Version 3 API

We release a new version of our API (version 3) that includes several enhancements and features to improve your experience and enable even greater integration possibilities.

Expanded Functionality: We have introduced new endpoints and extended existing functionalities to provide you with additional capabilities:

Get information about all vessel types and get extra information from public registries: Introducing an enhanced Vessel API! Now, besides the AIS self reported data, you can also access identity and authorization data from both public regional and national registries for vessels of all types.

A new Insights API with indicators related to vessels including AIS off events: that fuses historical AIS activity and authorizations into "vessel insights," designed to support risk assessment, streamline planning, and facilitate IUU fishing detection.

Other improvements: Elevate your experience with the newly empowered 4Wings Report API, offering advanced functionality for detailed region-specific analysis and a variety of additional encounter events, reinforcing our commitment to innovation.

Improved Documentation: We updated the API documentation to make it more comprehensive and user-friendly, making it easier for you to understand and implement the new features effectively. We have also provided a Migration Guide and code samples to assist you during the transition.

For more details, check the release notes

Get your GFW Postman collection for Version 3

You can download our Postman collection for Version 3 here to test some of the endpoints.

Remember to:

Add your API Access TOKEN, you can get one from here

Update variable base\_url with https://gateway.api.globalfishingwatch.org/

Map Visualization - 4Wings API

4Wings introduction

4Wings API (aka Map Visualization) allows you to get fast visualisation, navigation and analysis for gridded spatiotemporal datasets.You can:

visualize apparent fishing effort or SAR vessel detections in png or mvt format

generate a report and download in csv, json or tiff format for apparent fishing effort data and for SAR (Synthetic-aperture radar) vessel detections.

Create a style for generate PNG tiles

A Style is a document that defines the visual appearance of a map, in this case the map will be in PNG format, it includes what data to draw, the order to draw it in, and how to style the data when drawing it.

You can find on the right, two examples using AIS apparent fishing effort:

EXAMPLE 1 - Filtering by time period

EXAMPLE 2 - Filtering by time period and gear type. Check Gear Types supported here.

You can find on the right, two examples using SAR (Synthetic-aperture radar) vessel detections:

EXAMPLE 3 - Filtering any SAR vessel detections by time period

EXAMPLE 4 - Filtering SAR vessel detections that didn't match with AIS vessels

Generate PNG - HTTP Request

POST https://gateway.api.globalfishingwatch.org/v3/4wings/generate-png

Generate PNG - URL Parameters

Parameter Description Required Format Param Type

color Color in hexadecimal used to generate the color ramp. If you don't send this information, by default the color will be #002457.Default value: #002457 False string query

interval Tiles are available at several time resolutions (hourly, daily, monthly and 10 days), it means one frame every one hour, one day or 10 days. For each resolution, the the max displayable length items: 1 hour: 20 days, 1 day: 1 year and 10 days: several years depending on the dataset for AIS Fishing effort it starts in 2012. Default value: DAY False Enum: ['10DAYS', 'DAY', 'HOUR', 'MONTH', 'YEAR'] query

datasets[0] Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy Example: public-global-fishing-effort:latest or public-global-sar-presence:latest True string query

filters[0] Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0]. For AIS apparent fishing effort, the possible filters are: flag, geartype and vessel\_id. Example: flag in ('ESP'). Check Gear Types supported here.. For SAR vessel detections, the available filters are: matched, flag, vessel\_id, geartype, neural\_vessel\_type, and shiptype. Examples include matched='false', which indicates all SAR vessel detections that didn't match with an AIS vessel, and neural\_vessel\_type='Likely Fishing', which signifies all SAR vessel detections identified by the neural model (which only considers the thumbnails of the SAR images) as "Likely Fishing". This filter is useful for analyzing detections that did not match with AIS vessels. The neural\_vessel\_type filter accepts the following values: "Likely non-fishing", "Likely Fishing", or "Unknown". Check Vessel Types supported here. False string query

date-range Start date and end date to filter the data Example: 2021-01-01,2021-03-01 False string query

EXAMPLE 1: AIS APPARENT FISHING EFFORT - GENERATE PNG TILES WITH TEMPORAL FILTER

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/4wings/generate-png?interval=10DAYS&datasets%5B0%5D=public-global-fishing-effort:latest&color=%23361c0c&date-range=2020-01-01,2020-01-31' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be:

{

"colorRamp": {

"stepsByZoom": {

"0": [

{

"color": "rgba(54,28,12,102)",

"value": 9170

},

{

"color": "rgba(54,28,12,127)",

"value": 14857

},

{

"color": "rgba(54,28,12,153)",

"value": 24449

},

{

"color": "rgba(54,28,12,178)",

"value": 37594

},

{

"color": "rgba(54,28,12,255)",

"value": 55844

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,25)",

"value": 649

},

{

"color": "rgba(54,28,12,51)",

"value": 2313

},

{

"color": "rgba(54,28,12,76)",

"value": 5164

}

],

"1": [

{

"color": "rgba(54,28,12,25)",

"value": 162

},

{

"color": "rgba(54,28,12,51)",

"value": 578

},

{

"color": "rgba(54,28,12,76)",

"value": 1291

},

{

"color": "rgba(54,28,12,127)",

"value": 3714

},

{

"color": "rgba(54,28,12,153)",

"value": 6112

},

{

"color": "rgba(54,28,12,255)",

"value": 13961

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,102)",

"value": 2292

},

{

"color": "rgba(54,28,12,178)",

"value": 9398

}

],

"10": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"11": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"12": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"2": [

{

"color": "rgba(54,28,12,127)",

"value": 928

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,25)",

"value": 40

},

{

"color": "rgba(54,28,12,51)",

"value": 144

},

{

"color": "rgba(54,28,12,76)",

"value": 322

},

{

"color": "rgba(54,28,12,102)",

"value": 573

},

{

"color": "rgba(54,28,12,153)",

"value": 1528

},

{

"color": "rgba(54,28,12,178)",

"value": 2349

},

{

"color": "rgba(54,28,12,255)",

"value": 3490

}

],

"3": [

{

"color": "rgba(54,28,12,127)",

"value": 232

},

{

"color": "rgba(54,28,12,153)",

"value": 382

},

{

"color": "rgba(54,28,12,178)",

"value": 587

},

{

"color": "rgba(54,28,12,255)",

"value": 872

},

{

"color": "rgba(54,28,12,76)",

"value": 80

},

{

"color": "rgba(54,28,12,25)",

"value": 10

},

{

"color": "rgba(54,28,12,51)",

"value": 36

},

{

"color": "rgba(54,28,12,102)",

"value": 143

},

{

"color": "rgba(54,28,12,0)",

"value": 0

}

],

"4": [

{

"color": "rgba(54,28,12,51)",

"value": 9

},

{

"color": "rgba(54,28,12,76)",

"value": 20

},

{

"color": "rgba(54,28,12,102)",

"value": 35

},

{

"color": "rgba(54,28,12,127)",

"value": 58

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,25)",

"value": 2

},

{

"color": "rgba(54,28,12,153)",

"value": 95

},

{

"color": "rgba(54,28,12,178)",

"value": 146

},

{

"color": "rgba(54,28,12,255)",

"value": 218

}

],

"5": [

{

"color": "rgba(54,28,12,178)",

"value": 36

},

{

"color": "rgba(54,28,12,255)",

"value": 54

},

{

"color": "rgba(54,28,12,25)",

"value": 0

},

{

"color": "rgba(54,28,12,51)",

"value": 2

},

{

"color": "rgba(54,28,12,76)",

"value": 5

},

{

"color": "rgba(54,28,12,102)",

"value": 8

},

{

"color": "rgba(54,28,12,127)",

"value": 14

},

{

"color": "rgba(54,28,12,153)",

"value": 23

}

],

"6": [

{

"color": "rgba(54,28,12,51)",

"value": 0

},

{

"color": "rgba(54,28,12,76)",

"value": 1

},

{

"color": "rgba(54,28,12,102)",

"value": 2

},

{

"color": "rgba(54,28,12,127)",

"value": 3

},

{

"color": "rgba(54,28,12,153)",

"value": 5

},

{

"color": "rgba(54,28,12,178)",

"value": 9

},

{

"color": "rgba(54,28,12,255)",

"value": 13

}

],

"7": [

{

"color": "rgba(54,28,12,127)",

"value": 0

},

{

"color": "rgba(54,28,12,153)",

"value": 1

},

{

"color": "rgba(54,28,12,178)",

"value": 2

},

{

"color": "rgba(54,28,12,255)",

"value": 3

}

],

"8": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"9": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

]

}

},

"url": "https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/{z}/{x}/{y}?format=PNG&interval=10DAYS&datasets[0]=public-global-fishing-effort:latest&date-range=2020-01-01,2020-01-31&style=eyJjb2xvciI6WzU0LDI4LDEyXSwicmFtcCI6WzAsNjQ5LjY1NTI3Nzc3Nzc3ODMsMjMxMy40NTYzODg4ODg4OTE1LDUxNjQuMDg2MTExMTExMTIsOTE3MC43MjU1NTU1NTU1NiwxNDg1Ny42MDAyNzc3Nzc4MTgsMjQ0NDkuMTM5MTY2NjY2NjU3LDM3NTk0LjQ1MzMzMzMzMzM5LDU1ODQ0Ljc2NDE2NjY2NjUyXX0="

}

EXAMPLE 2: AIS APPARENT FISHING EFFORT - GENERATE PNG TILES WITH GEAR TYPE AND TEMPORAL FILTER

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/

/v3/4wings/generate-png?interval=10DAYS&datasets[0]=public-global-fishing-effort:latest&filters[0]=geartype in ("tuna\_purse\_seines","driftnets")&date-range=2020-01-01,2020-01-31' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be:

{

"colorRamp": {

"stepsByZoom": {

"0": [

{

"color": "rgba(22,63,137,25)",

"value": 26

},

{

"color": "rgba(22,63,137,102)",

"value": 384

},

{

"color": "rgba(22,63,137,255)",

"value": 1936

},

{

"color": "rgba(22,63,137,0)",

"value": 0

},

{

"color": "rgba(22,63,137,76)",

"value": 186

},

{

"color": "rgba(22,63,137,127)",

"value": 822

},

{

"color": "rgba(22,63,137,153)",

"value": 1114

},

{

"color": "rgba(22,63,137,178)",

"value": 1502

},

{

"color": "rgba(22,63,137,51)",

"value": 88

}

],

"1": [

{

"color": "rgba(22,63,137,127)",

"value": 205

},

{

"color": "rgba(22,63,137,178)",

"value": 375

},

{

"color": "rgba(22,63,137,51)",

"value": 22

},

{

"color": "rgba(22,63,137,76)",

"value": 46

},

{

"color": "rgba(22,63,137,102)",

"value": 96

},

{

"color": "rgba(22,63,137,255)",

"value": 484

},

{

"color": "rgba(22,63,137,0)",

"value": 0

},

{

"color": "rgba(22,63,137,25)",

"value": 6

},

{

"color": "rgba(22,63,137,153)",

"value": 278

}

],

"10": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"11": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"12": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"2": [

{

"color": "rgba(22,63,137,25)",

"value": 1

},

{

"color": "rgba(22,63,137,51)",

"value": 5

},

{

"color": "rgba(22,63,137,76)",

"value": 11

},

{

"color": "rgba(22,63,137,153)",

"value": 69

},

{

"color": "rgba(22,63,137,178)",

"value": 93

},

{

"color": "rgba(22,63,137,255)",

"value": 121

},

{

"color": "rgba(22,63,137,0)",

"value": 0

},

{

"color": "rgba(22,63,137,102)",

"value": 24

},

{

"color": "rgba(22,63,137,127)",

"value": 51

}

],

"3": [

{

"color": "rgba(22,63,137,178)",

"value": 23

},

{

"color": "rgba(22,63,137,255)",

"value": 30

},

{

"color": "rgba(22,63,137,25)",

"value": 0

},

{

"color": "rgba(22,63,137,51)",

"value": 1

},

{

"color": "rgba(22,63,137,76)",

"value": 2

},

{

"color": "rgba(22,63,137,102)",

"value": 6

},

{

"color": "rgba(22,63,137,127)",

"value": 12

},

{

"color": "rgba(22,63,137,153)",

"value": 17

}

],

"4": [

{

"color": "rgba(22,63,137,102)",

"value": 1

},

{

"color": "rgba(22,63,137,127)",

"value": 3

},

{

"color": "rgba(22,63,137,153)",

"value": 4

},

{

"color": "rgba(22,63,137,178)",

"value": 5

},

{

"color": "rgba(22,63,137,255)",

"value": 7

},

{

"color": "rgba(22,63,137,76)",

"value": 0

}

],

"5": [

{

"color": "rgba(22,63,137,127)",

"value": 0

},

{

"color": "rgba(22,63,137,255)",

"value": 1

}

],

"6": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"7": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"8": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

],

"9": [

{

"color": "rgba(22,63,137,255)",

"value": 0

}

]

}

},

"url": "https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/{z}/{x}/{y}?format=PNG&interval=10DAYS&datasets[0]=public-global-fishing-effort:latest&filters[0]=geartype in (\"tuna\_purse\_seines\",\"driftnets\")&date-range=2020-01-01,2020-01-31&style=eyJjb2xvciI6WzIyLDYzLDEzN10sInJhbXAiOlswLDI2LjE2NjM4ODg4ODg4ODg5Myw4OC4yMjgwNTU1NTU1NTU2MSwxODYuMzI1ODMzMzMzMzMzMywzODQuODIwNTU1NTU1NTU1Niw4MjIuOTk1NTU1NTU1NTU0OCwxMTE0LjMyNDcyMjIyMjIyMjEsMTUwMi4wNjA4MzMzMzMzMzMyLDE5MzYuNzA0MTY2NjY2NjY1XX0="

}

EXAMPLE 3: SAR VESSEL DETECTIONS - GENERATE PNG TILES WITH TEMPORAL FILTER AND DAY RESOLUTION

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff --request POST 'https://gateway.api.globalfishingwatch.org/v3/4wings/generate-png?interval=DAY&color=%23361c0c&date-range=2020-01-01%2C2020-01-31&datasets[0]=public-global-sar-presence%3Alatest' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be:

{

"colorRamp": {

"stepsByZoom": {

"0": [

{

"color": "rgba(54,28,12,127)",

"value": 1711

},

{

"color": "rgba(54,28,12,153)",

"value": 2662

},

{

"color": "rgba(54,28,12,178)",

"value": 3925

},

{

"color": "rgba(54,28,12,25)",

"value": 93

},

{

"color": "rgba(54,28,12,51)",

"value": 319

},

{

"color": "rgba(54,28,12,76)",

"value": 660

},

{

"color": "rgba(54,28,12,102)",

"value": 1108

},

{

"color": "rgba(54,28,12,255)",

"value": 6584

},

{

"color": "rgba(54,28,12,0)",

"value": 0

}

],

"1": [

{

"color": "rgba(54,28,12,25)",

"value": 23

},

{

"color": "rgba(54,28,12,51)",

"value": 79

},

{

"color": "rgba(54,28,12,76)",

"value": 165

},

{

"color": "rgba(54,28,12,102)",

"value": 277

},

{

"color": "rgba(54,28,12,127)",

"value": 427

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,153)",

"value": 665

},

{

"color": "rgba(54,28,12,178)",

"value": 981

},

{

"color": "rgba(54,28,12,255)",

"value": 1646

}

],

"10": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"11": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"12": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"2": [

{

"color": "rgba(54,28,12,255)",

"value": 411

},

{

"color": "rgba(54,28,12,51)",

"value": 19

},

{

"color": "rgba(54,28,12,153)",

"value": 166

},

{

"color": "rgba(54,28,12,178)",

"value": 245

},

{

"color": "rgba(54,28,12,102)",

"value": 69

},

{

"color": "rgba(54,28,12,127)",

"value": 106

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,25)",

"value": 5

},

{

"color": "rgba(54,28,12,76)",

"value": 41

}

],

"3": [

{

"color": "rgba(54,28,12,102)",

"value": 17

},

{

"color": "rgba(54,28,12,153)",

"value": 41

},

{

"color": "rgba(54,28,12,178)",

"value": 61

},

{

"color": "rgba(54,28,12,255)",

"value": 102

},

{

"color": "rgba(54,28,12,25)",

"value": 1

},

{

"color": "rgba(54,28,12,76)",

"value": 10

},

{

"color": "rgba(54,28,12,127)",

"value": 26

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,51)",

"value": 4

}

],

"4": [

{

"color": "rgba(54,28,12,178)",

"value": 15

},

{

"color": "rgba(54,28,12,255)",

"value": 25

},

{

"color": "rgba(54,28,12,25)",

"value": 0

},

{

"color": "rgba(54,28,12,51)",

"value": 1

},

{

"color": "rgba(54,28,12,76)",

"value": 2

},

{

"color": "rgba(54,28,12,102)",

"value": 4

},

{

"color": "rgba(54,28,12,127)",

"value": 6

},

{

"color": "rgba(54,28,12,153)",

"value": 10

}

],

"5": [

{

"color": "rgba(54,28,12,76)",

"value": 0

},

{

"color": "rgba(54,28,12,127)",

"value": 1

},

{

"color": "rgba(54,28,12,153)",

"value": 2

},

{

"color": "rgba(54,28,12,178)",

"value": 3

},

{

"color": "rgba(54,28,12,255)",

"value": 6

}

],

"6": [

{

"color": "rgba(54,28,12,178)",

"value": 0

},

{

"color": "rgba(54,28,12,255)",

"value": 1

}

],

"7": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"8": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"9": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

]

}

},

"url": "https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/{z}/{x}/{y}?format=PNG&interval=DAY&datasets[0]=public-global-sar-presence:latest&date-range=2020-01-01,2020-01-31&style=eyJjb2xvciI6WzU0LDI4LDEyXSwicmFtcCI6WzAsOTMsMzE5LDY2MCwxMTA4LDE3MTEsMjY2MiwzOTI1LDY1ODRdfQ=="

}

EXAMPLE 4: SAR VESSEL DETECTIONS - GENERATE PNG TILES FILTERING UNMATCHED DETECTIONS

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff --request POST 'https://gateway.api.globalfishingwatch.org//v3/4wings/generate-png?interval=DAY&filters[0]=matched%3D%27false%27&color=%23361c0c&date-range=2020-01-01%2C2020-01-31&datasets[0]=public-global-sar-presence%3Alatest' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be:

{

"colorRamp": {

"stepsByZoom": {

"0": [

{

"color": "rgba(54,28,12,76)",

"value": 489

},

{

"color": "rgba(54,28,12,102)",

"value": 850

},

{

"color": "rgba(54,28,12,127)",

"value": 1315

},

{

"color": "rgba(54,28,12,178)",

"value": 3011

},

{

"color": "rgba(54,28,12,25)",

"value": 63

},

{

"color": "rgba(54,28,12,51)",

"value": 218

},

{

"color": "rgba(54,28,12,255)",

"value": 4027

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,153)",

"value": 2024

}

],

"1": [

{

"color": "rgba(54,28,12,153)",

"value": 506

},

{

"color": "rgba(54,28,12,178)",

"value": 752

},

{

"color": "rgba(54,28,12,25)",

"value": 15

},

{

"color": "rgba(54,28,12,51)",

"value": 54

},

{

"color": "rgba(54,28,12,102)",

"value": 212

},

{

"color": "rgba(54,28,12,255)",

"value": 1006

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,76)",

"value": 122

},

{

"color": "rgba(54,28,12,127)",

"value": 328

}

],

"10": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"11": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"12": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"2": [

{

"color": "rgba(54,28,12,76)",

"value": 30

},

{

"color": "rgba(54,28,12,127)",

"value": 82

},

{

"color": "rgba(54,28,12,178)",

"value": 188

},

{

"color": "rgba(54,28,12,0)",

"value": 0

},

{

"color": "rgba(54,28,12,51)",

"value": 13

},

{

"color": "rgba(54,28,12,102)",

"value": 53

},

{

"color": "rgba(54,28,12,153)",

"value": 126

},

{

"color": "rgba(54,28,12,255)",

"value": 251

},

{

"color": "rgba(54,28,12,25)",

"value": 3

}

],

"3": [

{

"color": "rgba(54,28,12,153)",

"value": 31

},

{

"color": "rgba(54,28,12,178)",

"value": 47

},

{

"color": "rgba(54,28,12,255)",

"value": 62

},

{

"color": "rgba(54,28,12,25)",

"value": 0

},

{

"color": "rgba(54,28,12,51)",

"value": 3

},

{

"color": "rgba(54,28,12,76)",

"value": 7

},

{

"color": "rgba(54,28,12,102)",

"value": 13

},

{

"color": "rgba(54,28,12,127)",

"value": 20

}

],

"4": [

{

"color": "rgba(54,28,12,51)",

"value": 0

},

{

"color": "rgba(54,28,12,76)",

"value": 1

},

{

"color": "rgba(54,28,12,102)",

"value": 3

},

{

"color": "rgba(54,28,12,127)",

"value": 5

},

{

"color": "rgba(54,28,12,153)",

"value": 7

},

{

"color": "rgba(54,28,12,178)",

"value": 11

},

{

"color": "rgba(54,28,12,255)",

"value": 15

}

],

"5": [

{

"color": "rgba(54,28,12,102)",

"value": 0

},

{

"color": "rgba(54,28,12,153)",

"value": 1

},

{

"color": "rgba(54,28,12,178)",

"value": 2

},

{

"color": "rgba(54,28,12,255)",

"value": 3

}

],

"6": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"7": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"8": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

],

"9": [

{

"color": "rgba(54,28,12,255)",

"value": 0

}

]

}

},

"url": "https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/{z}/{x}/{y}?format=PNG&interval=DAY&datasets[0]=public-global-sar-presence:latest&filters[0]=matched='false'&date-range=2020-01-01,2020-01-31&style=eyJjb2xvciI6WzU0LDI4LDEyXSwicmFtcCI6WzAsNjMsMjE4LDQ4OSw4NTAsMTMxNSwyMDI0LDMwMTEsNDAyN119"

}

Get raster by tile coordinates

EXAMPLE 1: AIS APPARENT FISHING EFFORT HEATMAP - GET PNG TILE BY COORDINATES

Make sure to replace [STYLE] with the style obtained in the previous endpoint "Create a style for generate PNG tiles" in the 'url' field

# Make sure to replace [TOKEN] with your API Access Token

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/2/3/1?format=PNG&interval=10DAYS&datasets[0]=public-global-fishing-effort:latest&date-range=2020-01-01,2020-01-31&style=[STYLE]' \

-H "Authorization: Bearer [TOKEN]" \

-o "tile-by-coordinates.PNG"

If the request is successful, in this example the response will be a PNG file similar to this.

EXAMPLE 2: AIS APPARENT FISHING EFFORT HEATMAP - GET MVT TILE BY COORDINATES

# Make sure to replace [TOKEN] with your API Access Token

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/tile/heatmap/0/0/0?date-range=2023-05-01%2C2023-10-20&datasets[0]=public-global-fishing-effort%3Alatest&format=MVT&interval=HOUR&temporal-aggregation=true' \

-H "Authorization: Bearer [TOKEN]" \

If the request is successful, in this example the response will be an MVT file similar to this.

EXAMPLE 3: SAR VESSEL DETECTION HEATMAP - GET PNG TILE BY COORDINATES

# Make sure to replace [TOKEN] with your API Access Token

curl --location --globoff 'https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/5/13/13?format=PNG&datasets[0]=public-global-sar-presence%3Alatest&date-range=2020-01-01%2C2020-01-31&style=eyJjb2xvciI6WzU0LDI4LDEyXSwicmFtcCI6WzAsOTIsMzIzLDY0MCwxMTE2LDE3NTMsMjg1MCw0MTMxLDU4MDZdfQ%3D%3D&interval=DAY' \

-H "Authorization: Bearer [TOKEN]" \

Make sure to replace [STYLE] with the style obtained in the previous endpoint "Create a style for generate PNG tiles" in the 'url' field

If the request is successful, in this example the response will be an PNG file similar to this.

EXAMPLE 4: SAR VESSEL DETECTION HEATMAP - GET MVT TILE BY COORDINATES

# Make sure to replace [TOKEN] with your API Access Token

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/tile/heatmap/0/0/0?date-range=2023-05-01%2C2023-10-20&datasets[0]=public-global-sar-presence%3Alatest&format=MVT&interval=DAY&temporal-aggregation=true' \

-H "Authorization: Bearer [TOKEN]" \

If the request is successful, in this example the response will be an MVT file similar to this.

This endpoint allows you to get details of the cell of the tile (in PNG or MVT format depending on the parameter).

⚠️ Before using this endpoint, for PNG format, remember to create your STYLE that specifies how the fishing effort will be visualized. Check more detail about how to generate your style here.

You can find on the right, two examples using AIS apparent fishing effort:

EXAMPLE 1 - Get AIS apparent fishing effort heatmap in PNG format

EXAMPLE 2 - Get AIS apparent fishing effort heatmap in MVT format

You can find on the right, two examples using SAR (Synthetic-aperture radar) vessel detections:

EXAMPLE 3 - Get SAR vessel detections heatmap in PNG format

EXAMPLE 4 - Get SAR vessel detections heatmap in MVT format

Get raster - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/4wings/tile/heatmap/{z}/{x}/{y}

Get raster - URL Parameters

Parameter Description Required Format Param Type

z Zoom level (from 0 to 12) Example: 1 True number path

x X index (lat) of the tile True number path

y Y index (lon) of the tile True number path

temporal-aggregation Aggregates temporarily the data in the tile Example: True False boolean query

interval Tiles are available at several time resolutions (hourly, daily, monthly and 10 days), it means one frame every one hour, one day or 10 days. For each resolution, the max displayable length items: 1 hour: 20 days, 1 day: 1 year and 10 days: several years depending on the dataset for AIS Fishing effort it starts in 2012. Example: DAY False Enum: ['10DAYS', 'DAY', 'HOUR', 'MONTH', 'YEAR'] query

datasets[0] Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy. Example: public-global-fishing-effort:latest or public-global-sar-presence:latest True string query

filters[0] Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0]. For AIS apparent fishing effort, the possible filters are: flag, geartype and vessel\_id. Example: flag in ('ESP'). Check Gear Types supported here.. For SAR vessel detections, the available filters are: matched, flag, vessel\_id, geartype, neural\_vessel\_type, and shiptype. Examples include matched='false', which indicates all SAR vessel detections that didn't match with an AIS vessel, and neural\_vessel\_type='Likely Fishing', which signifies all SAR vessel detections identified by the neural model (which only considers the thumbnails of the SAR images) as "Likely Fishing". This filter is useful for analyzing detections that did not match with AIS vessels. The neural\_vessel\_type filter accepts the following values: "Likely non-fishing", "Likely Fishing", or "Unknown". Check Vessel Types supported here. False string query

date-range Start date and end date to filter the data Example: 2021-01-01,2021-03-01 False string query

format Format of response Example: MVT False Enum: ['MVT', 'PNG'] query

style Id of the style obtained with endpoint /v3/4wings/generate-png. False string query

Generate bins of inputs to know the data

You can use this endpoint for example to create a color ramp of the data.

You can find on the right, one example using AIS apparent fishing effort:

EXAMPLE 1 - Get AIS apparent fishing effort bins for zoom 1 in a daily interval

You can find on the right, two examples using SAR (Synthetic-aperture radar) vessel detections:

EXAMPLE 2 - Get SAR vessel detections bins for zoom 2 in a hourly interval

Get bins - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/4wings/bins/{z}

Get bins - URL Parameters

Parameter Description Required Format Param Type

z Zoom level (from 0 to 12) True number path

temporal-aggregation Aggregates temporarily the data in the tile Example: True False boolean query

num-bins Number of bins or buckets that you would like Example: 10 False number query

interval Tiles are available at several time resolutions (hourly, daily, monthly and 10 days), it means one frame every one hour, one day or 10 days. For each resolution, the the max displayable length items: 1 hour: 20 days, 1 day: 1 year and 10 days: several years depending on the dataset for AIS Fishing effort it starts in 2012. Example: 10DAYS False Enum: ['10DAYS', 'DAY', 'HOUR', 'MONTH', 'YEAR'] query

datasets[0] Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy. Example: public-global-fishing-effort:latest or public-global-sar-presence:latest True string query

filters[0] Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0]. For AIS apparent fishing effort, the possible filters are: flag, geartype and vessel\*id. Example: flag in ('ESP'). For SAR vessel detections, the possible filters are: matched, flag, vessel\_id, geartype, neural\_vessel\_type and shiptype. Examples: matched='false' which means all SAR vessel detections that didn't match with an AIS vessel. or neural\_vessel\_type='Likely Fishing' which means all SAR vessel detections that the neural model that it only has in account the thumbnails of the sar images identify as Likely Fishing (this is useful to analyze detections that had no matching with AIS vessels) . The filter neural\_vessel\_type accepts as possible values: "Likely non-fishing", "Likely Fishing" or "Unknown". Check \_Gear Types supported\* here. Check Vessel Types supported here. False string query

date-range Start date and end date to filter the data Example: 2021-01-01,2021-03-01 False string query

EXAMPLE 1: APPARENT FISHING EFFORT BINS FOR ZOOM 1 IN A DAILY INTERVAL

# Make sure to replace [TOKEN] with your API Access Token

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/bins/1?datasets[0]=public-global-fishing-effort%3Alatest&temporal-aggregation=false&num-bins=9&interval=DAY' \

-H "Authorization: Bearer [TOKEN]" \

If the request is successful, in this example the response will be:

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

[

0, 9.614632153181205, 46.89072615583312, 135.94034024094597,

257.06961050684566, 568.6451974803559, 913.1298155603789,

1173.3012226127767, 1554.9284184570513

]

]

}

EXAMPLE 2: SAR VESSEL DETECTIONS FOR ZOOM 2 IN A HOURLY INTERVAL

# Make sure to replace [TOKEN] with your API Access Token

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/bins/2?datasets[0]=public-global-sar-presence%3Alatest&temporal-aggregation=false&num-bins=9&interval=HOUR' \

-H "Authorization: Bearer [TOKEN]" \

If the request is successful, in this example the response will be:

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

[

0, 0.6141656839622642, 2.13199378330373, 4.751082251082251,

8.484912146676853, 13.063675088131609, 28.508133561643834,

45.34335191082803, 58.447841726618705

]

]

}

Return info in the cells of the tile specified - Interaction API

Interaction API allows you to get details of an MVT cell.

