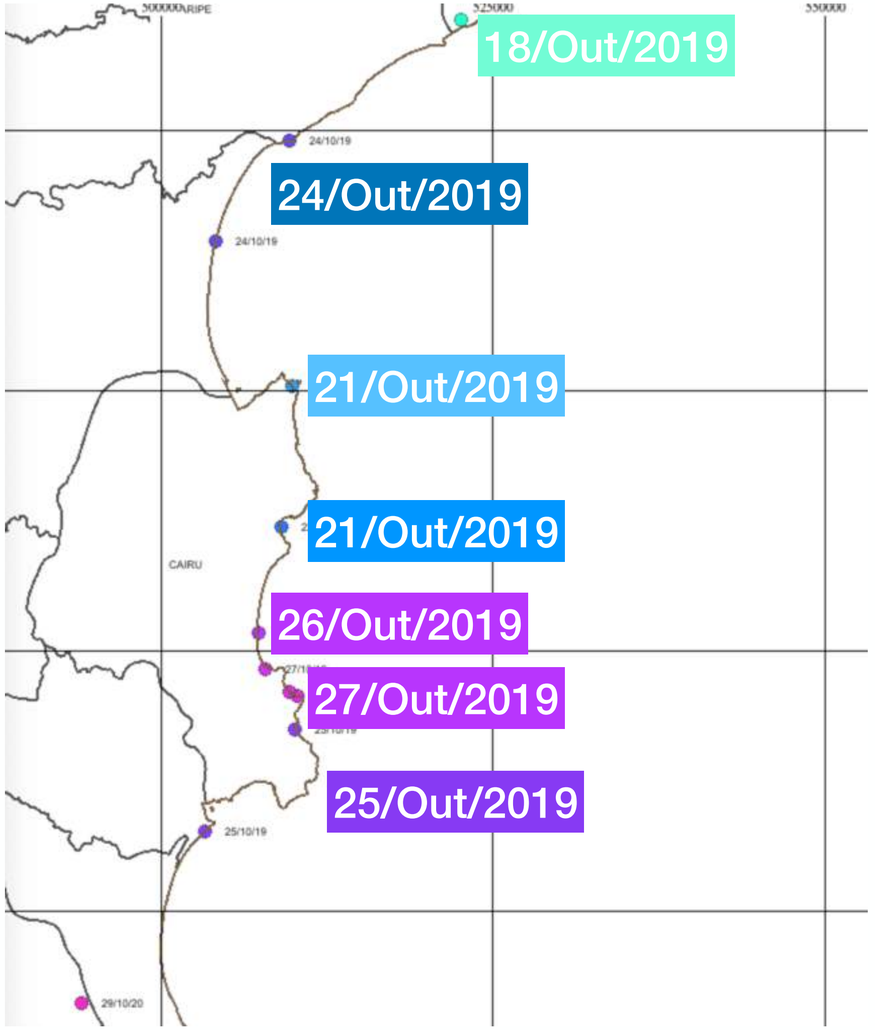

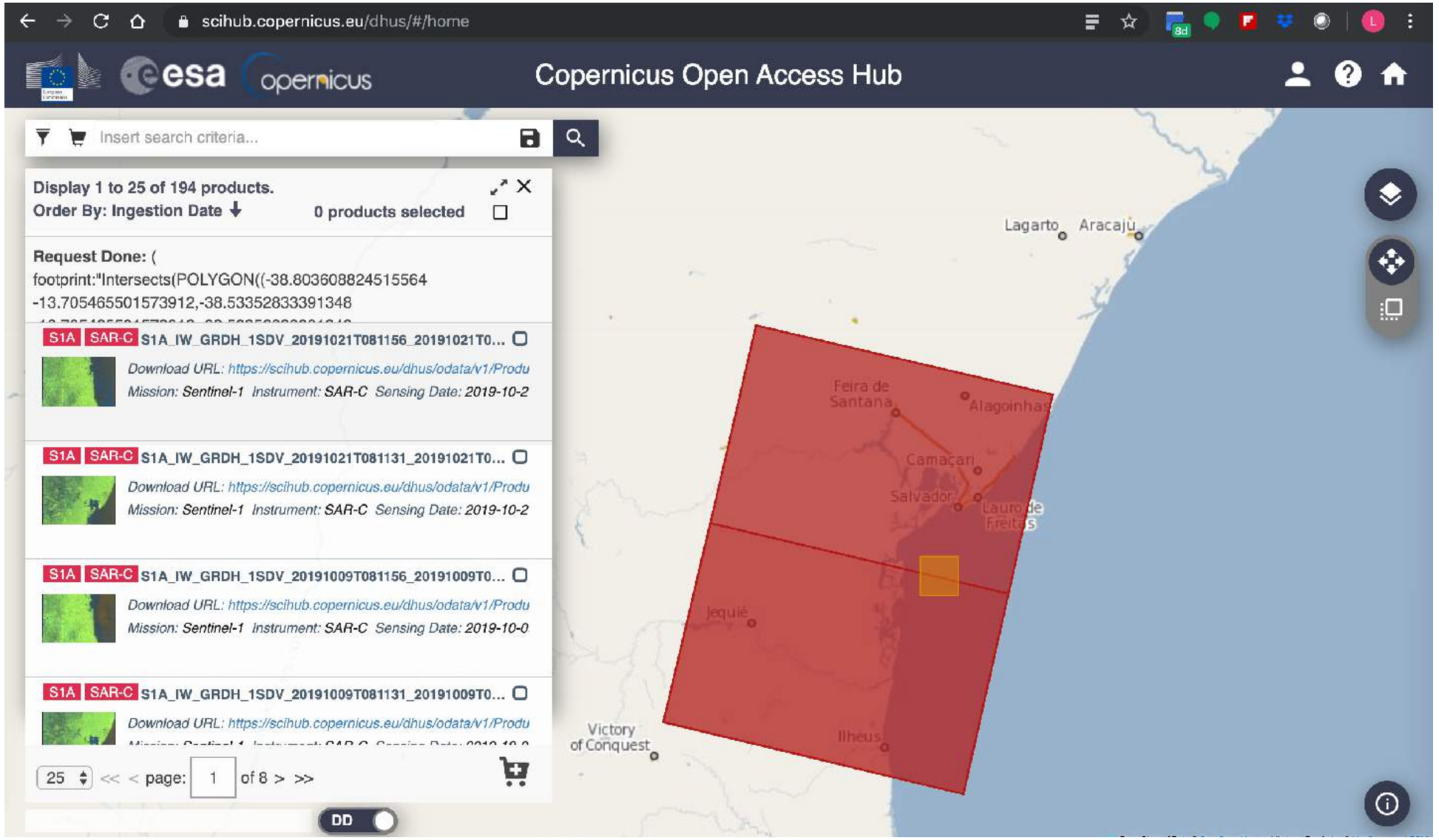
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25 << < page: 1 of 8 > >>
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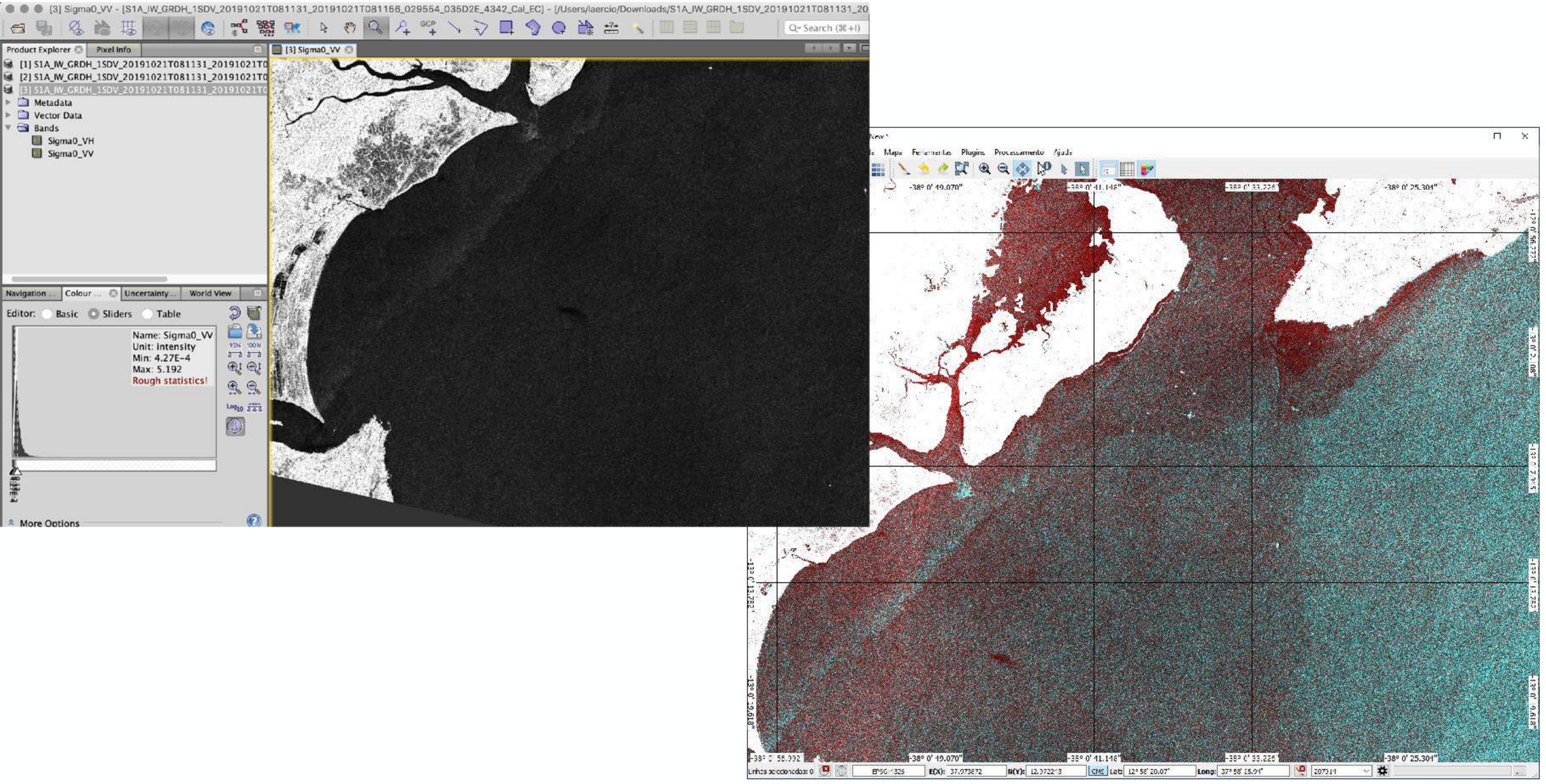
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More Options
Mapa
Ferramentas
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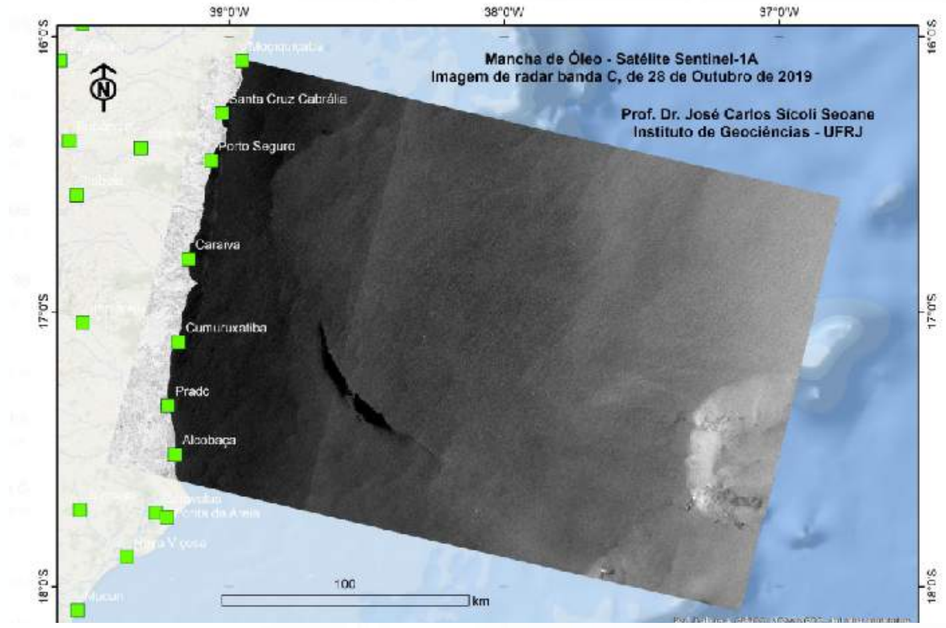
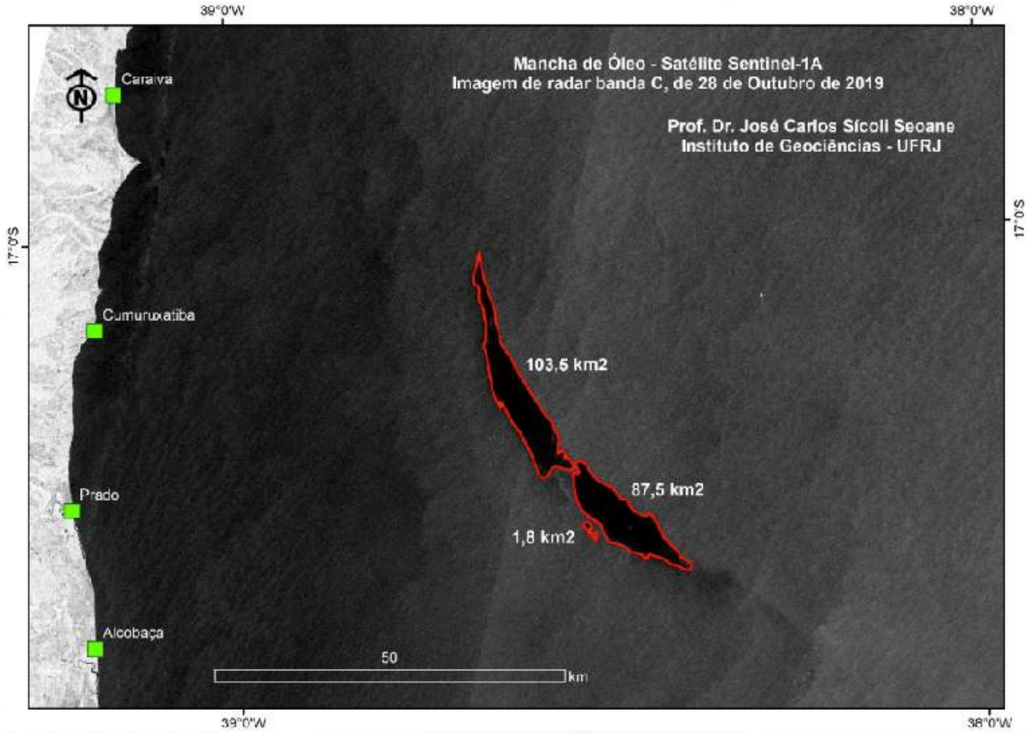
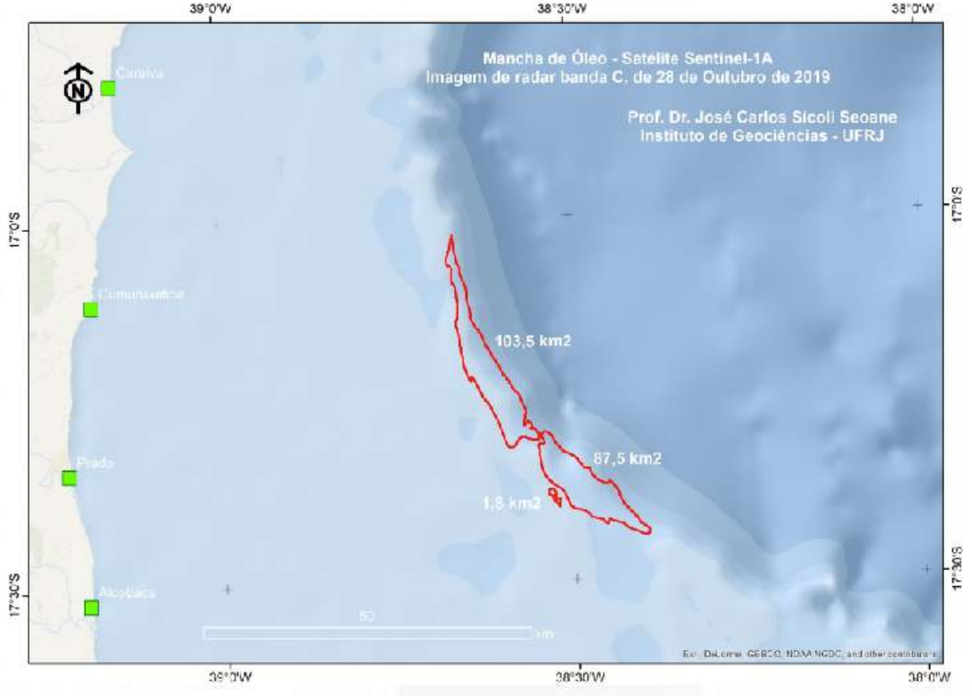
28/Outubro/2019







