

CASSIE – Intertidal Module

User - roadmap

Coastal Analyst System from Space Imagery Engine

Collaborative web platform with geospatial observation and forecasting solutions applied to monitoring, mitigation and adaptation of the coastal zone in the face of climate change.



FIRST ACCESS



SIGN IN WITH GOOGLE

Module Selection

Module Selection



Shoreline Analyst

Automatic mapping and statistical analysis of the shoreline evolution on any coastal area of interest in the world, using this module.

CHOOSE



Bathymetry (beta)

Estimation of shallow water depth on a selected coastal region, using optical inversion algorithms and machine learning.

CHOOSE



Coastal Squeeze (beta)

Mapping and analysis of indicators to obtain the Coastal Squeeze potential in mangrove areas.

CHOOSE

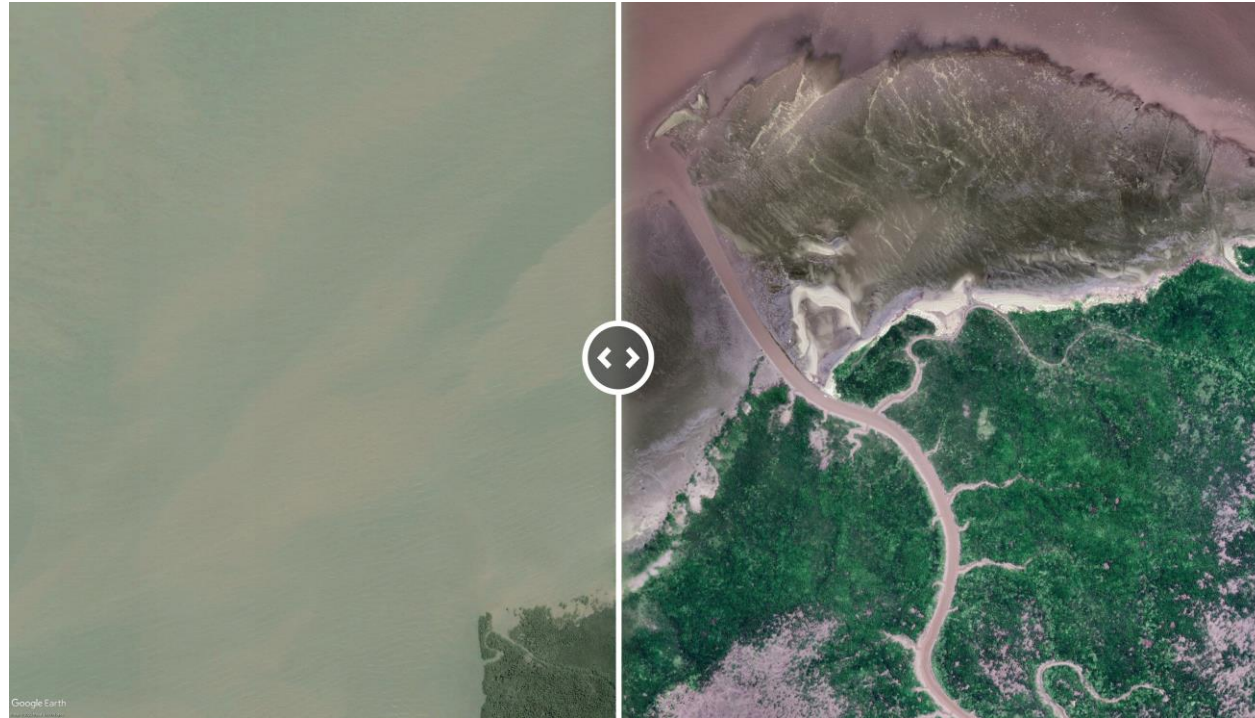


Intertidal (under development)

Depth estimation on intertidal zones, through waterline method.

CHOOSE

Intertidal Module



Intertidal (under development)

Depth estimation on intertidal zones, through waterline method.

Step 1

Intertidal

1

2


3

4

5

Satellite selectionInput dataImage acquisitionIntertidal áreaWaterlines


Select the available satellite for image aquisition.