You can find on the right, one example using AIS apparent fishing effort:

EXAMPLE 1 - Get AIS apparent fishing effort cell details

You can find on the right, two examples using SAR (Synthetic-aperture radar) vessel detections:

EXAMPLE 2 - Get SAR vessel detections cell details

Interaction - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/4wings/interaction/{z}/{x}/{y}/{cells}

Interaction - URL Parameters

Parameter Description Required Format Param Type

z Zoom level (from 0 to 12) True number path

x X index (lat) of the tile True number path

y Y index (lon) of the tile True number path

cells Indexes of cells separated by comma Example: 107,1,2 True string path

limit Number maximun of results Example: 10 False number query

datasets[0] Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy. Example: public-global-fishing-effort:latest or public-global-sar-presence:latest True string query

filters[0] Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0]. For AIS apparent fishing effort, the possible filters are: flag, geartype and vessel\_id. Example: flag in ('ESP'). Check Gear Types supported here.. For SAR vessel detections, the available filters are: matched, flag, vessel\_id, geartype, neural\_vessel\_type, and shiptype. Examples include matched='false', which indicates all SAR vessel detections that didn't match with an AIS vessel, and neural\_vessel\_type='Likely Fishing', which signifies all SAR vessel detections identified by the neural model (which only considers the thumbnails of the SAR images) as "Likely Fishing". This filter is useful for analyzing detections that did not match with AIS vessels. The neural\_vessel\_type filter accepts the following values: "Likely non-fishing", "Likely Fishing", or "Unknown". Check Vessel Types supported here. False string query

date-range Start date and end date to filter the data Example: 2021-01-01,2021-03-01 False string query

EXAMPLE 1: GET DETAIL OF AN APPARENT FISHING EFFORT CELL TO ALLOW FURTHER INTERACTION

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/interaction/1/0/0/107?date-range=2021-01-01,2021-12-31&datasets[0]=public-global-fishing-effort:latest' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be: fishing hours and vessel id that allow you to get more detail of a vessel by using the Vessel API

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

[

{

"hours": 11.455833333333334,

"id": "f2134364c-c3d5-8ee9-ddd4-5511c0500a50"

},

{

"hours": 9.895,

"id": "f042d0bcf-fe96-cad5-5833-36b4aff2e87a"

},

{

"hours": 12.617222222222221,

"id": "e2d464a53-35ed-f059-c7e2-1ac76e12c9cc"

},

{

"hours": 1.6769444444444446,

"id": "daa9e5914-4d3c-6242-6648-b1adbc93305b"

},

{

"hours": 1.238611111111111,

"id": "c88e21112-2a09-4d56-196e-ff9cb26f76c9"

},

{

"hours": 0.053055555555555564,

"id": "b8de3c8e8-84f0-ba2f-528c-ff877e2d0e9e"

},

{

"hours": 3.5319444444444446,

"id": "b5d3439b6-6d19-5385-9d6b-08a0dfd60fa7"

},

{

"hours": 18.993333333333332,

"id": "ab75d8a33-3f93-62eb-0c86-38d8c742eff3"

},

{

"hours": 9.597777777777777,

"id": "a812d4320-0608-5ad0-1929-d5206eda123a"

},

{

"hours": 34.2575,

"id": "9eab37595-5bf1-471e-2e38-c070ebb00a7a"

},

{

"hours": 47.11222222222222,

"id": "9cf14ce31-144f-dda7-ded3-743bec9e41db"

},

{

"hours": 9.228888888888891,

"id": "9aed1677e-ef23-f541-58eb-8d755d410df4"

},

{

"hours": 5.095000000000001,

"id": "70a3ff9ca-ab64-12b2-6446-34cdf14000c6"

},

{

"hours": 5.3925,

"id": "6b3129a20-009f-1741-5877-a714ea11cf2b"

},

{

"hours": 16.631666666666664,

"id": "68ab5e789-96a1-fd61-016c-92bd413a9682"

},

{

"hours": 10.718055555555555,

"id": "65aaba596-62eb-49af-910d-f7d9d47a2d06"

},

{

"hours": 9.872222222222222,

"id": "3f7c46fe4-45f8-0685-a7e5-60d531c7c352"

},

{

"hours": 8.126666666666667,

"id": "2ab8c04ff-f0e3-a3f1-7ef4-2428604174e0"

},

{

"hours": 38.58861111111111,

"id": "1abad9a58-8758-383e-8c58-6c8029ecaa44"

},

{

"hours": 10.016388888888889,

"id": "184b291b6-619c-748c-1f32-5fe46616d0dc"

},

{

"hours": 0.11166666666666666,

"id": "1738bc096-6373-5ae6-8bd0-dd31ecf6c0eb"

},

{

"hours": 2.338888888888889,

"id": "098ac6ed6-65a9-260b-fb84-8c932eb977ae"

},

{

"hours": 47.81805555555555,

"id": "050743514-4618-79b3-8643-96ada9281517"

},

{

"hours": 17.753055555555555,

"id": "04b95cb83-31d8-06e7-0845-8691696643f5"

}

]

]

}

EXAMPLE 2: GET DETAIL OF A SAR VESSEL DETECTION CELL TO ALLOW FURTHER INTERACTION

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff 'https://gateway.api.globalfishingwatch.org/v3/4wings/interaction/0/0/0/1049?datasets[0]=public-global-sar-presence%3Alatest&date-range=2017-01-01%2C2021-12-31' \

-H "Authorization: Bearer [TOKEN]"

If the request is successful, the response will be: detections and vessel id (in the case there is matching) that allow you to get more detail of a vessel by using the Vessel API

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

[

{

"detections": 1,

"timestamp": "2019-01-02T00:11:17Z",

"vessel\_id": "f9cceefc5-5c63-e34a-c660-14060bc5ebe6"

},

{

"detections": 1,

"timestamp": "2020-04-14T09:44:30Z",

"vessel\_id": "f7e478e4d-de52-230b-9f67-9e3c47030786"

},

{

"detections": 1,

"timestamp": "2018-08-23T00:11:17Z",

"vessel\_id": "f67b7ac6c-c819-e6aa-6ecc-62faf34106c8"

},

{

"detections": 1,

"timestamp": "2018-06-24T00:11:13Z",

"vessel\_id": "f6574e4ed-d56c-c281-97d7-965a47dbeda0"

},

{

"detections": 1,

"timestamp": "2021-05-27T00:11:30Z",

"vessel\_id": "ed3ebc54b-bc1b-a4ec-96d2-c6f3d3544a04"

},

{

"detections": 2,

"timestamp": "2019-03-03T00:11:15Z,2020-02-09T09:36:46Z",

"vessel\_id": "c78c0051a-a0a2-37c4-c760-b30e7007230f"

},

{

"detections": 1,

"timestamp": "2017-10-15T09:44:26Z",

"vessel\_id": "c242baee6-6c28-d945-3462-0755a0b1499c"

},

{

"detections": 1,

"timestamp": "2017-08-28T09:44:25Z",

"vessel\_id": "b802fb0bf-f7f6-8f21-b043-8c2da6278484"

},

{

"detections": 1,

"timestamp": "2020-06-25T00:11:26Z",

"vessel\_id": "a2713db20-0601-b0a6-a091-61bdc47a5944"

},

{

"detections": 1,

"timestamp": "2018-07-18T00:11:15Z",

"vessel\_id": "8a2774ca5-5a68-f4d1-e2d8-c61e371a8a4b"

},

{

"detections": 1,

"timestamp": "2019-02-26T09:36:40Z",

"vessel\_id": "79f1bf2b5-5e18-b97a-1aa4-ab9f97f9e10a"

},

{

"detections": 1,

"timestamp": "2021-02-20T00:11:27Z",

"vessel\_id": "766208f70-0759-9f75-911a-85e2f9205201"

},

{

"detections": 1,

"timestamp": "2020-07-14T09:36:51Z",

"vessel\_id": "724e0c2fb-bc6b-5c3b-89f7-0b44b374a2e1"

},

{

"detections": 1,

"timestamp": "2021-10-06T00:11:37Z",

"vessel\_id": "5c2329bfe-e430-9ed7-842a-1cc14f1ed651"

},

{

"detections": 2,

"timestamp": "2018-02-12T09:44:17Z,2018-03-15T09:36:27Z",

"vessel\_id": "4e324aedb-b3ab-7c6a-504a-1246f5e6faa9"

},

{

"detections": 1,

"timestamp": "2020-12-10T09:44:38Z",

"vessel\_id": "4d7ffb590-08bc-4b48-71b3-acb119cac029"

},

{

"detections": 1,

"timestamp": "2020-11-28T00:11:31Z",

"vessel\_id": "4d3917b59-9a9d-0f92-dfdf-800225c1887b"

},

{

"detections": 1,

"timestamp": "2017-01-31T09:36:21Z",

"vessel\_id": "4bcc70a54-40f5-e912-e25f-d8cff26c5ff5"

},

{

"detections": 1,

"timestamp": "2018-12-09T09:44:29Z",

"vessel\_id": "4489c5a49-993b-4159-e020-ed27b84e1484"

},

{

"detections": 1,

"timestamp": "2021-02-08T00:11:28Z",

"vessel\_id": "428d3868d-d961-c8ed-2677-fd10e8e0a2d5"

},

{

"detections": 1,

"timestamp": "2021-10-06T00:11:37Z",

"vessel\_id": "3be72b270-0846-1c1d-70c2-fe3d6adb0edf"

},

{

"detections": 1,

"timestamp": "2021-10-18T09:44:45Z",

"vessel\_id": "39a3b0460-0cb1-80da-ce74-e1ded9309b52"

},

{

"detections": 1,

"timestamp": "2019-04-08T00:11:16Z",

"vessel\_id": "354db802c-c309-002c-140d-0933d13b15d2"

},

{

"detections": 1,

"timestamp": "2021-06-15T09:36:56Z",

"vessel\_id": "3427df3e6-6468-8d6b-d6db-96b35b6747bf"

},

{

"detections": 1,

"timestamp": "2017-04-06T09:44:17Z",

"vessel\_id": "28e7adf49-943a-2be6-7c1f-7ea730ea44e6"

},

{

"detections": 1,

"timestamp": "2021-12-17T00:11:35Z",

"vessel\_id": "117064035-5205-1331-a8b6-3d9c54655912"

},

{

"detections": 1,

"timestamp": "2021-12-17T09:44:43Z",

"vessel\_id": "05cb894ca-afc6-1c59-47bf-8fd3dacd6678"

},

{

"detections": 1,

"timestamp": "2018-05-07T00:11:10Z",

"vessel\_id": "033998426-6dd0-d8d2-aedf-0756991c6027"

},

{

"detections": 7,

"timestamp": "2019-03-03T00:11:15Z,2021-10-25T09:37:01Z,2021-05-03T00:11:29Z,2020-11-28T00:11:31Z,2020-08-12T00:11:29Z,2020-08-12T00:11:29Z,2020-02-02T09:44:30Z",

"vessel\_id": null

}

]

]

}

Create a report of a specified region

Report - HTTP Request

It is possible to call this endpoint using one of these two verbs:

POST https://gateway.api.globalfishingwatch.org/v3/4wings/report

GET https://gateway.api.globalfishingwatch.org/v3/4wings/report

Verb Usage Notes:

POST: Use this method to send a custom polygon. This functionality is not available with the GET method.

GET: This method supports caching, which is highly beneficial for frontend/UI applications to prevent redundant requests. Cached requests can be stored and reused, significantly improving response times. Additionally, Global Fishing Watch caches GET requests at the gateway level. If a user is expected to call the same URL multiple times, this can result in a substantial performance improvement.

This endpoint only supports `geojson` or `region` object in the same request.

The value of the data of the report is aggregated using the sum function.

This endpoint only support one report by user at the same time. If you send more than 1 request at the same time, you will receive a 429 error. The error contains the information of the current executing report for the user.

EXAMPLE 429 ERROR RESPONSE

{

"statusCode": 429,

"error": "Too Many Requests",

"messages": [

{

"title": "Too Many Requests",

"detail": "Your application token is not currently enabled to perform more than one concurrent report. If you need to generate more than one report concurrently, contact us at apis@globalfishingwatch.org",

"metadata": {

"currentReportBody": {

"geojson": null,

"region": {

"dataset": "public-mpa-all",

"id": "555635930"

}

},

"currentReportUrl": "/v3/4wings/report?format=csv&datasets%5B0%5D=public-global-fishing-effort%3Av20201001&date-range=2023-05-01T00%3A00%3A00.000Z%2C2023-06-01T00%3A00%3A00.000Z&spatial-aggregation=true&temporal-resolution=entire&group-by=vessel\_id"

}

}

]

}

This endpoint could throw a 524 error (Gateway timeout) if the report takes more than 100s in obtain the data. In that case, you can recover the report using the endpoint last-report

Report - AIS Apparent Fishing Effort examples

On the right side, you can find these examples:

Example 1 (POST) - Generate fishing effort report grouped By Year and by Custom Polygon In JSON Format

Example 2 (POST) - Generate fishing effort report grouped By Gear Type, Using existing Regions (Russian Eez) In CSV Format.

Example 3 (GET) - same as Example 2 but using GET.

Example 4 (POST) - Generate report with total fishing hours per Lat/Lon grid cell (no grouping) using existing Regions (MPA Dorsal De Nasca) In JSON Format

Example 5 (GET) - same as Example 4 but using GET.

Example 6 (POST) - Generate report with total fishing hours per Lat/Lon grid cell (no grouping) using existing Regions (MPA Dorsal De Nasca) In JSON Format and buffer of 4 NAUTICAL MILES

Example 7 (GET) - same as Example 6 but using GET.

Report - SAR vessel detection examples

On the right side, you can find these examples:

Example 8 (POST) - Report REGION ID (Chile) DAILY grided data and filter by unmatched detections (JSON)

Example 9 (POST) - Report Indonesia Filter by matched detections - Example of Noisy Vessel

Report - URL Parameters for both POST and GET requests

Parameter Description Required Format Param Type

spatial-resolution Low means at 10th degree resolution and High means at 100th degree resolution. Only required if spatial-aggregation is false or it's not sent. Example: low False Enum: ['LOW', 'HIGH'] query

format As result you get a zip file that contains caveat information and also the actual file including the results that could be in different results. Example: csv True Enum: ['CSV', 'TIF', 'JSON'] query

group-by The report data can be grouped by different criteria, for example a csv by vessel\_id means that you get on row for each vessel id. Only required when spatial-aggregation is True. Example: vessel\_id False Enum: ['VESSEL\_ID', 'FLAG', 'GEARTYPE', 'FLAGANDGEARTYPE', 'MMSI'] query

temporal-resolution You can decide the level of detail regarding time. For example if you request csv, group by vessel\_id and daily, you get one row per vessel id per day, or if you request csv, group by vessel\_id and entire, you get one row per vessel id. Example: yearly True Enum: ['HOURLY', 'DAILY', 'MONTHLY', 'YEARLY','ENTIRE'] query

datasets[0] Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy. Example: public-global-fishing-effort:latest or public-global-sar-presence:latest True string query

filters[0] Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0].For AIS apparent fishing effort, the possible filters are: flag, geartype and vessel\_id. Example: flag in ('ESP'). Check Gear Types supported here.. For SAR vessel detections, the available filters are: matched, flag, vessel\_id, geartype, neural\_vessel\_type, and shiptype. Examples include matched='false', which indicates all SAR vessel detections that didn't match with an AIS vessel, and neural\_vessel\_type='Likely Fishing', which signifies all SAR vessel detections identified by the neural model (which only considers the thumbnails of the SAR images) as "Likely Fishing". This filter is useful for analyzing detections that did not match with AIS vessels. The neural\_vessel\_type filter accepts the following values: "Likely non-fishing", "Likely Fishing", or "Unknown". Check Vessel Types supported here. False string query

date-range Start date and end date to filter the data. Maximum 366 days. Example: 2021-01-01,2021-03-01 False string query

spatial-aggregation Aggregates spatially the data in the report. With value true, the formats supported are only csv and json. Example: True False boolean query

Report - URL Parameters only for GET request

Parameter Description Required Format Param Type

region-dataset (Only allowed in GET request) Id of the dataset to obtain the region (example: public-eez-areas) False string query

region-id (Only allowed in GET request) Id of the region (example: 5690)

buffer-operation (Only allowed in GET request) Operation to apply to the region after the buffer. Only works together with buffer-value and buffer-unit query param. If not send, the default operation is dissolve . Possible values (DIFFERENCE, DISSOLVE) False string query

buffer-unit (Only allowed in GET request) Unit of the buffer value. Possible values (MILES, NAUTICALMILES, KILOMETERS, RADIANS, DEGREES) False string query

buffer-value (Only allowed in GET request) Distance to draw the buffer (negative values are allowed) False string query

Report - Body only for POST request

Key Description Required Format Param Type

geojson Geometry to filter the data in GeoJSON format False object body

region Object with region information (To get details of existing regions, check Regions in the Reference data section) False object body

region.dataset Id of the dataset to obtain the region (example: public-eez-areas) False string body

region.id Id of the region (example: 5690) False string body

region.bufferOperation Operation to apply to the region after the buffer. Only works together with buffer-value and buffer-unit query param. If not send, the default operation is dissolve . Possible values (DIFFERENCE, DISSOLVE) False string body

region.bufferUnit Unit of the buffer value. Possible values (MILES, NAUTICALMILES, KILOMETERS, RADIANS, DEGREES) False string body

region.bufferValue Distance to draw the buffer (negative values are allowed) False string body

EXAMPLE 1 (POST) - GENERATE FISHING EFFORT REPORT GROUPED BY YEAR AND BY CUSTOM POLYGON IN JSON FORMAT

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/report?spatial-resolution=LOW&temporal-resolution=YEARLY&group-by=FLAG&datasets[0]=public-global-fishing-effort%3Alatest&date-range=2021-01-01%2C2022-01-01&format=JSON' \

-H "Authorization: Bearer [TOKEN]"

-H 'Content-Type: application/json' \

--data-raw '{"geojson":{"type":"Polygon","coordinates":[[[-76.11328125,-26.273714024406416],[-76.201171875,-26.980828590472093],[-76.376953125,-27.527758206861883],[-76.81640625,-28.30438068296276],[-77.255859375,-28.767659105691244],[-77.87109375,-29.152161283318918],[-78.486328125,-29.45873118535532],[-79.189453125,-29.61167011519739],[-79.892578125,-29.6880527498568],[-80.595703125,-29.61167011519739],[-81.5625,-29.382175075145277],[-82.177734375,-29.07537517955835],[-82.705078125,-28.6905876542507],[-83.232421875,-28.071980301779845],[-83.49609375,-27.683528083787756],[-83.759765625,-26.980828590472093],[-83.84765625,-26.35249785815401],[-83.759765625,-25.64152637306576],[-83.583984375,-25.16517336866393],[-83.232421875,-24.447149589730827],[-82.705078125,-23.966175871265037],[-82.177734375,-23.483400654325635],[-81.5625,-23.241346102386117],[-80.859375,-22.998851594142906],[-80.15625,-22.917922936146027],[-79.453125,-22.998851594142906],[-78.662109375,-23.1605633090483],[-78.134765625,-23.40276490540795],[-77.431640625,-23.885837699861995],[-76.9921875,-24.28702686537642],[-76.552734375,-24.846565348219727],[-76.2890625,-25.48295117535531],[-76.11328125,-26.273714024406416]]]}}'

If the request is successful, the response will be:

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

{

"public-global-fishing-effort:v3": [

{

"date": "2021",

"flag": "ESP",

"hours": 0.4283333333333333,

"lat": -27.3,

"lon": -82,

"vesselIDs": 1

},

{

"date": "2021",

"flag": "ESP",

"hours": 0.9591666666666667,

"lat": -24.7,

"lon": -78.6,

"vesselIDs": 2

},

{

"date": "2021",

"flag": "ESP",

"hours": 0.27555555555555555,

"lat": -24.6,

"lon": -78.4,

"vesselIDs": 2

},

{

"date": "2021",

"flag": "ESP",

"hours": 0.41805555555555557,

"lat": -24.2,

"lon": -77.8,

"vesselIDs": 1

},

{

"date": "2021",

"flag": "ESP",

"hours": 0.034444444444444444,

"lat": -24.7,

"lon": -78.5,

"vesselIDs": 1

}

]

}

]

}

EXAMPLE 2 (POST) - GENERATE FISHING EFFORT REPORT GROUPED BY GEAR TYPE, USING EXISTING REGIONS (Russian EEZ) IN CSV FORMAT

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request POST 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=MONTHLY&group-by=GEARTYPE&datasets[0]=public-global-fishing-effort:latest&date-range=2022-01-01,2022-05-01&format=CSV' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--output 'report-grouped.json' \

--data-raw '{

"region": {

"dataset": "public-eez-areas",

"id": 5690

}

}'

If the request is successful, the response will be a ZIP file including the CSV file and a pdf with data considerations, similar to this.

EXAMPLE 3 (GET) - SAME AS EXAMPLE 2 BUT USING THE GET VERB

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=MONTHLY&group-by=GEARTYPE&datasets[0]=public-global-fishing-effort:latest&date-range=2022-01-01,2022-05-01&format=CSV&region-id=5690&region-dataset=public-eez-areas' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json'

If the request is successful, the response will be a ZIP file including the CSV file and a pdf with data considerations, the same as EXAMPLE 2.

EXAMPLE 4 (POST) - GENERATE REPORT WITH TOTAL FISHING HOURS PER LAT/LON GRID CELL USING EXISTING REGIONS (MPA Dorsal de Nasca) IN JSON FORMAT.

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request POST 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=ENTIRE&spatial-aggregation=false&datasets[0]=public-global-fishing-effort:latest&date-range=2022-05-01,2022-12-01&format=JSON'\

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--output 'report-grouped.json' \

--data-raw '{

"region": {

"dataset": "public-mpa-all",

"id": 555745302

}

}'

If the request is successful, the response will be:

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

{

"public-global-fishing-effort:v3.0": [

{

"date": "2022-05-01,2022-12-01",

"hours": 0.5788888888888889,

"lat": -16,

"lon": -77

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.2480555555555557,

"lat": -15.3,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.24166666666666664,

"lat": -16.2,

"lon": -76.5

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.0566666666666669,

"lat": -15.9,

"lon": -76.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 4.950277777777778,

"lat": -15.1,

"lon": -76.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 4.2636111111111115,

"lat": -15.9,

"lon": -77.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 6.2619444444444445,

"lat": -16.2,

"lon": -76

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.3333333333333335,

"lat": -16,

"lon": -75.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.0277777777777777,

"lat": -15.7,

"lon": -76.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.9891666666666667,

"lat": -15.4,

"lon": -76.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.7366666666666668,

"lat": -17.5,

"lon": -77.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.3325,

"lat": -15.8,

"lon": -76.1

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.058611111111111,

"lat": -15.3,

"lon": -77.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.20166666666666666,

"lat": -15.5,

"lon": -76.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 3.750277777777778,

"lat": -15,

"lon": -77

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.17,

"lat": -15.9,

"lon": -76.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 6.835277777777778,

"lat": -16.1,

"lon": -76.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.8758333333333332,

"lat": -15.8,

"lon": -76.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.269722222222222,

"lat": -16.1,

"lon": -76.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.8836111111111112,

"lat": -17.6,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.3144444444444443,

"lat": -15.1,

"lon": -77

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.6336111111111113,

"lat": -15.4,

"lon": -76.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 6.915277777777777,

"lat": -15.9,

"lon": -77.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.069166666666667,

"lat": -15.7,

"lon": -76.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 3.7730555555555556,

"lat": -15.9,

"lon": -77.4

},

{

"date": "2022-05-01,2022-12-01",

"hours": 9.885555555555557,

"lat": -15.1,

"lon": -77.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.3966666666666665,

"lat": -15,

"lon": -77.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 3.3041666666666667,

"lat": -16,

"lon": -76.4

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.0766666666666667,

"lat": -16.5,

"lon": -76.1

},

{

"date": "2022-05-01,2022-12-01",

"hours": 4.8341666666666665,

"lat": -16.2,

"lon": -75.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 5.3325,

"lat": -15.6,

"lon": -76.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.395,

"lat": -15.5,

"lon": -77.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.9936111111111111,

"lat": -15.8,

"lon": -77.5

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.6669444444444445,

"lat": -15.8,

"lon": -76.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.0811111111111111,

"lat": -15.5,

"lon": -77.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.1025000000000003,

"lat": -15.5,

"lon": -76.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.9577777777777777,

"lat": -17.7,

"lon": -77.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 11.073611111111111,

"lat": -15.5,

"lon": -76.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.10583333333333333,

"lat": -15.6,

"lon": -76.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 3.9888888888888885,

"lat": -16,

"lon": -76.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.6916666666666667,

"lat": -14.9,

"lon": -76.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.9250000000000003,

"lat": -15.7,

"lon": -76.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.401111111111111,

"lat": -15.6,

"lon": -76.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.056944444444444,

"lat": -17.5,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.3311111111111114,

"lat": -15.6,

"lon": -77.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.7,

"lat": -15.8,

"lon": -77.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.2999999999999998,

"lat": -15.2,

"lon": -77.5

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.2666666666666666,

"lat": -15.7,

"lon": -77.5

}

]

}

]

}

EXAMPLE 5 (GET) - SAME AS EXAMPLE 4 BUT USING GET VERB

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=ENTIRE&spatial-aggregation=false&datasets[0]=public-global-fishing-effort:latest&date-range=2022-05-01,2022-12-01&format=JSON&region-id=555745302&region-dataset=public-mpa-all'\

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--output 'report-grouped.json'

If the request is successful, the response will be the same as in EXAMPLE 4

EXAMPLE 6 (POST) - GENERATE REPORT WITH TOTAL FISHING HOURS PER LAT/LON GRID CELL USING EXISTING REGIONS (MPA Dorsal de Nasca) IN JSON FORMAT and buffer of 4 NAUTICAL MILES

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request POST 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=ENTIRE&spatial-aggregation=false&datasets[0]=public-global-fishing-effort:latest&date-range=2022-05-01,2022-12-01&format=JSON'\

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--output 'report-grouped.json' \

--data-raw '{

"region": {

"dataset": "public-mpa-all",

"id": 555745302,

"bufferUnit": "NAUTICALMILES",

"bufferValue": 4

}

}'

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

{

"public-global-fishing-effort:v3.0": [

{

"date": "2022-05-01,2022-12-01",

"hours": 0.9830555555555555,

"lat": -16.8,

"lon": -78.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 15.889444444444445,

"lat": -17.6,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.5683333333333334,

"lat": -16.5,

"lon": -78.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.9202694444444446,

"lat": -17.2,

"lon": -78.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.9163888888888891,

"lat": -17.4,

"lon": -78.1

},

{

"date": "2022-05-01,2022-12-01",

"hours": 7.533611111111111,

"lat": -17.5,

"lon": -77.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.1566666666666667,

"lat": -17.8,

"lon": -77.6

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.35277777777777775,

"lat": -16.2,

"lon": -75.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 11.49388888888889,

"lat": -17.4,

"lon": -78

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.8391666666666664,

"lat": -17.7,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.716111111111111,

"lat": -16.9,

"lon": -78.4

},

{

"date": "2022-05-01,2022-12-01",

"hours": 8.26388888888889,

"lat": -16.7,

"lon": -78.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 2.1325000000000003,

"lat": -17.5,

"lon": -77.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 5.818888888888889,

"lat": -17.3,

"lon": -78.1

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.9325,

"lat": -17.1,

"lon": -78.2

},

{

"date": "2022-05-01,2022-12-01",

"hours": 9.506111111111112,

"lat": -17.7,

"lon": -77.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.106388888888889,

"lat": -16.6,

"lon": -78.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.0611111111111111,

"lat": -17.3,

"lon": -78

},

{

"date": "2022-05-01,2022-12-01",

"hours": 9.64361111111111,

"lat": -17.8,

"lon": -77.7

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.004722222222222,

"lat": -17.6,

"lon": -77.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.0069444444444444,

"lat": -16.5,

"lon": -78.9

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.02,

"lat": -17.5,

"lon": -78

},

{

"date": "2022-05-01,2022-12-01",

"hours": 9.575,

"lat": -16.6,

"lon": -78.8

},

{

"date": "2022-05-01,2022-12-01",

"hours": 0.3675,

"lat": -17.1,

"lon": -78.3

},

{

"date": "2022-05-01,2022-12-01",

"hours": 1.6669444444444446,

"lat": -15.7,

"lon": -76

}

]

}

]

}

EXAMPLE 7 (GET) - SAME AS EXAMPLE 6 BUT USING GET VERB

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/report?spatial-resolution=LOW&temporal-resolution=ENTIRE&spatial-aggregation=false&datasets[0]=public-global-fishing-effort:latest&date-range=2022-05-01,2022-12-01&format=JSON&region-id=555745302&region-dataset=public-mpa-all&buffer-value=4&buffer-unit=NAUTICALMILES'\

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--output 'report-grouped.json'

If the request is successful, the response will be the same as EXAMPLE 6.

EXAMPLE 8 (POST) - REPORT REGION ID (CHILE) DAILY GRIDED DATA AND FILTER BY UNMATCHED DETECTIONS (JSON)

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/report?spatial-resolution=HIGH&temporal-resolution=HOURLY&datasets[0]=public-global-sar-presence%3Alatest&date-range=2022-01-01%2C2022-01-06&format=JSON&filters[0]=matched%3D%27false%27' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data '{

"region": {

"dataset": "public-eez-areas",

"id": 8465

}

}'

If the request is successful, the response will be:

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

{

"public-global-sar-presence:v3.0": [

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -52.66,

"lon": -72.19

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -52.57,

"lon": -72.03

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.42,

"lon": -73

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.39,

"lon": -73.04

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.29,

"lon": -73.26

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.34,

"lon": -73.11

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.84,

"lon": -75.1

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.12,

"lon": -73.79

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.44,

"lon": -73.46

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.25,

"lon": -73.77

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.18,

"lon": -73.79

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -43.97,

"lon": -73.59

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.32,

"lon": -73.68

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.59,

"lon": -74.27

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.43,

"lon": -74.21

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.51,

"lon": -73.49

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -44.43,

"lon": -73.3

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.4,

"lon": -73.52

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.33,

"lon": -73.12

},

{

"date": "2022-01-05 23:00",

"detections": 1,

"lat": -45.03,

"lon": -73.62

}

]

}

]

}

EXAMPLE 9 - REPORT INDONESIA FILTER BY MATCHED DETECTIONS - EXAMPLE OF NOISY VESSEL

In this case there is a matching with SAR image and AIS positions but the AIS positions are linked to a noisy vessel that is why there is a vessel id but no vessel details since Global Fishing Watch couldn't determine those values as this refers to a noisy vessel.

To get details of existing regions, check Regions in the Reference data section

# Make sure to replace [TOKEN] with your API Access Token.

curl --location --globoff 'https://gateway.api.globalfishingwatch.org//v3/4wings/report?spatial-resolution=HIGH&temporal-resolution=HOURLY&group-by=VESSEL\_ID&datasets[0]=public-global-sar-presence%3Alatest&date-range=2017-01-01%2C2017-01-02&format=JSON&filters[0]=matched%3D%27true%27' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json'\

--data '{

"region": {

"dataset": "public-eez-areas",

"id": 8492

}

}'

If the request is successful, the response will be this below. See that the first result is the noisy vessel.

{

"total": 1,

"limit": null,

"offset": null,

"nextOffset": null,

"metadata": {},

"entries": [

{

"public-global-sar-presence:v3.0": [

{

"callsign": "",

"dataset": "",

"date": "2017-01-01 22:00",

"detections": 1,

"entryTimestamp": "2017-01-01T22:33:41Z",

"exitTimestamp": "2017-01-01T22:33:41Z",

"firstTransmissionDate": "",

"flag": "",

"geartype": "",

"imo": "",

"lastTransmissionDate": "",

"lat": -6.09,

"lon": 106.89,

"mmsi": "",

"shipName": "",

"vesselId": "74934b786-6f6f-d027-c06f-bf814d7da7f3",

"vesselType": ""

},

{

"callsign": "D7MR",

"dataset": "public-global-vessel-identity:v3.0",

"date": "2017-01-01 22:00",

"detections": 1,

"entryTimestamp": "2017-01-01T22:33:41Z",

"exitTimestamp": "2017-01-01T22:33:41Z",

"firstTransmissionDate": "2014-03-12T07:22:25Z",

"flag": "KOR",

"geartype": "CARGO",

"imo": "9260976",

"lastTransmissionDate": "2024-05-26T23:59:32Z",

"lat": -5.92,

"lon": 106.12,

"mmsi": "440199000",

"shipName": "OCEAN LEADER",

"vesselId": "ffe9f7ec6-66b8-b8c9-b5d6-71bd2d362414",

"vesselType": "CARGO"

},

and more results

Get last report generated

Get last report generated. It endpoints let you to download the last report requested without generate it again. The endpoint only saves the last report during 30 min after the generation

Get last report - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/4wings/last-report

Report - Responses

The endpoint can return 4 different responses depending of the last report status:

Report running.htt The report continue executing. It returns a json response with the info of the report running. Example:

{

"uri": "/v3/4wings/report?format=JSON&datasets%5B0%5D=public-global-fishing-effort%3Av3.0&date-range=2023-12-31T00%3A00%3A00.000Z%2C2024-01-10T00%3A00%3A00.000Z&spatial-aggregation=true&temporal-resolution=ENTIRE&region-dataset=public-eez-areas&group-by=VESSEL\_ID",

"status": "running",

"lastUpdate": "2024-02-05T13:34:06+0000"

}

Report finished correctly. In this case the response will be the same that the original request sent (See possibles responses of the report endpoint).

Report finished with error. In this case the response will be a json with the info of the error. Example:

{

"message": {

"statusCode": 422,

"error": "Unprocessable Entity",

"messages": [

{

"title": "region-id",

"detail": "region-id query param is required"

}

]

},

"status": 422

}

Report not found. In this case the endpoint return a 404 error. This can occurr because the last report response is only saved during 30 min after the report finished.

Statistics on fishing activity worldwide

Get apparent fishing effort statistics worldwide.

This endpoint is not available for SAR vessel detections for now.

Stats - HTTP Request

GET /v3/4wings/stats

Stats - Parameters

Name In Type Required Description

fields query string false Statitics fields (separated by comma). For AIS fishing effort, available fields are: FLAGS, VESSEL-IDS, ACTIVITY-HOURS

vessel-groups[0] query string false Vessel group ids to filter (separated by comma). Vessel groups applied at dataset with index 0. At the same as datasets, this query param could be send with different index to apply filters to other datasets.

datasets[0] query string true Specify the datasets that will be used to create the style. You can learn more about which are the possible datasets here. The parameters should be defined using an index, in case only one dataset is going to be sent: ?dataset[0]=xxxxx, in case of multiple datasets: ?dataset[0]=xxxxx&dataset[1]=yyyyy

filters[0] query string false Filters are applied to the dataset parameter with the corresponding index. For example if we want to apply a filter to dataset[0], we should apply the filter attributes to filter[0].For AIS fishing effort, the possible filters are: flag, geartype

date-range query string false Start date and end date to filter the data

Example responses

200 Response

[

{

"activityHours": 0,

"flags": 0,

"maxLat": 0,

"maxLon": 0,

"minLat": 0,

"minLon": 0,

"vesselIds": 0

}

]

Stats - Responses

Status Meaning Description Schema

200 OK. Stats response Check 4Wings Stats response below

401 Unauthorized. No Unauthorized. Error Codes

403 Forbidden You do not have permissions to do the action. Error Codes

422 Unprocessable Entity Unprocessable Entity. Validation error. Error Codes

429 Too Many Requests Too Many Request. Error Codes

503 Service Unavailable Service Unavailable. Error Codes

4Wings Stats response

Name Type Required Restrictions Description

activityHours number false none Total activity hours (if field is requested). For AIS, total fishing effort in hours.

flags number false none Total different flags (if field is requested).

maxLat number false none Maximum latitude with data (Only returned if vessel-group filter is applied)

maxLon number false none Maximun longitude with data (Only returned if vessel-group filter is applied)

minLat number false none Minimum latitude with data (Only returned if vessel-group filter is applied)

minLon number false none Minimum longitude with data (Only returned if vessel-group filter is applied)

vesselIds number false none Total different vessel ids (if field is requested). Please refer to Key Concept section to understand what a "vessel id" means.