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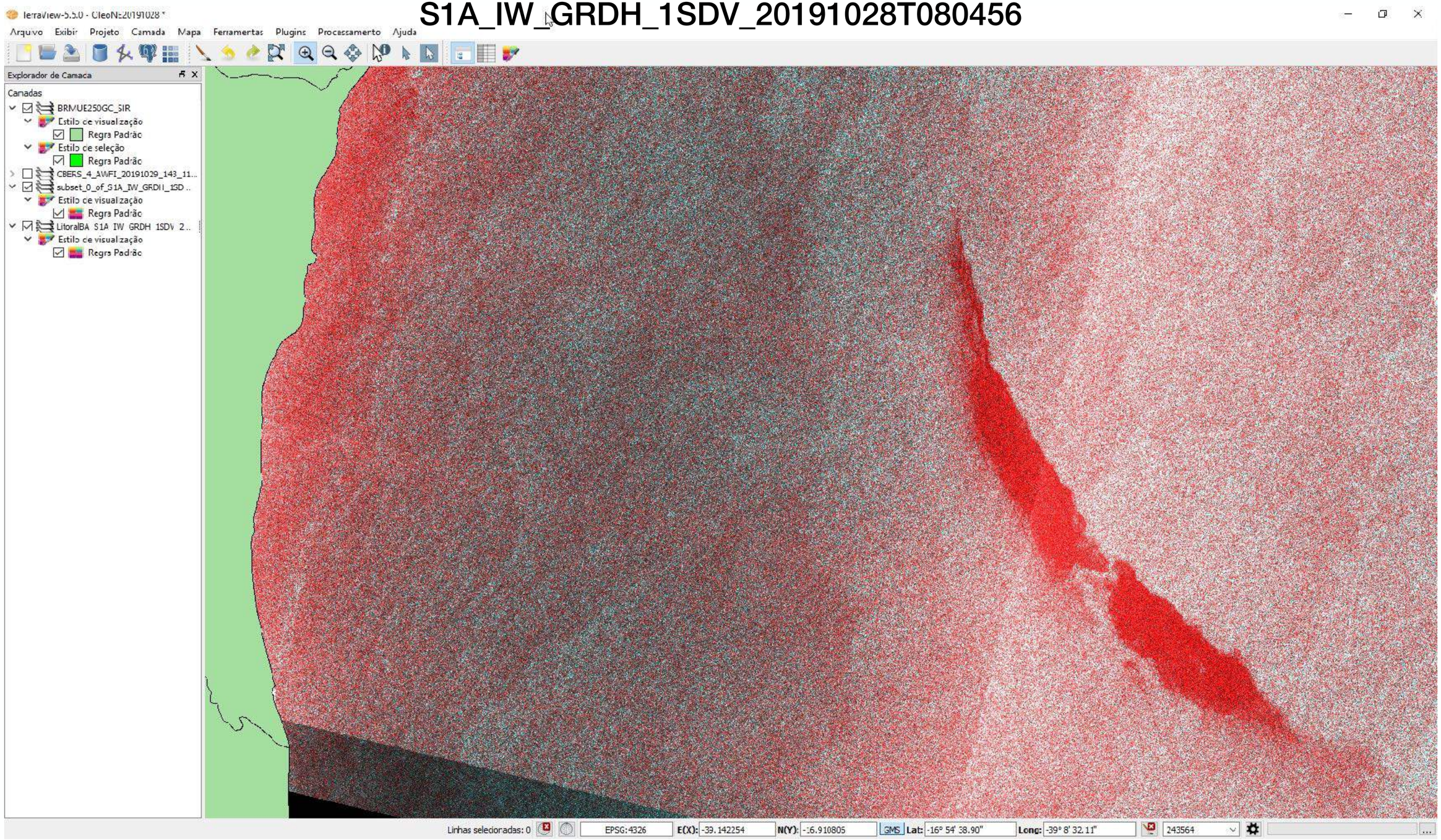