Sentinel-2

Optical Resolution: 10 meters
Activity Period: 2013-2024
Provider: ESA
Revisit time: 5 days

CHOOSE



Landsat

Optical Resolution: 30 meters
Activity Period: 1984-2024
Provider: USGS/NASA
Revisit time: 16 days

CHOOSE

RETURN

Step 2

Intertidal

1

2

3

4

5

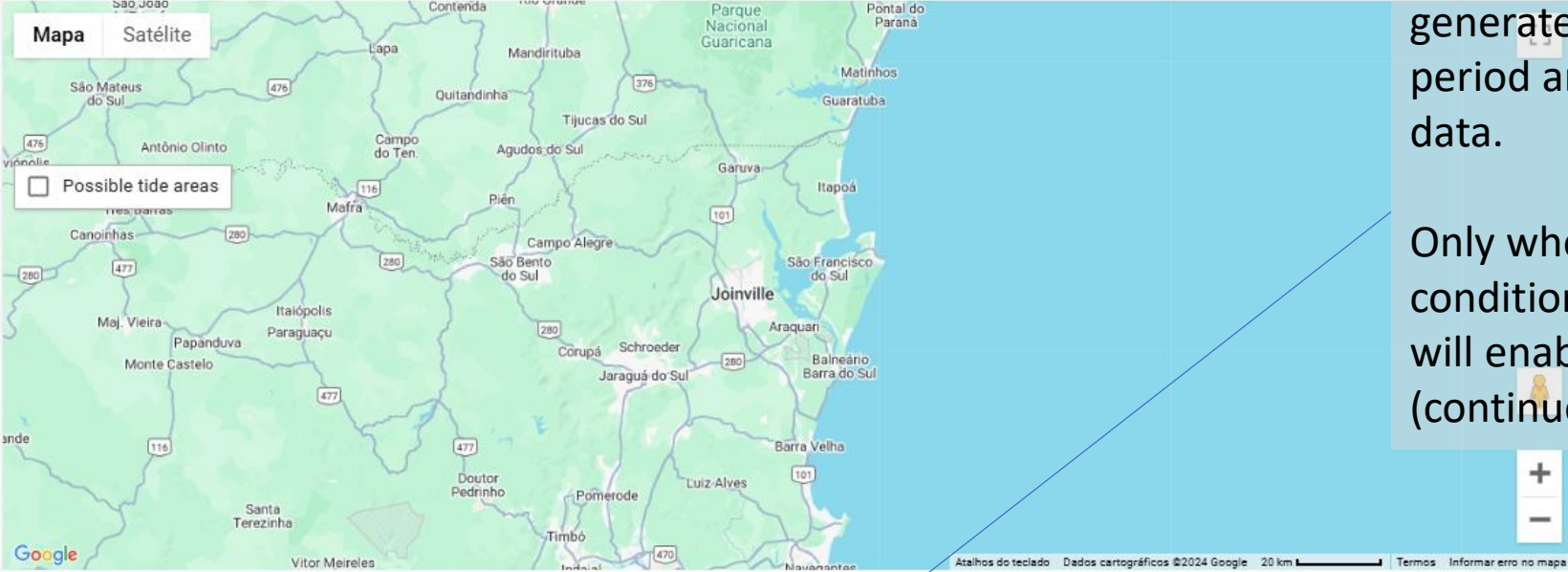
Satellite selectionInput dataImage acquisitionIntertidal áreaWaterlines

Selection of area of interest and tide data.

AREAPERIODTIDE DATA

MapaSatélite

☐ Possible tide areas



Atalhos do teclado Dados cartográficos ©2024 Google 20 km Informar erro no mapa

RETURNUNDOCONTINUE

In this step, the user must set an area of interest where he/she wants to generate topography, which period and input the tide data.

Only when these three conditions are set, CASSIE will enable the next step (continue) button.