EXAMPLE 1 - GET WORLDWIDE STATS RELATED TO FISHING EFFORT FOR A TIME PERIOD WITH NO FILTER

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/stats/?datasets[0]=public-global-fishing-effort:latest&fields=FLAGS,VESSEL-IDS,ACTIVITY-HOURS&date-range=2022-10-22,2023-01-22' \

-H 'Authorization: Bearer {access-token}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

[

{

"activityHours": 28570704.16737109,

"flags": 214,

"maxLat": null,

"maxLon": null,

"minLat": null,

"minLon": null,

"vesselIds": 87731

}

]

EXAMPLE 2 - GET WORLDWIDE STATS RELATED TO FISHING EFFORT FOR A TIME PERIOD WITH GEAR TYPE FILTER

curl --location -g --request GET 'https://gateway.api.globalfishingwatch.org/v3/4wings/stats/?datasets[0]=public-global-fishing-effort:latest&fields=FLAGS,VESSEL-IDS,ACTIVITY-HOURS&date-range=2022-10-22,2023-01-22&filters[0]=geartype in ("tuna\_purse\_seines","driftnets")' \

-H 'Authorization: Bearer {access-token}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

[

{

"activityHours": 90972.49606000002,

"flags": 62,

"maxLat": null,

"maxLon": null,

"minLat": null,

"minLon": null,

"vesselIds": 592

}

]

Vessels API

Introduction Vessels API

Vessels API allows you to search for vessels and get vessel identity details. This API combines Global Fishing Watch (GFW) core AIS identity data with GFW registry database to enable an improved understanding of vessel identity over time. The GFW registry database includes vessel identity information from over 40 public regional and national registries and a static version was released on our Data Download Portal here which was used in the recently published paper Tracking elusive and shifting identities of the global fishing fleet by Park et al. (2023).

You can:

Search for AIS and across over 40 public international, regional and national vessel registries. Check list of sources in the reference data section

Get identity details based on AIS self reported data or public registries. Check more detail about data caveats here.

Learning how APIs are used in Global Fishing Watch Vessel Viewer

If you want to learn which APIs are used in Vessel Viewer, you can review this document showing the exact API requests done behind each page.

Search

Search vessels - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/vessels/search

Search vessels - URL Parameters

Parameter Required Format Param Type

since The token to send to get more results. False string query

limit Amount of search results to return. Maximum 50. Default: 20 Example: 20 False number query

datasets Specify the datasets that will be used to search the vessel. You can learn more about which are the possible datasets here. Example: datasets[0]=['public-global-fishing-vessels:latest', 'public-global-carrier-vessels:latest'] True array query

query Free form query that allows you to search a vessel by sending some identifier, for example: MMSI, IMO, CALL SIGN,Shipname, etc. Identifier depends on the dataset. This property and where are incompatible together, you just can use one at once. Minimum 3 characters. Example: Don tito False string query

where Advanced query that allows you to search a vessel by sending several identifiers. The list of identifiers depends on the dataset. You can combine logic operators like AND, OR, =, >= , <. Some SCALAR operators are not supported yet. This property and query are incompatible together, you just can use one at once. Example: (shipname = 'SEIN PHOENIX' OR mmsi = '441618000' OR imo = '9047271' OR callsign='D8SP') AND transmissionDateTo >= '2021-05-29' AND transmissionDateFrom <= '2021-08-29' AND flag = 'KOR' False string query

match-fields This query param allows to filter by matchFields levels. Possible values: SEVERAL\_FIELDS, NO\_MATCH, ALL. It is allow to use with query query-param but not with where query-param. False array query

includes This query param allows to add extra information to the response. Values: OWNERSHIP, AUTHORIZATIONS, MATCH\_CRITERIA False array query

binary If the response should be in binary format (proto buffer) or not. It is useful if you want to improve the performance of your platform. A decoder is needed totransform the response. Default is False Example: True False boolean query

BASIC SEARCH - SEARCH ANY VESSEL BY A KEYWORD. Example MMSI = 368045130

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/vessels/search?query=368045130&datasets[0]=public-global-vessel-identity:latest&includes[0]=MATCH\_CRITERIA&includes[1]=OWNERSHIP&includes[2]=AUTHORIZATIONS' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"limit": 20,

"since": null,

"total": 1,

"entries": [

{

"dataset": "public-global-vessel-identity:v3.0",

"registryInfoTotalRecords": 1,

"registryInfo": [

{

"id": "db2d2e9437254280b9ccc8c59e8c8ccb",

"sourceCode": ["IMO", "USA"],

"ssvid": "368045130",

"flag": "USA",

"shipname": "MISS FREYA",

"nShipname": "MISSFREYA",

"callsign": "WDK3424",

"imo": "8969513",

"latestVesselInfo": true,

"transmissionDateFrom": "2019-02-01T19:28:14Z",

"transmissionDateTo": "2023-07-31T08:10:29Z",

"geartype": ["FISHING"],

"lengthM": null,

"tonnageGt": 171,

"vesselInfoReference": "4e4b5501-c2cf-4384-8051-c3affacb0229"

}

],

"registryOwners": [],

"registryAuthorizations": [],

"combinedSourcesInfo": [

{

"vesselId": "126221ace-e3b5-f4ed-6150-394809737c55",

"geartypes": [

{

"name": "SET\_LONGLINES",

"source": "COMBINATION\_OF\_REGISTRY\_AND\_AIS\_INFERRED\_NN\_INFO",

"yearFrom": 2019,

"yearTo": 2022

}

],

"shiptypes": [

{

"name": "FISHING",

"source": "COMBINATION\_OF\_REGISTRY\_AND\_AIS\_INFERRED\_NN\_INFO",

"yearFrom": 2019,

"yearTo": 2022

}

]

},

{

"vesselId": "3312b30d6-65b6-1bdb-6a78-3f5eb3977e58",

"geartypes": [

{

"name": "SET\_LONGLINES",

"source": "COMBINATION\_OF\_REGISTRY\_AND\_AIS\_INFERRED\_NN\_INFO",

"yearFrom": 2019,

"yearTo": 2023

}

],

"shiptypes": [

{

"name": "FISHING",

"source": "COMBINATION\_OF\_REGISTRY\_AND\_AIS\_INFERRED\_NN\_INFO",

"yearFrom": 2019,

"yearTo": 2023

}

]

}

],

"selfReportedInfo": [

{

"id": "3312b30d6-65b6-1bdb-6a78-3f5eb3977e58",

"ssvid": "368045130",

"shipname": "MISS FREYA",

"nShipname": "MISSFREYA",

"flag": "USA",

"callsign": "WDK3424",

"imo": null,

"messagesCounter": 90158,

"positionsCounter": 15799,

"sourceCode": ["AIS"],

"matchFields": "SEVERAL\_FIELDS",

"transmissionDateFrom": "2019-04-06T13:12:43Z",

"transmissionDateTo": "2023-10-21T09:32:55Z"

},

{

"id": "126221ace-e3b5-f4ed-6150-394809737c55",

"ssvid": "368045130",

"shipname": "MISS FREYA",

"nShipname": "MISSFREYA",

"flag": "USA",

"callsign": null,

"imo": null,

"messagesCounter": 12483,

"positionsCounter": 2066,

"sourceCode": ["AIS"],

"matchFields": "SEVERAL\_FIELDS",

"transmissionDateFrom": "2019-02-01T19:24:59Z",

"transmissionDateTo": "2022-07-17T11:48:43.52Z"

}

],

"matchCriteria": [

{

"reference": "3312b30d6-65b6-1bdb-6a78-3f5eb3977e58",

"property": "selfReportedInfo.id",

"source": "selfReportedInfo",

"matches": [

{

"property": "selfReportedInfo.ssvid",

"value": "368045130"

}

],

"period": {

"dateFrom": "2019-04-06T13:12:43Z",

"dateTo": "2023-10-21T09:32:55Z"

},

"latestVesselInfo": true

},

{

"reference": "126221ace-e3b5-f4ed-6150-394809737c55",

"property": "selfReportedInfo.id",

"source": "selfReportedInfo",

"matches": [

{

"property": "selfReportedInfo.ssvid",

"value": "368045130"

}

],

"period": {

"dateFrom": "2019-02-01T19:24:59Z",

"dateTo": "2022-07-17T11:48:43.52Z"

},

"latestVesselInfo": true

},

{

"reference": "4e4b5501-c2cf-4384-8051-c3affacb0229",

"property": "registryInfo.vesselInfoReference",

"source": "registryInfo",

"matches": [

{

"property": "registryInfo.ssvid",

"value": "368045130"

}

],

"period": {

"dateFrom": "2019-02-01T19:28:14Z",

"dateTo": "2023-07-31T08:10:29Z"

},

"latestVesselInfo": true

}

]

}

],

"metadata": {

"query": "368045130",

"normalizedQuery": "368045130",

"didYouMean": {

"shipname": {}

}

}

}

This endpoint searches for a vessel given a free form query. The query will be matched against any identifiers for the vessel, and a paginated, ranked results list will be returned. It allows you to perform a basic search of a vessel by sending some identifier, for example: MMSI, IMO, CALL SIGN,Shipname, etc.

ADVANCED SEARCH - SEARCH ANY VESSEL BY A KEYWORD. Example MMSI = 775998121 AND SHIPNAME

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/vessels/search?where=ssvid="775998121" AND shipname="DON TITO"&datasets[0]=public-global-vessel-identity:latest&includes[0]=MATCH\_CRITERIA&includes[1]=OWNERSHIP' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"total": 2,

"limit": 20,

"since": null,

"metadata": {

"query": "(selfReportedInfo.ssvid='775998121' OR registryInfo.ssvid='775998121') AND (selfReportedInfo.shipname LIKE '%DON TITO%' OR registryInfo.shipname LIKE '%DON TITO%')",

"normalizedQuery": null,

"didYouMean": {}

},

"entries": [

{

"dataset": "public-global-vessel-identity:v20230623",

"registryInfoTotalRecords": 0,

"registryInfo": [],

"registryOwners": [],

"registryAuthorizations": [],

"selfReportedInfo": [

{

"id": "c54923e64-46f3-9338-9dcb-ff09724077a3",

"ssvid": "775998121",

"shipname": "DON TITO",

"nShipname": "DONTITO",

"flag": "VEN",

"callsign": "YD23136",

"imo": null,

"geartype": null,

"shiptype": "OTHER\_NON\_FISHING",

"messagesCounter": 1103,

"positionsCounter": 430,

"shiptypesByYear": [

{

"shiptype": "OTHER\_NON\_FISHING",

"years": [2021, 2022, 2023]

}

],

"sourceCode": ["AIS"],

"matchFields": "NO\_MATCH",

"transmissionDateFrom": "2021-08-06T10:49:26Z",

"transmissionDateTo": "2023-09-21T14:52:16Z"

}

],

"matchCriteria": [

{

"reference": "c54923e64-46f3-9338-9dcb-ff09724077a3",

"property": "selfReportedInfo.id",

"source": "selfReportedInfo",

"matches": [],

"period": {

"dateFrom": "2021-08-06T10:49:26Z",

"dateTo": "2023-09-21T14:52:16Z"

},

"latestVesselInfo": true

}

]

},

{

"dataset": "public-global-vessel-identity:v20230623",

"registryInfoTotalRecords": 0,

"registryInfo": [],

"registryOwners": [],

"registryAuthorizations": [],

"selfReportedInfo": [

{

"id": "bae8f325c-cf0a-01fe-6d1a-9a275588d4ff",

"ssvid": "775998121",

"shipname": "DON TITO",

"nShipname": "DONTITO",

"flag": "VEN",

"callsign": "",

"imo": null,

"geartype": null,

"shiptype": "OTHER\_NON\_FISHING",

"messagesCounter": 74,

"positionsCounter": 37,

"shiptypesByYear": [

{

"shiptype": "OTHER\_NON\_FISHING",

"years": [2021, 2022]

}

],

"sourceCode": ["AIS"],

"matchFields": "NO\_MATCH",

"transmissionDateFrom": "2021-08-03T13:41:41Z",

"transmissionDateTo": "2022-07-23T13:39:10.01Z"

}

],

"matchCriteria": [

{

"reference": "bae8f325c-cf0a-01fe-6d1a-9a275588d4ff",

"property": "selfReportedInfo.id",

"source": "selfReportedInfo",

"matches": [],

"period": {

"dateFrom": "2021-08-03T13:41:41Z",

"dateTo": "2022-07-23T13:39:10.01Z"

},

"latestVesselInfo": true

}

]

}

]

}

This endpoint allows you to also perform an advanced search by creating a query like shipname LIKE '%GABU REEFE%' OR imo = '8300949. Where you can combine several fields, for example: id (vessel id), callsign, flag, imo, mmsi, shipname, normalized\_shipname, lastTransmissionDate and firstTransmissionDate.

Get list of vessels filtered by ids

Get vessels by ids - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/vessels

Get vessels by ids - URL Parameters

Parameter Description Required Format Param Type

datasets Specify the datasets that will be used to search the vessel. You can learn more about which are the possible datasets here. Example: ['public-global-fishing-vessels:latest', 'public-global-carrier-vessels:latest'] True array query

registries-info-data The response doesn't include all registry info data by default. It means, the default value is NONE. You can use DELTA to get only the data that changes in the time or ALL to get all data from the registries Example: NONE False Enum: ['NONE', 'DELTA', 'ALL'] query

includes This query param allows to add extra information to the response. Example: [['POTENTIAL\_RELATED\_SELF\_REPORTED\_INFO']] False array query

binary If the response should be in binary format (proto buffer) or not. It is useful if you want to improve the performance of your platform. A decoder is needed to transform the response. Default is False Example: True False boolean query

match-fields This query param allows to filter by matchFields levels. Possible values: SEVERAL\_FIELDS, NO\_MATCH, ALL. It is allow to use with query query-param but not with where query-param Example: [['SEVERAL\_FIELDS', 'NO\_MATCH']] False array query

ids List of vessel ids. You can get this information using the search endpoints Example: ['6583c51e3-3626-5638-866a-f47c3bc7ef7c'] True array query

vessel-groups List of vessel-groups. Example: ['my-vessel-group'] False array query

GET DETAILS OF TWO FISHING VESSELS AND ONE CARRIER

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/vessels?datasets[0]=public-global-vessel-identity:latest&ids[0]=8c7304226-6c71-edbe-0b63-c246734b3c01&ids[1]=6583c51e3-3626-5638-866a-f47c3bc7ef7c&ids[2]=71e7da672-2451-17da-b239-857831602eca' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"limit": null,

"since": null,

"total": 1,

"metadata": {

"idsFound": ["c54923e64-46f3-9338-9dcb-ff09724077a3"],

"idsNotFound": [

"73f5e35b6-6b92-0b9a-f8f4-cc7b29ef6c72",

"16c4ef8cc-c2bb-c587-7126-843ee54274ce",

"e486710c3-3baa-8532-4ddf-e6665e99d5a4",

"91666fdf5-5b79-3645-64da-8d199b76cd7e",

"8837304ea-ace9-a723-50cc-be1eb5797362"

]

},

"entries": [

{

"dataset": "public-global-vessel-identity:v20230623",

"registryInfoTotalRecords": 0,

"registryInfo": [],

"registryOwners": [],

"registryAuthorizations": [],

"selfReportedInfo": [

{

"id": "c54923e64-46f3-9338-9dcb-ff09724077a3",

"ssvid": "775998121",

"shipname": "DON TITO",

"nShipname": "DONTITO",

"flag": "VEN",

"callsign": "YD23136",

"imo": null,

"geartype": null,

"shiptype": "OTHER\_NON\_FISHING",

"messagesCounter": 1103,

"positionsCounter": 430,

"shiptypesByYear": [

{

"shiptype": "OTHER\_NON\_FISHING",

"years": [2021, 2022, 2023]

}

],

"sourceCode": ["AIS"],

"matchFields": "NO\_MATCH",

"transmissionDateFrom": "2021-08-06T10:49:26Z",

"transmissionDateTo": "2023-09-21T14:52:16Z"

}

]

}

]

}

After you perform a Basic, you get the vessel id, for example c54923e64-46f3-9338-9dcb-ff09724077a3. You can use this endpoint to get the details of a list of specific vessel ids.

Get vessel by id

Get vessel by id - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/vessels/{vesselId}

Get vessel by id - URL Parameters

Parameter Description Required Format Param Type

vesselId True string path

registries-info-data The response doesn't include all registry info data by default. It means, the default value is NONE. You can use DELTA to get only the data that changes in the time or ALL to get all data from the registries Example: NONE False Enum: ['NONE', 'DELTA', 'ALL'] query

includes This query param allows to add extra information to the response. Example: [['POTENTIAL\_RELATED\_SELF\_REPORTED\_INFO']] False array query

binary If the response should be in binary format (proto buffer) or not. It is useful if you want to improve the performance of your platform. A decoder is needed to transform the response. Default is False Example: True False boolean query

match-fields This query param allows to filter by matchFields levels. Possible values: SEVERAL\_FIELDS, NO\_MATCH, ALL. It is allow to use with query query-param but not with where query-param Example: [['SEVERAL\_FIELDS', 'NO\_MATCH']] False array query

dataset Specify the dataset that will be used to search the vessel. You can learn more about which are the possible datasets here. Example: public-global-fishing-vessels:latest True string query

GET DETAILS OF ONE VESSEL

curl --location --request GET 'https://gateway.globalfishingwatch.org/v3/vessels/c54923e64-46f3-9338-9dcb-ff09724077a3?dataset=public-global-vessel-identity:latest' \\

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"dataset": "public-global-vessel-identity:v20230623",

"registryInfoTotalRecords": 0,

"registryInfo": [],

"registryOwners": [],

"registryAuthorizations": [],

"selfReportedInfo": [

{

"id": "c54923e64-46f3-9338-9dcb-ff09724077a3",

"ssvid": "775998121",

"shipname": "DON TITO",

"nShipname": "DONTITO",

"flag": "VEN",

"callsign": "YD23136",

"imo": null,

"geartype": null,

"shiptype": "OTHER\_NON\_FISHING",

"messagesCounter": 1103,

"positionsCounter": 430,

"shiptypesByYear": [

{

"shiptype": "OTHER\_NON\_FISHING",

"years": [2021, 2022, 2023]

}

],

"sourceCode": ["AIS"],

"matchFields": "NO\_MATCH",

"transmissionDateFrom": "2021-08-06T10:49:26Z",

"transmissionDateTo": "2023-09-21T14:52:16Z"

}

]

}

After you perform a Basic , you get the vessel id, for example c54923e64-46f3-9338-9dcb-ff09724077a3. You can use this endpoint to get the details of ONE vessel id.

Events API

Introduction Events API

Events API allows you to explore different activities of a vessel. You can analyze:

apparent fishing events

encounters between these vessel types: fishing-carrier, fishing-support, fishing-bunker, fishing-fishing, tanker-fishing, carrier-bunker and support-banker.

In this API Portal we are offering more encounter types compared to our Public Map

loitering for all vessel types

port visits for all vessel types

AIS off (aka GAPs) for all vessel types

Check more detail about data caveats here.

REMINDER! Change the API Dataset to select the event type:

For fishing events, use public-global-fishing-events:latest

For encounters events, use public-global-encounters-events:latest

For loitering events, use public-global-loitering-events:latest

For port visits, use public-global-port-visits-events:latest

For AIS off event, use public-global-gaps-events:latest

Get All Events (GET endpoint)

We recommend use the GET endpoint if you are using the API from a Web APP because you can take advantage of the Browser cache to improve the load speed

Events GET - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/events

Events GET - URL Parameters

Parameter Description Required Format Param Type

limit Amount of search results to return. Example: 10 True number query

offset Offset into the search results, used for pagination. It starts at 0. It is used in combination with the param “limit”, for example you send limit = 5 and you get in the response total vessels =10. So, If you send offset =0 OR you don’t send it, you will get the first 5 results (first page). Therefore, in order to get the second page, you need to send offset = 5 which is the position of the first element you want from the second page. Example: 5 True number query

sort Property used to sort using a property. The list of possible values depends on the dataset. Before the property you can use ‘+’ or ‘-’ and based on that prefix, you can decide if it will be sort ascending + (ASC) or descending - (DESC).Example: -start. Enum: +start, -start, +end, -end False string query

datasets Specify the datasets that will be used to search the vessel. You can learn more about which are the possible datasets here. You can send several datasets and must be an array. Example: public-global-fishing-events:latest True string query

vessels List of vessel ids (Must be an array). You can get this information using the search endpoints Example: 8c7304226-6c71-edbe-0b63-c246734b3c01,6583c51e3-3626-5638-866a-f47c3bc7ef7c False string query

types Event types (Must be an array). Possible values: ENCOUNTER,FISHING,LOITERING,GAP,PORT\_VISIT Example: FISHING False string query

start-date Start date in format YYYY-MM-DD of the start date of the event (inclusive). Filter the events that their end date is greater or equal than the start date filter. Example: 2020-01-01 False string query

end-date End date in format YYYY-MM-DD of the end date of the event (exclusive). Filter the events that their start date is less than the end date filter. Example: 2020-02-01 False string query

include-regions Flag to specify if the matching with regions should be executed or not. Check our data caveats for details on how the region is matching. Default value is True. Example: True False boolean query

confidences This param applies only to port visits events, check data caveats to understand the different levels. Values go from 2 to 4, where 2 is low confidence, 3 is medium and 4 is high confidence. You can send several values and must be an array. Possible values: 2, 3, 4 Example: 3,4 False string query

encounter-types Possible values: 'FISHING-CARRIER','FISHING-SUPPORT','FISHING-BUNKER', 'FISHING-FISHING', 'FISHING-TANKER', 'CARRIER-BUNKER' and 'BUNKER-SUPPORT'. You can send several values and must be an array. Example: FISHING-CARRIER, FISHING-BUNKER. When using encounterType parameters like FISHING-CARRIER or CARRIER-FISHING, it is essential to note that you may encounter duplicate events for each vessel ID involved. This approach is designed to give you the possibility to decide which vessel type appears first in the event, so for example: FISHING-CARRIER, the first vessel in the response is the fishing one and the 2nd is the carrier. It is important to be mindful of this, particularly when tallying events. False string query

vessel-types Vessel types. Possible values: BUNKER, CARGO, DISCREPANCY, CARRIER,FISHING, GEAR, OTHER, PASSENGER, SEISMIC\_VESSEL, SUPPORT. You can send several values and must be an array. Example: BUNKER, CARGO False string query

gap-intentional-disabling Flag to specify if you want to get those AIS off events (aka gaps) that were potentially intentional or not."True" means that the gap was potentially intentional and "False" means that the gap was potentially not intentional. If this flag is not present, then the response contains all gaps events. False string query

GET FISHING EVENTS

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/events?vessels[0]=9b3e9019d-d67f-005a-9593-b66b997559e5&datasets[0]=public-global-fishing-events:latest&start-date=2017-01-01&end-date=2017-01-31&limit=1&offset=0' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-fishing-events:v3.0"],

"vessels": ["9b3e9019d-d67f-005a-9593-b66b997559e5"],

"dateRange": {

"from": "2017-01-01",

"to": "2017-01-31"

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 10,

"entries": [

{

"start": "2017-01-18T23:56:16.000Z",

"end": "2017-01-19T03:42:27.000Z",

"id": "718a4d93c16f78d9a54e9bc56d20c7e0",

"type": "fishing",

"position": {

"lat": -46.1538,

"lon": -63.2245

},

"regions": {

"mpa": [],

"eez": ["8466"],

"rfmo": ["ACAP", "CCSBT", "IWC", "ICCAT"],

"fao": ["41.3", "41.3.1", "41"],

"majorFao": ["41"],

"eez12Nm": [],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

-63.21452500000001, -46.1618533333, -63.23098, -46.1495283333

],

"distances": {

"startDistanceFromShoreKm": 221,

"endDistanceFromShoreKm": 220,

"startDistanceFromPortKm": 242.616953,

"endDistanceFromPortKm": 240.71707800000001

},

"vessel": {

"id": "9b3e9019d-d67f-005a-9593-b66b997559e5",

"name": "CLAUDINA",

"ssvid": "701000948"

},

"fishing": {

"totalDistanceKm": 2.136563188884008,

"averageSpeedKnots": 0.49600001273999994,

"averageDurationHours": 0.15707175925925926,

"potentialRisk": false

}

}

]

}

GET ENCOUNTER EVENTS

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/events?datasets[0]=public-global-encounters-events:latest&vessels[0]=8c7304226-6c71-edbe-0b63-c246734b3c01&limit=1&offset=0' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-encounters-events:v3.0"],

"vessels": ["8c7304226-6c71-edbe-0b63-c246734b3c01"],

"dateRange": {

"from": null,

"to": null

},

"encounterTypes": [

"FISHING-FISHING",

"FISHING-CARRIER",

"FISHING-SUPPORT",

"CARRIER-FISHING",

"SUPPORT-FISHING"

]

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 2,

"entries": [

{

"start": "2016-07-23T00:00:00.000Z",

"end": "2016-07-23T11:50:00.000Z",

"id": "da55e5723374f99f91887d4f51256d5a.2",

"type": "encounter",

"position": {

"lat": 72.0866,

"lon": 8.0857

},

"regions": {

"mpa": [],

"eez": [],

"rfmo": ["NEAFC", "IWC", "NASCO", "NAMMCO", "ACAP", "ICES"],

"fao": ["27", "27.2.a.1", "27.2", "27.2.a"],

"majorFao": ["27"],

"eez12Nm": [],

"highSeas": ["63203"],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

8.085723348900002, 72.0865557573, 8.085723348900002, 72.0865557573

],

"distances": {

"startDistanceFromShoreKm": 426,

"endDistanceFromShoreKm": 426,

"startDistanceFromPortKm": 425.01421899999997,

"endDistanceFromPortKm": 425.01421899999997

},

"vessel": {

"id": "8c7304226-6c71-edbe-0b63-c246734b3c01",

"name": "FRIOFORWIN",

"ssvid": "210631000"

},

"encounter": {

"vessel": {

"id": "208659960-0142-40c1-339a-c816edcab44b",

"flag": "RUS",

"name": "FORPOST",

"type": "fishing",

"ssvid": "273355780"

},

"medianDistanceKilometers": 0.065,

"medianSpeedKnots": 0.5,

"type": "carrier-fishing",

"potentialRisk": false

}

}

]

}

GET LOITERING EVENTS

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/events?datasets[0]=public-global-loitering-events-carriers:latest&vessels[0]=8c7304226-6c71-edbe-0b63-c246734b3c01&limit=1&offset=0' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-loitering-events-carriers:v20201001"],

"vessels": ["8c7304226-6c71-edbe-0b63-c246734b3c01"],

"dateRange": {

"from": null,

"to": null

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 113,

"entries": [

{

"start": "2013-06-12T11:40:09.000Z",

"end": "2013-06-12T12:01:09.000Z",

"id": "9991a9e4b2ee7313c33f5263308d045c",

"type": "loitering",

"position": {

"lat": 32.2075,

"lon": -13.9346

},

"regions": {

"mpa": [],

"eez": ["8363"],

"rfmo": ["ACAP", "NAMMCO", "ICCAT", "IWC"],

"fao": ["34.1.2", "34", "34.1"],

"majorFao": ["34"],

"eez12Nm": [],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [-13.9335216667, 32.2104016667, -13.9357016667, 32.20455],

"distances": {

"startDistanceFromShoreKm": 239,

"endDistanceFromShoreKm": 239,

"startDistanceFromPortKm": 242.068016,

"endDistanceFromPortKm": 241.65545300000002

},

"vessel": {

"id": "8c7304226-6c71-edbe-0b63-c246734b3c01",

"name": "FRIO FORWIN",

"ssvid": "210631000"

},

"loitering": {

"totalTimeHours": 0.35,

"totalDistanceKm": 0.6822365329451406,

"averageSpeedKnots": 1.0525093072279246,

"averageDistanceFromShoreKm": 239.00000000000003

}

}

]

}

GET PORT VISITS

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/events?datasets[0]=public-global-port-visits-events:latest&vessels[0]=914f83946-6af4-04c6-4974-44a203a87952&limit=1&offset=0' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-port-visits-events:v3.0"],

"vessels": ["914f83946-6af4-04c6-4974-44a203a87952"],

"dateRange": {

"from": null,

"to": null

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 74,

"entries": [

{

"start": "2014-04-15T20:09:21.000Z",

"end": "2014-04-28T12:15:34.000Z",

"id": "a7b8b2f40b75ea6bec8bc8dbcb56741e",

"type": "port\_visit",

"position": {

"lat": 42.2182,

"lon": -8.7915

},

"regions": {

"mpa": [],

"eez": ["5693"],

"rfmo": ["NEAFC", "ICES", "NASCO", "ICCAT", "NAMMCO", "IWC", "ACAP"],

"fao": ["27.9", "27.9.a", "27"],

"majorFao": ["27"],

"eez12Nm": [],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

-8.7508320328, 42.2291383982, -8.8819075644, 42.2035438605

],

"distances": {

"startDistanceFromShoreKm": 0,

"endDistanceFromShoreKm": 2,

"startDistanceFromPortKm": 0,

"endDistanceFromPortKm": 0

},

"vessel": {

"id": "914f83946-6af4-04c6-4974-44a203a87952",

"name": "IRENE",

"ssvid": "355794000"

},

"port\_visit": {

"visitId": "f5fafee33631a3948c8e2042b5810cdc",

"confidence": 3,

"durationHrs": 304.1036111111111,

"startAnchorage": {

"anchorageId": "0d2f61f7",

"atDock": true,

"distanceFromShoreKm": 0,

"flag": "ESP",

"id": "esp-vigo",

"lat": 42.229138398208576,

"lon": -8.750832032773074,

"name": "VIGO",

"topDestination": "VIGO"

},

"intermediateAnchorage": {

"anchorageId": "0d2f61f7",

"atDock": true,

"distanceFromShoreKm": 0,

"flag": "ESP",

"id": "esp-vigo",

"lat": 42.229138398208576,

"lon": -8.750832032773074,

"name": "VIGO",

"topDestination": "VIGO"

},

"endAnchorage": {

"anchorageId": "0d25f581",

"atDock": false,

"distanceFromShoreKm": 2,

"flag": "ESP",

"id": "esp-vigo",

"lat": 42.20354386049306,

"lon": -8.881907564441319,

"name": "VIGO",

"topDestination": "VIGO"

}

}

}

]

}

Get All Events (POST endpoint)

Events POST - HTTP Request

POST https://gateway.api.globalfishingwatch.org/v3/events

Events POST - URL Parameters

Parameter Description Required Format Param Type

limit Amount of search results to return. Example: 10 True number query

offset Offset into the search results, used for pagination. It starts at 0. It is used in combination with the param “limit”, for example you send limit = 5 and you get in the response total vessels =10. So, If you send offset =0 OR you don’t send it, you will get the first 5 results (first page). Therefore, in order to get the second page, you need to send offset = 5 which is the position of the first element you want from the second page. Example: 5 True number query

sort Property used to sort using a property. The list of possible values depends on the dataset. Before the property you can use ‘+’ or ‘-’ and based on that prefix, you can decide if it will be sort ascending + (ASC) or descending - (DESC).Example: -start. Enum: +start, -start, +end, -end False string query

