Commission for the Conservation of
Southern Bluefin Tuna

みなみまぐろ保存委員会

CCSBT-CC/2210/18

Potential for the Secretariat to Undertake Future Analyses Using Publicly Available Automatic Identification System (AIS) Data
将来的に事務局が一般公開されている船舶自動識別装置（AIS）データを用いた解析を実施する能力

1. Introduction
序論

In October 2021, CC16 considered the recommendations in Pew's paper CCSBT-CC/2110/23, including discussing whether the Secretariat could utilise publicly available Automatic Identification System (AIS) data in future to cross-check submitted at-sea transhipment positions and/or to potentially do other analyses while there remains no centralised Vessel Monitoring System (VMS) in place.
2021 年 10 月に開催された CC 16 は、ピュー慈善基金が提出した文書 CCSBT-CC/2110/23 による勧告（将来において事務局が提出された洋上転載の位置情報のクロスチェック及び／又は一元化 VMS がない状況でその他の解析を行なうために一般公開されている船舶自動識別装置（AIS）データを利用できるかどうかを検討することを含む）について検討した。

Key discussion points included that:
重要な論点は以下のとおりであった。

- Some Members were uncertain about the Secretariat's capacity to be able to conduct AIS analyses given its already high workload;
  一部のメンバーは、既に事務局の業務量が大きい状況を踏まえ、事務局が AIS 解析を実施するキャパシティを有しているのかどうかについて疑問を呈した。
- Some Members considered AIS analyses to be useful to consider in the future; and
  一部のメンバーは、将来的に AIS 解析を検討することは有益であるとした。
- One Member noted that rather than doing retrospective analyses it might be better to conduct closer to real-time analyses that could assist with better targeting of compliance resources such as for targeted inspections.
  あるメンバーは、遡及的な解析を行なうのではなく、対象を絞り込んだ調査のように遵守関連リソースをより有効に振り向けることに資するよう、リアルタイムに近い解析を行なう方が良いと述べた。

Following these discussions, CC16 tasked the Secretariat with undertaking exploratory work during 2022 to determine whether the Secretariat has the capacity to conduct a vessel

Automatic Identification System (AIS) analysis in the future and report back to CC17 on its conclusions.
これらの議論を踏まえ、CC 16 は事務局に対し、事務局が将来的に AIS 解析を実施するキャパシティを有しているのかどうかを判断するため、事務局に対し、2022 年にいくつかの探索的作業を行った上でその結論を CC 17 に報告するよう勧告した。

This paper discusses several exploratory analyses that the Secretariat undertook during 2022 to examine options for rapid analyses it could potentially do in the future.
本文書では、将来的に実施し得る迅速な解析のオプションを精査するために事務局が 2022 年に実施したいくつかの探索的解析について議論する。

2. Background Information: Automatic Identification Systems (AIS)
背景情報：船舶自動識別装置（AIS）

Automatic Identification Systems (AIS) transponders are designed to be capable of providing position, identification and other information about the ship to other ships and to coastal authorities automatically for maritime safety purposes.
船舶自動識別装置（AIS）トランスポンダは、海上での安全を目的として、他の船舶及び沿岸当局に対して当該船舶の位置、識別情報及びその他の情報を自動的に提供できるように設計されている。

The International Maritime Organisation (IMO) requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size. This requirement became effective for all ships by 31 December 2004.
国際海事機関（IMO）は、国際航海に従事する総トン数 300 トン以上である全船舶、国際航海には従事しないが総トン数 500 トン以上である貨物船、及びサイズを問わず全ての客船に対して AIS の装備を義務付けている。この要件は 2004 年 12 月 31 日から全船舶に対して発効した。

Other management bodies may also require large ships, including many commercial fishing vessels, to broadcast their position with AIS in order to avoid collisions.
またその他の管理機関は、大型船舶（多くの商業漁船を含む）に対し、衝突回避を目的として AIS 位置情報を送信することを義務付けている。

3. Method Including Data Limitations and Considerations
方法（データの制約及び考察を含む）

The Secretariat undertook some exploratory AIS analysis work using Global Fishing Watch's (GFW's) publicly available main map and Carrier Vessel Portal (CVP) information/map. Data considerations and limitations of the AIS data available data through GFW's website and maps are detailed in an information sheet GFW provides when data are downloaded (refer to **Attachment A**). The AIS data on the GFW platform are available up to 72 hours prior to the current time, *i.e.* there is a 3-day time-lag in data availability.
事務局は、グローバル・フィッシング・ウォッチ（GFW）が公開している主要なマップ及び運搬船ポータル（CVP）の情報／マップを用いていくつかの探索的解析を行った GFW のウェブサイト及びマップを通じて利用可能となっている AIS データに関するデータの考察及び制約については、データをダウンロードした際に GFW