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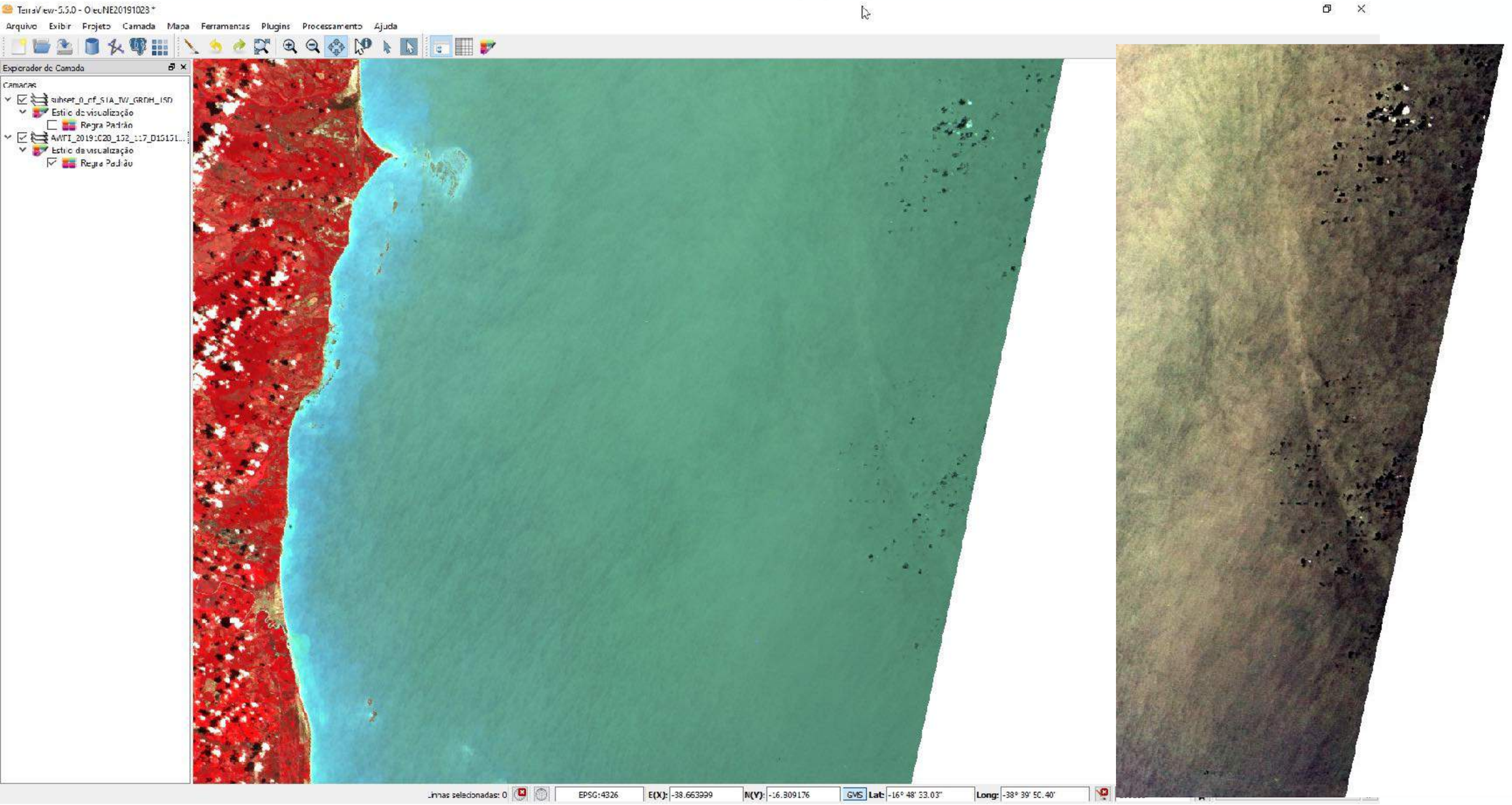

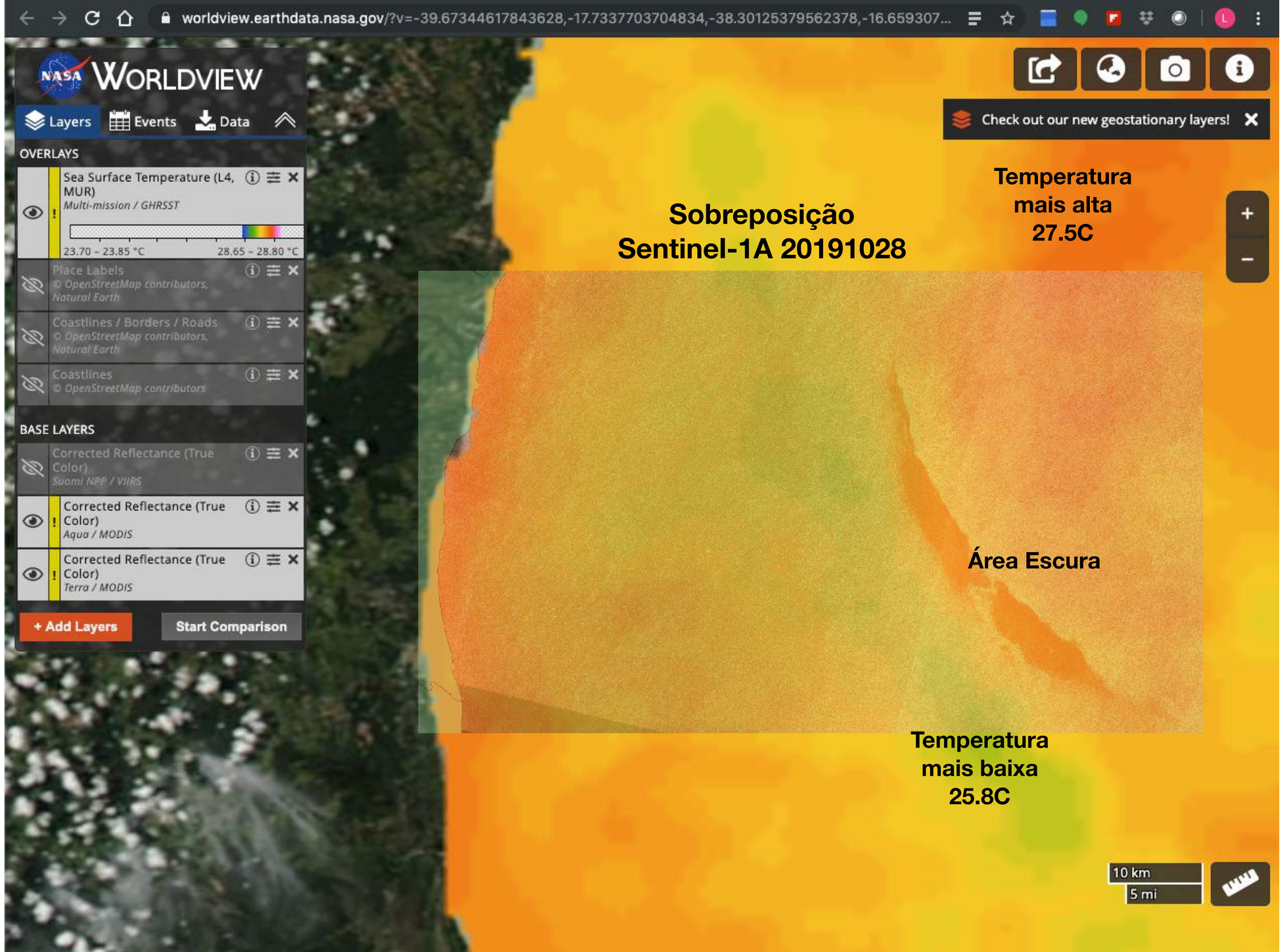
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OVERLAYS
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Multi-mission / GHRSST
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28.65 – 28.80 °C
Place Labels
© OpenStreetMap contributors, Natural Earth
Coastlines / Borders / Roads
© OpenStreetMap contributors, Natural Earth
Coastlines
© OpenStreetMap contributors
BASE LAYERS
Corrected Reflectance (True Color)
Suomi NPP / VIIRS
Corrected Reflectance (True Color)
Aqua / MODIS
Corrected Reflectance (True Color)
Terra / MODIS
+ Add Layers
Start Comparison
Check out our new geostationary layers!
Sobreposição
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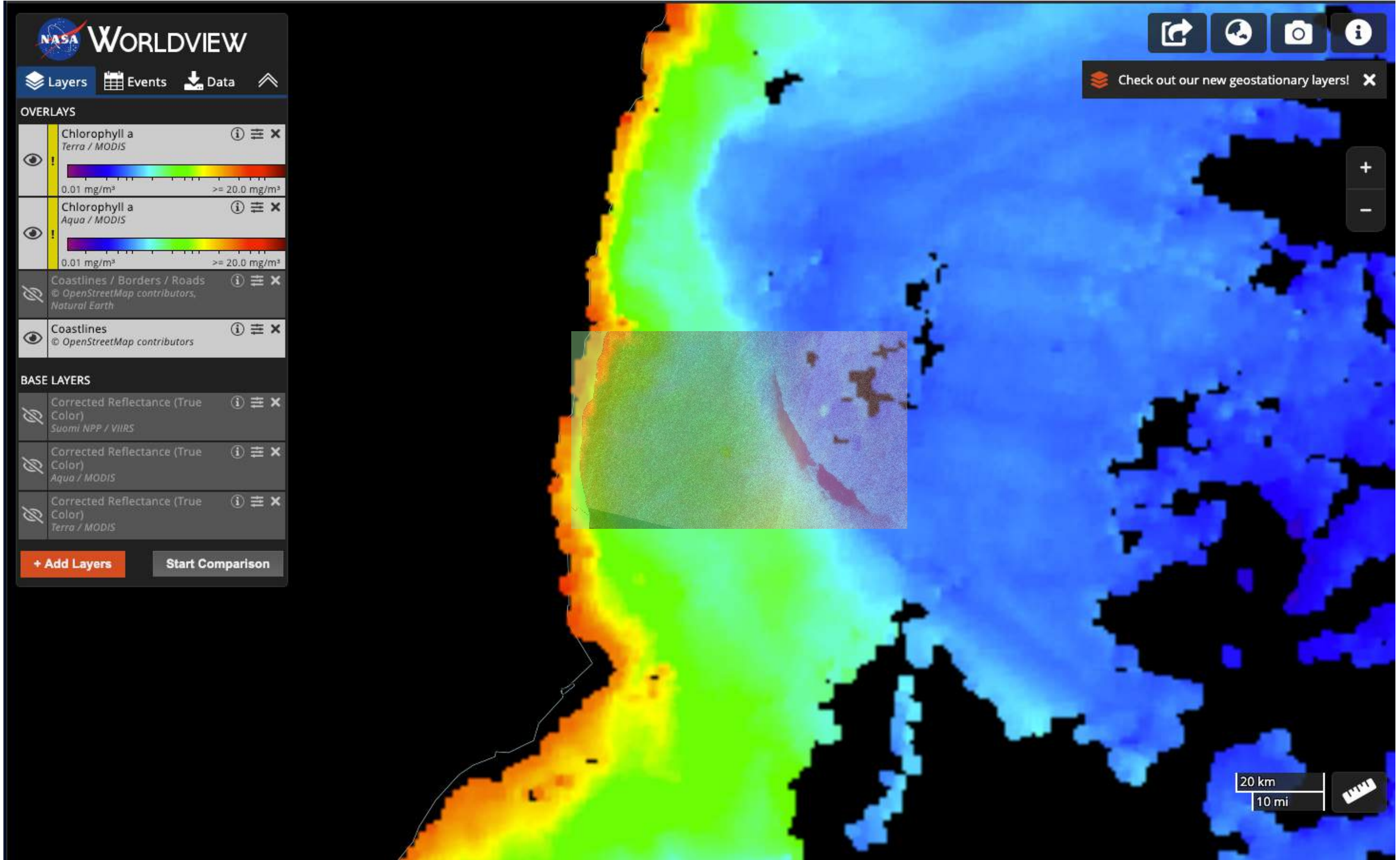
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>= 20.0 mg/m³
Coastlines / Borders / Roads
© OpenStreetMap contributors, Natural Earth
Coastlines
© OpenStreetMap contributors
BASE LAYERS
Corrected Reflectance (True Color)
Suomi NPP / VIIRS
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Terra / MODIS
+ Add Layers
Start Comparison
Check out our new geostationary layers!
20 km
10 mi