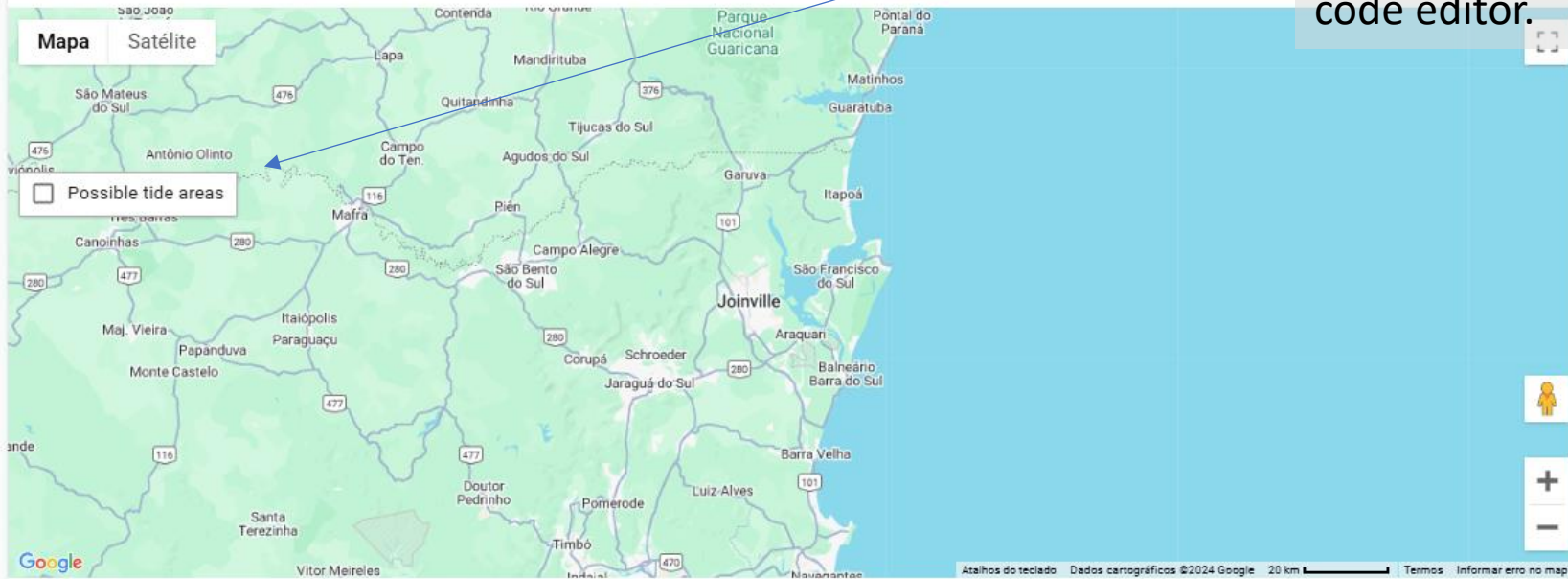
Step 2

Intertidal



Selection of area of interest and tide data

AREA	PERIOD	TIDE DATA
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- * Enable visualization of possible areas according to the dataset by Murray et al (2019), imported from the code editor.

RETURN

UNDO

CONTINUE

Murray, N.J., Phinn, S.R., DeWitt, M., Ferrari, R., Johnston, R., Lyons, M.B., Clinton, N., Thau, D. & Fuller, R.A. (2019). The global distribution and trajectory of tidal flats. *Nature*, 565, 222-225.

Step 2

1) AREA: Draw on map or input a kmz file

Choose one of the following options to define the area

IMPORT KMZ DRAW ON MAP

CANCEL

2) PERIOD: Set the beginning and ending date of analysis and set the cloud coverage to create the image collection

Define the date period for image collection

Select the analysis period start date

dd/mm/yyyy

Select the analysis period end date

dd/mm/yyyy ?

Define the maximum cloud coverage

<= 0 %

CANCEL CONFIRM PERIOD

⚠

3 months is the ideal period for analyzes of the intertidal region. Shorter periods may generate few images for analysis. Longer periods may present changes in the morphology, which may influence the results of topography in the intertidal zone.