から提供される情報シートに詳述されている（**別紙 A** を参照）。GFW プラットフォーム上の AIS データは現在時刻の 72 時間前より以前までの分が利用可能であり、すなわちデータが利用可能となるまで 3 日間のタイムラグがある。

Note in particular that the exploratory maps/analyses presented in this paper show only those vessels that transmit AIS data (that was detected) and are also limited by the accuracy of the AIS data that was transmitted. All information presented in this paper is publicly available through the functionality offered by GFW's maps and CVP on its website.
本文書で提示した探索的なマップ／解析結果は、（検知された）AIS データを送信している船舶のみを示しており、また送信された AIS データの精度に左右されるものであることに特に注意されたい。本文書に示した情報は全て、GFW のマップ及び CVP がウェブサイト上で提供している機能を通じて一般公開されている。

Potential Transhipment Events
転載の可能性がある事案
GFW's maps, especially the information viewed via its dedicated CVP, can be used as a tool to examine potential meeting events between vessels which could be indicative of transhipments occurring.
GFW のマップ（特に専用の CVP 経由で閲覧できる情報）は、転載が行われたことを示唆している可能性がある船舶間の邂逅事案を精査するツールとして利用し得るものである。
On the GFW website 'Encounter Events' are identified as being when AIS data indicate that two vessels may have conducted a transhipment, based on the distance between the two vessels and vessel speeds.[1] 'Loitering Events' are identified when a single carrier vessel exhibits behaviour consistent with encountering another vessel at-sea, but no other vessel is visible on AIS at that location and time,[2] possibly due to a variety of factors including lack of AIS transmission, poor satellite coverage, and/or the size of the second vessel.
GFW ウェブサイトでは、2 隻の船舶間の距離及び船速からしてこれらの船舶が転載を実施していた可能性があると AIS データが示唆している場合に「邂逅事案」として特定される [1]。「ロイタリング（徘徊）事案」は、1 隻の運搬船が他の船舶と邂逅しているかのような挙動を示しているのに、（AIS が切られている、衛星の通信状態が悪い、第二の船舶のサイズ等といった様々な原因により）AIS ではその位置・時間に他の船舶が表示されていない状況を示す [2]。

[1] Vessel encounters are defined when two vessels are within 500 meters of each other for at least 2 hours and traveling at < 2 knots, while at least 10 km from a coastal anchorage. 船舶の「邂逅」とは、沿岸の停泊地から少なくとも 10km 以上離れた位置において、2 隻の船舶が、少なくとも 2 時間以上 500m 以内の距離にあり、かつ 2 ノット未満で航行していた状況として定義される。

[2] Vessel loitering is when a carrier vessel travelled at speeds of < 2 knots for at least 4 hours, while at least 20 nautical miles from shore　船舶の「ロイタリング（徘徊）」とは、沿岸線から少なくとも 20 海里離れた位置において、運搬船が少なくとも 4 時間以上 2 ノット未満で航行していた状況をいう。

4. Exploratory Analyses Conducted
探索的解析の実施

EXAMPLE 1
解析例 1
Checking for Chinese Vessel Activity in Chinese Legislation Exclusion Areas
中国の国内規制に基づく操業禁止区域内での中国船舶の活動の確認
Time involved for checking any date/timeframe including reporting in a paper: Minimal (*e.g.* 2 hours).
確認に要する時間（文書としての報告を含む）：最小限（例えば 2 時間）

Background Information
背景情報
In late 2018/early 2019, the CCSBT received a translation of some Chinese legislation ("*Notification by General Office of Ministry of Agriculture and Rural Affairs on Further Strictly Comply With International Tuna Measures*") which was dated and appeared to take effect from 07/01/2019.
2018 年末／2019 年初頭において、CCSBT は 2019 年 1 月 7 日付けで発効したとされる中国の国内規制の英語翻訳版（「*国際的まぐろ措置のさらに厳密な遵守に関する農業農村部漁業漁政管理局通知*」）を受領した。