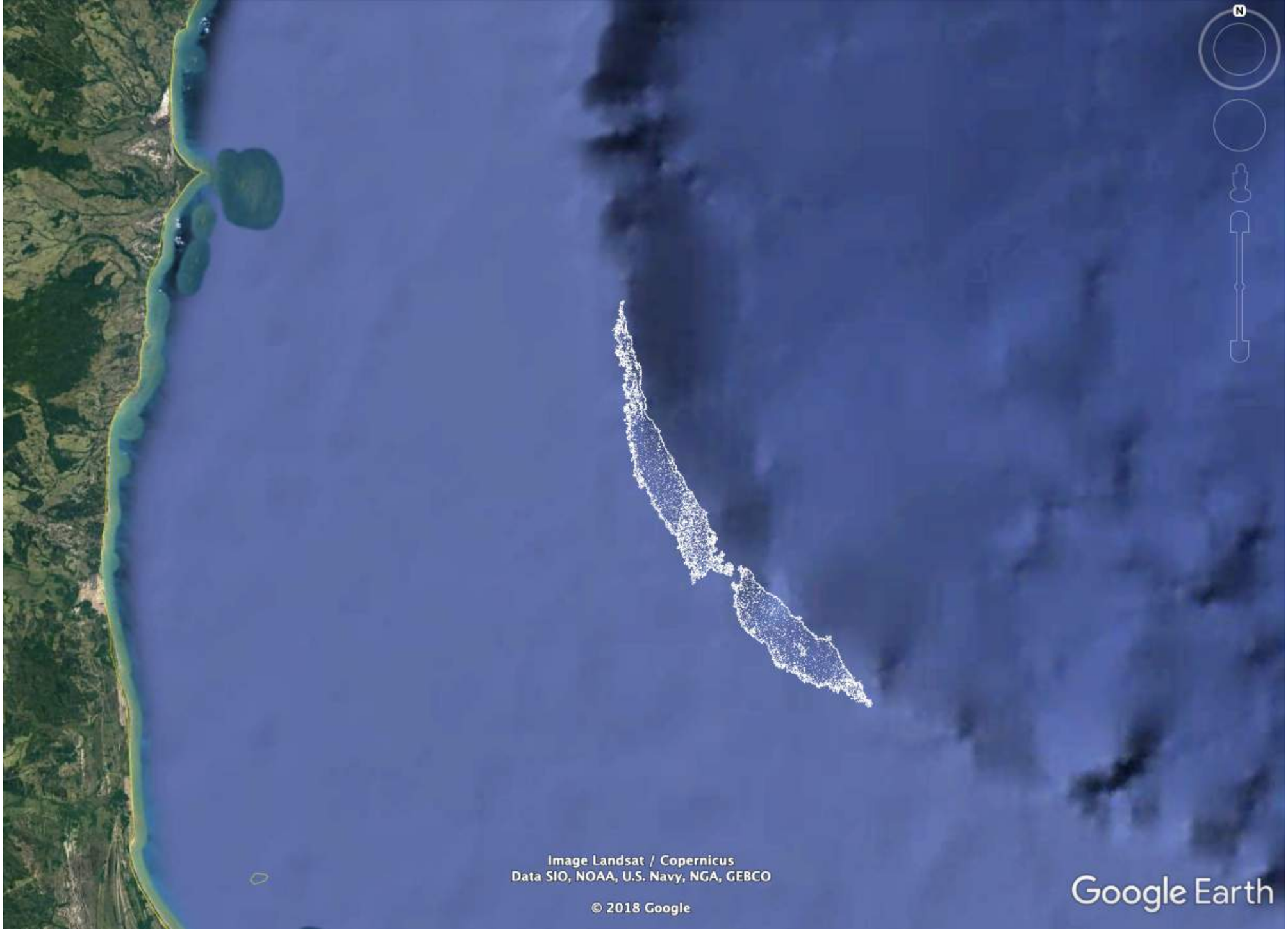
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Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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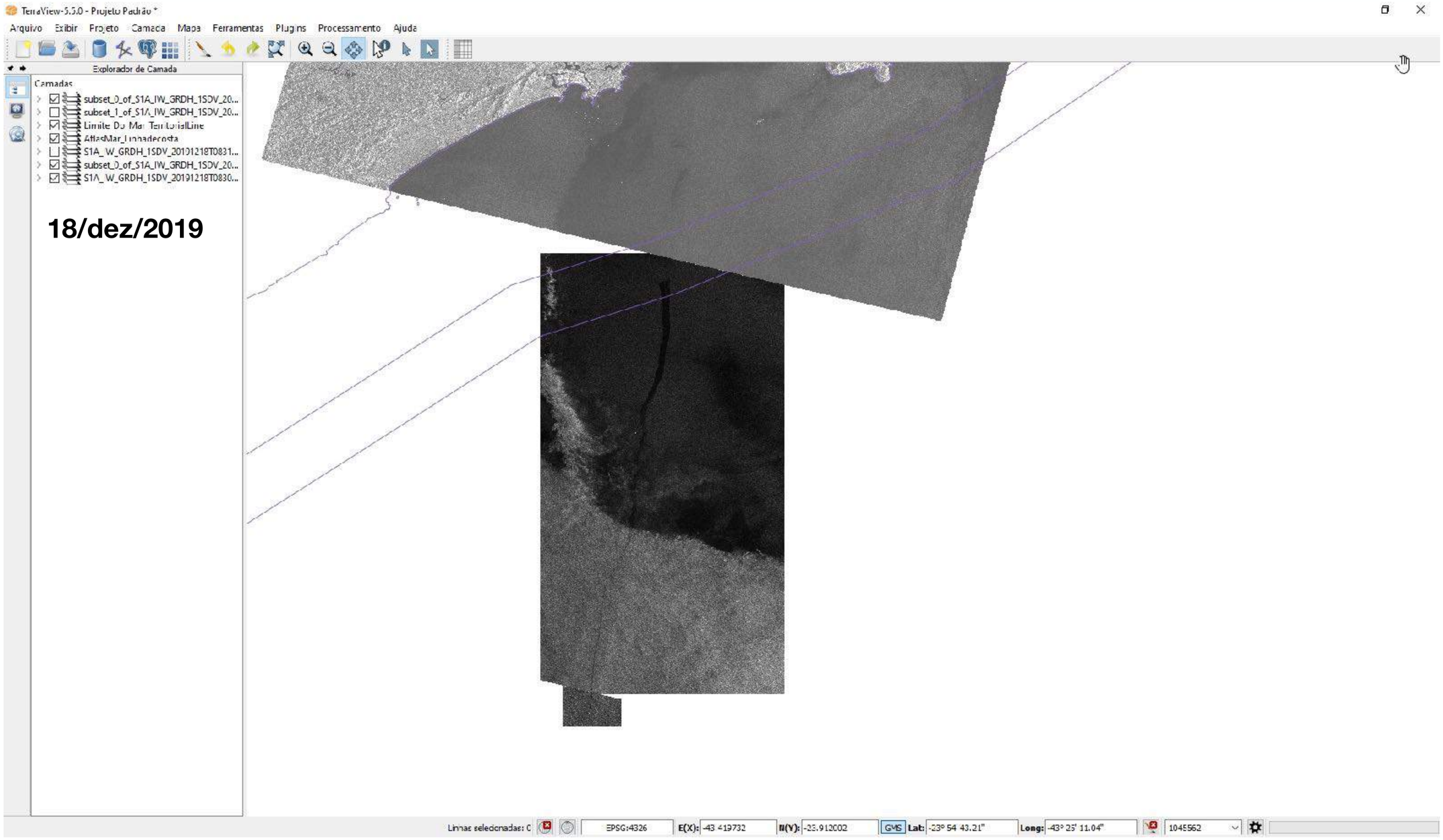
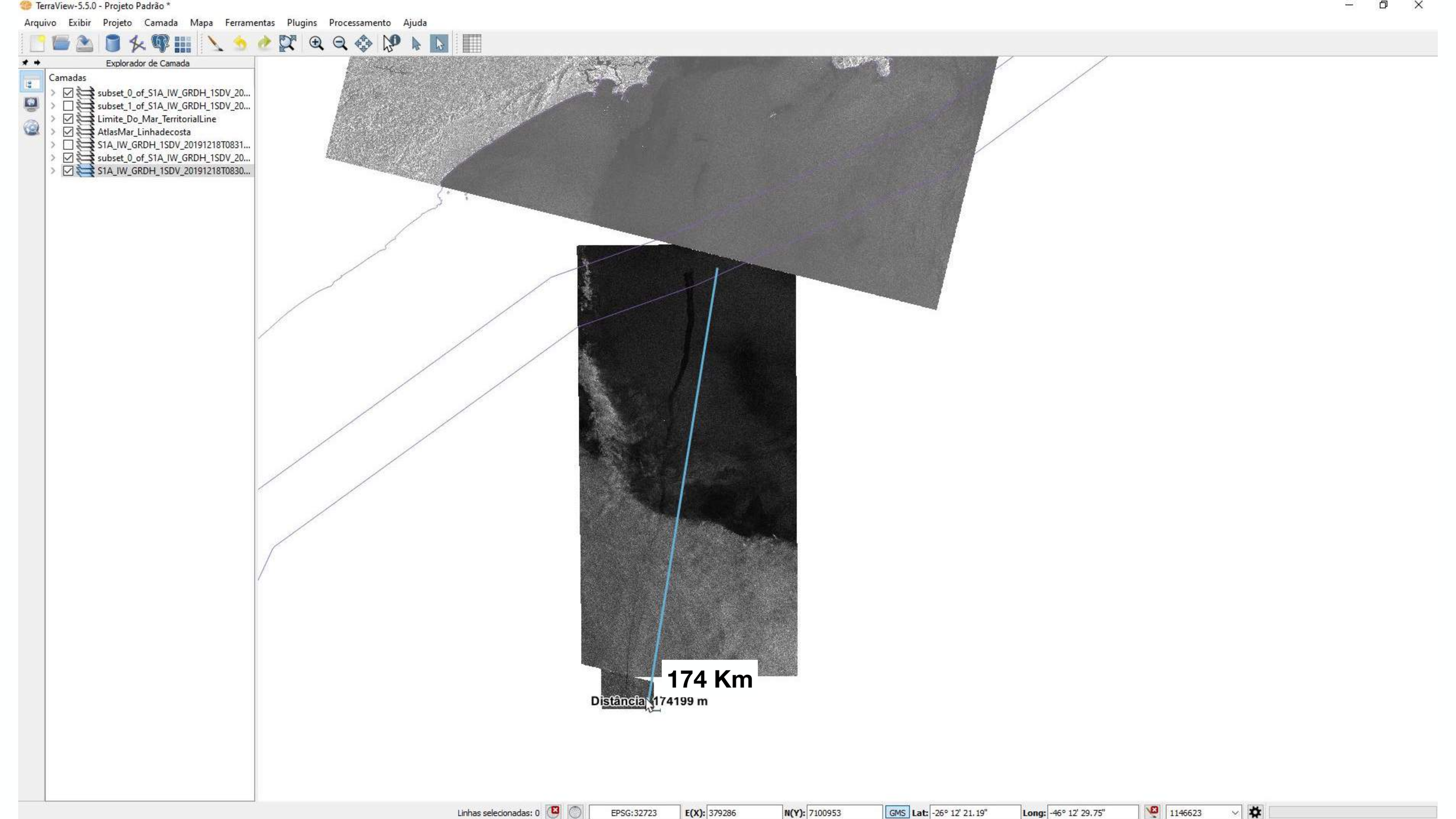
Litoral SP/PR