Events POST - Body Parameters

Parameter Description Required Format Param Type

datasets Specify the datasets that will be used to search the vessel. You can learn more about which are the possible datasets here. You can send several datasets in array format. Example: ['public-global-fishing-events:latest', 'public-global-encounter-events:latest'] True [string] body

vessels List of vessel ids. You can get this information using the search endpoints Example: ['8c7304226-6c71-edbe-0b63-c246734b3c01', '6583c51e3-3626-5638-866a-f47c3bc7ef7c'] False [string] body

types Event types. Possible values: PORT, ENCOUNTER, LOITERING, GAP, PORT\_VISIT. Example: ['FISHING'] False [string] body

startDate Start date in format YYYY-MM-DD of the start date of the event (inclusive). Filter the events that their end date is greater or equal than the start date filter. Example: 2020-01-01 False string body

endDate End date in format YYYY-MM-DD of the end date of the event (exclusive). Filter the events that their start date is less than the end date filter. Example: 2020-02-01 False string body

confidences This param applies only to port visits events, check data caveats to understand the different levels. Values go from 2 to 4, where 2 is low confidence, 3 is medium and 4 is high confidence. Possible values: 2, 3, 4 Example: ['3','4'] False [string] body

encounterTypes Possible values: 'CARRIER-FISHING', 'FISHING-CARRIER','FISHING-SUPPORT','SUPPORT-FISHING','FISHING-BUNKER', 'BUNKER-FISHING', 'FISHING-FISHING', 'FISHING-TANKER', 'TANKER-FISHING', 'CARRIER-BUNKER', 'BUNKER-CARRIER', 'SUPPORT-BUNKER' and 'BUNKER-SUPPORT'. You can send several values and must be an array. Example: ['CARRIER-FISHING','FISHING-CARRIER']. When using encounterType parameters like FISHING-CARRIER or CARRIER-FISHING, it is essential to note that you may encounter duplicate events for each vessel ID involved. This approach is designed to give you the possibility to decide which vessel type appears first in the event, so for example: FISHING-CARRIER, the first vessel in the response is the fishing one and the 2nd is the carrier. It is important to be mindful of this, particularly when tallying events. False [string] body

duration Minimum duration (greater than or equal to), in minutes, of the event. Example: 30 False number body

vesselTypes Vessel types of the vessels involved in the events. Possible values: FISHING, CARRIER, SUPPORT, PASSENGER, OTHER\_NON\_FISHING, SEISMIC\_VESSEL, BUNKER\_OR\_TANKER, CARGO Example: ['FISHING', 'CARRIER'] False [string] body

vesselGroups Ids of the vessel groups. Must be an array Example: ['my-vessel-group'] False [string] body

flags Flags of the vessels involved in the events, in ISO3. Must be an array. Example: ['ESP', 'FRA'] False [string] body

geometry Region where the events happen. False object body

region Region where the events happen.(#reference-data) False object body

region.id Id of the region(#reference-data) False object body

region.dataset Id of the dataset to obtain the region. You can get it from Reference Data False object body

vesselTypes Vessel types. Possible values: BUNKER, CARGO,DISCREPANCY, CARRIER, FISHING, GEAR, OTHER, PASSENGER, SEISMIC\_VESSEL, SUPPORT. You can send several values and must be an array. Example: BUNKER, CARGO False [string] body

gapIntentionalDisabling Flag to specify if you want to get those AIS off events (aka gaps) that were potentially intentional or not."True" means that the gap was potentially intentional and "False" means that the gap was potentially not intentional. If this flag is not present, then the response contains all gaps events. False [string] body

EXAMPLE 1 - GET FISHING EVENTS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events?offset=0&limit=1' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-fishing-events:latest"],

"startDate": "2017-01-01",

"endDate": "2017-01-31",

"flags": ["CHN"],

"geometry": {

"type": "Polygon",

"coordinates": [

[

[

120.36621093749999,

26.725986812271756

],

[

122.36572265625,

26.725986812271756

],

[

122.36572265625,

28.323724553546015

],

[

120.36621093749999,

28.323724553546015

],

[

120.36621093749999,

26.725986812271756

]

]

]

}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-fishing-events:v3.0"],

"dateRange": {

"from": "2017-01-01",

"to": "2017-01-31"

},

"encounterTypes": [],

"flags": ["CHN"],

"geometry": {

"type": "FeatureCollection",

"features": [

{

"type": "Feature",

"properties": {},

"geometry": {

"type": "Polygon",

"coordinates": [

[

[120.36621093749999, 26.725986812271756],

[122.36572265625, 26.725986812271756],

[122.36572265625, 28.323724553546015],

[120.36621093749999, 28.323724553546015],

[120.36621093749999, 26.725986812271756]

]

]

}

}

]

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 2480,

"entries": [

{

"start": "2016-12-30T07:28:06.000Z",

"end": "2017-01-02T03:49:40.000Z",

"id": "8326eb5fb66215de739f0c889a9b6a8e",

"type": "fishing",

"position": {

"lat": 27.0865,

"lon": 121.2232

},

"regions": {

"mpa": [],

"eez": ["8486"],

"rfmo": ["ACAP", "WCPFC", "APFIC", "IWC"],

"fao": ["61"],

"majorFao": ["61"],

"eez12Nm": ["8486"],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

121.1017333333, 26.9795383333, 121.3309066667, 27.1756633333

],

"distances": {

"startDistanceFromShoreKm": 38,

"endDistanceFromShoreKm": 37,

"startDistanceFromPortKm": 26.906598000000002,

"endDistanceFromPortKm": 36.957859

},

"vessel": {

"id": "3cedf7bd9-9800-1fc2-11d7-7985205d926e",

"name": "ZHELINGYU52036",

"ssvid": "412416212"

},

"fishing": {

"totalDistanceKm": 235.36357126254234,

"averageSpeedKnots": 2.0328767029525117,

"averageDurationHours": 0.3135754332313966,

"potentialRisk": false

}

}

]

}

EXAMPLE 2 - GET ENCOUNTER EVENTS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events?offset=0&limit=1' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-encounters-events:latest"],

"startDate": "2017-01-01",

"endDate": "2017-01-31",

"vessels": ["55d38c0ee-e0d7-cb32-ac9c-8b3680d213b3"],

"flags": ["TWN"],

"duration": 60,

"geometry": {

"type": "Polygon",

"coordinates": [

[

[

-130.9735107421875,

-17.691128657307427

],

[

-130.4901123046875,

-17.691128657307427

],

[

-130.4901123046875,

-17.209017141391765

],

[

-130.9735107421875,

-17.209017141391765

],

[

-130.9735107421875,

-17.691128657307427

]

]

]

}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-encounters-events:v3.0"],

"vessels": ["55d38c0ee-e0d7-cb32-ac9c-8b3680d213b3"],

"dateRange": {

"from": "2017-01-01",

"to": "2017-01-31"

},

"encounterTypes": [

"FISHING-FISHING",

"FISHING-CARRIER",

"FISHING-SUPPORT",

"CARRIER-FISHING",

"SUPPORT-FISHING"

],

"flags": ["TWN"],

"geometry": {

"type": "FeatureCollection",

"features": [

{

"type": "Feature",

"properties": {},

"geometry": {

"type": "Polygon",

"coordinates": [

[

[-130.9735107421875, -17.691128657307427],

[-130.4901123046875, -17.691128657307427],

[-130.4901123046875, -17.209017141391765],

[-130.9735107421875, -17.209017141391765],

[-130.9735107421875, -17.691128657307427]

]

]

}

}

]

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 1,

"entries": [

{

"start": "2017-01-01T00:50:00.000Z",

"end": "2017-01-01T04:30:00.000Z",

"id": "05e5fcf80f3542a33154214f0a586f19.2",

"type": "encounter",

"position": {

"lat": -17.4783,

"lon": -130.7285

},

"regions": {

"mpa": [],

"eez": [],

"rfmo": ["WCPFC", "ACAP", "IWC", "IATTC", "SPRFMO"],

"fao": ["77"],

"majorFao": ["77"],

"eez12Nm": [],

"highSeas": ["63203"],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

-130.7285232872, -17.4782849293, -130.7285232872, -17.4782849293

],

"distances": {

"startDistanceFromShoreKm": 602,

"endDistanceFromShoreKm": 602,

"startDistanceFromPortKm": 760.023188,

"endDistanceFromPortKm": 760.023188

},

"vessel": {

"id": "55d38c0ee-e0d7-cb32-ac9c-8b3680d213b3",

"name": "JINHSIANGFA",

"ssvid": "416077500"

},

"encounter": {

"vessel": {

"id": "46ae0e5f9-9304-7ac9-dc78-462d84320bf5",

"flag": "TWN",

"name": "SHUNTIANFA168",

"type": "carrier",

"ssvid": "416602000"

},

"medianDistanceKilometers": 0.016,

"medianSpeedKnots": 1.067,

"type": "fishing-carrier",

"potentialRisk": false

}

}

]

}

EXAMPLE 3 - GET LOITERING EVENTS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events?offset=0&limit=1' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-loitering-events-carriers:latest"],

"startDate": "2017-01-01",

"endDate": "2017-01-31",

"vessels": ["82be6f228-8ce4-26d1-bf81-3b7979d0c72f"],

"flags": ["KOR"],

"duration": 60,

"geometry": {

"type": "Polygon",

"coordinates": [

[

[

43.835981972515576,

-6.785011952437713

],

[

43.83602857589722,

-6.785011952437713

],

[

43.83602857589722,

-6.784984652340707

],

[

43.835981972515576,

-6.784984652340707

],

[

43.835981972515576,

-6.785011952437713

]

]

]

}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-loitering-events-carriers:v20201001"],

"vessels": ["82be6f228-8ce4-26d1-bf81-3b7979d0c72f"],

"dateRange": {

"from": "2017-01-01",

"to": "2017-01-31"

},

"encounterTypes": [],

"flags": ["KOR"],

"geometry": {

"type": "FeatureCollection",

"features": [

{

"type": "Feature",

"properties": {},

"geometry": {

"type": "Polygon",

"coordinates": [

[

[43.835981972515576, -6.785011952437713],

[43.83602857589722, -6.785011952437713],

[43.83602857589722, -6.784984652340707],

[43.835981972515576, -6.784984652340707],

[43.835981972515576, -6.785011952437713]

]

]

}

}

]

}

},

"limit": 1,

"offset": 0,

"nextOffset": null,

"total": 0,

"entries": []

}

EXAMPLE 4 - GET PORT VISITS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events?offset=0&limit=1' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-port-visits-events:latest"],

"startDate": "2017-01-01",

"endDate": "2017-01-31",

"vessels": ["e0248aed9-99b4-bae7-6b87-ff0a3c464676"],

"flags": ["ATG"],

"duration": 60,

"geometry":{

"type": "Polygon",

"coordinates": [

[

[

30.552978515625,

46.255846818480315

],

[

31.22314453125,

46.255846818480315

],

[

31.22314453125,

46.59661864884465

],

[

30.552978515625,

46.59661864884465

],

[

30.552978515625,

46.255846818480315

]

]

]

}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-port-visits-events:v3.0"],

"vessels": ["e0248aed9-99b4-bae7-6b87-ff0a3c464676"],

"dateRange": {

"from": "2017-01-01",

"to": "2017-01-31"

},

"encounterTypes": [],

"flags": ["ATG"],

"geometry": {

"type": "FeatureCollection",

"features": [

{

"type": "Feature",

"properties": {},

"geometry": {

"type": "Polygon",

"coordinates": [

[

[30.552978515625, 46.255846818480315],

[31.22314453125, 46.255846818480315],

[31.22314453125, 46.59661864884465],

[30.552978515625, 46.59661864884465],

[30.552978515625, 46.255846818480315]

]

]

}

}

]

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 1,

"entries": [

{

"start": "2017-01-01T00:00:00.000Z",

"end": "2017-01-01T09:35:02.000Z",

"id": "4f76e3bf40fcb9af92f6e7250154c86d",

"type": "port\_visit",

"position": {

"lat": 46.3181,

"lon": 31.0484

},

"regions": {

"mpa": [],

"eez": ["5695"],

"rfmo": ["IWC", "ICCAT", "GFCM", "ACAP"],

"fao": ["37", "37.4.2", "37.4"],

"majorFao": ["37"],

"eez12Nm": [],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [

31.0767735168, 46.2917746863, 31.0090529428, 46.3757554864

],

"distances": {

"startDistanceFromShoreKm": 28,

"endDistanceFromShoreKm": 20,

"startDistanceFromPortKm": 0,

"endDistanceFromPortKm": 0

},

"vessel": {

"id": "e0248aed9-99b4-bae7-6b87-ff0a3c464676",

"name": "ONEGOOTRA",

"ssvid": "305656000"

},

"port\_visit": {

"visitId": "ffe81fe2608c6de1799a701b736951ca",

"confidence": 4,

"durationHrs": 9.58388888888889,

"startAnchorage": {

"anchorageId": "40c652c5",

"atDock": false,

"distanceFromShoreKm": 28,

"flag": "UKR",

"id": "ukr-mykolayiv",

"lat": 46.291774686340844,

"lon": 31.076773516760372,

"name": null,

"topDestination": "NIKOLAEV"

},

"intermediateAnchorage": {

"anchorageId": "40c65295",

"atDock": false,

"distanceFromShoreKm": 26,

"flag": "UKR",

"id": "ukr-mykolayiv",

"lat": 46.30317322627217,

"lon": 31.073053845170914,

"name": null,

"topDestination": "NIKOLAEV"

},

"endAnchorage": {

"anchorageId": "40c64c1b",

"atDock": false,

"distanceFromShoreKm": 20,

"flag": "UKR",

"id": "ukr-mykolayiv",

"lat": 46.37575548639163,

"lon": 31.009052942845823,

"name": null,

"topDestination": "NIKOLAEV"

}

}

}

]

}

EXAMPLE 5 - GET FISHING EVENTS WITHIN SENEGAL EEZ

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events?offset=0&limit=1' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-fishing-events:latest"],

"startDate": "2020-10-01",

"endDate": "2020-12-31",

"flags": ["CHN"],

"region": {

"dataset": "public-eez-areas",

"id": 8371

}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"metadata": {

"datasets": ["public-global-fishing-events:v3.0"],

"dateRange": {

"from": "2020-10-01",

"to": "2020-12-31"

},

"encounterTypes": [],

"flags": ["CHN"],

"region": {

"dataset": "public-eez-areas",

"id": 8371

}

},

"limit": 1,

"offset": 0,

"nextOffset": 1,

"total": 627572,

"entries": [

{

"start": "2020-09-26T01:43:25.000Z",

"end": "2020-10-07T06:33:31.000Z",

"id": "d2a6b63ea4b654c038194a3fc88ba7ac",

"type": "fishing",

"position": {

"lat": 39.6907,

"lon": 124.0237

},

"regions": {

"mpa": [],

"eez": ["8486"],

"rfmo": ["ACAP", "IWC", "PICES", "WCPFC"],

"fao": ["61"],

"majorFao": ["61"],

"eez12Nm": ["8486"],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [124.0155016667, 39.6785533333, 124.035055, 39.6993483333],

"distances": {

"startDistanceFromShoreKm": 16,

"endDistanceFromShoreKm": 14,

"startDistanceFromPortKm": 2.382918,

"endDistanceFromPortKm": 4.529377

},

"vessel": {

"id": "d320fba36-69f1-1feb-849b-a03829f8860c",

"name": "LIAODANYU23523",

"ssvid": "412223961"

},

"fishing": {

"totalDistanceKm": 9.705851662418958,

"averageSpeedKnots": 0.21297844288636178,

"averageDurationHours": 0.11517397789514866,

"potentialRisk": false

}

}

]

}

Get one by Event ID

Get by event id - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/events/{eventId}

Get by event id - URL Parameters

Parameter Description Required Format Param Type

eventId True string path

raw If true, return all content of the event without parsing False boolean query

dataset Specify the dataset that will be used to search the vessel. You can learn more about which are the possible datasets here. Example: public-global-fishing-events:latest True string query

GET A PORT VISIT EVENT BY ITS ID

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/events/c2f0967e061f99a01793edac065de003?dataset=public-global-port-visits-events:latest' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"start": "2020-01-26T05:52:47.000Z",

"end": "2020-01-29T14:39:33.000Z",

"id": "c2f0967e061f99a01793edac065de003",

"type": "port\_visit",

"position": {

"lat": 20.8374,

"lon": -17.0161

},

"regions": {

"mpa": [],

"eez": ["8369"],

"rfmo": ["IWC", "NAMMCO", "ACAP", "ICCAT", "SRFC"],

"fao": ["34.1", "34.1.32", "34.1.3", "34"],

"majorFao": ["34"],

"eez12Nm": [],

"highSeas": [],

"mpaNoTakePartial": [],

"mpaNoTake": []

},

"boundingBox": [-17.0147743934, 20.7287971969, -17.0301185356, 20.8284907611],

"distances": {

"startDistanceFromShoreKm": 7,

"endDistanceFromShoreKm": 2,

"startDistanceFromPortKm": 0,

"endDistanceFromPortKm": 0

},

"vessel": {

"id": "8c7304226-6c71-edbe-0b63-c246734b3c01",

"name": "FRIOFORWIN",

"ssvid": "210631000"

},

"port\_visit": {

"visitId": "54a297966f51994d8bad91ba58945f8c",

"confidence": 4,

"durationHrs": 80.77944444444445,

"startAnchorage": {

"anchorageId": "0ea1bbe7",

"atDock": false,

"distanceFromShoreKm": 7,

"flag": "MRT",

"id": "mrt-cansado",

"lat": 20.72879719687954,

"lon": -17.014774393446658,

"name": "CANSADO",

"topDestination": "NOUADHIBOU"

},

"intermediateAnchorage": {

"anchorageId": "0ea1b6ad",

"atDock": false,

"distanceFromShoreKm": 4,

"flag": "MRT",

"id": "mrt-nouadhibou",

"lat": 20.885489104200627,

"lon": -17.003218026679036,

"name": "NOUADHIBOU",

"topDestination": "NOUADHIBOU"

},

"endAnchorage": {

"anchorageId": "0ea1b0c3",

"atDock": true,

"distanceFromShoreKm": 2,

"flag": "MRT",

"id": "mrt-cansado",

"lat": 20.828490761089796,

"lon": -17.030118535609358,

"name": "CANSADO",

"topDestination": "NOUADHIBOU"

}

}

}

Statistics on events (POST)

Get events statistics worldwide or for a specific region. The available events to get stats are:

Fishing events

Encounter events

Loitering events

AIS Off events (aka GAPs)

Port visits

Events Stats POST - HTTP Request

POST /v3/events/stats

Events Stats POST - URL Parameters

It has no query param. All parameters should be sent in the body, see body parameters below.

Events Stats POST - Body Parameters

Parameter Description Required Format Param Type

datasets Specify the datasets that will be used to search the vessel. You can learn more about which are the possible datasets here. You can send several datasets in array format. Example: ['public-global-fishing-events:latest', 'public-global-encounter-events:latest'] True [string] body

vessels List of vessel ids. You can get this information using the search endpoints Example: ['8c7304226-6c71-edbe-0b63-c246734b3c01', '6583c51e3-3626-5638-866a-f47c3bc7ef7c'] False [string] body

types Event types. Possible values: PORT, ENCOUNTER, LOITERING, GAP, PORT\_VISIT. Example: ['FISHING'] False [string] body

startDate Start date in format YYYY-MM-DD of the start date of the event (inclusive). Filter the events that their end date is greater or equal than the start date filter. Example: 2020-01-01 False string body

endDate End date in format YYYY-MM-DD of the end date of the event (exclusive). Filter the events that their start date is less than the end date filter. Example: 2020-02-01 False string body

confidences This param applies only to port visits events, check data caveats to understand the different levels. Values go from 2 to 4, where 2 is low confidence, 3 is medium and 4 is high confidence. Possible values: 2, 3, 4 Example: ['3','4'] False [string] body

encounterTypes Possible values: CARRIER-FISHING, FISHING-CARRIER, FISHING-SUPPORT, SUPPORT-FISHING Example: ['CARRIER-FISHING','FISHING-CARRIER']. When using encounterType parameters like FISHING-CARRIER or CARRIER-FISHING, it is essential to note that you may encounter duplicate events for each vessel ID involved. This approach is designed to give you the possibility to decide which vessel type appears first in the event, so for example: FISHING-CARRIER, the first vessel in the response is the fishing one and the 2nd is the carrier. It is important to be mindful of this, particularly when tallying events. False [string] body

vesselGroups Ids of the vessel groups. Must be an array Example: ['my-vessel-group'] False [string] body

geometry Region where the events happen. False object body

region Region where the events happen.You can send the region id, you can get it from Reference Data False object body

timeseriesInterval Time series granularity. Must be a string. Possible values: HOUR, DAY, MONTH, YEAR. False STRING body

includes Allows to include additional information. Possible options are: TOTAL\_COUNT,TIME\_SERIES. TOTAL\_COUNT returns the total count of vessel ids, flags and events. TIME\_SERIES should be used in combination with the param timeseriesInterval since it returns values based on what time series is selected. False [string] body

vesselTypes Vessel types. Possible values: BUNKER, CARGO, DISCREPANCY, CARRIER, FISHING, GEAR, OTHER, PASSENGER, SEISMIC\_VESSEL,SUPPORT False [string] body

Events Stats POST - Responses

Status Meaning Description Schema

201 Created Event Stats Response Events Stats Response properties

401 Unauthorized. No Unauthorized. Error Codes

403 Forbidden You do not have permissions to do the action. Error Codes

422 Unprocessable Entity Unprocessable Entity. Validation error. Error Codes

500 Internal Server Error Server side issue. Please contact us at apis@globalfishingwatch.org Error Codes

Properties Events Stats Response

Name Type Required Restrictions Description

flags [string] true none Distinct flags

numEvents number true none Number of events

numFlags number true none Number of distinct vessel flags

numVessels number true none Number of distinct vessels

timeseries [See Timeseries definition below] true none Timeseries

Properties Events Stats Response Timeseries

Name Type Required Restrictions Description

date string(date-time) true none Date

value number true none Number of events

EXAMPLE 1 - GET ENCOUNTERS STATS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events/stats' \

--header 'Accept: application/json' \

--header 'Authorization: Bearer {access-token}'

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-encounters-events:latest"],

"encounterTypes": ["CARRIER-FISHING", "FISHING-CARRIER"],

"vesselTypes": ["CARRIER"],

"startDate": "2018-01-01",

"endDate": "2023-01-31",

"timeseriesInterval": "YEAR",

"flags": ["RUS"],

"duration": 60

}

'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"numEvents": 23300,

"numFlags": 1,

"numVessels": 202,

"flags": ["RUS"],

"timeseries": [

{

"date": "2018-01-01T00:00:00.000Z",

"value": 4486

},

{

"date": "2019-01-01T00:00:00.000Z",

"value": 4234

},

{

"date": "2020-01-01T00:00:00.000Z",

"value": 4656

},

{

"date": "2021-01-01T00:00:00.000Z",

"value": 4807

},

{

"date": "2022-01-01T00:00:00.000Z",

"value": 4701

},

{

"date": "2023-01-01T00:00:00.000Z",

"value": 416

}

]

}

EXAMPLE 2 - GET FISHING EVENTS STATS IN A CUSTOM REGION

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events/stats' \

--header 'Accept: application/json' \

--header 'Authorization: Bearer {access-token}'