Section XIII[3] of that legislation set out some no fishing zones (either all or part year) for Chinese fishing vessels as follows:
当該規制のセクション XIII[3] は、中国漁船による操業禁止区域（通年又は年の一部）を以下のとおり定めている。

a) Atlantic:
   大西洋
   40 S to 45 S, 10 W to 20 E fishing prohibited all year round
   南緯 40－45 度、西経 10 度－東経 20 度の海域、通年操業禁止
b) Indian Ocean Spawning:
   インド洋産卵海域
   10 S to 20 S, 100 E to 130 E fishing prohibited all year round
   南緯 10－20 度、東経 100－130 度の海域、通年操業禁止
c) Western & Central Pacific Ocean (WCPO):
   中西部太平洋（WCPO）
   37 S to 45 S, 170 E to 180 E fishing prohibited all year round
   南緯 37－45 度、東経 170－180 度の海域、通年操業禁止
d) Western & Central Pacific Ocean (WCPO):
   中西部太平洋（WCPO）
   45 S to 50 S, 150 E to 170 E fishing prohibited all year round
   南緯 45－50 度、東経 150－170 度の海域、通年操業禁止
e) Indian Ocean (IO):
   インド洋（IO）
   30 S to 45 S, 20 E to 45 E (fishing prohibited from 1 September to 31 October)

[3] Prohibition of fishing for South Bluefin Tuna (SBT) みなみまぐろ（SBT）の漁獲の禁止

南緯 30 −45 度、東経 20 −45 度の海域（9 月 1 日から 10 月 31 日まで操業禁止）

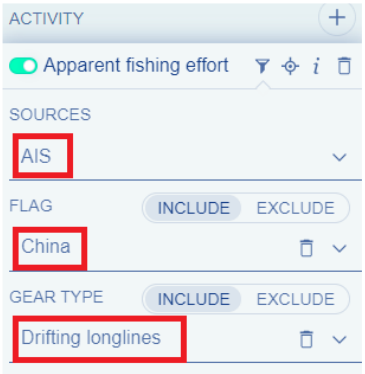
f) Indian Ocean (IO):
インド洋（IO）
30 S to 45 S, 70 E to 140 E (fishing prohibited from 1 September to 31 October).
南緯 30 −45 度、東経 70 −140 度の海域（9 月 1 日から 10 月 31 日まで操業禁止）

Method
方法

GFW personnel provided six shape files (rectangles) to the Secretariat which can be placed on a map to indicate the areas covered by these six Chinese Exclusion Zones. The Secretariat saved these six exclusion zone rectangles and can easily display them on any new map it creates on the GFW platform whenever required (**Attachment C**: Maps 1a & b).
GFW の担当者は、中国による上記 6 つの禁止区域に該当する海域を地図上に表示するための 6 つの図形（長方形）ファイルを事務局に提供した。事務局はこれら 6 箇所の禁止区域を示す図形データを保存したので、必要に応じて GFW プラットフォーム上で作成する新規マップに当該情報を簡単に表示することができる（**別紙 C**：マップ 1a 及び b）。

In order to check if any unexpected fishing activity by Chinese longliners appears to be occurring in these exclusion zones, only the following short steps are necessary:
これらの禁止区域において中国はえ縄漁船による予期せぬ漁業活動が発生していないかどうかは、以下の簡単な操作を行なうだけでこれを確認することができる。

- Upload the all-year and part-year exclusion rectangles to a new map;
新規マップに通年及び年の一部の禁止区域図形をアップロードする。
- Set the start and end date of the timeframe of interest using the date slider; and
日付スライダーを用いて、確認したい期間の開始日及び終了日を指定する。
- Select the fleet of interest *e.g.* Chinese drifting longliners in the 'Apparent fishing effort' (AIS data) activity option as below:
以下のとおり、AIS データにより「明らかな漁獲努力」と分類される活動のオプションにおいて、確認したい船団（例えば中国浮はえ縄漁船）を指定する。



Results
結果
Exploratory maps were created for the 2021 calendar year (**Attachment C**: Maps 1a-f) and appeared to indicate that:
2021 暦年の探索的マップ（**別紙 C**：マップ 1a－1f）を作成し、以下が示唆された。

- There was no activity by Chinese-flagged drifting longliners transmitting AIS data within the 4 all-year exclusion areas; and
  4 箇所の通年操業禁止区域において、AIS データを送信している中国船籍浮はえ縄漁船による活動はなかった。
- There was potentially some very brief activity by 4 Chinese-flagged drifting longliners transmitting AIS data in the 1 September to 31 October IO exclusion area (area f above) – some points were shown in the exclusion areas but no tracks; and
  インド洋における 9 月 1 日から 10 月 31 日までの操業禁止区域において、AIS データを送信している中国船籍浮はえ縄漁船 4 隻による非常に短時間の活動があった可能性がある。
- There appeared to be 1 Chinese-flagged drifting longliner transmitting AIS data that was transiting through the 1 September to 31 October IO exclusion area (area e above) between 30 August and 5 September 2021.
  AIS データを送信している中国船籍浮はえ縄漁船 1 隻が、2021 年 8 月 30 日から 9 月 5 日にかけて、インド洋において 9 月 1 日から 10 月 31 日まで操業禁止となっている区域（上記の区域 e）を通過したようである。