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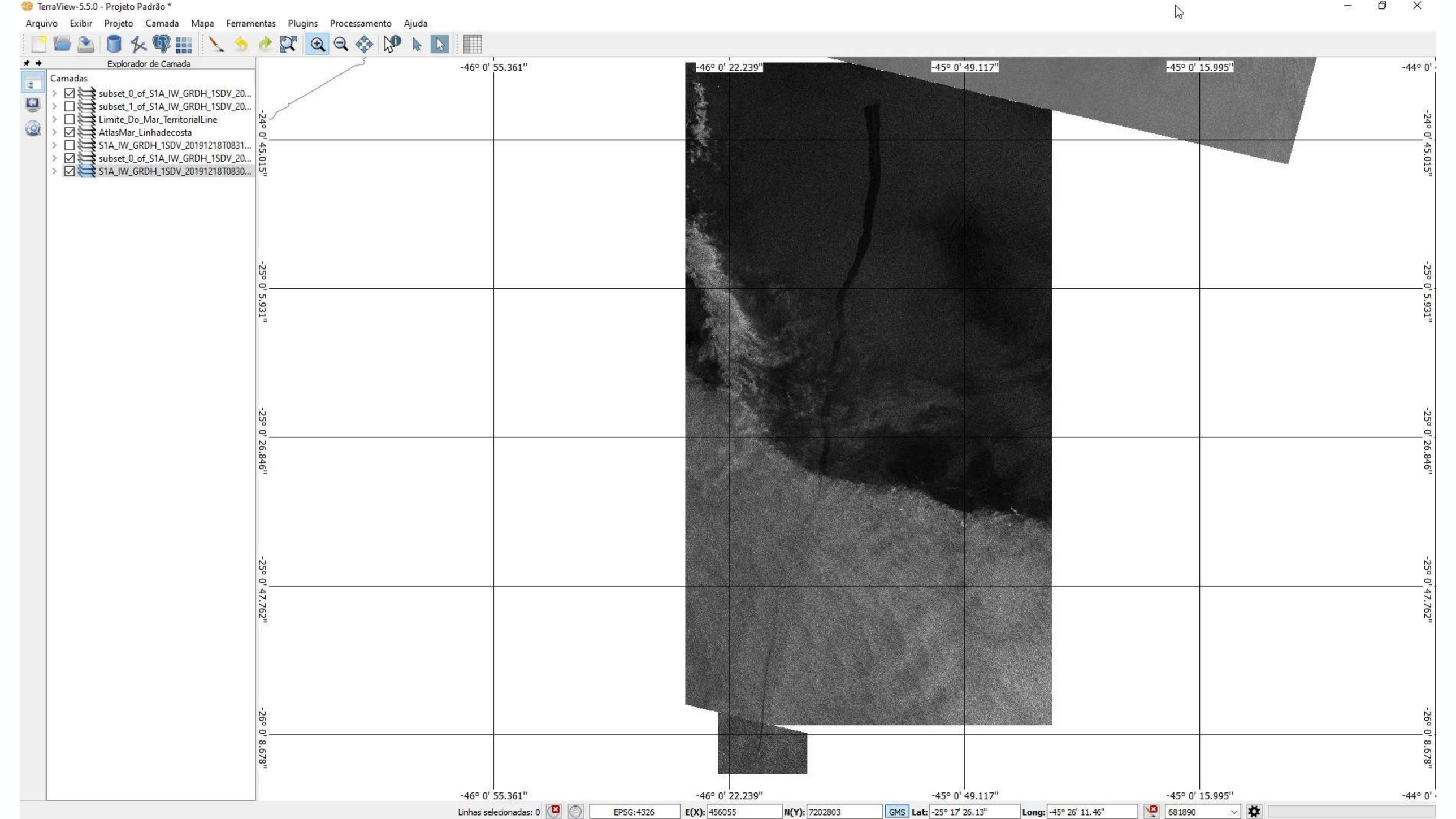
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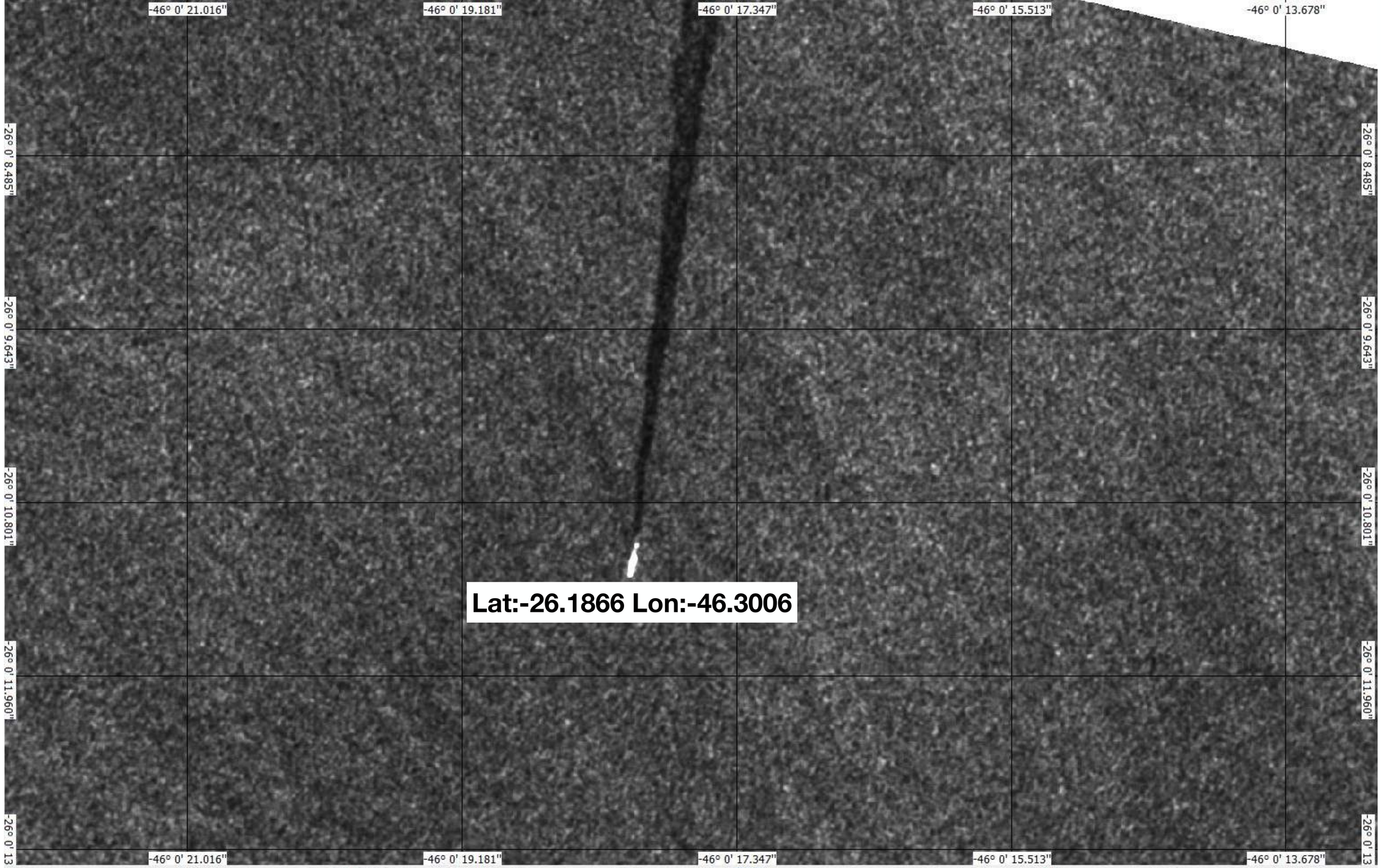