--header 'Content-Type: application/json' \

--data-raw '{

"datasets": [ "public-global-fishing-events:latest"],

"startDate": "2018-01-01",

"endDate": "2023-01-31",

"timeseriesInterval": "YEAR",

"duration": 90,

"geometry":{"type":"MultiPolygon","coordinates":[[[[-58.15342633,-32.356403276],[-58.16805183,-32.359000619],[-58.184795664,-32.379219766],[-58.192409931,-32.391977392],[-58.193236164,-32.395055309],[-58.191125697,-32.400694246],[-58.194202127,-32.416740918],[-58.193898065,-32.421293436],[-58.200104417,-32.439695043],[-58.203068501,-32.469794853],[-58.201773268,-32.482103825],[-58.199452453,-32.48651512],[-58.198189657,-32.494591443],[-58.1909169,-32.506733087],[-58.184742646,-32.529503992],[-58.173524528,-32.553211355],[-58.165369884,-32.559773049],[-58.161893615,-32.567770973],[-58.159343751,-32.608650802],[-58.151728474,-32.62249165],[-58.151480284,-32.635035765],[-58.153010794,-32.641369091],[-58.149292387,-32.653570867],[-58.145301188,-32.659776215],[-58.143623423,-32.665853784],[-58.142912012,-32.675649681],[-58.148653602,-32.690020187],[-58.146101053,-32.707362162],[-58.148179071,-32.73123023],[-58.14123188,-32.751686231],[-58.141575555,-32.757396873],[-58.146951161,-32.761720555],[-58.14325427,-32.768691322],[-58.138638482,-32.770629602],[-58.135694082,-32.785976586],[-58.130758029,-32.801498671],[-58.12284602,-32.814061796],[-58.121850748,-32.82451262],[-58.125803727,-32.833189037],[-58.118631373,-32.853729616],[-58.11323325,-32.886529032],[-58.114730058,-32.895617282],[-58.121359728,-32.902057784],[-58.114789226,-32.918915937],[-58.113440989,-32.925924348],[-58.114673138,-32.927592234],[-58.113667629,-32.93986786],[-58.114402803,-32.966621671],[-58.119544774,-32.98206643],[-58.117304543,-32.990437423],[-58.124303771,-32.999824842],[-58.126772533,-33.007898604],[-58.125627861,-33.017099642],[-58.126974786,-33.02044177],[-58.130380817,-33.021945453],[-58.130076688,-33.028447656],[-58.13639079,-33.036502418],[-58.145125702,-33.042909231],[-58.152890334,-33.056053578],[-58.157767888,-33.059454364],[-58.167855355,-33.070938913],[-58.171621097,-33.07757795],[-58.190545784,-33.082063935],[-58.20357497,-33.083064676],[-58.217409645,-33.089760457],[-58.226105363,-33.092454759],[-58.229059871,-33.094206846],[-58.23173247,-33.098114538],[-58.24229906,-33.097167419],[-58.26464951,-33.103257289],[-58.274157515,-33.108160081],[-58.296088631,-33.103355406],[-58.308711192,-33.104855771],[-58.316347337,-33.103650705],[-58.319896027,-33.104192307],[-58.326565333,-33.107984139],[-58.334930123,-33.109173568],[-58.351201872,-33.117847445],[-58.37674193,-33.11489371],[-58.381859593,-33.134746496],[-58.389796431,-33.152533877],[-58.392322222,-33.171894929],[-58.39592379,-33.182181078],[-58.39140114,-33.198990159],[-58.391069256,-33.20561281],[-58.391582845,-33.220615805],[-58.395984501,-33.247423443],[-58.387047693,-33.275469435],[-58.387268996,-33.304045888],[-58.404901857,-33.321471301],[-58.430538696,-33.337315138],[-58.434248957,-33.341044457],[-58.438287022,-33.349102535],[-58.441513198,-33.360251944],[-58.443260942,-33.380153055],[-58.454591357,-33.393804471],[-58.456374996,-33.397844667],[-58.460268366,-33.412833067],[-58.464415537,-33.454967867],[-58.468550176,-33.46031186],[-58.479401304,-33.483322774],[-58.480264012,-33.488111484],[-58.48077669,-33.517791379],[-58.478041927,-33.553805081],[-58.479856494,-33.586243485],[-58.478916634,-33.617127032],[-58.481100391,-33.637515218],[-58.487874996,-33.651897059],[-58.493461906,-33.670607619],[-58.494350582,-33.680173282],[-58.47943317,-33.714776411],[-58.468057168,-33.734126473],[-58.455313818,-33.76015984],[-58.452826355,-33.784736997],[-58.449108288,-33.79554959],[-58.439122338,-33.810083477],[-58.439000681,-33.830576292],[-58.431369825,-33.847419786],[-58.43127944,-33.852632918],[-58.432118254,-33.85690005],[-58.438362706,-33.867637254],[-58.441619598,-33.879114621],[-58.428425775,-33.893523576],[-58.425638696,-33.901883358],[-58.42532535,-33.907932313],[-58.405,-33.955],[-58.376666667,-34],[-58.345,-34.038333333],[-58.333333333,-34.103333333],[-58.323333333,-34.123333333],[-58.316666667,-34.15],[-58.293333333,-34.166666667],[-58.251666667,-34.2],[-58.208333333,-34.221666667],[-58.166666667,-34.253333333],[-58.091666667,-34.295],[-58.065,-34.333333333],[-58.02,-34.361666667],[-58.01,-34.38],[-57.94,-34.443333333],[-57.935,-34.55],[-57.951666667,-34.666666667],[-57.533333333,-34.783333333],[-57.333333333,-34.866666667],[-57,-35.183333333],[-56.716666667,-35.171666667],[-55.866666667,-35.633333334],[-54.277051457,-37.095171775],[-53.922631024,-37.249589551],[-53.349558934,-37.516174588],[-53.125984692,-37.62930317],[-52.999508183,-37.706596921],[-52.667141949,-37.859911042],[-52.694583731,-37.933319234],[-52.723742913,-38.005066515],[-52.781652076,-38.133212609],[-52.818230445,-38.206396929],[-52.852702656,-38.271079163],[-52.892380372,-38.341464162],[-52.93240984,-38.408702342],[-52.991277275,-38.501030558],[-53.047565098,-38.583554818],[-53.098741187,-38.653935419],[-53.160180737,-38.733344606],[-53.266857511,-38.880382604],[-53.300855412,-38.938100266],[-53.343162719,-39.0059623],[-53.420352922,-39.12047819],[-53.490878482,-39.215859706],[-53.579826859,-39.328213772],[-53.641305593,-39.447996003],[-53.697813609,-39.548030311],[-53.767108475,-39.659553473],[-53.837380873,-39.76258815],[-53.904023374,-39.852678791],[-53.978250462,-39.945689344],[-54.058772289,-40.039203987],[-54.140932398,-40.12792611],[-54.222923475,-40.210500517],[-54.308385881,-40.290929116],[-54.381247969,-40.355601372],[-54.522649834,-40.475286705],[-54.5896488,-40.529592468],[-54.656633327,-40.581421888],[-54.725185257,-40.632085711],[-54.799129295,-40.684219878],[-54.982622233,-40.806158763],[-55.059932704,-40.854269793],[-55.14474833,-40.904422269],[-55.272853929,-40.97519824],[-55.345894371,-41.013314313],[-55.431307029,-41.055941103],[-55.53293563,-41.104108399],[-55.631284789,-41.147863472],[-55.716757759,-41.190838995],[-55.809465128,-41.234946431],[-55.894350461,-41.273363007],[-55.964556955,-41.303501092],[-56.13147113,-41.371343049],[-56.343878744,-41.453779341],[-56.430510239,-41.486171388],[-56.602131463,-41.545753547],[-56.881434625,-41.636740043],[-56.968842286,-41.662845414],[-57.058930719,-41.688132286],[-57.232589165,-41.73156739],[-57.313056102,-41.75290048],[-57.458834918,-41.798025491],[-57.60636055,-41.838910956],[-57.689322414,-41.859900528],[-57.77520308,-41.880137525],[-57.964785723,-41.920478506],[-58.018397281,-42.008509338],[-58.077150872,-42.097624248],[-58.141760571,-42.188271294],[-58.204764026,-42.270445379],[-58.269734621,-42.349689806],[-58.335089398,-42.424491534],[-58.407529831,-42.502392183],[-58.483831894,-42.579380103],[-58.560267257,-42.67524804],[-58.640996392,-42.768868251],[-58.734760057,-42.86928214],[-58.794721063,-42.929420777],[-58.860523109,-42.992145996],[-58.921208859,-43.047275226],[-58.978059958,-43.096698751],[-59.043011588,-43.150770607],[-59.117667335,-43.20995537],[-59.172244336,-43.440205973],[-59.196633828,-43.531230245],[-59.236481833,-43.657059727],[-59.283260847,-43.782363315],[-59.310377766,-43.847302783],[-59.341297708,-43.915925313],[-59.37116949,-43.977725566],[-59.403682698,-44.040780895],[-59.471170767,-44.160362166],[-59.508977174,-44.221896377],[-59.550776059,-44.286131604],[-59.596124477,-44.351913036],[-59.646495794,-44.420812628],[-59.696772052,-44.485763638],[-59.758558403,-44.561017858],[-59.816355994,-44.627398619],[-59.873606461,-44.689744259],[-59.93733864,-44.755585983],[-59.997308382,-44.814448305],[-60.060678503,-44.87370552],[-60.130715766,-44.935961936],[-60.194956684,-44.990359294],[-60.265502365,-45.04733662],[-60.341124528,-45.105465567],[-60.410790852,-45.156524432],[-60.501840038,-45.219906266],[-60.569156876,-45.264549913],[-60.593001909,-45.332237491],[-60.620056503,-45.402408722],[-60.649296878,-45.47203445],[-60.680611542,-45.540878005],[-60.798487166,-46.252942691],[-60.892346482,-46.827400481],[-60.876141565,-46.892003775],[-60.860125752,-46.963867549],[-60.846673352,-47.034147016],[-60.835115986,-47.106411626],[-60.823861804,-47.197094417],[-60.816262363,-47.287515135],[-60.812178204,-47.380255259],[-60.81132071,-47.470464402],[-60.789357567,-47.57001835],[-60.771806104,-47.669766298],[-63.010277579,-49.136763174],[-63.216903298,-49.27356026],[-64.573338447,-50.36154789],[-64.61197803,-50.444077188],[-64.692970462,-50.623161323],[-64.79013278,-50.85254852],[-64.906905274,-51.142135709],[-65.015149355,-51.414864114],[-64.951999257,-51.541358402],[-64.943769184,-51.576673068],[-64.927231182,-51.654362447],[-64.895229135,-51.819863575],[-64.782348031,-52.43408733],[-64.696960756,-52.530644417],[-64.69081124,-52.535669033],[-64.527312376,-52.619264009],[-63.669138833,-52.928926212],[-63.503463349,-52.991130652],[-63.382281589,-53.039296868],[-63.289889857,-53.077671032],[-63.186481469,-53.122576509],[-63.014353379,-53.201204205],[-62.090246253,-53.574389554],[-62.017541046,-53.604329688],[-61.874168954,-53.666558527],[-61.620494975,-53.781988593],[-58.541962783,-56.227816107],[-58.598928057,-56.296476374],[-58.654927131,-56.360029108],[-58.740975646,-56.452477612],[-58.808303331,-56.521031303],[-58.880443073,-56.590216544],[-58.948844595,-56.652227825],[-59.01990807,-56.713362815],[-59.093607859,-56.77358818],[-59.171856516,-56.834340035],[-59.25779333,-56.897648328],[-59.355169571,-56.965465481],[-59.442012051,-57.022792975],[-59.53587506,-57.081696217],[-59.63482843,-57.140636466],[-59.729628223,-57.194307893],[-59.829290444,-57.248003524],[-59.921526326,-57.295386165],[-60.025215134,-57.346164751],[-60.127774885,-57.393968715],[-60.234255394,-57.441208292],[-60.361712251,-57.494753364],[-60.470158273,-57.537887357],[-60.583359099,-57.580671399],[-60.692912806,-57.619999848],[-60.781276617,-57.650308492],[-60.891010724,-57.686252031],[-60.993508065,-57.718198027],[-61.103274907,-57.750732886],[-61.223506916,-57.784459507],[-61.33360071,-57.813641041],[-61.450971666,-57.847987317],[-61.555058016,-57.876905199],[-61.669233364,-57.906955205],[-61.783112164,-57.935291548],[-61.89242823,-57.960984829],[-62.007595737,-57.986503544],[-62.118560476,-58.009613652],[-62.236928568,-58.032729184],[-62.363140753,-58.055667083],[-62.464203633,-58.072794974],[-62.585649106,-58.09194578],[-62.70129094,-58.108755488],[-62.78764548,-58.120403444],[-62.904448872,-58.134999131],[-62.998322387,-58.145733459],[-63.108174375,-58.157223391],[-63.305703869,-58.174907412],[-63.499557443,-58.188671454],[-63.628639994,-58.201220765],[-63.760971992,-58.212439077],[-63.951831707,-58.22570631],[-64.153774234,-58.236045771],[-64.352891792,-58.242555435],[-64.544580812,-58.245382666],[-64.728217396,-58.262856069],[-64.901445022,-58.276201878],[-65.037667254,-58.295087169],[-65.185224829,-58.313451793],[-65.336067798,-58.330034654],[-65.466023779,-58.342534366],[-65.59549255,-58.353411055],[-65.732283561,-58.363191894],[-65.852431789,-58.370348573],[-66.056526848,-58.380686846],[-66.221889676,-58.38690667],[-66.36336728,-58.390252948],[-66.517055734,-58.391837329],[-66.663875033,-58.391336126],[-66.805434229,-58.389010129],[-66.953719381,-58.384617011],[-67.118916269,-58.377362994],[-67.266666667,-58.368752742],[-67.266666667,-56.38],[-65.726666667,-56.38],[-65.726666667,-55.381666667],[-66.078333333,-55.183333333],[-66.416666667,-55.121666667],[-66.498636207,-55.116105147],[-66.524894791,-55.116441149],[-66.541629865,-55.118358262],[-66.575993898,-55.118139035],[-66.585575249,-55.118744105],[-66.605946275,-55.121919726],[-66.623743681,-55.120685602],[-66.643446364,-55.121258641],[-66.679219162,-55.118177489],[-66.71011652,-55.119827943],[-66.729553447,-55.095212908],[-66.742753318,-55.063917542],[-66.758391003,-55.038316007],[-66.770396071,-55.025395044],[-66.777062918,-55.02019201],[-66.791620391,-55.012102387],[-66.807592912,-55.006691247],[-66.822973116,-55.003609162],[-66.828313956,-54.999285257],[-66.833472284,-54.996730221],[-66.849952602,-54.99088032],[-66.875303374,-54.986517548],[-66.887786775,-54.985255862],[-66.896490093,-54.983015423],[-66.908760152,-54.978290778],[-66.921689079,-54.975092401],[-66.933041752,-54.974582257],[-66.94123952,-54.975301372],[-66.951846967,-54.972343926],[-66.962741597,-54.971864261],[-66.974861027,-54.969690097],[-66.97897598,-54.971914117],[-66.994077394,-54.975602248],[-67.00879098,-54.977635121],[-67.023474561,-54.975268423],[-67.030272873,-54.976252663],[-67.034741089,-54.975927891],[-67.058406193,-54.965357369],[-67.068872762,-54.947665804],[-67.073399406,-54.946241402],[-67.091902954,-54.945169133],[-67.105251153,-54.947747714],[-67.123389242,-54.934309084],[-67.13145724,-54.930822426],[-67.139683058,-54.928913911],[-67.156528039,-54.929030393],[-67.165420868,-54.930585254],[-67.174983352,-54.933794046],[-67.181509833,-54.931771593],[-67.192961652,-54.929930838],[-67.204481711,-54.923968164],[-67.212182684,-54.921727379],[-67.219782039,-54.920761374],[-67.225914595,-54.917703153],[-67.234554765,-54.915136916],[-67.259883492,-54.915350992],[-67.268940566,-54.910775127],[-67.277525114,-54.908580965],[-67.292051146,-54.908967294],[-67.298863504,-54.906847402],[-67.309410329,-54.90642649],[-67.342087721,-54.913570667],[-67.350178865,-54.914453246],[-67.355179529,-54.916804413],[-67.365766279,-54.917479258],[-67.371029444,-54.91981314],[-67.376570265,-54.920297189],[-67.383639747,-54.918812709],[-67.392049526,-54.920012293],[-67.399621155,-54.919925604],[-67.402458118,-54.921135108],[-67.407647134,-54.919635434],[-67.411559849,-54.920266542],[-67.424513694,-54.916594312],[-67.433077411,-54.919494509],[-67.435661111,-54.922024676],[-67.441353372,-54.918078352],[-67.4464889,-54.917481979],[-67.449582508,-54.91595985],[-67.45797678,-54.916318362],[-67.463148451,-54.918920109],[-67.46931989,-54.918026886],[-67.475805688,-54.921435849],[-67.477622644,-54.923930059],[-67.49442508,-54.926605944],[-67.499914018,-54.923135954],[-67.516282681,-54.919668692],[-67.52686246,-54.913787281],[-67.537001654,-54.915268254],[-67.541752618,-54.914125673],[-67.55729819,-54.908226455],[-67.564390845,-54.901954224],[-67.574215947,-54.901652544],[-67.582063987,-54.905248484],[-67.590966219,-54.905529321],[-67.595946717,-54.907255843],[-67.613508067,-54.904100669],[-67.630674539,-54.907284791],[-67.640642586,-54.903423533],[-67.656273746,-54.907954845],[-67.661544589,-54.907993001],[-67.66792575,-54.910296977],[-67.676879374,-54.909439394],[-67.688124616,-54.909901797],[-67.693631943,-54.911284875],[-67.701451968,-54.908080267],[-67.708922379,-54.907154395],[-67.720125536,-54.903245614],[-67.742576739,-54.903496822],[-67.746398191,-54.902301818],[-67.752822382,-54.902941231],[-67.759038669,-54.9000552],[-67.775813585,-54.89505063],[-67.788096457,-54.892582411],[-67.793627446,-54.889159851],[-67.813157816,-54.892201388],[-67.824054671,-54.885433036],[-67.83301966,-54.88378902],[-67.852787808,-54.886491804],[-67.856998184,-54.889808118],[-67.866719086,-54.894824058],[-67.876928358,-54.894396064],[-67.890822791,-54.891835393],[-67.900629574,-54.884623211],[-67.921823122,-54.881216177],[-67.928299055,-54.877920646],[-67.943819473,-54.87505823],[-67.955656026,-54.87516097],[-67.962489197,-54.872977811],[-67.970217509,-54.874410295],[-67.983030027,-54.874422505],[-67.997118224,-54.877016981],[-68.004777318,-54.876657207],[-68.012155091,-54.875066345],[-68.035605719,-54.875697386],[-68.040479245,-54.877210341],[-68.049234254,-54.87797937],[-68.057545196,-54.880437637],[-68.065850218,-54.881290503],[-68.079514591,-54.886104957],[-68.096006538,-54.887487045],[-68.102867065,-54.889842264],[-68.111979792,-54.889764266],[-68.120538627,-54.888559421],[-68.126311322,-54.889403349],[-68.136839504,-54.886635707],[-68.144989439,-54.885649257],[-68.153713213,-54.887292451],[-68.161332004,-54.885768176],[-68.165839896,-54.886316832],[-68.169495009,-54.885422107],[-68.176632316,-54.886457038],[-68.184153527,-54.885495498],[-68.192427213,-54.88724228],[-68.195851238,-54.889222724],[-68.200688968,-54.889060638],[-68.209000633,-54.890579535],[-68.21355292,-54.892283738],[-68.217488927,-54.891038652],[-68.233057663,-54.891946998],[-68.238960238,-54.891343665],[-68.249134364,-54.892707172],[-68.254395528,-54.890933571],[-68.26190351,-54.890095029],[-68.269995319,-54.891142368],[-68.277560121,-54.889290013],[-68.283609417,-54.886385223],[-68.291650136,-54.884825294],[-68.299804157,-54.884326509],[-68.307582775,-54.88138305],[-68.315506411,-54.879569452],[-68.336047154,-54.878130687],[-68.352337976,-54.879306059],[-68.370324735,-54.882294804],[-68.386200438,-54.881963284],[-68.389853176,-54.882815174],[-68.402914954,-54.887287228],[-68.410563466,-54.891123704],[-68.42116051,-54.898806948],[-68.442918467,-54.897916425],[-68.468003065,-54.899066666],[-68.486494611,-54.898503236],[-68.489583333,-54.897698128],[-68.50148669,-54.898361919],[-68.510840366,-54.900482553],[-68.518711174,-54.900944472],[-68.538270451,-54.905573869],[-68.546688318,-54.908695872],[-68.552541331,-54.912445784],[-68.559040008,-54.914225606],[-68.569932693,-54.909208309],[-68.578738462,-54.908066655],[-68.587318308,-54.909862003],[-68.595740621,-54.913705255],[-68.601725598,-54.918613188],[-68.605607742,-54.919247414],[-68.619225583,-54.91738518],[-68.614789104,-54.896864271],[-68.610190869,-54.894876837],[-68.611824036,-54.894218445],[-68.612859845,-54.80067122],[-68.620692527,-54.685155272],[-68.601029356,-54.690788384],[-68.58612197,-54.69782126],[-68.5361048,-54.730454984],[-68.511858148,-54.75166168],[-68.398337246,-54.745842561],[-68.388627045,-54.733506258],[-68.380998152,-54.726083344],[-68.350665684,-54.704769085],[-68.341279435,-54.700175218],[-68.326430609,-54.695180769],[-68.316176067,-54.693168395],[-68.300540964,-54.69218061],[-68.284943455,-54.693646859],[-68.243626665,-54.703151511],[-68.198407936,-54.719618061],[-68.11802173,-54.724146862],[-68.101404391,-54.726493496],[-68.085413488,-54.731586007],[-68.049587569,-54.748643934],[-67.922944945,-54.762864699],[-67.666732505,-54.780466478],[-67.536694649,-54.774689734],[-67.326378527,-54.792447982],[-67.021104841,-54.805696291],[-67.004543645,-54.808767859],[-66.928753452,-54.829556026],[-66.819286256,-54.837135248],[-66.772418952,-54.847287894],[-66.665907408,-54.892847749],[-66.635882697,-54.913209815],[-66.615033063,-54.930426455],[-66.602621277,-54.934760084],[-66.528972521,-54.951164736],[-66.461116608,-54.951897306],[-66.455184494,-54.950579059],[-66.44815863,-54.941105981],[-66.437134995,-54.92991724],[-66.424495358,-54.920592647],[-66.410551551,-54.913362248],[-66.390529259,-54.90727965],[-66.330285965,-54.895855332],[-66.318815704,-54.894993206],[-66.198155518,-54.89288434],[-66.125598897,-54.895187701],[-66.084625026,-54.88674081],[-66.079296722,-54.870883348],[-66.072021849,-54.857149178],[-66.06270674,-54.844708118],[-66.047508231,-54.830645536],[-66.029739349,-54.820014559],[-66.003649939,-54.809340492],[-65.993714982,-54.805926021],[-65.978278914,-54.802802462],[-65.967798063,-54.802085699],[-65.957299852,-54.80247242],[-65.916922346,-54.808102209],[-65.904978516,-54.803761732],[-65.89492911,-54.801400944],[-65.884689871,-54.80008875],[-65.869214027,-54.800114066],[-65.853927414,-54.802526919],[-65.810797465,-54.812807937],[-65.787471913,-54.807446594],[-65.776585527,-54.806106607],[-65.765617871,-54.805966963],[-65.718721785,-54.808420732],[-65.6957814,-54.81197489],[-65.67668229,-54.818605721],[-65.659307228,-54.828942602],[-65.647268874,-54.839482526],[-65.631883852,-54.835588686],[-65.591773893,-54.828940034],[-65.580475426,-54.828318098],[-65.561089935,-54.829287653],[-65.548791266,-54.817267799],[-65.535738483,-54.808207322],[-65.498883596,-54.791223161],[-65.484204951,-54.786789922],[-65.469021095,-54.784652924],[-65.424663557,-54.784123787],[-65.404472204,-54.786996124],[-65.386526535,-54.792903605],[-65.371687196,-54.776774724],[-65.354445869,-54.763291799],[-65.345940272,-54.75802674],[-65.335549815,-54.736652364],[-65.360367552,-54.742900948],[-65.372002048,-54.744491859],[-65.409963608,-54.745208229],[-65.457035707,-54.740977892],[-65.694267573,-54.762293617],[-65.704610914,-54.762155881],[-65.714884688,-54.760950372],[-65.77838911,-54.750144257],[-65.8586327,-54.746350524],[-65.879411363,-54.74163384],[-65.89051213,-54.738116455],[-65.920049156,-54.723443268],[-65.942694378,-54.72189642],[-65.972280036,-54.716015397],[-66.315582445,-54.615429459],[-66.404934627,-54.581784845],[-66.434007184,-54.575779628],[-66.470098557,-54.570990478],[-66.504067055,-54.563383212],[-66.519316407,-54.558662406],[-66.528980469,-54.554190587],[-66.542449619,-54.545622579],[-66.554383775,-54.535020472],[-66.564292068,-54.522909838],[-66.577684606,-54.516561988],[-66.590266674,-54.508077176],[-66.615028319,-54.484755223],[-66.712790513,-54.427452096],[-66.728051291,-54.413772001],[-66.767912291,-54.36528584],[-66.805539245,-54.342993669],[-66.941203431,-54.306881331],[-66.987027406,-54.289732913],[-67.001109984,-54.281342386],[-67.017190674,-54.267219212],[-67.05936714,-54.250712804],[-67.168344089,-54.219542799],[-67.181386287,-54.214811401],[-67.344774811,-54.142064772],[-67.627202144,-53.991037873],[-67.635298282,-53.984996685],[-67.646198237,-53.974482671],[-67.667715255,-53.946953119],[-67.677410015,-53.927231863],[-67.683157639,-53.903470909],[-67.709250596,-53.904567179],[-67.724735954,-53.903287028],[-67.744720375,-53.897886285],[-67.763164565,-53.888486446],[-67.775507986,-53.879048486],[-67.789413753,-53.863713078],[-67.797602603,-53.850507857],[-67.804814919,-53.832361555],[-67.836031415,-53.817811275],[-67.849034244,-53.810524985],[-68.038881807,-53.684683685],[-68.055773188,-53.670582878],[-68.072070309,-53.649158074],[-68.127362229,-53.583626275],[-68.13603419,-53.570039085],[-68.15040601,-53.53523319],[-68.159739865,-53.49671375],[-68.169400885,-53.48008523],[-68.178549808,-53.457642234],[-68.181672834,-53.442686984],[-68.182295098,-53.423635586],[-68.205030295,-53.414864585],[-68.290058913,-53.419988325],[-68.306681896,-53.419605149],[-68.380931036,-53.407644033],[-68.423077248,-53.399401285],[-68.456776642,-53.397570088],[-68.472433243,-53.395469778],[-68.492424521,-53.388892744],[-68.558556371,-53.354839298],[-68.607339458,-53.320994037],[-68.607083494,-53.069295691],[-68.594627696,-53.053274255],[-68.578849182,-53.039265111],[-68.51502252,-53.002529344],[-68.465957137,-52.965688231],[-68.436864472,-52.947995916],[-68.467471336,-52.930616558],[-68.494162559,-52.909747873],[-68.563550428,-52.833684752],[-68.606804302,-52.794756265],[-68.606665015,-52.657790542],[-68.438693661,-52.403950776],[-68.435040117,-52.39669323],[-68.432392955,-52.39808166],[-68.428578139,-52.397137523],[-68.419222713,-52.391910553],[-68.419606209,-52.329769134],[-68.564794779,-52.325134158],[-68.586119652,-52.304019928],[-68.71465075,-52.282390475],[-68.832111001,-52.276210665],[-68.927100777,-52.232265353],[-68.963793874,-52.213039279],[-69.05326283,-52.187290072],[-69.189816833,-52.150211334],[-69.445322329,-52.15141585],[-69.409985923,-52.146228458],[-69.36540171,-52.145014714],[-69.269529766,-52.109401654],[-69.25395306,-52.10501238],[-69.193928109,-52.099273737],[-69.173918927,-52.099565362],[-69.1137,-52.109459807],[-69.098783693,-52.113138576],[-69.044132585,-52.134401901],[-68.966073206,-52.176327507],[-68.938136049,-52.187202374],[-68.920092556,-52.190998892],[-68.882140526,-52.203559686],[-68.812040738,-52.204105733],[-68.802661435,-52.205461834],[-68.774486042,-52.212193264],[-68.716671147,-52.206984607],[-68.700737868,-52.207634106],[-68.595199599,-52.231428737],[-68.761713348,-52.069225614],[-68.832943438,-51.974893953],[-68.903987552,-51.868149046],[-68.946056857,-51.827418693],[-68.955420077,-51.815825276],[-69.009650607,-51.718828978],[-69.060301989,-51.745719071],[-69.15408801,-51.777980008],[-69.177539142,-51.784296666],[-69.187985965,-51.786014336],[-69.198555837,-51.786617915],[-69.228976057,-51.786191416],[-69.24445536,-51.783380185],[-69.259302191,-51.778176008],[-69.273149072,-51.770707694],[-69.289468373,-51.757554965],[-69.299707776,-51.745610658],[-69.307947143,-51.732208246],[-69.315477102,-51.712647735],[-69.31866991,-51.693144647],[-69.322492513,-51.692151092],[-69.353646934,-51.688857634],[-69.386719043,-51.6919173],[-69.607228954,-51.724716586],[-69.628113783,-51.724535836],[-69.64850556,-51.720020954],[-69.658236669,-51.716192553],[-69.671952031,-51.708599895],[-69.684312241,-51.698957032],[-69.695013535,-51.687500946],[-69.703792919,-51.674513182],[-69.710434631,-51.660312926],[-69.714775444,-51.645249163],[-69.716708679,-51.6296921],[-69.715467775,-51.608843385],[-69.707889169,-51.58388858],[-69.697326581,-51.565870798],[-69.690693157,-51.557786936],[-69.67925329,-51.547068305],[-69.66166717,-51.535801667],[-69.629424267,-51.523061131],[-69.615735418,-51.518990029],[-69.5816102,-51.511444754],[-69.544144751,-51.490571426],[-69.524132001,-51.483233179],[-69.487987087,-51.476235434],[-69.440134491,-51.472068324],[-69.417861963,-51.463986821],[-69.394925715,-51.458484644],[-69.36674871,-51.455980857],[-69.354840926,-51.45589759],[-69.279075952,-51.45988522],[-69.262088122,-51.462252299],[-69.147122266,-51.502070765],[-69.141740727,-51.502934691],[-69.127979775,-51.491784856],[-69.118609515,-51.48567418],[-69.092822169,-51.473784352],[-69.152402165,-51.365567165],[-69.174762977,-51.307232547],[-69.180546773,-51.279414515],[-69.19206437,-51.262563231],[-69.198325104,-51.248564179],[-69.202371751,-51.233772461],[-69.206386817,-51.20604257],[-69.236443314,-51.102943162],[-69.277244237,-51.121234227],[-69.329276445,-51.150660862],[-69.361588895,-51.171017995],[-69.375780706,-51.177616307],[-69.390828223,-51.181919497],[-69.406362864,-51.183822162],[-69.416802218,-51.1837315],[-69.432301471,-51.181559319],[-69.452080725,-51.17496033],[-69.470061553,-51.164403086],[-69.48546221,-51.150346582],[-69.497613129,-51.133401945],[-69.505986029,-51.11430587],[-69.510216887,-51.093888588],[-69.510121758,-51.073037773],[-69.503943706,-51.047744226],[-69.497157984,-51.033641064],[-69.473746889,-50.993675267],[-69.463871872,-50.980977197],[-69.452088631,-50.970026755],[-69.39738061,-50.931801879],[-69.312309805,-50.888384266],[-69.259197308,-50.850987167],[-69.249906963,-50.845800199],[-69.228486771,-50.836520328],[-69.230286562,-50.815234838],[-69.240839381,-50.794689342],[-69.245508659,-50.778734523],[-69.249885656,-50.746301354],[-69.248589389,-50.725542062],[-69.244807273,-50.710394954],[-69.233891686,-50.679121349],[-69.209634296,-50.630495982],[-69.17791377,-50.574618897],[-69.174843486,-50.5419452],[-69.166524288,-50.5165948],[-69.158399773,-50.502765833],[-69.140585929,-50.481524096],[-69.122192003,-50.453301832],[-69.086540472,-50.412974067],[-69.071149288,-50.393486915],[-69.050460983,-50.36319985],[-68.966703561,-50.287613341],[-68.958284207,-50.273128324],[-68.948484591,-50.261231998],[-68.936973265,-50.250982879],[-68.919439871,-50.240294154],[-68.894531983,-50.229819729],[-68.880020656,-50.225063066],[-68.864954264,-50.222571427],[-68.849639587,-50.222406979],[-68.815632362,-50.201114957],[-68.800882384,-50.194472424],[-68.790536384,-50.191405484],[-68.774549244,-50.188936387],[-68.76376004,-50.188739151],[-68.747957943,-50.190013902],[-68.645032749,-50.156842535],[-68.577200371,-50.137078619],[-68.58881533,-50.124191548],[-68.598230545,-50.110548129],[-68.611121385,-50.080406402],[-68.650101986,-50.092551281],[-68.671382571,-50.094724254],[-68.728687513,-50.088823652],[-68.772271233,-50.082534941],[-68.80237991,-50.08452542],[-68.833611817,-50.081619833],[-68.840433118,-50.084022304],[-68.87521907,-50.103007172],[-68.889946637,-50.108073365],[-68.905282225,-50.110791322],[-69.008396447,-50.115557547],[-69.030156964,-50.113834745],[-69.050151867,-50.108272508],[-69.068567983,-50.098702696],[-69.076932489,-50.092537457],[-69.088168779,-50.081747814],[-69.102754277,-50.060325339],[-69.111344829,-50.03587413],[-69.113498502,-50.00774505],[-69.110223534,-49.982362611],[-69.100613138,-49.958642705],[-69.085296788,-49.938138972],[-69.073771724,-49.927950697],[-69.060820427,-49.919650581],[-69.012969823,-49.899395982],[-69.003053993,-49.895913836],[-68.987632901,-49.892686741],[-68.962220111,-49.891567874],[-68.950393416,-49.887895915],[-68.914509565,-49.870469188],[-68.894012744,-49.864246705],[-68.872660939,-49.86253225],[-68.802957131,-49.868034971],[-68.7444023,-49.864163608],[-68.733537357,-49.864601176],[-68.719401434,-49.866574207],[-68.742687611,-49.835982857],[-68.790007792,-49.814160503],[-68.80297585,-49.805179653],[-68.814370322,-49.794271298],[-68.823907683,-49.781706867],[-68.83135062,-49.767798996],[-68.836513932,-49.752893748],[-68.839269143,-49.737362006],[-68.839547695,-49.721590241],[-68.836063459,-49.700865786],[-68.828324965,-49.681327141],[-68.816673979,-49.663837216],[-68.801625059,-49.649168442],[-68.78384283,-49.637968654],[-68.76411263,-49.630732483],[-68.743305831,-49.62777951],[-68.703279723,-49.630486471],[-68.660588934,-49.642010097],[-68.62186134,-49.659393862],[-68.598572102,-49.67470278],[-68.585687197,-49.684917369],[-68.574650327,-49.697105318],[-68.520389765,-49.767231328],[-68.496951467,-49.78954027],[-68.487695257,-49.800691186],[-68.462338649,-49.843676093],[-68.453609084,-49.863475724],[-68.433799337,-49.874569754],[-68.42524592,-49.880533116],[-68.389718724,-49.911762996],[-68.380170351,-49.923561062],[-68.359841486,-49.953259546],[-68.344569469,-49.987553583],[-68.342978827,-49.989262558],[-68.328288217,-49.995882487],[-68.319043045,-50.001665323],[-68.306491144,-50.012137933],[-68.297324303,-50.021974954],[-68.26119517,-50.024266748],[-68.189927905,-50.015696921],[-68.111490756,-49.993304745],[-68.026842234,-49.953694229],[-67.946822385,-49.911207371],[-67.902864407,-49.88105613],[-67.874996428,-49.844975892],[-67.860645653,-49.823380146],[-67.827662328,-49.749848464],[-67.815775218,-49.691399734],[-67.817832928,-49.6647996],[-67.812331203,-49.614098333],[-67.806262542,-49.590978381],[-67.804932946,-49.545699193],[-67.796488012,-49.507776968],[-67.791368598,-49.491763169],[-67.8223368,-49.490964863],[-67.83373764,-49.489378659],[-67.844880671,-49.486492828],[-67.8680901,-49.478886359],[-67.877739693,-49.47461679],[-67.891237726,-49.466368395],[-67.90326617,-49.45609467],[-67.910318311,-49.448245392],[-67.919250174,-49.435189561],[-67.926011486,-49.420888597],[-67.930433056,-49.405700357],[-67.932330112,-49.379453202],[-67.927233106,-49.352806838],[-67.916972529,-49.328695858],[-67.907916072,-49.315808804],[-67.896948417,-49.304503667],[-67.884341667,-49.295060923],[-67.870408589,-49.287714842],[-67.855494857,-49.282647677],[-67.841533175,-49.280169287],[-67.832093087,-49.267888788],[-67.829729661,-49.252016383],[-67.822834185,-49.232140132],[-67.815010216,-49.218423023],[-67.805124417,-49.206108618],[-67.797508227,-49.198831621],[-67.784756525,-49.189516704],[-67.77069744,-49.182325338],[-67.756989418,-49.177787632],[-67.734309165,-49.141785316],[-67.73034683,-49.109066522],[-67.727530731,-49.098671061],[-67.721254706,-49.083795342],[-67.715773546,-49.074524263],[-67.705764877,-49.061855323],[-67.693847878,-49.050962177],[-67.680319502,-49.041413741],[-67.663801123,-49.00199577],[-67.640597347,-48.961633614],[-67.631238443,-48.949322939],[-67.616026411,-48.9354278],[-67.455911306,-48.817733644],[-67.356101221,-48.773399684],[-67.286465444,-48.752769414],[-67.28341918,-48.751090632],[-67.274927154,-48.728593953],[-67.266874661,-48.714683817],[-67.252877204,-48.698480049],[-67.23715151,-48.685960139],[-67.231077458,-48.659594411],[-67.219155566,-48.63614732],[-67.205459516,-48.620142352],[-67.17912891,-48.5975694],[-67.166728059,-48.588565695],[-67.153097086,-48.581562527],[-67.088384035,-48.55436211],[-67.03636239,-48.524774022],[-67.022349781,-48.518183445],[-67.002406041,-48.51290377],[-66.94896085,-48.50720275],[-66.938339321,-48.489017398],[-66.924491081,-48.473783065],[-66.912213291,-48.464399751],[-66.894105237,-48.454993646],[-66.873034818,-48.435707602],[-66.864371389,-48.429279139],[-66.828142901,-48.409925229],[-66.808031883,-48.393970782],[-66.793747446,-48.385449306],[-66.735161346,-48.363833411],[-66.690893778,-48.339391287],[-66.676032967,-48.33427132],[-66.660553459,-48.331543208],[-66.585792209,-48.324360801],[-66.560732615,-48.323934451],[-66.552137021,-48.308533864],[-66.538633657,-48.292622931],[-66.526494621,-48.2827233],[-66.515765932,-48.276223048],[-66.499432906,-48.264159362],[-66.484954899,-48.257117703],[-66.469534525,-48.252490642],[-66.453571475,-48.250398111],[-66.430807427,-48.250344119],[-66.422990761,-48.235634634],[-66.414325673,-48.223167738],[-66.382598835,-48.188879412],[-66.361939562,-48.172713004],[-66.3491049,-48.164297666],[-66.335133659,-48.157945433],[-66.322449018,-48.154199848],[-66.30998445,-48.139213652],[-66.293585156,-48.125604176],[-66.284392295,-48.120186235],[-66.269653062,-48.113969947],[-66.225770939,-48.101668441],[-66.217994053,-48.085283066],[-66.208896486,-48.072398496],[-66.197886169,-48.061104658],[-66.185237014,-48.051682518],[-66.153019315,-48.033696],[-66.120770304,-48.021094428],[-66.078180918,-48.011531287],[-66.061164385,-48.00979361],[-66.051423399,-47.991416868],[-66.050828701,-47.965375163],[-66.039770362,-47.927186159],[-66.027388497,-47.904100729],[-66.009961691,-47.883750165],[-66.113183821,-47.923190838],[-66.126891714,-47.926649823],[-66.196480788,-47.939239667],[-66.274548051,-47.968902751],[-66.294321633,-47.972261409],[-66.338816041,-47.975159929],[-66.353625376,-47.974330915],[-66.411862174,-47.961251373],[-66.426953097,-47.95644395],[-66.445537031,-47.946450865],[-66.453935305,-47.940040987],[-66.465149747,-47.92885691],[-66.471582373,-47.920476047],[-66.479486485,-47.906751168],[-66.487551979,-47.881668231],[-66.488786317,-47.855349373],[-66.486192179,-47.839725105],[-66.481163752,-47.824706376],[-66.473827173,-47.810669927],[-66.46078048,-47.794086558],[-66.448865171,-47.78365235],[-66.430705177,-47.772908098],[-66.410695025,-47.766213461],[-66.379965045,-47.761473576],[-66.305265109,-47.763507399],[-66.249005382,-47.736282058],[-66.181220342,-47.712241837],[-66.156049188,-47.705272406],[-66.150585415,-47.702732102],[-66.12348817,-47.679351715],[-66.114864363,-47.673318317],[-66.080433617,-47.652001467],[-66.060951527,-47.643788496],[-66.045442385,-47.640424186],[-66.029596316,-47.639555758],[-65.966228938,-47.641207621],[-65.909883045,-47.64727292],[-65.881101552,-47.589892517],[-65.833805371,-47.484024428],[-65.825749644,-47.394412641],[-65.8165535,-47.348666123],[-65.831472488,-47.312439781],[-65.848821019,-47.259394218],[-65.864878161,-47.248759078],[-65.881061213,-47.235828336],[-65.910277609,-47.217430219],[-65.92128026,-47.207058345],[-65.931878635,-47.193108043],[-65.946550304,-47.190128909],[-65.956344596,-47.186797724],[-66.004435681,-47.16481143],[-66.059884118,-47.179197021],[-66.074718948,-47.18199846],[-66.205006997,-47.189484826],[-66.318059112,-47.172845826],[-66.375983264,-47.165400443],[-66.386316156,-47.162963227],[-66.397848276,-47.158771895],[-66.439178428,-47.161282203],[-66.453743426,-47.160434077],[-66.484841889,-47.154344443],[-66.516050467,-47.142139887],[-66.535072847,-47.145764931],[-66.565179709,-47.148001463],[-66.58081652,-47.147136868],[-66.591840998,-47.14500119],[-66.614660269,-47.15021403],[-66.636078177,-47.150952545],[-66.65716161,-47.147110534],[-66.68130939,-47.136922019],[-66.708724022,-47.137293962],[-66.718538184,-47.135865484],[-66.732873944,-47.131920187],[-66.82900557,-47.097097878],[-66.841629857,-47.09000196],[-66.884566718,-47.061383585],[-66.897687768,-47.04960123],[-66.951015651,-46.992450959],[-67.027747217,-46.931725611],[-67.04186086,-46.924680378],[-67.052525775,-46.917219279],[-67.062781643,-46.914627888],[-67.077227035,-46.908888581],[-67.086286808,-46.903846483],[-67.098777478,-46.89459488],[-67.11292001,-46.879467355],[-67.128047146,-46.855513791],[-67.147220415,-46.834224084],[-67.17777114,-46.814171249],[-67.189667552,-46.80296673],[-67.198636576,-46.791361764],[-67.21919848,-46.787682692],[-67.239808465,-46.779708371],[-67.287176982,-46.754450055],[-67.299425727,-46.744921593],[-67.310089562,-46.733564454],[-67.363388461,-46.721508664],[-67.382807912,-46.713822667],[-67.482801763,-46.647731251],[-67.494102756,-46.637957393],[-67.503821353,-46.626608841],[-67.603241668,-46.490674257],[-67.630792968,-46.445074015],[-67.668696544,-46.356152512],[-67.718201684,-46.192643708],[-67.721786355,-46.175395071],[-67.724252116,-46.135846888],[-67.723869544,-46.11958412],[-67.718887579,-46.078137386],[-67.708443269,-46.040430938],[-67.667558889,-45.947409563],[-67.658963062,-45.933501204],[-67.646549878,-45.918226587],[-67.644199844,-45.907104155],[-67.638780091,-45.892091526],[-67.633867316,-45.882645785],[-67.616587184,-45.856604142],[-67.606441577,-45.844923429],[-67.594561217,-45.834186719],[-67.586933841,-45.821387349],[-67.576782416,-45.808991814],[-67.56478167,-45.798376598],[-67.549535216,-45.788918973],[-67.537875133,-45.767768144],[-67.524332671,-45.752109717],[-67.507856176,-45.739575377],[-67.461074829,-45.71217119],[-67.455973456,-45.696705593],[-67.456150824,-45.653779832],[-67.451207947,-45.627505232],[-67.433534088,-45.587574933],[-67.409841722,-45.550810413],[-67.402624455,-45.542770004],[-67.390280052,-45.53228408],[-67.363709376,-45.517623541],[-67.343463842,-45.493191253],[-67.331184473,-45.4818789],[-67.291832367,-45.454470164],[-67.24035915,-45.393100118],[-67.204064243,-45.354451403],[-67.170478707,-45.323982808],[-67.13711422,-45.280883781],[-67.073111055,-45.226920737],[-67.058252856,-45.216707587],[-67.012611952,-45.191062141],[-66.972815935,-45.166514701],[-66.896802972,-45.139562778],[-66.876613007,-45.1358935],[-66.795847312,-45.129662926],[-66.684946966,-45.115742194],[-66.67861352,-45.09747211],[-66.670990321,-45.083846822],[-66.661339228,-45.071574168],[-66.649895498,-45.060953307],[-66.636938084,-45.052243137],[-66.622782838,-45.045655978],[-66.607774812,-45.041352398],[-66.595984191,-45.03970029],[-66.584112458,-45.02915244],[-66.556829574,-45.008562142],[-66.538217844,-44.997458159],[-66.499096077,-44.982065618],[-66.451771001,-44.971472495],[-66.434477162,-44.96144639],[-66.414111858,-44.95477655],[-66.399986463,-44.952850372],[-66.371161891,-44.945779024],[-66.356597756,-44.943688089],[-66.312381114,-44.944496645],[-66.298756259,-44.945870091],[-66.285477566,-44.937787143],[-66.270487079,-44.921623187],[-66.258528948,-44.911573371],[-66.245151681,-44.903508357],[-66.22567593,-44.896175004],[-66.215471999,-44.894066643],[-66.199893756,-44.892920315],[-66.169946001,-44.895650652],[-66.118621456,-44.888758163],[-66.097475695,-44.889238859],[-66.03464025,-44.903682457],[-66.009176533,-44.903365361],[-65.993384595,-44.905781648],[-65.973308414,-44.91284749],[-65.948736456,-44.927301758],[-65.935627336,-44.919200553],[-65.926093031,-44.914900927],[-65.898726131,-44.906857087],[-65.884202532,-44.904024058],[-65.835108048,-44.903426879],[-65.819607698,-44.905662899],[-65.808365182,-44.908924441],[-65.821605204,-44.883438479],[-65.826937537,-44.863758673],[-65.828250256,-44.848511372],[-65.826052782,-44.795167398],[-65.822475444,-44.779544663],[-65.816448237,-44.764694076],[-65.808125978,-44.750997098],[-65.795774467,-44.736963708],[-65.794412487,-44.718025973],[-65.790528903,-44.70268043],[-65.773885843,-44.665681042],[-65.765021098,-44.651845532],[-65.730248216,-44.611405889],[-65.704998307,-44.589374176],[-65.692406704,-44.580939458],[-65.638613118,-44.551134938],[-65.624215028,-44.54610248],[-65.60728799,-44.543159879],[-65.596031183,-44.534976225],[-65.586415732,-44.529635262],[-65.537911912,-44.511729029],[-65.520309111,-44.495452606],[-65.502439028,-44.485182737],[-65.482843071,-44.478794584],[-65.46477439,-44.476313643],[-65.458204823,-44.463671605],[-65.448668679,-44.450687864],[-65.437171456,-44.439403829],[-65.427439421,-44.432266304],[-65.420878832,-44.415101002],[-65.413547922,-44.400919733],[-65.398772747,-44.382526499],[-65.390062868,-44.368566645],[-65.375611579,-44.352973862],[-65.3578302,-44.340601941],[-65.363180304,-44.324660095],[-65.386103642,-44.298203316],[-65.39187309,-44.289129313],[-65.398620225,-44.274489751],[-65.402927543,-44.258956315],[-65.405904419,-44.238272721],[-65.408390118,-44.192118351],[-65.405943645,-44.176734688],[-65.39465687,-44.138108995],[-65.38636321,-44.118243581],[-65.37745064,-44.104764622],[-65.366483474,-44.092897123],[-65.336938681,-44.07061286],[-65.335493203,-44.062643855],[-65.339802526,-44.048008475],[-65.3415803,-44.035816422],[-65.349009907,-44.02779046],[-65.358078353,-44.014876753],[-65.368339839,-43.99071447],[-65.375007088,-43.961441253],[-65.375345225,-43.944821864],[-65.373278267,-43.926134377],[-65.37805507,-43.913628801],[-65.395746945,-43.895379219],[-65.404624831,-43.882560315],[-65.411402023,-43.868517137],[-65.416893599,-43.84848189],[-65.418127022,-43.82774431],[-65.41540614,-43.793430658],[-65.422227198,-43.777594734],[-65.430882835,-43.748005148],[-65.434027284,-43.670261079],[-65.430017159,-43.644491451],[-65.423312954,-43.625379008],[-65.416296917,-43.611476234],[-65.40349938,-43.594678669],[-65.393578002,-43.578319821],[-65.355410684,-43.527375811],[-65.344580902,-43.515145997],[-65.331904476,-43.504842561],[-65.312531519,-43.494315747],[-65.272726602,-43.468020377],[-65.268532931,-43.463956202],[-65.232695467,-43.414844016],[-65.224926371,-43.406380126],[-65.142208688,-43.341912072],[-65.14295128,-43.31245976],[-65.137090507,-43.28668259],[-65.11653463,-43.245458674],[-65.106759732,-43.232617939],[-65.095046645,-43.221516734],[-65.076947775,-43.209913283],[-65.053818914,-43.201373862],[-65.047567222,-43.198066354],[-65.039217978,-43.192129885],[-65.008677049,-43.163235287],[-64.994719213,-43.153299261],[-64.806316048,-43.056215476],[-64.786410212,-43.049658294],[-64.665164611,-43.023405685],[-64.685824582,-43.016896214],[-64.710915391,-43.004254302],[-64.755572856,-42.974375745],[-64.778036364,-42.96283387],[-64.889136882,-42.922333084],[-64.956782439,-42.905928384],[-64.970298532,-42.900172995],[-64.992237453,-42.887601572],[-65.025870562,-42.880628879],[-65.044707888,-42.872807144],[-65.053430591,-42.867497493],[-65.06538729,-42.857936757],[-65.083943038,-42.840413887],[-65.094132237,-42.827951514],[-65.099754882,-42.818803094],[-65.106271697,-42.804083664],[-65.116314386,-42.769477267],[-65.118903401,-42.748013566],[-65.116818802,-42.726495019],[-65.112238763,-42.710926382],[-65.101213532,-42.686303513],[-65.093127948,-42.673128699],[-65.083108485,-42.66135743],[-65.054901836,-42.6376227],[-65.039114006,-42.610380201],[-65.016113104,-42.582892461],[-65.00779815,-42.575583205],[-64.993940765,-42.566451458],[-64.96606039,-42.551369735],[-64.952522441,-42.545992446],[-64.889456976,-42.532298585],[-64.848372177,-42.528767943],[-64.810512766,-42.489961255],[-64.786474897,-42.47230349],[-64.754573637,-42.45769743],[-64.744197704,-42.454884286],[-64.724914946,-42.451681435],[-64.712864581,-42.444040594],[-64.700946034,-42.438228784],[-64.702138302,-42.416649839],[-64.698907803,-42.396285425],[-64.68752128,-42.355741503],[-64.67555494,-42.333292573],[-64.680682842,-42.330090641],[-64.722660438,-42.329754407],[-64.759019731,-42.324269264],[-64.795246937,-42.313936897],[-64.824290293,-42.302278887],[-64.837729628,-42.295542587],[-64.859688335,-42.294492427],[-64.888165408,-42.288731374],[-64.902585107,-42.282770573],[-64.990059245,-42.237679578],[-65.040207329,-42.200386485],[-65.084297787,-42.154111854],[-65.155269296,-42.037304317],[-65.163795639,-42.019260125],[-65.167740569,-42.0048101],[-65.174141985,-41.95978368],[-65.174284778,-41.943890844],[-65.171907831,-41.928176113],[-65.150503134,-41.86652913],[-65.107495704,-41.791851041],[-65.100913483,-41.77594526],[-65.121366919,-41.733348278],[-65.134563818,-41.688032911],[-65.137161311,-41.661684633],[-65.134187428,-41.640690984],[-65.122529945,-41.60297761],[-65.116161204,-41.589018424],[-65.102807284,-41.568880158],[-65.095606434,-41.549495036],[-65.132077083,-41.518950001],[-65.147520395,-41.4988827],[-65.154178485,-41.485197135],[-65.168348885,-41.448896626],[-65.175526439,-41.416960473],[-65.199898789,-41.360960129],[-65.204241957,-41.341119324],[-65.205811726,-41.318256429],[-65.244422006,-41.202271574],[-65.273766616,-41.026580516],[-65.275109951,-41.011575212],[-65.275372664,-40.96121983],[-65.270126215,-40.928674766],[-65.266094845,-40.913115761],[-65.254436849,-40.88102558],[-65.235121561,-40.845358663],[-65.231741187,-40.825127525],[-65.220554479,-40.796495178],[-65.209095166,-40.779052022],[-65.188489754,-40.759034893],[-65.174094936,-40.748352122],[-65.10038486,-40.703292473],[-65.083098144,-40.689861572],[-65.075783799,-40.67606717],[-65.066403852,-40.66357135],[-65.059116754,-40.65611998],[-65.046833105,-40.646463849],[-65.023633176,-40.632472643],[-64.978603294,-40.616643874],[-64.956058041,-40.611813993],[-64.888905483,-40.605999192],[-64.872361325,-40.607637144],[-64.778123043,-40.624971128],[-64.758298571,-40.630787607],[-64.724365803,-40.648382861],[-64.7111854,-40.656845154],[-64.699488065,-40.667261765],[-64.684048183,-40.688252535],[-64.677587999,-40.702521362],[-64.673702748,-40.71640479],[-64.665706842,-40.728794061],[-64.659548812,-40.742223421],[-64.627173415,-40.748008917],[-64.612808864,-40.751692844],[-64.523463526,-40.786703321],[-64.385260607,-40.815945217],[-64.145442429,-40.912769248],[-64.134781912,-40.914914352],[-64.110395416,-40.907278758],[-64.071102205,-40.8998482],[-64.04965005,-40.900225213],[-64.028772079,-40.905169647],[-64.009429383,-40.914453892],[-63.990809616,-40.928246949],[-63.97919653,-40.938878048],[-63.967379689,-40.954367811],[-63.929754933,-40.967377076],[-63.916157118,-40.97404687],[-63.817689237,-41.045645118],[-63.796489574,-41.054173717],[-63.769911104,-41.058905217],[-63.623487448,-41.060871142],[-63.478245066,-41.05423707],[-63.3862203,-41.060659797],[-63.377728396,-41.059696798],[-63.334958906,-41.049669264],[-63.31916195,-41.048067773],[-63.106310903,-41.054617554],[-63.080778579,-41.050320706],[-62.966697478,-41.004818153],[-62.909520278,-40.992405429],[-62.884240772,-40.975576544],[-62.865538441,-40.960259028],[-62.856026925,-40.954780025],[-62.840778781,-40.948595163],[-62.820811142,-40.943538369],[-62.804429998,-40.941719941],[-62.793439217,-40.942016206],[-62.772110183,-40.944803019],[-62.756602827,-40.943957373],[-62.739676002,-40.932666598],[-62.713528311,-40.918944105],[-62.643352343,-40.896507351],[-62.523771227,-40.839779332],[-62.39443984,-40.787735219],[-62.378213671,-40.756548357],[-62.393600946,-40.746076755],[-62.408466637,-40.730785851],[-62.426686509,-40.702389596],[-62.434838499,-40.683137512],[-62.438221347,-40.667813754],[-62.439123081,-40.651203496],[-62.44350211,-40.635691352],[-62.446795058,-40.61343491],[-62.444915063,-40.584486386],[-62.438823473,-40.562143691],[-62.452828956,-40.555912979],[-62.466832422,-40.547552359],[-62.475330343,-40.541771018],[-62.48685416,-40.531542296],[-62.496669755,-40.519664621],[-62.527820072,-40.47400874],[-62.536057691,-40.45497961],[-62.548430991,-40.40760934],[-62.571353813,-40.373411178],[-62.580677127,-40.352764068],[-62.588946506,-40.322763414],[-62.590054092,-40.306699671],[-62.588569151,-40.290666408],[-62.580295788,-40.259855087],[-62.574240256,-40.244021067],[-62.565597143,-40.229437436],[-62.543944829,-40.200249864],[-62.517857807,-40.174556279],[-62.492754444,-40.154763881],[-62.476001123,-40.145141062],[-62.447034183,-40.133726487],[-62.443759433,-40.124878613],[-62.459186099,-40.091230724],[-62.464959569,-40.070584971],[-62.466321517,-40.054550809],[-62.465093995,-40.038505796],[-62.46130879,-40.022865416],[-62.454058982,-40.00279817],[-62.445937783,-39.988337521],[-62.438910729,-39.979163101],[-62.431333274,-39.962961932],[-62.42423553,-39.930202481],[-62.411701298,-39.896429432],[-62.414541575,-39.867253716],[-62.413010114,-39.851835174],[-62.408005118,-39.833866586],[-62.40794014,-39.809203703],[-62.403286999,-39.789284617],[-62.393230975,-39.763982844],[-62.381334208,-39.746480126],[-62.374064872,-39.738770294],[-62.361735641,-39.728753556],[-62.352700588,-39.72321708],[-62.338178035,-39.716779654],[-62.328008214,-39.713803166],[-62.3123065,-39.711394601],[-62.296421498,-39.71150282],[-62.285927736,-39.712974454],[-62.26569954,-39.719195248],[-62.251637837,-39.726585342],[-62.212292938,-39.751185855],[-62.210045765,-39.71449196],[-62.184036981,-39.573210614],[-62.174036794,-39.545104981],[-62.173383663,-39.52826003],[-62.199729154,-39.516459522],[-62.21339987,-39.508020261],[-62.262041176,-39.471729144],[-62.289987765,-39.442070353],[-62.305068138,-39.436718017],[-62.318877429,-39.429167948],[-62.343698102,-39.40888898],[-62.354073325,-39.39652449],[-62.36548369,-39.378464225],[-62.372201236,-39.363765086],[-62.378983761,-39.343181551],[-62.391868685,-39.330835528],[-62.407459469,-39.31207779],[-62.415378319,-39.298679244],[-62.421122273,-39.284214245],[-62.425165252,-39.263876922],[-62.425110641,-39.245191579],[-62.439002326,-39.214982917],[-62.445190261,-39.194834492],[-62.447017666,-39.173836631],[-62.444789811,-39.151524229],[-62.450052853,-39.14086375],[-62.454868965,-39.126334357],[-62.457811087,-39.101037896],[-62.45549042,-39.080776827],[-62.448921206,-39.058571855],[-62.438666524,-39.039200929],[-62.427747195,-39.025782841],[-62.418572785,-39.004150315],[-62.427333033,-38.984505086],[-62.442008951,-38.973246907],[-62.452608128,-38.961722684],[-62.461278545,-38.94868527],[-62.467807645,-38.934454278],[-62.472913595,-38.91422909],[-62.473740793,-38.894089466],[-62.480380249,-38.879159065],[-62.484559137,-38.863945782],[-62.490195935,-38.81623111],[-62.487066653,-38.78984552],[-62.477099193,-38.765215426],[-62.457851428,-38.735983676],[-62.447263664,-38.724665766],[-62.435054252,-38.715119766],[-62.395248562,-38.69429532],[-62.38006871,-38.68964662],[-62.359050371,-38.687287755],[-62.338006035,-38.689402162],[-62.309821189,-38.696726517],[-62.295278988,-38.701803816],[-62.151197336,-38.710668143],[-62.129778671,-38.714351998],[-62.114515469,-38.720112234],[-62.090827619,-38.732939984],[-62.070939527,-38.748888498],[-62.045004053,-38.783974106],[-62.026104287,-38.822941739],[-62.020568932,-38.831009464],[-62.015778553,-38.834461749],[-61.997052697,-38.841813229],[-61.825983656,-38.881270732],[-61.797124777,-38.882239151],[-61.777332438,-38.878940428],[-61.760154175,-38.872668011],[-61.749470445,-38.870057162],[-61.733069582,-38.868376247],[-61.714883296,-38.8685088],[-61.700230416,-38.870776433],[-61.686073911,-38.875185788],[-61.670583397,-38.882232347],[-61.659701055,-38.8888404],[-61.639892418,-38.89723247],[-61.535926996,-38.908864964],[-61.517924188,-38.902337482],[-61.452901402,-38.885654539],[-61.429311011,-38.882525145],[-61.333341548,-38.881475433],[-61.148258936,-38.900065714],[-61.088069267,-38.888022497],[-61.071215713,-38.879541476],[-61.057523957,-38.874272918],[-61.025972089,-38.868646848],[-61.015605946,-38.868197992],[-60.991913866,-38.869629081],[-60.966976373,-38.874503024],[-60.872985082,-38.875590414],[-60.674687947,-38.844272118],[-60.515052513,-38.828314665],[-60.358840292,-38.807646587],[-59.904116976,-38.73957618],[-59.886063874,-38.738526992],[-59.817967247,-38.740107895],[-59.653393582,-38.686016277],[-59.087420496,-38.596364257],[-59.056058487,-38.585744402],[-59.030308849,-38.580484168],[-58.982010655,-38.55520702],[-58.966632349,-38.549621463],[-58.751406729,-38.490962565],[-58.597780672,-38.462817726],[-58.525452676,-38.429541213],[-58.445771289,-38.407675728],[-58.432266784,-38.404982062],[-58.353929187,-38.394901856],[-58.310414398,-38.374812105],[-58.191409679,-38.336552724],[-58.166672907,-38.325517139],[-58.122108923,-38.295364741],[-58.108271812,-38.287528964],[-58.080992158,-38.276895355],[-58.047741374,-38.271076546],[-57.908528406,-38.205551812],[-57.836357906,-38.163463556],[-57.731678826,-38.115514459],[-57.652364334,-38.071076089],[-57.636014251,-38.056239904],[-57.635065734,-38.054710037],[-57.635378336,-38.035430467],[-57.640366937,-38.016168936],[-57.641806992,-37.995715672],[-57.637364223,-37.942454413],[-57.626468828,-37.891845322],[-57.621358478,-37.87562202],[-57.602231875,-37.829492722],[-57.569419248,-37.774976035],[-57.52835359,-37.72407505],[-57.443510322,-37.639989638],[-57.430673998,-37.630275367],[-57.417276491,-37.623130807],[-57.389300067,-37.585637224],[-57.379288807,-37.574159648],[-57.367650672,-37.564335499],[-57.26382519,-37.489450103],[-57.236782265,-37.464979707],[-57.137711788,-37.354167545],[-57.101047759,-37.290026134],[-56.966923648,-37.099792435],[-56.86593025,-36.9729535],[-56.768640365,-36.869137278],[-56.766606496,-36.865267277],[-56.765004721,-36.847909272],[-56.772062398,-36.609162804],[-56.772828091,-36.603874175],[-56.793309585,-36.556255198],[-56.798545147,-36.535727092],[-56.799562191,-36.51985766],[-56.798357062,-36.442578793],[-56.833196192,-36.441616435],[-56.859905597,-36.450852397],[-56.889491522,-36.471632066],[-56.903639559,-36.478325211],[-56.913577879,-36.481523184],[-56.928974247,-36.484336898],[-56.939401271,-36.484860729],[-56.960135057,-36.482644651],[-56.979958514,-36.476176929],[-56.998009717,-36.465738779],[-57.020328104,-36.444961027],[-57.031245249,-36.430296717],[-57.050230429,-36.423122587],[-57.162184321,-36.366540565],[-57.314823754,-36.244770059],[-57.329664575,-36.228107907],[-57.346799827,-36.203666523],[-57.354534334,-36.188773474],[-57.369562023,-36.179311078],[-57.384677992,-36.165033918],[-57.3938936,-36.152438549],[-57.401037241,-36.138562702],[-57.408164479,-36.120373712],[-57.412571906,-36.099070207],[-57.427617254,-36.066957795],[-57.440510874,-36.05507583],[-57.450262878,-36.042427014],[-57.457876724,-36.028386947],[-57.465715654,-36.007838376],[-57.471265972,-35.98380644],[-57.473100842,-35.953578718],[-57.49110473,-35.883807651],[-57.493299909,-35.863040839],[-57.489918431,-35.837184664],[-57.476987615,-35.801855978],[-57.461731765,-35.736116179],[-57.444915657,-35.689020298],[-57.4323023,-35.667095245],[-57.399633139,-35.631295481],[-57.30243601,-35.507510797],[-57.238627406,-35.437927512],[-57.283502713,-35.367662718],[-57.32224564,-35.317286878],[-57.385047962,-35.25939558],[-57.418588286,-35.22263135],[-57.505512537,-35.151614059],[-57.54599873,-35.125478422],[-57.572797015,-35.102066658],[-57.643541095,-35.079368286],[-57.657878906,-35.071672682],[-57.730577981,-35.024657917],[-57.790699983,-35.004452112],[-57.80416408,-34.998802506],[-57.816661931,-34.991252429],[-57.861383736,-34.956318628],[-57.90685732,-34.931354868],[-57.934869276,-34.933614494],[-57.945208484,-34.933426263],[-57.955472973,-34.932171298],[-57.970490008,-34.92832117],[-58.002362033,-34.917301115],[-58.016836584,-34.910065231],[-58.033965105,-34.8969744],[-58.053412179,-34.876570567],[-58.092779238,-34.868558161],[-58.103222422,-34.864718057],[-58.125334563,-34.853833882],[-58.168894046,-34.849412319],[-58.179380128,-34.847350502],[-58.194547834,-34.842192495],[-58.229796579,-34.826956597],[-58.245169746,-34.818648381],[-58.290503335,-34.785017561],[-58.363412458,-34.744711634],[-58.376668447,-34.735939884],[-58.384659713,-34.728970889],[-58.395153135,-34.717031336],[-58.417427776,-34.683721065],[-58.427947738,-34.664608149],[-58.435441946,-34.655867977],[-58.462489303,-34.64195164],[-58.481063375,-34.630191881],[-58.49916578,-34.621767547],[-58.526318745,-34.606918937],[-58.542916965,-34.594221684],[-58.556513815,-34.578352002],[-58.568399223,-34.555120301],[-58.573357729,-34.534390074],[-58.583753258,-34.522415368],[-58.592382502,-34.508413248],[-58.604021459,-34.484140886],[-58.608548603,-34.468144035],[-58.611419888,-34.43895717],[-58.61069367,-34.423546181],[-58.606062435,-34.403519825],[-58.597950138,-34.385784534],[-58.622450959,-34.37358143],[-58.631139164,-34.367639814],[-58.642882183,-34.35710008],[-58.655688978,-34.340429464],[-58.666347883,-34.316440768],[-58.670136133,-34.295762939],[-58.668673688,-34.269553569],[-58.660441151,-34.244627777],[-58.6460058,-34.222703122],[-58.634765119,-34.211629208],[-58.618626807,-34.200597646],[-58.601389223,-34.18643269],[-58.579189476,-34.174420442],[-58.564667589,-34.170031308],[-58.549648869,-34.167889405],[-58.499052788,-34.16929088],[-58.492108229,-34.158742347],[-58.490508984,-34.129104846],[-58.485740321,-34.102774069],[-58.503694486,-34.093006784],[-58.519330094,-34.079746687],[-58.529097932,-34.067856629],[-58.539070741,-34.049944469],[-58.544032556,-34.0353786],[-58.546700905,-34.020223929],[-58.546472099,-33.995525207],[-58.543065948,-33.974963337],[-58.551256364,-33.937198895],[-58.554488096,-33.89674009],[-58.600551477,-33.842487663],[-58.611434666,-33.826870543],[-58.634133755,-33.780797616],[-58.647004654,-33.726289105],[-58.649054821,-33.711157674],[-58.649242548,-33.67766174],[-58.639504234,-33.592678249],[-58.636062004,-33.578433727],[-58.63171729,-33.567318723],[-58.635633251,-33.534314674],[-58.631406081,-33.484501128],[-58.617820139,-33.421666993],[-58.599266587,-33.368516381],[-58.574413029,-33.319469342],[-58.565897226,-33.307025272],[-58.528679571,-33.262107751],[-58.533134485,-33.236414149],[-58.531742353,-33.206541175],[-58.529323932,-33.19027708],[-58.521383911,-33.156354345],[-58.526847357,-33.143260513],[-58.530636793,-33.128019026],[-58.531526615,-33.101906265],[-58.526944421,-33.07745946],[-58.521770834,-33.062529486],[-58.514310127,-33.048600811],[-58.501307233,-33.030549481],[-58.485403111,-33.013599005],[-58.467648437,-33.00097892],[-58.452764942,-32.994207712],[-58.41699834,-32.981349639],[-58.401469308,-32.977142317],[-58.390828001,-32.975747185],[-58.374739231,-32.975809245],[-58.258761754,-32.991780085],[-58.259010875,-32.969926307],[-58.254956602,-32.942585641],[-58.251208776,-32.926832255],[-58.246105674,-32.913217555],[-58.259617936,-32.891930239],[-58.27150261,-32.867136575],[-58.276511373,-32.851964594],[-58.291232609,-32.745620229],[-58.310469779,-32.672167817],[-58.322726799,-32.538313946],[-58.318784346,-32.473457279],[-58.31359464,-32.454084028],[-58.28737902,-32.395201031],[-58.275279464,-32.378281234],[-58.25994128,-32.364230649],[-58.251260369,-32.358476904],[-58.237236331,-32.351614394],[-58.222315045,-32.347018427],[-58.206860245,-32.344801037],[-58.191248667,-32.345016277],[-58.180941905,-32.346511087],[-58.165912406,-32.350739782],[-58.15342633,-32.356403276]],[[-64.073310706,-42.523136468],[-64.107589456,-42.53069955],[-64.122603687,-42.532589951],[-64.182404745,-42.530019398],[-64.172749975,-42.535134056],[-64.146911946,-42.552225567],[-64.130069798,-42.56635853],[-64.110303066,-42.592135004],[-64.101354847,-42.610977958],[-64.097322127,-42.626106958],[-64.095700353,-42.64167999],[-64.096529283,-42.657315282],[-64.099788596,-42.672629536],[-64.10539839,-42.687247322],[-64.113221141,-42.700810288],[-64.123065075,-42.712985938],[-64.13483337,-42.723581072],[-64.136032465,-42.727468335],[-64.122892721,-42.739521548],[-64.088007632,-42.778661392],[-64.054815569,-42.766592786],[-64.043720657,-42.763888285],[-64.011110029,-42.759827813],[-63.950387105,-42.759633071],[-63.761580509,-42.727604049],[-63.733234817,-42.717760073],[-63.731688859,-42.696789465],[-63.725874933,-42.676823842],[-63.707516627,-42.6322014],[-63.683895193,-42.592024944],[-63.681193722,-42.583455946],[-63.697475719,-42.444117005],[-63.691114905,-42.346764789],[-63.694097635,-42.334670565],[-63.713330454,-42.321429674],[-63.733141117,-42.304760698],[-63.740728371,-42.29758671],[-63.750605531,-42.285442325],[-63.758466438,-42.271905319],[-63.767195666,-42.251352255],[-63.77383685,-42.228624672],[-63.794423357,-42.188216144],[-63.803111476,-42.177027846],[-63.809182496,-42.172438613],[-63.843791131,-42.18012533],[-63.917527341,-42.205375188],[-63.971481413,-42.234676041],[-63.952121329,-42.281460296],[-63.945790063,-42.314829467],[-63.946409688,-42.336283889],[-63.952062246,-42.358390886],[-63.952766203,-42.387575284],[-63.959296839,-42.412944832],[-63.970664015,-42.435037754],[-63.980418978,-42.449033775],[-63.991562867,-42.461289021],[-64.020704676,-42.48371936],[-64.03274266,-42.498407058],[-64.044883628,-42.508786374],[-64.058522299,-42.517100215],[-64.073310706,-42.523136468]]],[[[-58.251505018,-34.191333532],[-58.257094741,-34.190234303],[-58.259853959,-34.175694108],[-58.265737652,-34.167930961],[-58.265803814,-34.164608478],[-58.247214437,-34.168048858],[-58.244910359,-34.174237728],[-58.243333459,-34.175335169],[-58.242628812,-34.185976029],[-58.245695234,-34.189400673],[-58.251505018,-34.191333532]]]]}