EXAMPLE 2
解析例 2
Cross-Check Submitted At-sea Transhipment Locations Against Encounter/Loitering Events
提出された洋上転載の位置情報と邂逅／ロイタリング（徘徊）事案とのクロスチェック
Time involved for future checking on any date/timeframe: Moderate (*e.g.* 5-15 minutes per Carrier Vessel trip examined; there are approximately 20 trips per annum – plus an additional 1/1.5 days to include the maps and results in a paper).
将来的な確認に要する時間：中程度（例えば運搬船の航海の精査に 5－15 分。年あたり 20 航海程度であり、加えてマップと結果の文書化に 1－1.5 日）

Background Information
背景情報
The Secretariat receives information on transhipment-at-sea involving SBT locations (including latitude and longitude information) from various sources and within various timeframes including:
事務局は、SBT を含む洋上転載が行われた位置情報を様々なソースから受領しており、そのタイミングも以下のように多岐にわたる。

- Closer to real-time transmission of transhipment declarations from CCSBT-authorised Carrier Vessels (CVs) by email;
  CCSBT 許可運搬船から、電子メールにより、転載申告書をほぼリアルタイムで受領している。

- Transhipment declarations sent to CCSBT by the ICCAT or IOTC Secretariats by email which are generally received with a greater time delay;
  ICCAT 又は IOTC 事務局から、電子メールにより、転載申告書を受領している。こちらの受領は全体的に遅くなる。
- Transhipment observer reports which are generally received months after the at-sea transhipments occurred; and
  洋上転載の実施から概ね数カ月後に、転載オブザーバー報告書を受領している。
- CDS forms sometimes include latitude/longitude details although not required to be provided.
  要件とはなっていないものの、CDS 様式に緯度／経度の詳細が記載されている場合がある。

Method
方法

The concept of this exploratory analysis was to:
この探索的解析のコンセプトは以下のとおりである。

- Check near-real-time 2021 transhipment location information the Secretariat received direct from Carrier Vessels against near-real-time encounter/loitering information available on the GFW platform; and
  運搬船から直接に事務局がほぼリアルタイムで受領した 2021 年の転載位置情報と、GFW プラットフォームから入手可能なほぼリアルタイムの邂逅／ロイタリング情報とを照合する。
- Check 2021 transhipment locations received in transhipment observer reports (received during a calendar year with a much greater time lag) against encounter/ loitering information on the GFW platform.
  転載オブザーバー報告書を通じて受領した 2021 年の転載位置情報（暦年内に受領するが、かなりのタイムラグがある）を、GFW プラットフォームの邂逅／ロイタリング情報と照合する。

One very efficient way to do these cross-checks is by following the visual representation/ positions of encounter/loitering events and port visits for an individual CV for a defined timeframe within GFW's CVP.
これらのクロスチェックを非常に効率的に行なうための方法としては、GFW の CVP の中で定義された時間枠において、邂逅／ロイタリング事案と入港について視覚的に表現／位置付けする方法がある。

An example screen-shot of a chain of encounter/ loiter/ port visit chain of events for CV 'Harima' in September 2021 is presented in **Attachment C** (Map 2)[4].
一例として、2021 年 9 月の運搬船「Harima」による一連の邂逅／ロイタリング／入港の軌跡のスクリーンショットを別紙 C（マップ 2）に示した [4]。

[4] Some information in the screenshot is blurred so as not to identify individual vessels 当該スクリーンショットでは、個々の船舶を特定できないように一部の情報をぼかして表示している。

Results
結果
In general, when manually cross-checked, only a subset of confirmed at-sea transhipment locations reported to the Secretariat matched 'encounter' events on GFW's main map/ CVP. However, anecdotally, some transhipments reported to the Secretariat that didn't match 'encounter' events did have dates and locations that were very similar to 'loitering' events noted on the CVP.
マニュアル（手作業）でクロスチェックを行った場合、全体として、事務局に報告された確認済の洋上転載位置情報のうち一部のみが GFW のメインマップ／CVP 上の「邂逅」事案と合致した。しかしながら、事務局に報告された転載活動の中には、「邂逅」事案とは合致しなかったものの、CVP 上で「ロイタリング」と記載された事例と非常に類似した日付及び位置を示した例もあった。