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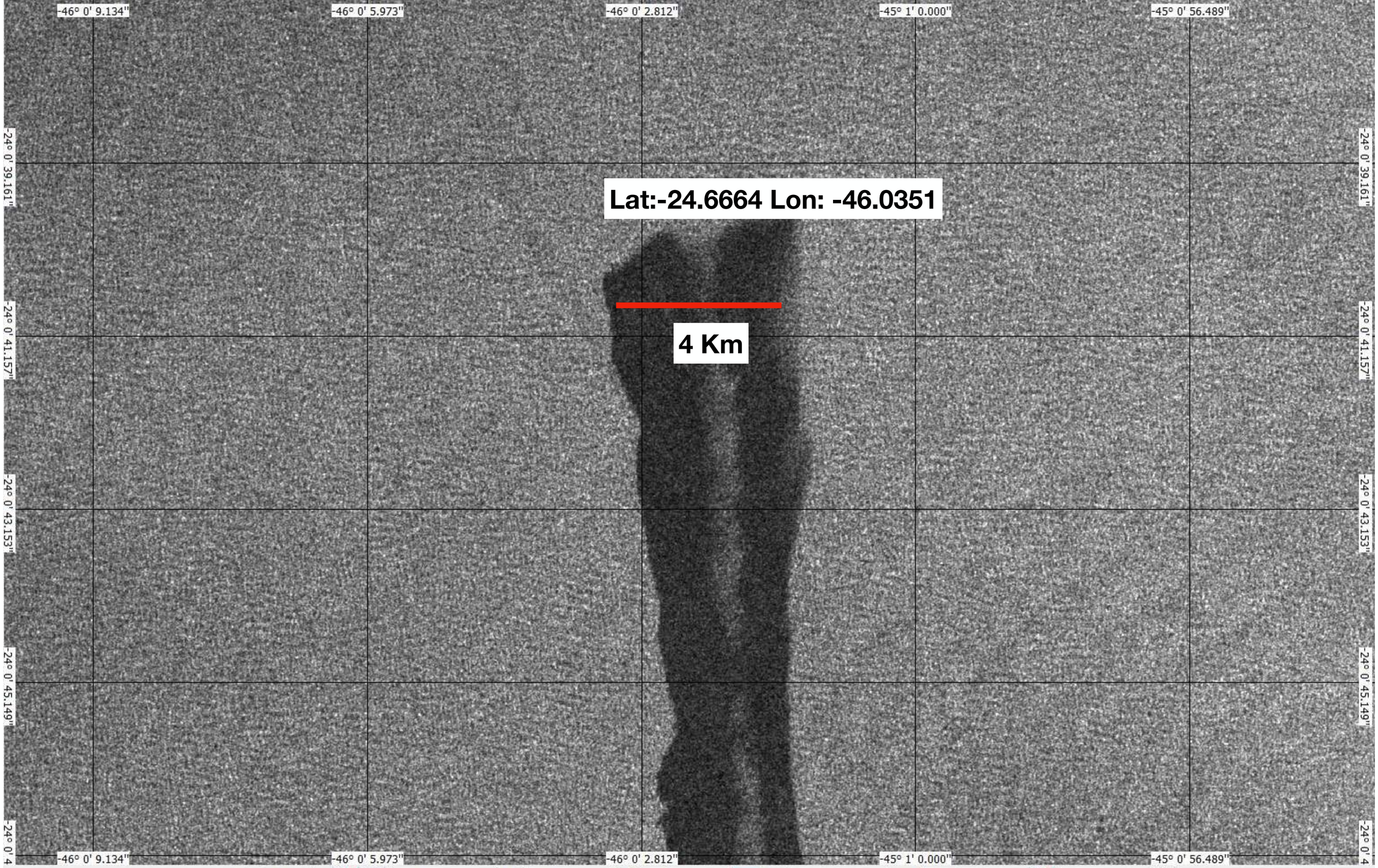