Choose one of the following options to define the tide data

IMPORT DATA EXTRACT DATA FROM MODEL

CANCEL

3) TIDE SIGNAL: import the tide signal data

Step 3

Intertidal

✓

Satellite selection

✓

Input data

3

Image acquisition




4

Intertidal área

5

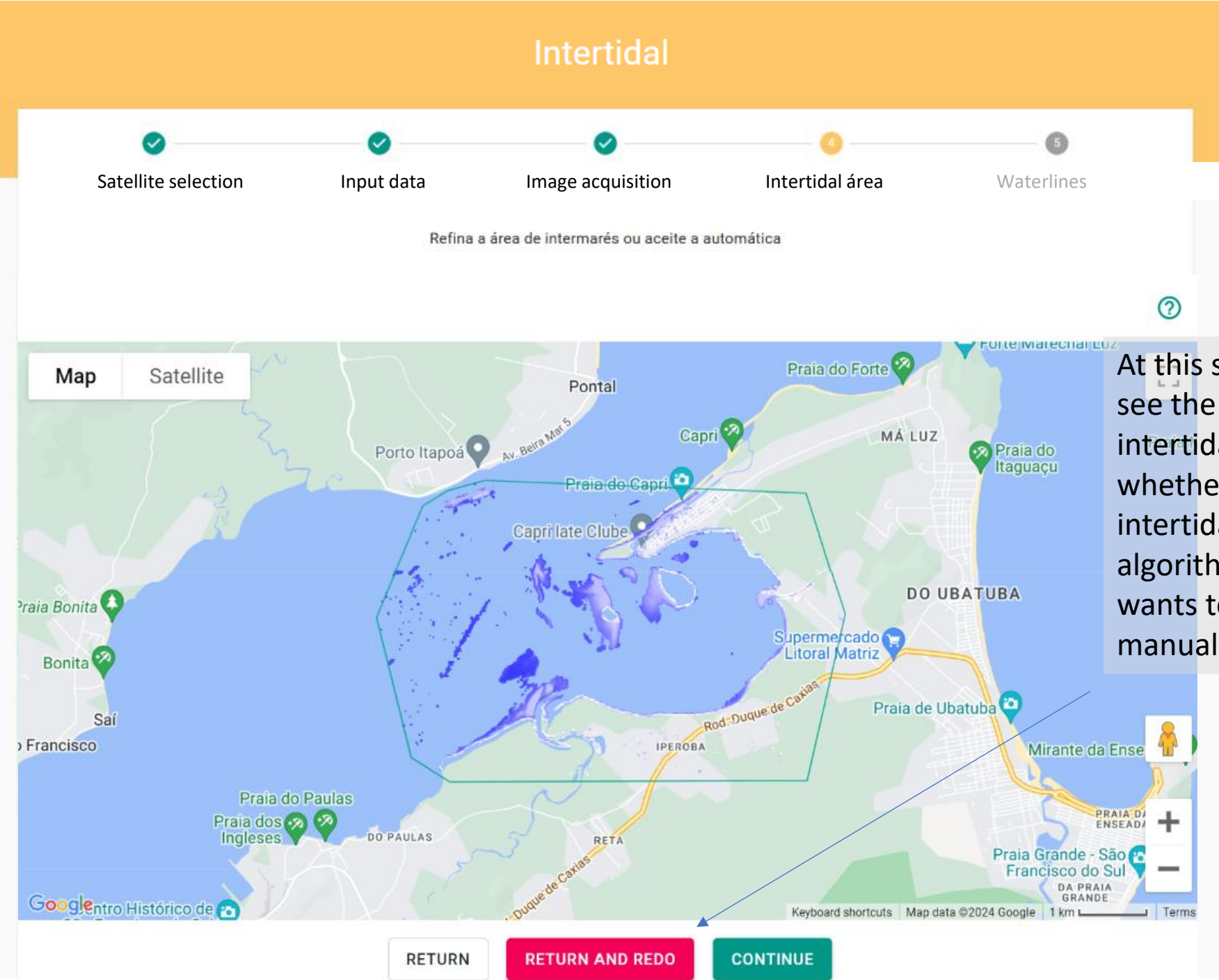
Waterlines

Select the images to compose the collection. Ideal that different tidal levels are found.