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"numEvents": 296288,

"numFlags": 19,

"numVessels": 1260,

"flags": [

"TWN",

"unknown",

"URY",

"GBR",

"BLZ",

"KOR",

"PRT",

"LKA",

"AFG",

"ARE",

"ARG",

"UKR",

"RUS",

"KIR",

"VUT",

"CHN",

"FLK",

"CHL",

"ESP",

"JPN"

],

"timeseries": [

{

"date": "2018-01-01T00:00:00.000Z",

"value": 54144

},

{

"date": "2019-01-01T00:00:00.000Z",

"value": 54403

},

{

"date": "2020-01-01T00:00:00.000Z",

"value": 52402

},

{

"date": "2021-01-01T00:00:00.000Z",

"value": 68412

},

{

"date": "2022-01-01T00:00:00.000Z",

"value": 61037

},

{

"date": "2023-01-01T00:00:00.000Z",

"value": 5890

}

]

}

EXAMPLE 3 - GET PORT VISITS STATS IN A REGION ID (SENEGAL)

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/events/stats' \

--header 'Accept: application/json' \

--header 'Authorization: Bearer {access-token}'

--header 'Content-Type: application/json' \

--data-raw '{

"confidences": [ "3","4"],

"datasets": [ "public-global-port-visits-events:latest"],

"startDate": "2018-01-01",

"endDate": "2019-01-31",

"timeseriesInterval": "YEAR",

"region": {

"dataset": "public-eez-areas",

"id": 8371

}

}

'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"numEvents": 4366,

"numFlags": 72,

"numVessels": 1368,

"flags": [

"SWE",

"FRA",

"unknown",

"GIB",

"TZA",

"ATG",

"PRT",

"GRC",

"TUV",

"CAN",

"THA",

"NLD",

"ESP",

"NGA",

"COK",

"HRV",

"MNE",

"KNA",

"COM",

"BRB",

"HKG",

"GNB",

"GHA",

"CIV",

"SOM",

"CHN",

"TGO",

"LUX",

"UKR",

"SEN",

"KIR",

"CHE",

"VNM",

"VCT",

"KOR",

"SLV",

"DNK",

"BEL",

"MLT",

"TWN",

"DEU",

"AUS",

"USA",

"VUT",

"NOR",

"CYM",

"TUR",

"NIU",

"PHL",

"GBR",

"POL",

"BHS",

"SLE",

"SYC",

"CYP",

"BMU",

"AGO",

"PCN",

"BLZ",

"CPV",

"PLW",

"WLF",

"SGP",

"GIN",

"MHL",

"BES",

"WSM",

"RUS",

"ITA",

"GMB",

"MAR",

"LBR",

"PAN"

],

"timeseries": [

{

"date": "2018-01-01T00:00:00.000Z",

"value": 4003

},

{

"date": "2019-01-01T00:00:00.000Z",

"value": 363

}

]

}

Insights API

Introduction Vessels Insights API

The Insights API is a set of indicators or 'vessel insights' that bring together important information on a vessel's known activity (based on AIS), vessel identity information and public authorizations. The objective of the insights is to support risk-based decision-making, operational planning, and other due diligence activities by making it easier for a user to identify vessel characteristics that can indicate an increased potential or opportunity for a vessel to engage in IUU (Illegal, Unreported, or Unregulated) fishing. The vessel insights were originally developed in collaboration with TMT, the Ocean Risk & Resilience Action Alliance (ORRAA) and representatives from the insurance industry. The project aimed to strengthen an insurance underwriter's ability to assess the potential that a vessel they insure may engage in or support IUU fishing. The collaboration included a pilot whereby insurance underwriters were asked to provide feedback on Vessel Viewer and the utility of the insights. The insights were then expanded for testing by port inspectors, MCS officers, the seafood industry, and others, with feedback from all pilot groups informing improvements and future efforts.

Insights by vessels

This endpoint allow to get vessel insights for one or several vessel\_ids. You can define what insight you want to get. It will return a list of events, you can use Events API to get the details of the event.

These are the available insights:

Any apparent fishing events in no-take MPAs

Any apparent fishing events detected in areas with no known RFMO authorization

The vessel’s AIS coverage metric

Any AIS off events

If the vessel is present on an RFMO IUU vessel list

Important: Data Considerations before drawing conclusions

In order to avoid any misinterpreation of these insights, please refer to our Data Caveats here.