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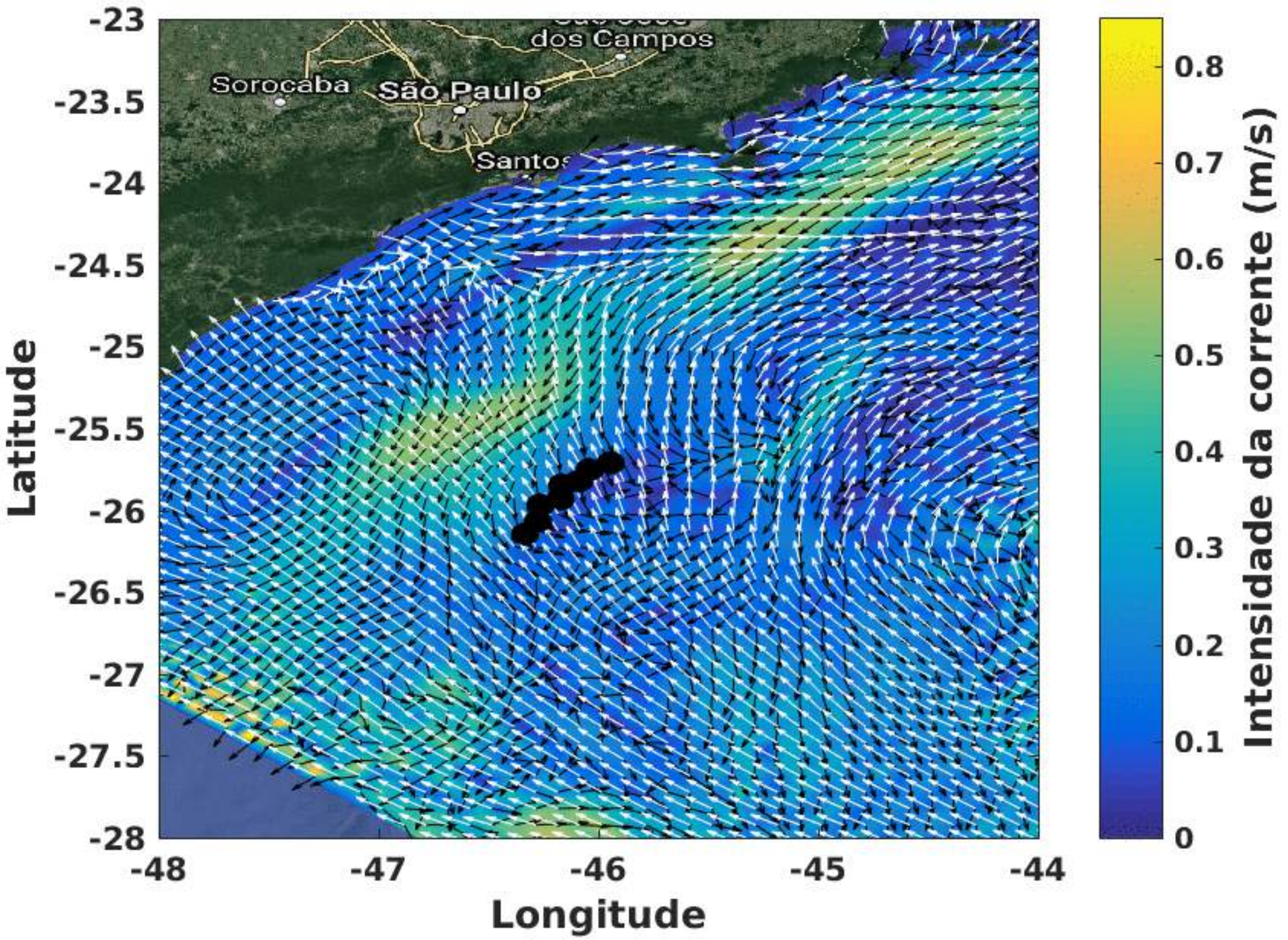
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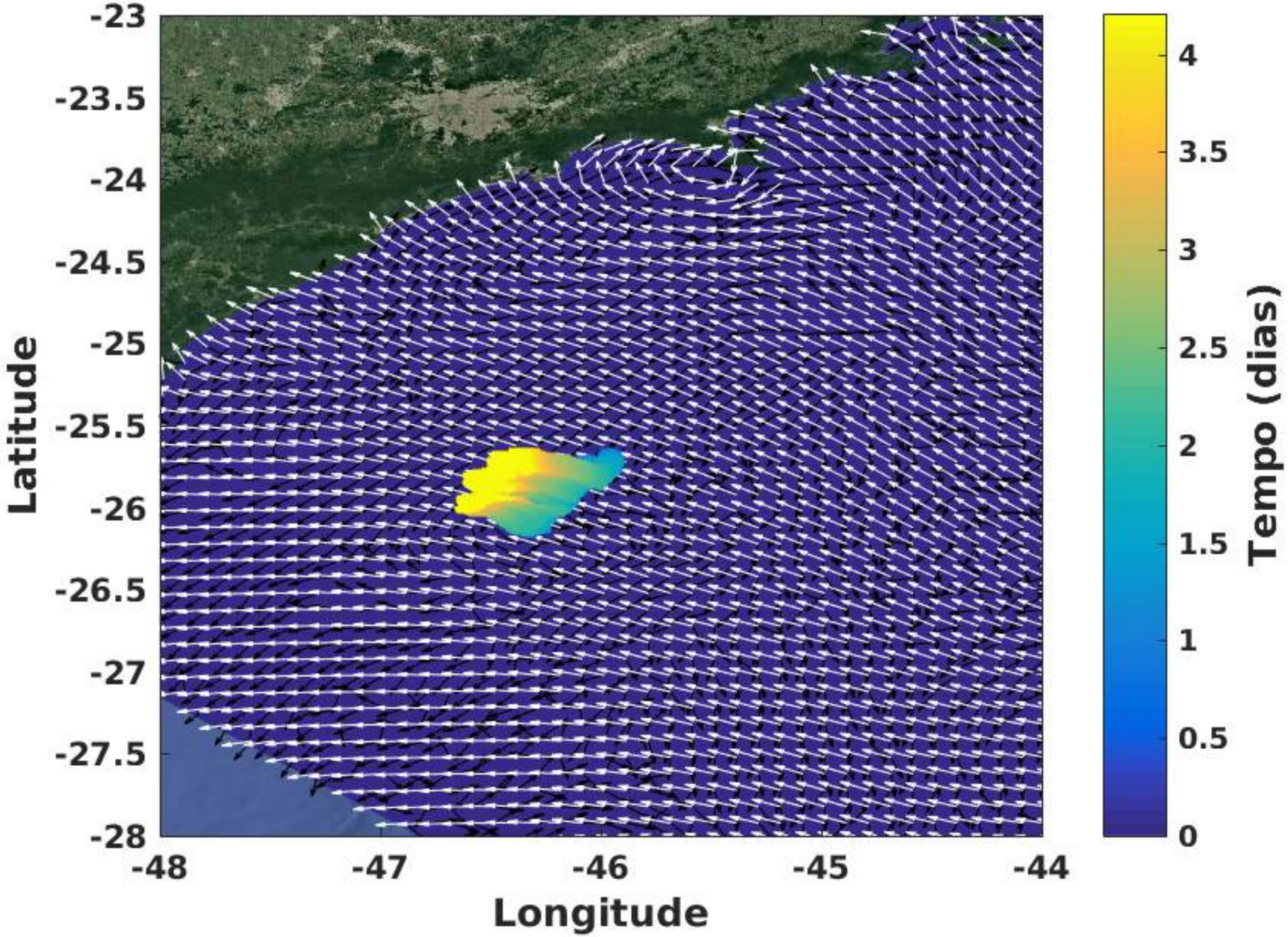
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NovaSAR-1
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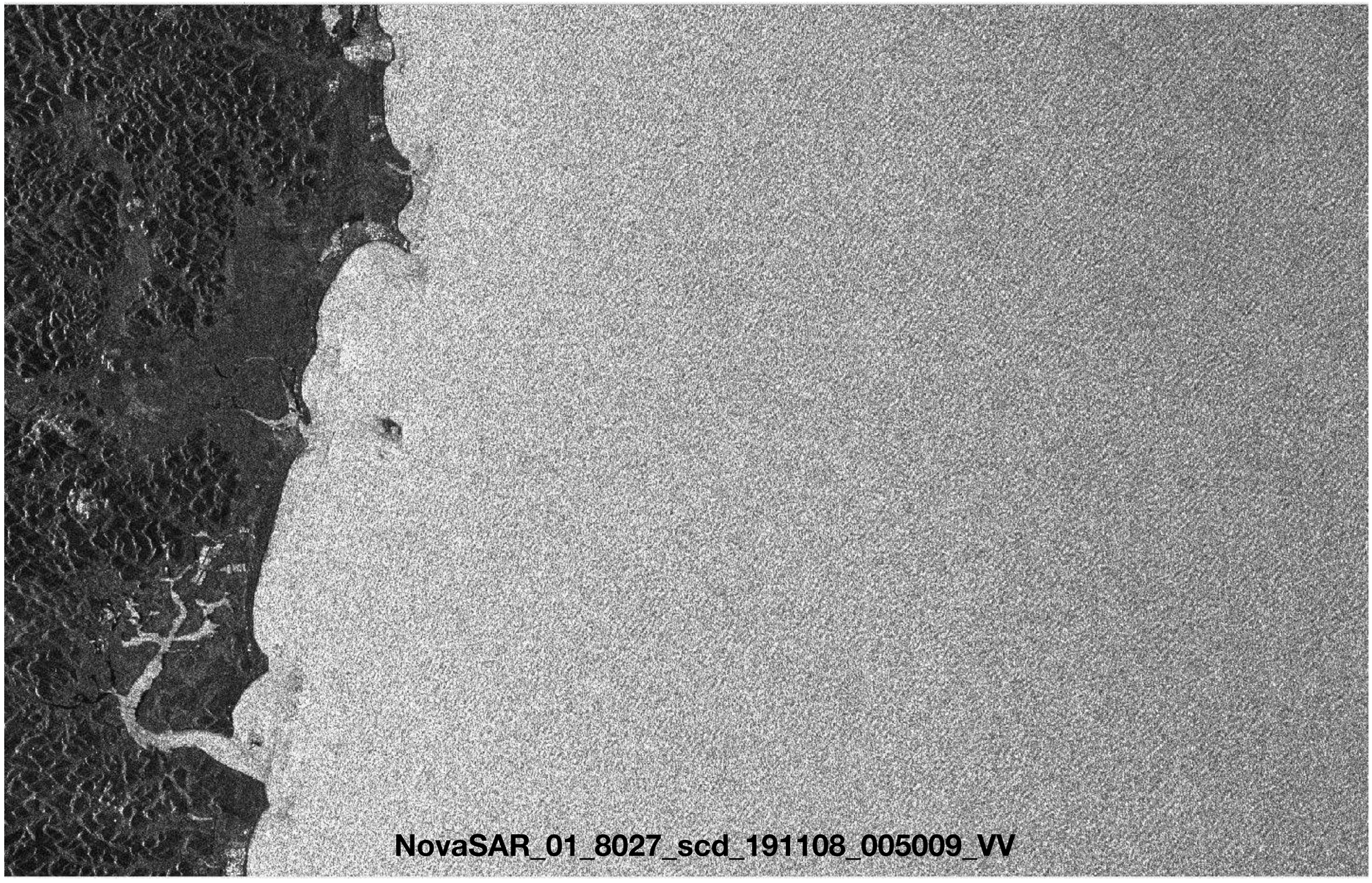

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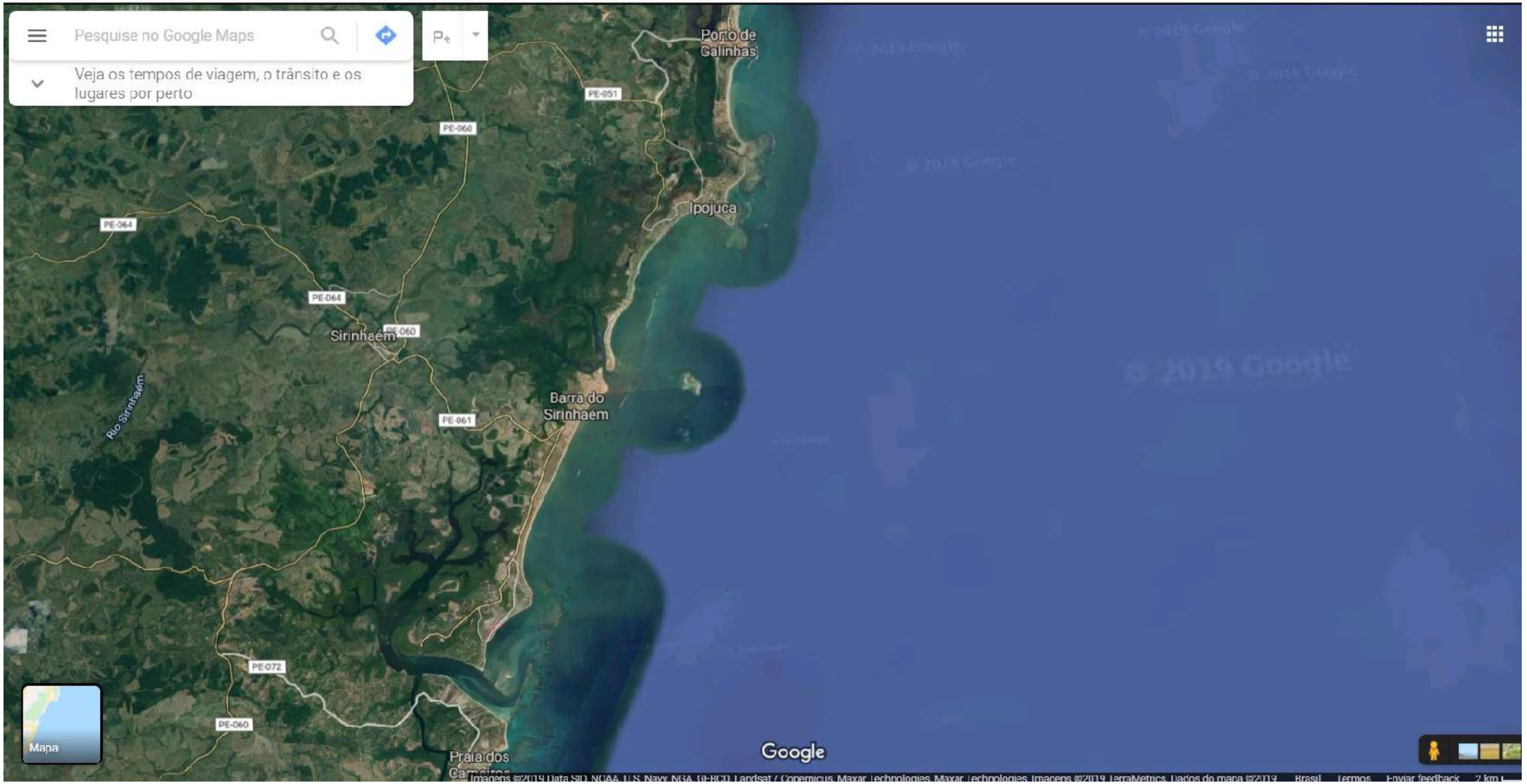