ID	Clouds	Thumbnail	Selected
S2 - 08/02/2023 10:29	0.7%		<input checked="" type="checkbox"/>
S2 - 13/02/2023 10:29	1.8%		<input checked="" type="checkbox"/>
S2 - 20/03/2023 10:29	0.0%		<input checked="" type="checkbox"/>

In this step, the user will view each image found for that period and must select which of them to keep for the analysis. Ideally, different tide levels should be chosen.

Step 4

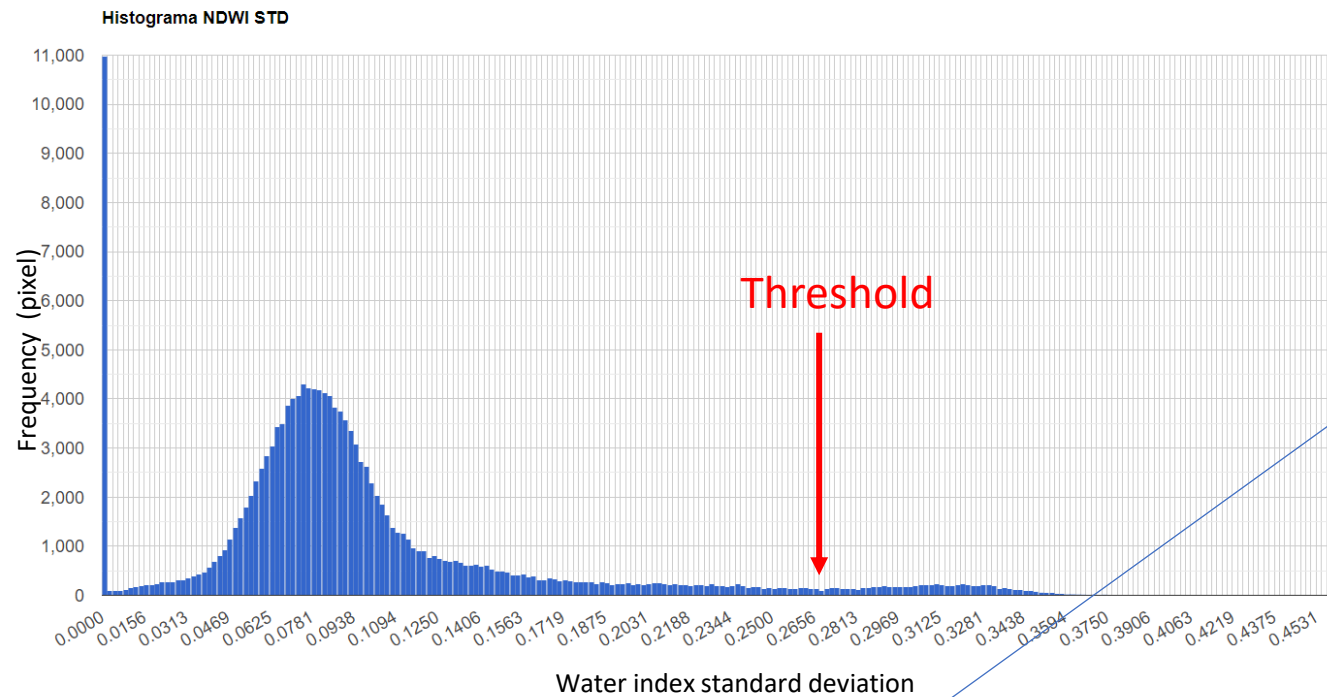


At this step, the user will see the automatically intertidal area and chose whether he accepts the intertidal area found by the algorithm or whether he wants to remake this step manually.

Intertidal

Satellite selection ✓ Input data ✓ Image acquisition ✓ Intertidal área 4 Waterlines 5

Refina a área de intermarés ou aceite a automática



Return and Redo: the user will choose the cutoff threshold that defines the intertidal region through the image histogram in terms of the standard deviation of the water index.