Insights by vessels - HTTP Request

POST https://gateway.api.globalfishingwatch.org/v3/insights/vessels

Insights by vessels - URL Parameters

No query params

Insights by vessels - Body

All parameters should be sent in the body

Key Description Required Format Param Type

includes This query param allows the user to request one or multiple insights in one request. You can use it to avoid calculating all insights in case you just need one. Possible values: FISHING, GAP, COVERAGE, VESSEL-IDENTITY-IUU-VESSEL-LIST True string ENUM Possible values: FISHING, GAP, COVERAGE, VESSEL-IDENTITY-IUU-VESSEL-LIST body

startDate string example: 2021-01-01 True string format YYYY-MM-DD body

endDate string example: 2021-01-01 True string format YYYY-MM-DD body

vessels Array including API Dataset ID and Vessel ID which will allow you to get the details in Events API. See example on the right. True object body

GET INSIGHTS FOR A VESSEL RELATED TO FISHING EVENTS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/insights/vessels' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"includes": [ "FISHING"],

"startDate": "2020-01-01",

"endDate": "2020-12-31",

"vessels": [

{"datasetId":"public-global-vessel-identity:latest","vesselId":"785101812-2127-e5d2-e8bf-7152c5259f5f"}

]

}

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"period": {

"startDate": "2020-01-01",

"endDate": "2020-12-31"

},

"apparentFishing": {

"datasets": [

"public-global-fishing-events:v3.0"

],

"historicalCounters": {

"events": 2546,

"eventsInRFMOWithoutKnownAuthorization": 0,

"eventsInNoTakeMPAs": 18

},

"periodSelectedCounters": {

"events": 523,

"eventsInRFMOWithoutKnownAuthorization": 0,

"eventsInNoTakeMPAs": 18

},

"eventsInRfmoWithoutKnownAuthorization": [],

"eventsInNoTakeMpas": [

"9864ab75303cfc44fe4542fa755987e8",

"77d84fa537395a6c29fc8509e337e82b",

"9f053082b086a5c66fd87d54fb456bb9",

"20db28e5e09ce91c347a54637460fb19",

"2a937121e418ef38889fc9395461ee68",

"b920508f737e8b9c678e3fef74a6799a",

"e62a86cc34b5eba3826a02ee1fa6f846",

"1ce80b9f862d28c2f470561021eac8bb",

"a530632e0c5221a931520c60593b33bf",

"031c029d9ab3ab2b4f7151df2b0a13c7",

"d24003cbd7bf9b4cddb174a967136635",

"9f7972a6b56d99f60d0586cf4545cabf",

"8ed2cc511fb59e96e5549d902a65e176",

"97bbac02d35fa9e2a3dc196502ef47b8",

"29a91f15fd844bd0fc344d47d3490a9d",

"877f42def050b3784e4a9d1387503220",

"11d484a2d0e397fcf5a8a5a9cb9124a8",

"af534af9aec9149add9f66265296de7d"

]

}

}

GET INSIGHTS FOR A VESSEL RELATED TO AIS OFF EVENTS

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/insights/vessels' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"includes": [ "GAP"],

"confidences": [],

"startDate": "2022-07-11",

"endDate": "2023-07-11",

"vessels": [

{"datasetId":"public-global-vessel-identity:latest","vesselId":"2339c52c3-3a84-1603-f968-d8890f23e1ed"}

]

}'

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"period": {

"startDate": "2022-07-11",

"endDate": "2023-07-11"

},

"gap": {

"datasets": [

"public-global-gaps-events:v3.0"

],

"historicalCounters": {

"events": 1,

"eventsGapOff": 1

},

"periodSelectedCounters": {

"events": 1,

"eventsGapOff": 1

},

"aisOff": [

"9ce75aa2a483a06f41155132b83dc744"

]

}

}

GET INSIGHTS FOR A VESSEL RELATED TO BEING LISTED IN IUU LIST

curl --location --request POST 'https://gateway.api.globalfishingwatch.org/v3/insights/vessels' \

--header 'Authorization: Bearer [TOKEN]' \

--header 'Content-Type: application/json' \

--data-raw '{

"includes": [ "VESSEL-IDENTITY-IUU-VESSEL-LIST"],

"confidences": [],

"startDate": "2020-01-01",

"endDate": "2024-04-10",

"vessels": [

{"datasetId":"public-global-vessel-identity:latest","vesselId":"2d26aa452-2d4f-4cae-2ec4-377f85e88dcb"}

]

} ]

}

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response will be:

{

"period": {

"startDate": "2020-01-01",

"endDate": "2024-04-10"

},

"vesselIdentity": {

"datasets": [

"public-global-vessel-identity:v3.0"

],

"iuuVesselList": {

"valuesInThePeriod": [

{

"from": "2020-01-01T00:00:00Z",

"to": "2024-03-01T00:00:00Z"

}

],

"totalTimesListed": 1,

"totalTimesListedInThePeriod": 1

}

}

}

Datasets API

Datasets API introduction

Datasets API allow you to get SAR fixed infrastructure data in MVT format

Get SAR fixed infrastructure context layer in MVT format

EXAMPLE : GET SAR FIXED INFRASTRUCTURE DATA IN MVT FORMAT BY COORDINATES

# Make sure to replace [TOKEN] with your API Access Token

curl --location 'https://gateway.api.globalfishingwatch.org/v3/datasets/public-fixed-infrastructure-filtered:latest/context-layers/1/0/1' \

-H "Authorization: Bearer [TOKEN]" \

-o "sar\_fixed\_infrastructure.mvt"

If the request is successful, in this example the response will be a MVT file similar to this.

Get SAR (Synthetic-aperture radar) offshore infrastructure data between 2017 to 3 months ago that were detected with satellite imagery and classified with deep learning. Refer to the Paper Paolo et al. 2024, Nature for more details.

Differences between this API, our Public Map and the Data Download Portal

This is the same API used in our Public Map, which means that we are filtering the data compared to the Data Download Portal. In the Map and API we exclude data labeled as noise, lake\_maracaibo is relabeled oil, only structures that have been detected for at least 3 months and have a predicted noise probability of < .3 are included, and data from certain regions, such as Chile, Canada, and Norway are filtered to remove additional noisy detections. Specifically, we are removing these coordinates:

(lat BETWEEN -50.6 AND -41.51 AND lon BETWEEN -80.44 AND -75.71) -- chile

(lat BETWEEN 50.6 AND 74.02 AND lon BETWEEN -115.8 AND -60.53) -- canada

(lat BETWEEN 64.2 AND 67.43 AND lon BETWEEN 10.58 AND 16.06) -- norway\_s

(lat BETWEEN 67.63 AND 71.19 AND lon BETWEEN 12.44 AND 31.08) -- norway\_n

You can find on the right, this example:

EXAMPLE - All SAR fixed infrastructure in zoom level 1 and x index (lat) of the tile 0 and y index (lon) 1

Use Cases using this data

Maritime domain awareness

Infrastructure locations can support maritime domain awareness, and understanding of other activities occurring at sea.

Infrastructure data supports assessments of ocean industrialization, facilitating monitoring of areas experiencing build-up or new development

Monitoring vessels

Infrastructure locations can be used to analyse the behaviour of vessels associated with infrastructure, including grouping vessels based on their interaction with oil and wind structures.

Interactions between vessels and infrastructure can help quantify the resources required to support offshore industrial activity

The impacts of infrastructure on fishing, including attracting or deterring fishing, can be analysed.

Marine protected areas (MPAs) and marine spatial planning During the planning stage in the designation of new protected areas, knowing the location of existing infrastructure will be vital to understand which stakeholders shall be included in the consultation process, to understand potential conflicts, and identify easy wins.

Environmental impacts Infrastructure locations can be used to help detect marine pollution events, and to differentiate between types of pollution events (e.g. pollution from vessels versus pollution from platforms)

Get fixed infrastructure in MVT - HTTP Request

GET https://gateway.api.globalfishingwatch.org/v3/datasets/public-fixed-infrastructure-filtered:latest/user-context-layers/{z}/{x}/{y}

Get fixed infrastructure in MVT - URL Parameters

Parameter Description Required Format Param Type

z Zoom level (from 0 to 9 for SAR fixed infrastructure dataset) Example: 1 True number path

x X index (lat) of the tile True number path

y Y index (lon) of the tile True number path

Get fixed infrastructure in MVT - Response

Field Description

structure\_id unique identifier for all detections of the same structure. Example: 254126

lat latitude of the structure in float format, example: 69.0376701416465

lon longitude of the structure in float format, example: -136.835064603853

label predicted structure type. Possible values: oil, wind, and unknown

structure\_start\_date the first date the structure was detected in epoch format, example: 1483228800000

structure\_end\_date the last date the structure was detected in epoch format, example: 1709251200000

label\_confidence label confidence. Confidence levels of high, medium, and low are assigned to each structure, and are conditional on where the detections fell in relation to the boundaries of manually developed wind and oil polygons, and whether the label has changed from the previous month. The confidence field can be used to filter analysis.

General API Documentation

Key Concepts: API DATASET and VESSEL ID

API DATASET

API dataset is a key parameter to identify which data you are requesting.

We recommend using the alias `latest` to make sure you include the latest improvements in our data. For example, public-global-fishing-events:latest. As Aug 1 2024, `latest` alias is linked to API datasets version 3.

Global Fishing Watch is harnessing innovative technology to turn transparent data into actionable information and drive tangible change in the way that our ocean is governed. Data accessed through ​​the Global Fishing Watch APIs is as accurate as possible, but should be used with the data caveats described in each dataset in mind.

API Dataset for 4Wings API Description

public-global-fishing-effort:latest AIS apparent fishing effort from 2012 to 96 hours ago, check more detail about data caveats here. The filters that can be applied to this dataset include: flag, geartype and vessel\_id. Example: flag in ('ESP').

public-global-sar-presence:latest SAR vessel detections which means industrial vessels between 2017 to 5 days ago that were detected with satellite imagery and classified with deep learning. For more detail check the Paper Paolo et al. 2024, Nature. Check more detail about data caveats here. The filters that can be applied to this dataset include: matched, flag, vessel\_id, geartype, neural\_vessel\_type and shiptype. Examples: matched='false' which means all SAR vessel detections that didn't match with an AIS vessel. or neural\_vessel\_type='Likely Fishing' which means all SAR vessel detections that the neural model that it only has in account the thumbnails of the sar images identify as Likely Fishing (this is useful to analyze detections that had no matching with AIS vessels) . The filter neural\_vessel\_type accepts as possible values: "Likely non-fishing", "Likely Fishing" or "Unknown"

API Dataset for Events API Description

public-global-encounters-events:latest AIS Encounters events between these vessel types: fishing-carrier,fishing-support, fishing-bunker, fishing-fishing, tanker-fishing, carrier-bunker and support-banker. Check more detail about data caveats here

public-global-loitering-events:latest AIS Loitering events for all vessel types. Check more detail about data caveats here

public-global-fishing-events:latest AIS apparent fishing events. Check more detail about data caveats here

public-global-port-visits-events:latest AIS port visits for all vessel types. Check more detail about data caveats here . This dataset points to public-global-port-visits-events:v3.1, see details below.

public-global-gaps-events:latest AIS off events for all vessel types. This dataset is in prototype stage which means it is still under quality assurance processes and there may be inaccuracies, or issues within the data that have not been resolved yet. It may also not reflect the most recent or up-to-date information, and new data points or changes in the data may not be included. Check more detail about data caveats [here].(#data-caveat)

API Dataset for Vessels API Description

public-global-vessel-identity:latest All vessel types based on AIS and public international, national and regional registries. Check more detail about data caveats here

API Dataset for Datasets API Description

public-fixed-infrastructure-filtered:latest API dataset with all offshore infrastructure between 2017 to 3 months ago that were detected with satellite imagery and classified with deep learning. Refer to the Paper Paolo et al. 2024, Nature for more details. Check more detail about data caveats here

API DATASETS SPECIFIC VERSIONS

When you are sending latest alias, you still get the detail of the specific API Dataset in the header of the response, for example:

If you send this API dataset public-global-fishing-effort:latest

In the response, in a custom header named x-datasets you will get public-global-fishing-effort:v3.0

In case you want to request an specific version of the API Dataset, this is the list of available versions:

4Wings API Description

public-global-fishing-effort:v3.0 AIS apparent fishing effort generated using GFW (Global Fishing Watch) Data Pipeline version 3. The differences and impact on the data with this new version can be found here.

public-global-fishing-effort:v20231026 AIS apparent fishing effort generated using GFW Data Pipeline version 20201001. The difference with the previous API dataset is that the fishing vessels are identified using a new logic which should be generally reflective of the previous fishing vessel list. More specifically, the restrictions on which fishing vessels to include in apparent fishing effort should be very close to the same. Check more detail about data caveats here.

public-global-sar-presence:v3.0 SAR vessel detections which means industrial vessels between 2017 to 5 days ago that were detected with satellite imagery and classified with deep learning. We use SAR imagery from the Copernicus Sentinel-1 mission of the European Space Agency (ESA) . For more detail check the Paper Paolo et al. 2024, Nature. . Review data caveats here. AIS vessel matching using data from Data Pipeline version 3 (more information about this new version can be found here.)

public-global-sar-presence:v20231026 Same as public-global-sar-presence:v3.0 but using AIS vessel matching using data from Data Pipeline version 20201001.

Events API Description

public-global-encounters-events:v3.0 AIS Encounters events generated using GFW Data Pipeline version 3. The differences and impact on the data with this new version can be found here. For data caveats specific to encounter events, check here. For general data caveats on events, check here

public-global-loitering-events:v3.0 AIS Loitering events for all vessel types, generated using GFW Data Pipeline version 3. The differences and impact on the data with this new version can be found here. For data caveats specific to loitering events, check here. For general data caveats on events, check here

public-global-fishing-events:v3.0 AIS apparent fishing events generated using GFW Data Pipeline version 3. The differences and impact on the data with this new version can be found here. For data caveats specific to fishing events, check here. For general data caveats on events, check here

public-global-port-visits-events:v3.0 AIS port visits generated using GFW Data Pipeline version 3 for all vessel types. The differences and impact on the data with this new version can be found here. In this dataset, the location of a port visit is based on the average location of the port events that make up a port visit, see definition here. For data caveats specific to port visits, check here. For general data caveats on events, check here

public-global-port-visits-events:v3.1 AIS port visits generated using GFW Data Pipeline version 3 for all vessel types using the a new method, instead of the average location of the port events, it uses the intermediate anchorage location, the first Port Stop or Port Gap if a Port Stop does not exist, to provide a more precise location estimate of the actual port visit by the vessel. For more details and examples refer to this FAQ. For data caveats specific to port visits, check here. For general data caveats on events, check here. The tag latest is now pointing to this new version

public-global-gaps-events:v3.0 AIS off events using GFW Data Pipeline version 3 for all vessel types. The differences and impact on the data with this new version can be found here. For data caveats specific to fishing events, check here. For general data caveats on events, check here. This dataset is in prototype stage which means it is still under quality assurance processes and there may be inaccuracies, or issues within the data that have not been resolved yet. It may also not reflect the most recent or up-to-date information, and new data points or changes in the data may not be included.

public-global-encounters-events:v20231026 AIS Encounters events generated using GFW Data Pipeline version 20201001 combining more vessel types: fishing-carrier,fishing-support, fishing-bunker, fishing-fishing, tanker-fishing, carrier-bunker and support-banker. The difference with the previous API dataset is that the carrier and fishing vessels are identified using a new logic which (1) makes the carrier list more restrictive given the requirements for matching AIS record (vessel\_id) to a carrier vessel registry record is more precise and (2) makes the fishing list less restrictive given fishing vessel with potential offsetting and noisy data. Previously these fishing vessels with noise were filtered into the ‘other’ vessel type and excluded from this API dataset. Check more detail about data caveats here

public-global-loitering-events:v20231026 AIS Loitering events for all vessel types. The difference with the previous API dataset is that you can get all vessel types loitering events now and if you filter by carrier vessels those are identified using a new logic which makes the carrier list more restrictive given the requirements for matching AIS record (vessel\_id) to a carrier vessel registry record is more precise. This means there will be a fewer number of vessels identified as carriers. Check more detail about data caveats here

public-global-fishing-events:v20231026 AIS apparent fishing events generated using GFW Data Pipeline version 20201001. The difference with the previous API dataset is that the fishing vessels are now identified using a new logic which is less restrictive. Fishing events are run for all vessels on any fishing vessel list (registry, inferred, AIS self reported) and known fishing vessels that were originally excluded from the fishing vessel list due to noise. They will now be identified as fishing and then events are included in this dataset. Check more detail about data caveats here

public-global-port-visits-c2-events:v20231026 AIS port visits generated using GFW Data Pipeline version 20201001 for all vessel types. Check more detail about data caveats here

public-global-gaps-events:v20231026 AIS off events for all vessel types. This dataset is in prototype stage which means it is still under quality assurance processes and there may be inaccuracies, or issues within the data that have not been resolved yet. It may also not reflect the most recent or up-to-date information, and new data points or changes in the data may not be included. Check more detail about data caveats here

Vessels API Description

public-global-vessel-identity:v3.0 API dataset with all vessel types including: support, carrier, bunker, fishing, discrepancy, cargo, passenger, seismic\_vessel, gear and other using GFW Data Pipeline version 3. It combines information from GFW core AIS identity data with GFW registry database to enable an improved understanding of vessel identity over time. The differences and impact on the data with this new version can be found here. For data caveats specific to vessel identity, check here.

public-global-vessel-identity:v20231026 API dataset with all vessel types including: support, carrier, bunker, fishing, discrepancy, cargo, passenger, seismic\_vessel, gear and other using GFW Data Pipeline version 20201001. It combines information from GFW core AIS identity data with GFW registry database to enable an improved understanding of vessel identity over time. Check more detail about data caveats here

Datasets API Description

public-fixed-infrastructure-filtered:v1.1 API dataset with all offshore infrastructure between 2017 to 3 months ago that were detected with satellite imagery and classified with deep learning. Refer to the Paper Paolo et al. 2024, Nature for more details. Check more detail about data caveats here

API DATASETS VERSIONING

In case a new API Dataset version is active and you are requesting an specific version, you will see a notification in the header response clarifying that there is a newest API Dataset version.

Old API datasets will remain available for 3 months until they are deprecated. If you request an API dataset that is deprecated, you will receive a 404 error explaining that the dataset is deprecated and that you need to use the newest one.

VESSEL ID

A unique vessel identity developed for internal use by Global Fishing Watch and API users, that combines available vessel identifiers such as name, callsign, and Maritime Mobile Service Identity (MMSI) in order to identify vessels that may not consistently transmit AIS, or the same identifiers on AIS, over time. This value will allow you to connect the different APIs. In Vessel API it is the field id inside the object selfReportedInfo.

Errors Codes

The GFW API uses the following error codes:

Range Description

2XX Successful execution

4XX Error on the client side

5XX Errors on the server side

Code Meaning

200 OKAY - The request has succeeded.

202 Accepted - The request has been accepted for processing, but the processing has not been completed.

204 No content - The server has successfully fulfilled the request and that there is no additional content to send in the response payload body.For example when you ask for an empty tile in /4wings/tile/heatmap/

401 Unauthorized - Your API Access Token is wrong or your don't have permissions to access that dataset.

403 Forbidden - The server understood the request but refuses to authorize it.

404 Not Found - The specified data could not be found.

422 Unprocessable Entity -The server understands the content type of the request entity, and the syntax of the request entity is correct but was unable to process the contained instructions. For example, this error condition may occur if a a user requests in /4wings/tile/heatmap/ a zoom greater than 12 since it is semantically erroneous, we only support up to zoom level 12.

429 Too Many Requests - The server received more request that the user can do. For example, this error condition may occur if a user tries to do several reports at the same time.

503 Service Unavailable - We're temporarily offline for maintenance. Please try again later or contact us in apis@globalfishingwatch.org

Error Code Examples

If you are asking for a wrong API dataset, you get this error:

{

"statusCode": 404,

"error": "Not Found",

"messages": [

{

"title": "Not Found",

"detail": "Dataset with id public-global-fishing-effort:latest not found"

}

]

}

If you are missing one mandatory field, for a example 'Query', you get this error:

{

"statusCode": 422,

"error": "Unprocessable Entity",

"messages": [

{

"title": "Query",

"detail": "Query param dataset is required"

}

]

}

If you have insufficient permissions, you get this error:

{

"statusCode": 403,

"error": "Forbidden",

"messages": [

{

"title": "Forbidden",

"detail": "Insufficient permissions for public-global-fishing-effort:latest datasets"

}

]

}

If you send zoom > 12 in /4wings/tile/heatmap/, you get this error:

{

"statusCode": 422,

"error": "Unprocessable Entity",

"messages": [

{

"title": "z",

"detail": "The tiler does not support zoom levels greater than 12"

}

]

}

If you send a report at the same time that you doing other report, you get this error:

{

"statusCode": 429,

"error": "Too Many Requests",

"messages": [

{

"title": "Too Many Requests",

"detail": "You can only generate one report at the same time. If you need this feature, contact us"

}

]

}

If you try to generate a style url (/v3/4wings/generate-png) and it doesn't exist data for the filters.`, you get this error:

{

"statusCode": 204

}

In 4Wings Report API, if you are sending a custom polygon that is too large, you get this error in html. In this case, we recommend sending a region id, see more details here

<html>

<head>

<meta http-equiv="content-type" content="text/html;charset=utf-8" />

<title>413 Request Entity Too Large</title>

</head>

<body text="#000000" bgcolor="#ffffff">

<h1>Error: Request Entity Too Large</h1>

<h2>Your client issued a request that was too large.</h2>

<h2>

<script>

(function () {

/\*

Copyright The Closure Library Authors.

SPDX-License-Identifier: Apache-2.0

\*/

var c = function (a, d, b) {

a = a + "=deleted; path=" + d;

null != b && (a += "; domain=" + b);

document.cookie = a + "; expires=Thu, 01 Jan 1970 00:00:00 GMT";

};

var g = function (a) {

var d = e,

b = location.hostname;

c(d, a, null);

c(d, a, b);

for (var f = 0; ; ) {

f = b.indexOf(".", f + 1);

if (0 > f) break;

c(d, a, b.substring(f + 1));

}

};

var h;

if (4e3 < unescape(encodeURI(document.cookie)).length) {

for (

var k = document.cookie.split(";"), l = [], m = 0;

m < k.length;

m++

) {

var n = k[m].match(/^\s\*([^=]+)/);

n && l.push(n[1]);

}

for (var p = 0; p < l.length; p++) {

var e = l[p];

g("/");

for (var q = location.pathname, r = 0; ; ) {

r = q.indexOf("/", r + 1);

if (0 > r) break;

var t = q.substring(0, r);

g(t);

g(t + "/");

}

"/" != q.charAt(q.length - 1) && (g(q), g(q + "/"));

}

h = !0;

} else h = !1;

h &&

setTimeout(function () {

if (history.replaceState) {

var a = location.href;

history.replaceState(null, "", "/");

location.replace(a);

}

}, 1e3);

})();

</script>

</h2>

</body>

</html>

Most error responses have this format, except when the request entity is too large (see example on the right):

{

"statusCode": 4XXX or 5XXX,

"messages": [{ "title": "[Title]", "detail": "[Detail]" }],

"error": "[Generic error]"

}

Response

Responses varies in case of:

a single resource, the API returns the result directly.

a collection of resources, the API returns the next response format (except in the case that the response is not a JSON)

Total: It is the counter of total resources available

Limit: The number of resources that the API returns in the response

Offset: It is the number of resources that the API skips in the response.

NextOffset: It is the next number of resources that a user should exclude in the response to paginate correctly.

Metadata: In this property, the API should return any other valuable information. For instance, in the case of the search, the API could add information related to the query executed, terms suggestions, etc.

Entries: The list of resources.

Data caveat

How are the events estimated?

The automatic identification system (AIS) data is obtained from a combination of commercial and government sources. Learn more. The data is then used to estimate vessel identity and activity, including apparent fishing,encounters, loitering events, and port visits.

Any and all references to activity events, including fishing, encounters, loitering, AIS off (aka GAP) and port visits should be understood in the context of Global Fishing Watch's algorithms, which are best efforts to determine apparent vessel activity events based on AIS data collected via satellites and terrestrial receivers. As AIS data varies in completeness, accuracy and quality, it is possible that some events are not identified. It is also possible that some events are identified but are incorrect or do not indicate actual fishing, transshipment, or port access. For these reasons, Global Fishing Watch qualifies all designations of events, including synonyms of event terms such as "fishing effort," "fishing" or "fishing activity," as apparent rather than certain. Any/all Global Fishing Watch information about apparent events should be considered an estimate and must be relied upon solely at your own risk. Global Fishing Watch is constantly improving processes to make sure event algorithms and designations are as accurate as possible.

Encounter event

Encounters may indicate potential transshipment activity between two vessels. Encounters can occur in the vessel viewer between a carrier and fishing vessel or a fishing support vessel and a fishing vessel. AIS data is used to calculate encounters based on the distance between the two vessels, vessel speeds, and duration in a given area. An encounter is defined as a period when two vessels are detected within 500 meters of each other for at least two hours and traveling at a median speed of less than 2 knots, while at least 10 km from a coastal anchorage. Check more details here

You can read more about transshipment behavior from our report or scientific publication.

Loitering event

Loitering is when a single vessel exhibits behavior indicative of a potential encounter event. It is possible that loitering events do not indicate a potential transshipment. For example, other events in which a vessel may remain fairly stationary include maintenance or waiting outside of port for permission to dock. AIS data is used to calculate loitering events based on vessel speed and distance from shore. Loitering occurs when a carrier vessel travels at an average speed of less than 2 knots, while at least an average of 20 nautical miles from shore. Loitering events are not displayed for fishing vessels, due to the challenge in distinguishing loitering from other low speed operations related to fishing activity. Due to the individual definitions of loitering events and encounter events, it is possible for a loitering event to overlap with an encounter event, representing the same activity, or the loitering event may encompass one or more encounter events.

Check more details here

Port visit events

Movements in and out of a port are automatically detected by Global Fishing Watch and categorized according to four distinct types of events: port entry, port stop, port gap (i.e. a gap in AIS transmission while in port) and port exit. When at least two of these events occur, then a port visit is detected. Therefore, a port visit occurs when a vessel has a port entry, a port stop or port gap, and potentially followed by a port exit event, depending on the confidence of the port visit (see next question on how port visit confidence is determined). This means the vessel is within 3 km of an anchorage (port entry), and is moving between 0.5 and 0.2 knots (port stop), or is within an anchorage but has a gap in AIS transmission for at least 4 hours (port gap), and then the vessel transits more than 4 km outside of the anchorage point (port exit). Ports are based upon the Global Fishing Watch anchorages dataset, a global database of anchorage locations where vessels congregate. More information on anchorages can be found here.

Confidence levels of a port visit

A port visit with low confidence (level = 2) indicates that only a port stop or gap event was detected using AIS within the port.Only a port stop OR gap was identified based on AIS transmission.

Medium confidence (level = 3) indicates that a port entry or exit was detected using AIS, along with a stop or gap within the port.

High confidence (level = 4) indicates that the vessel was identified using AIS with an entry, stop or gap, and exit within port. A port visit with a lower confidence may sometimes be a false port visit caused by noisy AIS transmission and requires a further inspection of the vessel tracks.

Definition of each por event:

PORT ENTRY: vessel that was not in port gets within 3km of anchorage point

PORT STOP: begin: speed < 0.2 knots; end: speed > 0.5 knots

PORT GAP: AIS gap > 4 hours; start is recorded 4 hours after the last message before the gap; end at next message after gap.

PORT\_EXIT: vessel that was in port moves more than 4km from anchorage point

Apparent fishing events

Global Fishing Watch analyzes AIS data collected from vessels that our research has identified as known or possible commercial fishing vessels, and applies a fishing detection algorithm to determine “apparent fishing activity” based on changes in vessel speed and direction. The algorithm classifies each AIS broadcast data point for these vessels as either apparently fishing or not fishing and shows the apparent fishing effort on the Global Fishing Watch map. Fishing events use those data points as input and summarize them into one event for easier analysis. Fishing events are defined using the following restrictions:

Consecutive positions identified as fishing are grouped together into a single event

Fishing positions which appear consecutively, but are 10 km apart or more than 2 hours apart are separated into distinct events.

Fishing events within 1 hour and 2 km of another fishing event but possibly having intermittent transit points are grouped together into a single event.

Finally, the dataset is restricted by removing fishing events that are brief and fast, as these are less likely to indicate a realistic fishing event. The following short fishing events are removed:

Events less than 20 minutes

Events comprised of five or fewer positions;

Events that cover distance of less than 0.5 km (for all gears except estimated squid gear)

Events that cover distance of less than 50m (for estimated squid gear)

Abnormally fast moving vessel events with an average vessel speed of 10 knots or greater

Learn more about this dataset here

Check more details about difference between fishing effort and fishing events here

AIS Off Event (aka GAP)

AIS devices are designed to continually broadcast a vessel’s position in order to serve as a collision avoidance system. It is not uncommon to observe hundreds or thousands of AIS positions for a vessel in a single day. Thus, when a vessel has an extended gap in AIS positions it can potentially indicate suspicious behaviour. However not all AIS signals broadcasted are received by satellite or terrestrial AIS receivers and thus it is inherently concerning to observe transmission gaps in a vessel’s AIS signal that are many hours long, especially in certain areas. Satellites must be overhead and terrestrial receivers require line of sight to receive AIS messages. When AIS messages may overlap in time, especially in areas of high vessel density, signal interference may result and prevent messages from being received by satellites. Subsequently, GFW records all AIS gap events over six hours (referred to as “naive gaps” or gap-intentional-disabling=false) and then uses a set of filters to identify those gaps we believe could be a cause of intentional AIS disabling.

To identify AIS gaps that are most likely due to intentional disabling rather than technical issues, GFW developed a classification model based on the following rules, which are explained in more detail in the Known Issues section below:

The gap event must be at least 12 hours

The gap must start at least 50 nautical miles from shore

The gap must start in an area with a satellite reception quality greater than 10 positions per day

The vessel must have at least 14 satellite positions in the 12 hours prior to the gap

Known Issues

Gap events less than 50 nautical miles from shore are unreliable due to differences in satellite and terrestrial AIS. Satellite AIS reception generally decreases closer to shore as high vessel densities lead to signal interference. At the same time, >99% of GFW’s terrestrial AIS messages are less than 50 nautical miles from shore - generally the upper range of terrestrial AIS receivers - and terrestrial AIS coverage varies considerably around the world. Through a combination of these factors, AIS gaps that start within 50 nautical miles could be due to numerous technical reasons, such as:

Transitioning from areas with terrestrial AIS coverage to poor satellite AIS reception

Poor satellite reception while approaching port followed by turning off AIS upon arrival. These situations are likely responsible for many of the very long AIS gaps (e.g. several months) in the data

Gaps shorter than 12 hours are unreliable due to satellite periodicity. The number of satellites over the horizon at different places on earth varies considerably hour to hour. At all latitudes under 60, the major peak is at 12 hours (one half a day) and the standard deviation of the number of satellites overhead is very high when considering time periods under 12 hours. For this reason, only gaps >=12 hours can be considered intentional disabling events. The 12 hour threshold accounts for the approximate amount of time required for the swath of an individual AIS satellite in a sun-synchronous orbit to cover the same location.

Reception Quality: The AIS reception quality estimates currently used in identifying these events are based on data for 2017-2019 from Welch et al. (2022) while we work to automate monthly reception quality estimates from then onwards.

Vessel API - Vessel identity information

Vessel identity data is extracted from over 40 registries available either in the public domain or from authorities and researchers, including registries from regional fisheries management organizations, national registries, and lists compiled by researchers. Each of the lists has been obtained regularly since early 2019 and supplemented, when possible, with historical data to provide snapshots of a registry and its vessels over time.

Even if vessel identities are matched to authorization lists, the vessels are only potentially authorized, as we can verify only that they were authorized to fish in that region and cannot verify that they were compliant with regulations on target species or catch quantities.

Whether fishing by some of these vessels was truly unauthorized cannot be known, as public records may be incomplete or outdated, and in some regions, fishing is simply not internationally regulated.

Vessel Types

For vessel type a research and analysis is conducted in addition to using the original AIS data to identify the most likely value. Global Fishing Watch developed a carrier database and bunker database that is curated using a combination of sources, including: major RFMO vessel registry lists, publicly available national public registries, the IMO number, and a convolutional neural network—machine learning algorithm—used to estimate vessel class, as well as web and search images.

The fishing vessels identified from Global Fishing Watch come from its fishing database, which is collated using vessel public registry databases, reported AIS identity information, and estimated classification using a machine learning algorithm.

The passenger, seismic, cargo, and gear vessel classes identified from Global Fishing Watch come from its vessel database which is collated using vessel registry databases and estimated classification using a machine learning algorithm.

All support vessels are considered purse seine support vessels based on internal review.

Diagram showing how Global Fishing Watch determines GFW vessel type and GFW gear type data fields

Learn more about Global Fishing Watch vessel classes here.