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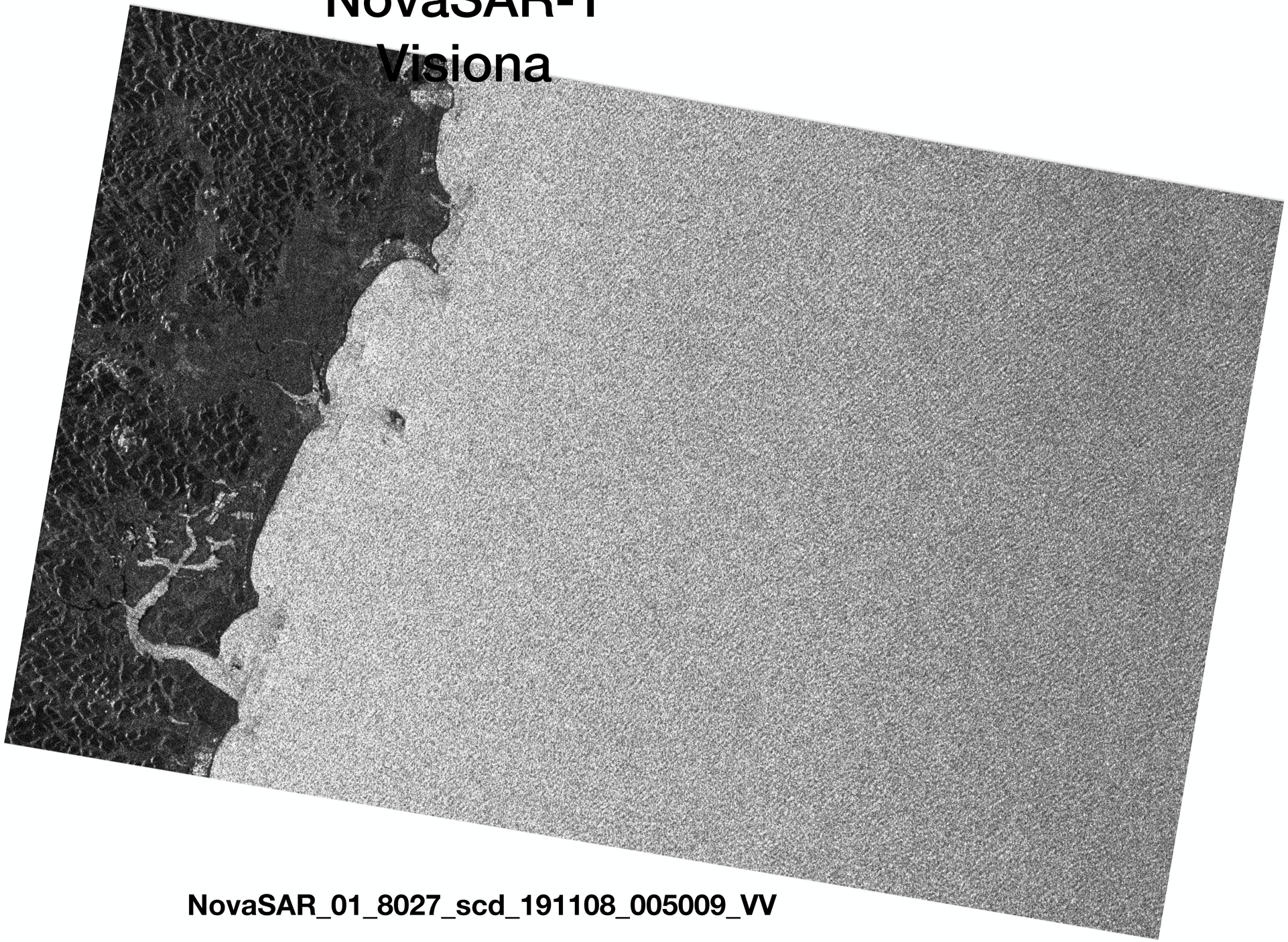
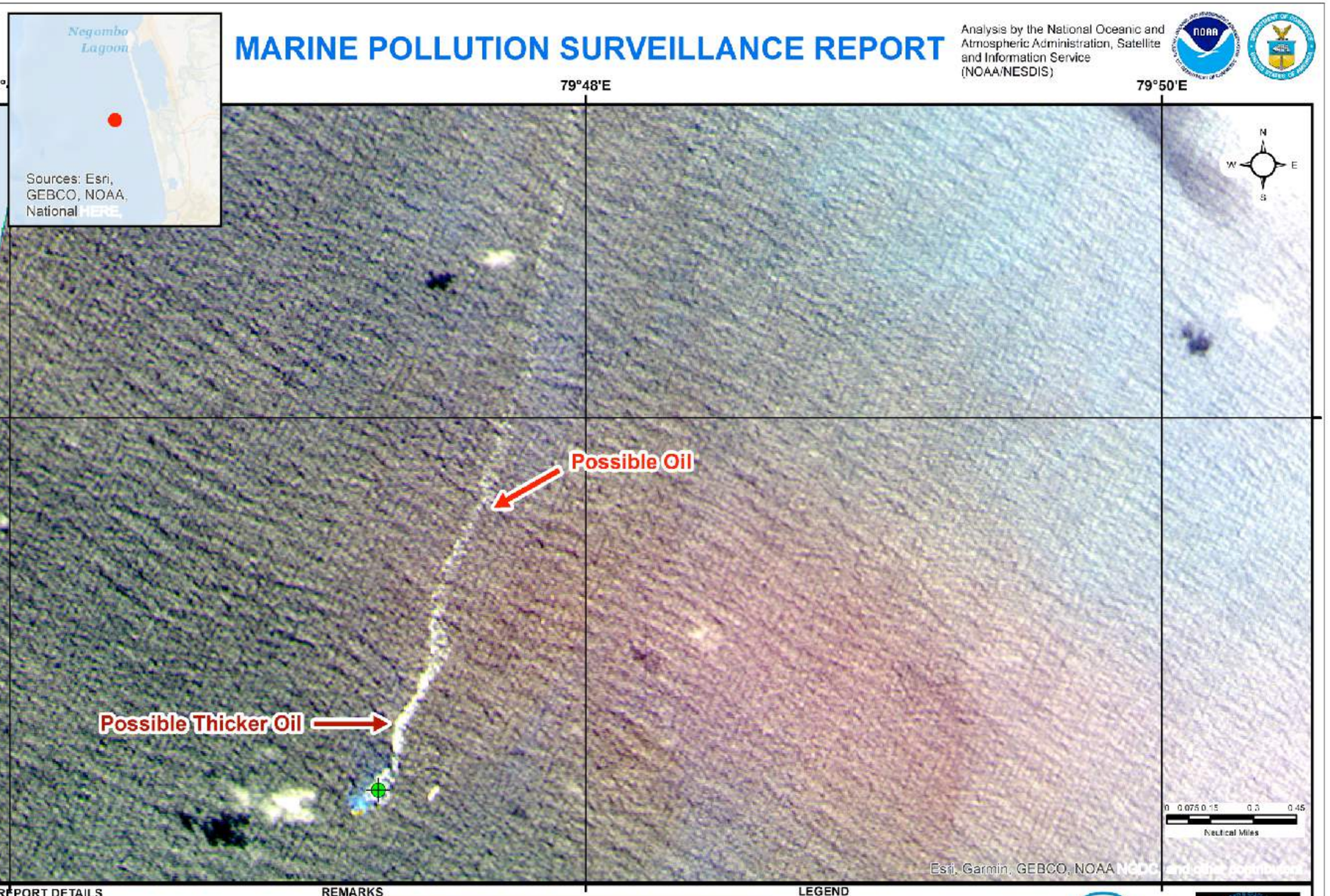


NovaSAR_01_8027_scd_191108_005009_VV


FPSO Trinity
CBERS4 - PAN10M 19/Jun/2021

MARINE POLLUTION SURVEILLANCE REPORT

Analysis by the National Oceanic and Atmospheric Administration, Satellite and Information Service (NOAA/NESDIS)



REPORT DETAILS

REPORT DATE/TIME: 6/12/2021 1000 (UTC)
IMAGE DATE/TIME: 6/10/2021 0519 (UTC)
DATA SOURCE: CBERS-4
MODE: Multispectral
RESOLUTION: 10 meter

Coordinate System: GCS WGS 1984
Datum: WGS 1984

REMARKS

The MV X-PRESS PEARL continued to appear to leak possible oil from the vessel. The slick had a bright shimmery return against the background environment, indications of thicker oil. The slick was 2.74nm in length and was linear in shape toward the north from the vessel.

UNCERTAINTIES: The full extent of the anomaly could not be determined because of the image extents not covering the entire area.

LEGEND

Suspected Point Source:
[07°04'42" N/79°47'16" E]

Total Area of Possible Oil: 0.67 km²

Resumo

Não foram detectadas manchas de óleo em imagens SAR nem nas óticas

Análise de manchas suspeitas indicando falsos positivos

Efeitos mais comuns ventos, densidade e óleos biogênicos

Várias imagens com navios com rastro de óleo

Obrigado

laercio.namikawa@inpe.br