RETURN

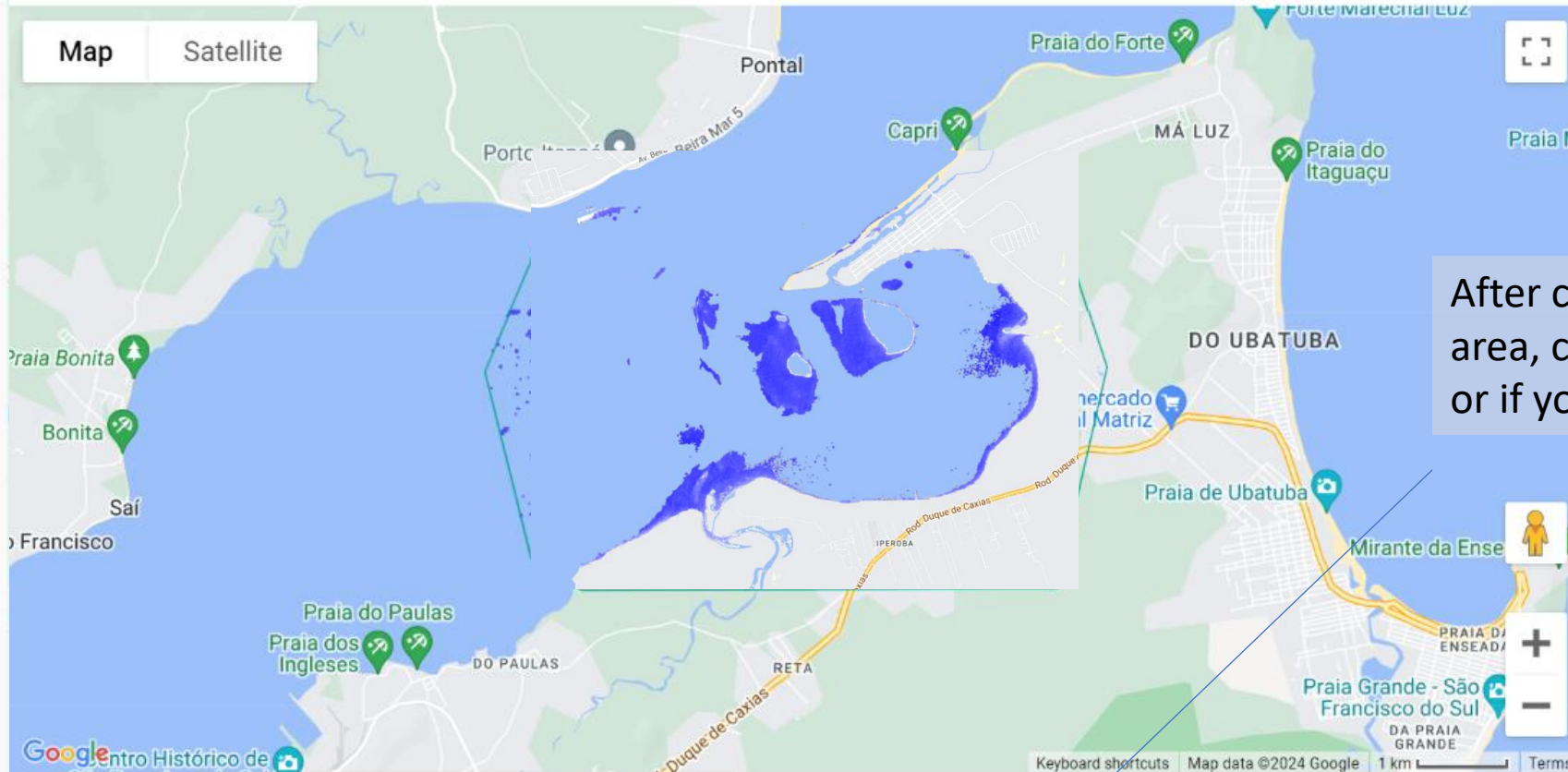
RETURN AND REDO

CONTINUE

Intertidal

✓ ✓ ✓ 4 5
Satellite selection Input data Image acquisition Intertidal área Waterlines

Refina a área de intermarés ou aceite a automática



After checking the new area, choose again if accept or if you want to redo...