Learn more about the list of vessel registries that we have here

Why am I seeing multiple ids when I search for a vessel?

Using Vessel API version 3, you get results from public registries inside object registryInfo, AIS self reported data inside object selfReportedInfo and a mix of sources (AIS, Registry and GFW machine learning models) inside object combinedSourcesInfo.

So why do I see multiple ids inside selfReportedInfo? When processing AIS positions Global Fishing Watch algorithms try to match AIS position messages with AIS self-reported identity messages to assign vessel tracks throughout time to the correct vessel identity. When there is a new identity reported, Global Fishing Watch creates a new record.Often times, a new identity is reported when a vessel does have a real identity change (e.g, the vessel went to port where it changed its flag State and name). However, there are instances when the vessel simply changes the way it is transmitting on AIS. For example, a vessel will often transmit its name, IMO, MMSI, and callsign, but for a period of time it only transmits its MMSI and not the other identity values, which results in multiple identities for a single vessel.

Search by Name = GABU REEFER and IMO = 8300949

Vessel API returns 3 results:

Vessel Id Name IMO MMSI CALL SIGN AIS TRANSMISSIONS

1da8dbc23-3c48-d5ce-95f1-1ffb6cc00161 GABU REEFER 8300949 613590000 TJMC996 Jan 24 2022 to Oct 19 2023 \* (this last date will be updated depending on when do you make the call to the Vessel API)

0b7047cb5-58c8-6e63-4bfd-96a6af515c91 GABU REEFER 8300949 214182732 ER2732 Feb 22 2019 to Sept 19 2022

58cf536b1-1fca-dac3-ad31-7411a3708dcd GABU REEFER 8300949 616852000 D6FJ2 Jan 02 2012 to Feb 23 2019

In this example even though they are the same physical vessel, the identity reported in AIS selfReportedInfo is different.

The records show the vessel under the same IMO, however the vessel did not consistently transmit the same identity values. In this example, the vessel was likely transmitting under a different MMSI, different call sign and possibly a different owner.

With Vessel API version 3, you can link all these vessel ids since they are related to the same vessel from the information GFW pulled from the public registries that you can find under the object registryInfo.

Exclusive economic zone boundaries definition

Exclusive economic zones (EEZs) extend up to 200 nautical miles from a country's coast. EEZ boundaries are shown as solid lines for “200 NM”, “Treaty”, “Median line”, “Joint regime”, “Connection Line”, “Unilateral claim (undisputed)” and dashed lines for “Joint regime”, “Unsettled”, “Unsettled median line” based on the “LINE\_TYPE” field. For more detail on the methodology to create these boundaries, check https://marineregions.org/eezmethodology.php Source: marineregions.org. Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11.

Marine protected area boundaries definition

Marine protected areas (MPAs) are areas of the ocean set aside for long-term conservation. These can have different levels of protection, and the range of activities allowed or prohibited within their boundaries varies considerably. Source: World Database on Protected Areas.

What does it mean if an event is within a specific geographic area, such as an EEZ,MPA or RFMO?

For Encounters, Loitering, Port visits and AIS off (GAP) events

An event is considered to occur within a specific geographic area if the mean point of the event intersect with the defined boundaries of the geographic areas referred to as Reference Layers. This determination is made using the point-in-polygon (PIP) method, which assesses whether the mean point of the event falls within, outside of, or precisely on the perimeter of a polygon. Because the mean point of the event is used, it is possible the actual track coordinates do not overlap with the EEZ. Please investigate the highlighted events further on the map.

For apparent fishing events

An event is deemed to take place within a designated geographical region when its tracks intersect with the defined boundaries of the geographic areas referred to as Reference Layers. This determination is made using the point-in-polygon (PIP) method, which assesses whether a specific point along the event's path falls within, outside of, or precisely on the perimeter of a polygon.

It is absolutely recommended to inspect the track manually since it can happen that there are events occurring along a boundary where in many cases the vessel in question was fishing outside/along the EEZ but then barely goes inside the EEZ for a short time. This is why we encourage you to manually inspect vessels fishing in an area they aren’t supposed to be, as while many fishing events happened just barely inside an EEZ, the majority of the activity happened on the high seas. Another example is when the vessel appeared to be transiting and it was a false fishing event, or the activity happened predominantly outside the no take MPA.

How does GFW calculate that an Event has a publicly listed authorization?

Events that have publicly listed authorization information are calculated only for events on the high seas and in the 5 tuna RFMOs (IATTC, ICCAT, IOTC, CCSBT, WCPFC), SPRFMO and NPFC. Events outside these areas, and specifically in EEZs are not flagged as potential risks because Global Fishing Watch doesn’t have national registries in the database. In the future, we are exploring adding other RFMOs, contact support@globalfishingwatch.org for any recommendation. The system only keeps the records where the authorization interval overlaps with the activity interval of the vessel(s) in the event.

Understanding authorization fields in the API:

Fishing events: .

PUBLICLY\_AUTHORIZED: if there is authorization record for vessel in RFMO where event occurred at time of the event. If an event occurred in the RFMO overlap area, if the vessel is authorised to one or more of the RFMOs where the event occurred, then it is PUBLICLY\_AUTHORIZED.

NOT\_MATCHING\_RELEVANT\_PUBLIC\_AUTHORIZATION: if there is no authorization record for vessel in RFMO or RFMO overlap area where event occurred at time of event.

PENDING\_INFO: if an event occurred after the last registry scrape date (generally in the past month) then the event may be PENDING\_INFO, as there is not up to date authorization records.

potentialRisk: true if PUBLICLY\_AUTHORIZED is false and the event is not in EEZ. If vessel is in EEZ we do not flag events as potentialRisk as we do not have national registry lists.

Encounter events:

PUBLICLY\_AUTHORIZED: Based on joint public authorization status. If both vessels in the encounter are publicly authorised to the same RFMO where the event took place, the event is PUBLICLY\_AUTHORIZED. If the encounter is in an RFMO overlap area, both vessels must be authorised to all the RFMOs.

NOT\_MATCHING\_RELEVANT\_PUBLIC\_AUTHORIZATION: If the encounter is in an RFMO overlap area, both vessels must be authorised to at least one of the RFMOs. If the vessels in the encounter are authorised, but to different RFMOs, the vessel is flagged as a potential Risk (eg a carrier flagged to SPRFMO and fishing vessel flagged to IATTC would not be authorised to transship the same fish species).

PENDING\_INFO: if an event occurred after the last registry scrape date (generally in the past month) then the event may be PENDING\_INFO, as there are not up to date authorization records.

PARTIALLY\_MATCHED: If the encounter is in an RFMO overlap area, both vessels must be authorised to at least one of the RFMOs.

potentialRisk: when the event has NOT\_MATCHING\_RELEVANT\_PUBLIC\_AUTHORIZATION and the event is not in EEZ then, potentialRisk is true. If the event is in EEZ we do not flag an event as potentialRisk as we do not have national registry lists.

Important caveats

Even if a vessel is PUBLICLY\_AUTHORIZED from the registry the vessel should be verified by the user for the specific vessel activity of interest.

The logic GFW implemented for authorization is not the same as GFW Carrier Vessel Portal

What does it mean that an API Dataset is in Prototype stage?

It means it is still under quality assurance processes and there may be inaccuracies, or issues within the data that have not been resolved yet. It may also not reflect the most recent or up-to-date information, and new data points or changes in the data may not be included.

Insights API: Fishing detected in no-take MPAs

For details on how an Fishing event is estimated, please refers to our Data Caveats.

To create this indicator, apparent fishing events are cross-referenced with the boundaries of no take MPAs (see source here) to create this indicator. If our algorithms have detected apparent fishing activity within the boundaries of a no take MPA, then this is flagged in the API result.

Caveats: Events close to boundary lines may be reported as being inside a boundary when, in fact, they occurred outside of it. We recommend that you check the vessel positions on the Map alongside adding the MPA layer to see the boundaries and confirm exactly where the vessel was operating.

Insights API: Fishing event detected outside known authorized areas

For details on how an Fishing event is estimated, please refers to our Data Caveats.

To create this indicator, apparent fishing events are cross-referenced with authorization information that Global Fishing Watch has compiled from 7 RFMOs (CCSBT, IATTC, ICCAT, IOTC, NPFC, SPRFMO, and WCPFC) to create this risk indicator. If a vessel is believed to have fished in an RFMO where, based on our information, there is no known authorization, then this is flagged in the risk summary.

Caveats: - Events close to boundary lines may be reported as being inside a boundary when, in fact, they occurred outside of it. We recommend that you check the vessel positions on the Map to see the boundaries and confirm exactly where the vessel was operating.

This indicator only covers RFMO authorizations, it does not cover national registration or licensing lists as we do not have access to national databases at this time.

We make our best effort to provide the most accurate and up-to-date information possible. However, sometimes there can be delays, reporting or administrative errors that result in the incorrect information displayed, both at the RFMO and in Vessel Viewer. For this reason, we always recommend you refer to additional data sources or request authorization records from a vessel to confirm any findings.

Insights API: Coverage

The coverage metric is an estimate of how well a vessel's activities, i.e. where it travelled and what it did, can be captured by the vessel’s Automatic Identification System (AIS) tracking data. The transmission of AIS during a vessel’s voyage, excluding port visits, provides the vessel’s location data, speed, and identity data. The more frequently a vessel transmits this information, the more our algorithms can characterize their activity, including fishing, encounters and loitering, and AIS off events. To calculate the coverage metric, all voyages linked to a vessel in the selected time range are segmented into one hour blocks and the total number of blocks with at least one AIS transmission are counted. The coverage metric is a percentage representing the proportion of one hour blocks a vessel is in a voyage and has at least one AIS transmission. You can read more about our work on transmission gaps here.

An ‘NA’ value for coverage is because there is no reported activity for that vessel in the selected time range. This could be because of poor coverage but may also be the result of inactivity (e.g. the vessel was undergoing maintenance and had no voyages during the selected time range). In these cases, we recommend you check additional information sources and request supporting records from the vessel.

The AIS coverage metric is critical to interpreting vessel activity information. The higher the coverage, i.e. percentage, the greater confidence you can have that the activities listed are an accurate representation of the vessel’s activity. Conversely, the lower the coverage, the less confidence you can have that the activity summary represents the vessel’s actual activities. Because the coverage metric is calculated based on voyages (e.g. during the period of time the vessel is detected out of port), the coverage should be interpreted as a reflection of the vessel’s AIS reception quality while out at sea, and not reflective of AIS during port visits.

Caveats:

Coverage only calculated during voyages: The coverage calculation is limited to the period of time a vessel is detected in a voyage (e.g. the activity of a vessel out at sea, between port visits). This means that if a vessel is detected in port, this activity the vessel is active on AIS will not be factored into the coverage calculation. Some of the reasons for this are: (a) if a vessel is in port for a long period of time with its AIS on, that high coverage may be disproportionate and not reflective of the vessel’s coverage at sea, (b) vessels frequently turn off AIS once in port. If there is an issue detecting port visits for a vessel, this may affect the accuracy of the coverage calculation, given port visits are used to bound the period of time to calculate coverage for.

One hour intervals: Coverage is evaluated by looking at the frequency a vessel transmits on AIS at least once every hour. Depending on the use case or the area where a vessel is active, evaluating coverage on one hour intervals may result in low coverage. For instance, in some areas satellite reception may be low, resulting in low coverage subsequently. Fishing vessels frequently transmit Class B AIS, which has a less frequent ping rate that could result in lower coverage. These factors and others are important to consider when trying to understand the value/meaning of the coverage metric.

Coverage metric is calculated from January 1, 2017

Insights API - AIS off event (aka GAP)

For details on how AIS off event is estimated, please refers to our Data Caveats - AIS Off Event

Caveats:

This indicator only covers AIS off events that are 50 nautical miles or more from shore. Closer to shore, challenges from variable terrestrial AIS coverage and signal interference in crowded waters complicate reliable detection of disabling events.

The dataset has attempted to remove gaps that are a result of poor coverage or reception quality and similar factors that are beyond the control of the vessel.

Insights API - RFMO IUU vessel list

The regional fisheries management organization (RFMO) IUU vessel list indicates if a vessel is currently included on any RFMO list of IUU fishing vessels.

The API provides:

a counter that shows the number of times the vessel has appeared in an IUU vessel list based on GFW's historical data.

Another counter indicating the vessel's appearances in the RFMO IUU vessel list within a specified period, along with the duration of inclusion.

Data Caveats

Note that this only refers to the official RFMO IUU vessel lists, including CCAMLR, CCSBT, GFCM, IATTC, ICCAT, IOTC, NAFO, NEAFC, NPFC, SEAFO, SPRFMO, SIOFA, WCPFC. Vessels that have a history of suspected or proven IUU or other non-compliance, but have never been IUU listed by an RFMO will not be flagged in this field.

Source data is Combined IUU Vessel List from TMT but GFW has some data gaps from 1 Jan 2017, so these are the dates where we collected information:

Sept 25 2017

Apr 05 2018

every month for 2020 and 2021

Jan to Jul for 2022 and Nov 2022

Mar, Apr, June to Oct 2023

Jan, Mar in 2024 and every month after that

We recommend checking the original source for other time ranges and more details about caveats.

Exclusive economic zone boundaries definitions

Exclusive economic zones (EEZs) extend up to 200 nautical miles from a country's coast. For more detail on the methodology to create these boundaries, check https://marineregions.org/eezmethodology.php Source: marineregions.org. Check more details of the source here

Marine protected area boundaries definition

Marine protected areas (MPAs) are areas of the ocean set aside for long-term conservation. These can have different levels of protection, and the range of activities allowed or prohibited within their boundaries varies considerably. Source: World Database on Protected Areas. Check more details of the source here

SAR Vessel Detections Data Caveats

False positives can be produced from noise artifacts: Although we have applied sophisticated filters to remove noise (false detections and misclassifications), some false positives may still remain. This is version 1 of the dataset, and we appreciate any feedback to improve the data.

Sentinel-1 SAR data does not sample most of the open ocean. However, the vast majority of industrial activity is close to shore. Also, farther from shore, more fishing vessels use AIS (60-90%), far more than the average for all fishing vessels (about 25%). Thus, for most of the world, our detection data complemented by AIS will capture the vast majority of human activity in the global ocean.

We do not provide detections of vessels or infrastructure close to shore as it’s difficult to accurately map where the shoreline begins. We do not classify objects within 1 km of shore, because of ambiguous coastlines and rocks. Nor do we classify objects in much of the Arctic and Antarctic, where sea ice can create too many false positives; in both regions, however, vessel traffic is either very low (Antarctic) or in countries that have a high adoption of AIS (northern European or northern North American countries).

Vessel detection by SAR imagery is limited primarily by the resolution of the images (~20 m in the case of Sentinel-1 IW GRD products). As a result, we miss most vessels under 15 m in length, although an object smaller than a pixel can still be seen if it is a strong reflector, such as a vessel made of metal rather than wood or fiberglass. Especially for smaller vessels (< 25 m), detection also depends on wind speed and the state of the ocean, as a rougher sea surface will produce higher backscatter, making it difficult to separate a small target from the sea clutter. Conversely, the higher the radar incidence angle, the higher the probability of detection, as less backscatter from the background will be received by the antenna. The vessel orientation relative to the satellite antenna also matters, as a vessel perpendicular to the radar line of sight will have a larger backscatter cross section, increasing the probability of being detected.

Vessel length estimates are limited by the quality of ground truth data. Although we selected only high-confidence AIS-SAR matches to construct our training data, we found that some AIS records contained an incorrectly reported length. These errors, however, resulted in only a small fraction of imprecise training labels, and deep learning models can accommodate some noise in the training data.

Not all geographies are covered equally. Our fishing classification may be less accurate in certain regions. In areas of high traffic from pleasure crafts and other service boats, such as near cities in wealthy countries and in the fjords of Norway and Iceland, some of these smaller craft might be misclassified as fishing vessels. Conversely, some misclassification of fishing vessels as non-fishing vessels is expected in areas where all activity is dark, such as southeast asia. More importantly, however, is that many industrial fishing vessels are between 10 and 20 meters in length, and the recall of our model falls off quickly within these lengths. As a result, the total number of industrial fishing vessels is likely significantly higher than what we detect. Because our model uses vessel length from SAR, it may be possible to use methods similar to those in Kroodsma et al. (2022) to estimate the number of missing vessels. Future work can address this challenge.

SAR Fixed Infrastructure Data Caveats

Sentinel-1 and Sentinel-2 satellites do not sample most of the open ocean.

Most industrial activity happens relatively close to shore.

The extent and frequency of SAR acquisitions is determined by the mission priorities.

For more info see: Paper details

We do not provide detections of infrastructure within 1 km of shore

We do not classify objects within 1 km of shore because it is difficult to map where the shoreline begins, and ambiguous coastlines and rocks cause false positives.

The bulk of industrial activities, including offshore development with medium-to-large oil rigs and wind farms, occur several kilometers from shore.

False positives can be produced from noise artifacts.

Rocks, small islands, sea ice, radar ambiguities (radar echoes), and image artifacts can cause false positives

Detections in some areas including Southern Chile, the Arctic, and the Norwegian Sea have been filtered to remove noise.

Spatial coverage varies over time, which can produce different detections results year on year Example: here. Infrastructure detentions from 2017-01-01 to current are available, and updated on a monthly basis.

Labels can change over time The label assigned to a structure is the greatest predicted label averaged across time. As we get more data, the label may change, and more accurately predict the true infrastructure type.

Global datasets aren’t perfect

We’ve done our best to create the most accurate product possible, but there will be infrastructure that isn’t detected, or has been classified incorrectly. This will be most evident when working at the project level.

We strongly encourage users to provide feedback to the research team so that we may improve future versions of the model. All feedback is greatly appreciated.

Reference Data

GEAR TYPES SUPPORTED

You can use the following list to filter fishing effort or other data by gear type. For more details, check our data caveats here.

TUNA\_PURSE\_SEINES

DRIFTNETS

TROLLERS

SET\_LONGLINES

PURSE\_SEINES

POTS\_AND\_TRAPS

OTHER\_FISHING

DREDGE\_FISHING

SET\_GILLNETS

FIXED\_GEAR

TRAWLERS

FISHING

SEINERS

OTHER\_PURSE\_SEINES

OTHER\_SEINES

SQUID\_JIGGER

POLE\_AND\_LINE

DRIFTING\_LONGLINES

VESSEL TYPES SUPPORTED

You can use the following list to filter any data by gear type. For more details, check our data caveats about how we calculate each vessel type here.

carrier

seismic\_vessel

passenger

other

support

bunker

gear

cargo

fishing

discrepancy

REGIONS

GET LIST OF EEZs

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/datasets/public-eez-areas/context-layers' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response returns:

[

{

"id": 5670,

"iso3": "ALB",

"label": "Albanian Exclusive Economic Zone"

},

{

"id": 8378,

"iso3": "DZA",

"label": "Algerian Exclusive Economic Zone"

},

{

"id": 5690,

"iso3": "RUS",

"label": "Russian Exclusive economic Zone"

},

{

...

},

]

GET LIST OF MPAs

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/datasets/public-mpa-all/context-layers' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response returns:

[

{

"id": "555512344",

"label": "100\_Daeseom"

},

{

"id": "555512376",

"label": "101\_Hogamseom"

},

{

"id": "555512360",

"label": "102\_Galmaeseom"

},

{

...

},

]

GET LIST OF RFMOs

curl --location --request GET 'https://gateway.api.globalfishingwatch.org/v3/datasets/public-rfmo/context-layers' \

-H "Authorization: Bearer [TOKEN]"

Make sure to replace [TOKEN] with your API Access Token. If the request is successful, the response returns:

[

{

"id": "APFIC",

"label": "APFIC"

},

{

"id": "BOBP-IGO",

"label": "BOBP-IGO"

},

{

"id": "CCAMLR",

"label": "CCAMLR"

},

{

"id": "CCBSP",

"label": "CCBSP"

},

{

"id": "CCSBT",

"label": "CCSBT"

},

{

"id": "CCSBT Primary Area",

"label": "CCSBT Primary Area"

},

{

"id": "COREP",

"label": "COREP"

},

{

"id": "CPPS",

"label": "CPPS"

},

{

"id": "CRFM",

"label": "CRFM"

},

{

"id": "CTMFM",

"label": "CTMFM"

},

{

"id": "FCWC",

"label": "FCWC"

},

{

"id": "FFA",

"label": "FFA"

},

{

"id": "GFCM",

"label": "GFCM"

},

{

"id": "IATTC",

"label": "IATTC"

},

{

"id": "ICCAT",

"label": "ICCAT"

},

{

"id": "ICES",

"label": "ICES"

},

{

"id": "IOTC",

"label": "IOTC"

},

{

"id": "IPHC",

"label": "IPHC"

},

{

"id": "LTA",

"label": "LTA"

},

{

"id": "NAFO",

"label": "NAFO"

},

{

"id": "NAMMCO",

"label": "NAMMCO"

},

{

"id": "NASCO",

"label": "NASCO"

},

{

"id": "NEAFC",

"label": "NEAFC"

},

{

"id": "NPAFC",

"label": "NPAFC"

},

{

"id": "NPFC",

"label": "NPFC"

},

{

"id": "OSPESCA",

"label": "OSPESCA"

},

{

"id": "PERSGA",

"label": "PERSGA"

},

{

"id": "PICES",

"label": "PICES"

},

{

"id": "RECOFI",

"label": "RECOFI"

},

{

"id": "SEAFDEC",

"label": "SEAFDEC"

},

{

"id": "SIOFA",

"label": "SIOFA"

},

{

"id": "SPC",

"label": "SPC"

},

{

"id": "SPRFMO",

"label": "SPRFMO"

},

{

"id": "SRFC",

"label": "SRFC"

},

{

"id": "SWIOFC",

"label": "SWIOFC"

},

{

"id": "WCPFC",

"label": "WCPFC"

}

]

There are two endpoints that uses regions ids:

In Events API, an event can potentially be within a specific geographic area, such as an Exclusive economic zones (EEZs), Marine protected areas (MPAs) or Regional fisheries management organization (RFMO). In the response regions field you can get the list of those regions. Check more detail about the source of those areas on how we calculate if the event is within a region in our data caveats.For MPAs and EEZs, the API returns an id.

In 4Wings API - Report, you can send in the body a custom polygon or you can directly send the region id.

In order to get the details of those regions, call the endpoints described on the right.

You can check the source we use for those regions in our data caveats.

Vessel API - Registry Codes - Data Sources

Vessel identity data is extracted from over 40 registries available either in the public domain or from authorities and researchers, including registries from regional fisheries management organizations, national registries, and lists compiled by researchers. Each of the lists has been obtained regularly since early 2019 and supplemented, when possible, with historical data to provide snapshots of a registry and its vessels over time. Where available, we collected information on vessel identity, vessel characteristics, owner name, owner nationality, and fishing authorization. The major sources of data are listed below.

We do not publicly disclose the raw information that we collect but use the acquired information uniquely for non-commercial purpose of aggregating it with other data sets.

Source Code Source Additional Links

AUS Australia vessel registry

CAN Canada vessel registry http://sd.ic.gc.ca/

CCAMLR CCAMLR Commission for the Conservation of Antarctic Marine Living Resources. CCAMLR authorised vessel list and CCAMLR IUU list

CCSBT CCSBT Commission for the Conservation of Southern Bluefin Tuna

CRUISE Cruise ship list -- but the site is not available anymore

ECU Ecuador national fleet registry

ESP MSC certified spanish vessel lists. Downloaded from the web in pdf, not available anymore online. Spanish vessels manually reviewed list of VMS and vessel logbooks

EU European Union

FFA FFA (Pacific Islands Forum Fisheries Agency)

FRO Faroe Islands

GFCM GFCM General Fisheries Commission for the Mediterranean authorised vessel list

GFW-REVIEW Expert manual review organized by GFW

IATTC IATTC Inter-American Tropical Tuna Commission authorised vessel list

ICCAT ICCAT International Commission for the Conservation of Atlantic Tunas authorised vessel list

IMO GISIS Global Integrated Shipping Information

IOTC IOTC Indian Ocean Tuna Commision authorised vessel list

ISL Iceland's vessel registry

ISSF ISSF International Seafood Sustainability Foundation large scale purse seine vessels, IMO numbered tuna vessel, proactive vessel registry (PVR) and vessels in other sustainability initiatives (VOSI) lists

IUU TMT Combined IUU vessel list

KOR Republic of Korea vessel registry krs.co.kr link 2

MDG Madagascar authorized vessel list

MYS Malaysian flagged vessel list

NAFO NAFO Northwest Atlantic Fisheries Organization vessel registry

NEAFC NEAFC North East Atlantic Fisheries Commission vessels and authorization list

NOR Norway authorized vessel list fiskeridir.no link 2

NPFC NPFC North Pacific Fisheries Commission vessels registry

OPRT OPRT Organization for the Promotion of Responsible Tuna Fisheries

PER Peruvian vessel list (The list of vessels is shared by Global Fishing Watch for public vessel tracking on its website)

RESEARCH-PAPER Vessel lists from various research papers gathered by GFW Research team

RUS Russia vessel registry

SEAFO SEAFO South East Atlantic Fisheries Organisation authorised vessel list

SEISMIC Oceana's list of seismic vessels

SIOFA SIOFA Southern Indian Ocean Fisheries Agreement authorised vessel list

SPRFMO SPRFMO South Pacific Regional Fisheries Management Organisation vessel list

SPSHIPBASE Northern European vessel database

TMT TMT uses a range of sources, including RFMO authorized vessel lists, other vessel databases, national sources, AIS, vessel photographs and other sources of intelligence

TMT\_National TMT Data sources include information from a variety of national sources

TMT\_Other TMT Data from a range of sources, gathered in the course of TMT’s analytical work

TMT\_Other\_Official TMT Data from official sources that do not fall into the RFMO or national categories

TMT\_RFMO TMT Data from regional fisheries management bodies (RFMOs) and would appear on the source list as 'TMT\_IATTC', 'TMT\_WCPFC' for example.

TWN Chinese Taipei (Fisheries Agency of Taiwan provides vessels registered to IOTC separately through its website))

USA Merchant vessels of the United States. US Federal Communications Commission vessel license list https://wireless2.fcc.gov/

WCPFC WCPFC Western and Central Pacific Fisheries Commission fishing vessel database

SDK

gfwr

We have released a new version of the gfwr package, now using API v3. This update includes significant changes to parameter names and output formats.

For a comprehensive list of changes and migration details, please check the change log.

Overview of Changes

Updated endpoints, retaining those from v1.1.0.

New endpoints: get\_events\_stats() and get\_last\_report().

Note: Some APIs, primarily designed for frontend applications, were not implemented.

To learn more about gfwr, visit the: Github gfwr official page

License and Rate Limits

Terms of Use

GLOBAL FISHING WATCH

1025 CONNECTICUT AVE., NW, STE. 200

WASHINGTON, DC 20036-5425

Welcome to the Global Fishing Watch ("GFW", "We", "Our", "Us”) suite of Application Program Interfaces (APIs). These Terms of Use let the user of these Services ("You", "Your") know what You get when You use Our APIs to access our websites, and what We expect in return.

The services available through Global Fishing Watch, including all data products and associated services, (collectively referred to as the “Services”), are owned and operated by Global Fishing Watch, Inc. By using the Services, You agree to be bound by these Terms of Use and any future updates (collectively, the "Terms").

1. USAGE

We provide You with access to these Services in order to promote better management of the ocean for the betterment of all people.

A. Please don’t misuse Our Services. You agree to use the Services and their contents only for lawful purposes and not to defame, harass or threaten any one or to make available any defamatory, infringing, obscene, pornographic, offensive or illegal material. You may not use the Services in any manner that could damage or overburden the Services or interfere with any other person’s use of the Services.

B. Your use of the Services does not give You any ownership rights in the intellectual property in the Services or in its contents. Some of the software used to provide the Services may be made available separately under open-source licenses.

C. Noncommercial Use Only. The Services are available for noncommercial use only in accordance with the CC BY-NC 4.0 license, including complying with the attribution requirements set forth in Section 3 below. You are welcome to use the Services provided that Your application and its use are not intended (primarily or materially) for or directed towards commercial advantage or monetary compensation. In this context, We ask that users not exceed 50,000 DAILY API requests per day and 1,550,000 per month. Users who exceed this volume may be asked to reduce usage or may receive diminished service levels. GFW reserves the right to revoke Your usage rights at any time for any reason, including if We determine that Your application or use is not consistent with such restrictions on commercial use.

D. We will continue to regularly add to, modify, and otherwise improve Our Services. By using the Services, You acknowledge that We may change the features and functions of the Services, including APIs, over time. It is Your responsibility to ensure that Your use of the Services is compatible with the current version. We ask that you also reasonably cooperate with us from time to time in providing feedback on your Use of the APIs, your purposes and the impact created, which will help us advance our noncommercial goals for the APIs.

2. ACCOUNTS AND API USAGE

A. In order to use many of the Services, You must register for an account. GFW reserves the right to reject any account registration request, in its sole discretion.

B. By requesting to open an account with the Global Fishing Watch Services, You represent and warrant to us, as of the time of your request and on a continuing basis for the duration of Your use of the Services, that: (1) You are applying on behalf of an organization or entity that supports the sustainable use of ocean resources; (2) You are authorized to act on behalf of such organization or entity; (3) the application is sent from a valid email from the organization or entity; and (4) no other application or registration for this organization or entity exists. GFW may request additional information in order to confirm these conditions are met.

C. When You use Our application program interfaces (“API(s)”), each request to an API must include one of Your Account's unique API keys.

D. Please protect the security of Your Account. When accessing or using the API, you must comply with all of our security policies and procedures at all times. You are responsible for Your use of the Services and all activity that occurs under Your Account, including any use of Your Account’s API keys.

E. You may not, and may not attempt to, reverse-engineer, decompile, disassemble, or otherwise attempt to determine or modify the source code of our API or create any derivative products from the API. Anyone who uses the API to access Account data or to perform actions on the service must authenticate with an API key.

F. You agree that your login credentials and any other required forms of authentication, where applicable, have been chosen by you, when applicable. You also agree to keep your login credentials and any other required forms of authentication, including your API keys, confidential and separate from each other, as well as separate from any other information or documents relating to your use of the service.

G. The GFW API Token is specific to You and is Your responsibility. Your token is not to be shared or published with any additional users. You may only use the API token issued to you, and your Use of any token other than the one issued to You is a violation of these Terms. You may not include Your token in a publicly available web interface such that it can be discovered by other parties using Your website and/or application. You may not permit or authorize any other person or entity to use the API token issued to you.

H. We may cancel or suspend Your access to the Services at any time and for any reason, without notice. Upon cancellation or suspension, Your right to use the Services will end. You will have the right to access to Your Content stored on the Services for a period of fifteen days following cancellation or suspension; thereafter You may not have access to Your Content stored on the Services.

I. You agree to participate in follow-up surveys and report how the APIs are used, the number of users and other benefits they provide the end-stakeholder.

3. ATTRIBUTION AND CITATION

A. In connection with any use you make of Our APIs, you agree that you will attribute Us as the source of the data in compliance with our Attribution Requirements, which are as follows:

A.1. Websites or embedded graphics. If You use Our APIs in a Website, data visualization or graphic, You must include either of the following:

“Powered by Global Fishing Watch.” and link this text to https://globalfishingwatch.org on web pages or visuals that make use of the Global Fishing Watch API(s).

OR

“Global Fishing Watch. [2022 or current year in the Global Fishing Watch copyright notice on the home page], updated daily. [API dataset name and version], [DATE RANGE]. Data set accessed YYYY-MM-DD at https://globalfishingwatch.org/our-apis/.”

A.2. Bibliography. If You include the use of Our API(s) in a bibliography or use the entire Site as a source, use the following citation format:

“Copyright [2022 or current year in the Global Fishing Watch copyright notice on the home page], Global Fishing Watch, Inc., ​https://globalfishingwatch.org​/our-apis/.”

A.3. Other products or use. If You made any other use of Our API(s), use the following citation format:

“Powered by Global Fishing Watch.” and link this text to https://globalfishingwatch.org on other products or use-cases that make use of the Global Fishing Watch API(s).

OR

“Global Fishing Watch. [2022 or current year in the Global Fishing Watch copyright notice on the home page], updated daily. [API dataset name and version], [DATE RANGE]. Data set accessed YYYY-MM-DD at https://globalfishingwatch.org/our-apis/.”

B. You also agree to ensure that Our Attribution Requirements are communicated and maintained by any partners or downstream users of Our Services. Aside from the Attribution Requirements, neither You nor any partners or downstream users of Our Services shall use the GFW name, logos, trademarks or other marks without GFW’s prior written consent.

4. THIRD-PARTY CONTENT

A. The Services incorporate content, data, and information from others, including You. While We may review any content, and remove it if We determine it violates the law or Our policies, We do not commit to review all content, and You should not rely on Us to do so.

B. Open data is important to Us and We make considerable effort to make many of the datasets available without restriction through the Services. Nonetheless, each dataset carries its own license and restrictions. You should review the dataset’s metadata to understand these restrictions.

C. You must comply with the licenses of Our datasets. All content displayed on or accessible through the Services is protected by United States copyright laws or their equivalents in other countries.

5. YOUR CONTENT