RETURN

RETURN AND REDO

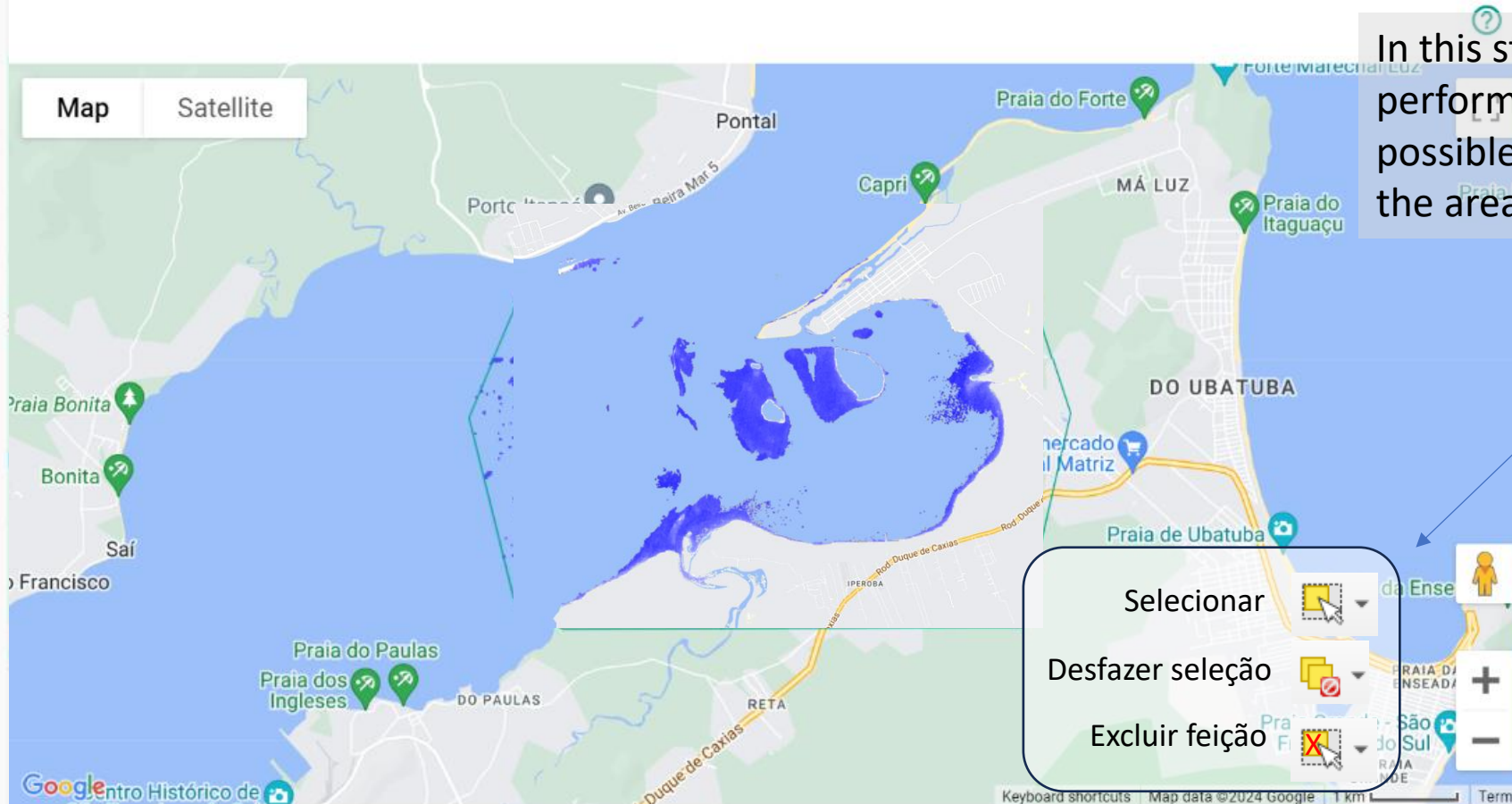
CONTINUE

Step 4.2

Intertidal

Satellite selection Input data Image acquisition Intertidal área Waterlines

Refina a área de intermarés ou aceite a automática



In this step, the user will perform a filter to exclude possible outliers or errors in the area (ships, clouds, etc.)

RETURN

RETURN AND REDO

CONTINUE

Step 5