EXAMPLE 3
解析例 3
To Examine Data Relating to Potential Issues of Compliance Concern
遵守上の懸念となり得る問題に関するデータの精査

Example: View Activity of Indonesian Authorised Carrier Vessels and Indonesian Fishing Vessels Reported as Having Freezing Capacity (LSTLVs) that Transmitted on AIS Between 2020 to 2022
例：2020 年から 2022 年までの間に AIS データを送信していたインドネシア許可運搬船及び冷凍能力を有する船舶として報告されたインドネシア漁船（LSTLV）の活動状況の閲覧
Elapsed time to look for vessels on the GFW platform and create each map: 30 minutes per map and 1-2 days for presenting maps in a paper.
GFW プラットフォームにおける船舶の検索及び各マップの作成に要した時間：1 マップあたり 30 分、及びマップを文書化するために 1－2 日

Background
背景
Indonesia recently submitted 6 at-sea transhipment observer reports (by Indonesian national observers) for 32 at-sea transhipments that involved SBT from 15 different longline fishing vessels to 4 authorised Indonesian Carrier Vessels which the Secretariat had previously been unaware of and which were not consistent with the requirements of CCSBT's Transhipment Resolution.
最近、インドネシアは、15 隻の異なるはえ縄漁船から 4 隻のインドネシア許可運搬船に対して行われた 32 回の SBT を含む洋上転載に関する 6 件の洋上転載オブザーバー報告書（インドネシアの国内オブザーバーによるもの）を提出した。事務局はこれまで、インドネシアによるこれらの洋上転載を認識していなかった。また、これらの活動は CCSBT 転載決議の要件と合致していない。

The Secretariat did some exploratory mapping using GFW's platform to give an indication of the activity (including encounter/loitering events[1,2]) of some of the Indonesia's CVs and longliners with freezing capacity which it confirmed had received/made transhipments involving SBT during 2021. This exercise was repeated for 2020 and 2022 (there are to date no reported SBT transhipments involving Indonesian longliners with freezing capacity, *i.e.*

LSTLVs, for 2020 or 2022) to check if the visual patterns of activity of the same vessels appear similar between years.
事務局は、2021 年に SBT を含む転載を行ったとインドネシアが確認したインドネシア運搬船及び冷凍能力を有するはえ縄漁船の一部による活動（邂逅／ロイタリング事案を含む）を視覚的に示すため、GFW プラットフォームを用いていくらかの探究的マッピングを行った。各年において同じ船舶が類似した活動パターンを示していないかを視覚的に確認するため、2020 年と 2022 年に関しても同様の作業を行った（なお、現在のところ、2020 年又は 2022 年において冷凍能力を有するインドネシアはえ縄漁船（すなわち LSTLV）が関与した SBT の転載は報告されていない）。

No specific vessel identification information is included in the maps produced for this example analysis but is available.
本解析事例で作成したマップには船舶識別情報を含めていないが、これらの情報自体は利用可能である。

Method
手法
Recognising the AIS data considerations and limitations outlined in the section 3 and **Attachment A** of this paper, the Secretariat produced a trial set of maps:
本文書のセクション 3 及び別紙 A に総括した AIS データに関する考察及び制約を踏まえつつ、事務局は一連の試行マップを作成した。

i. For the 2021 calendar year, to display any available AIS tracks for the 4 Indonesian authorised CVs confirmed to have received at-sea transhipments including SBT during 2021.
2021 暦年に関して、2021 年に SBT を含む洋上転載物を受け取ったことが確認されたインドネシア許可運搬船 4 隻について利用可能な AIS の軌跡を表示するためのマップ。

ii. For the 2021 calendar year, to display any available AIS tracks for the 15 Indonesian longliners which the Secretariat was advised have ‘freezing capacity’ and made at-sea transhipments including SBT during 2021.
2021 暦年に関して、「冷凍能力」を有しており、2021 年に SBT を含む洋上転載を行ったと事務局が通知を受けたインドネシアはえ縄漁船 15 隻について利用可能な AIS の軌跡を表示するためのマップ。

iii. For the 2021 calendar year, to display on 1 map AIS tracks and encounter/loitering events of 1 example Indonesian CV (“CV1” in i. above) which received 2 reported transhipments of SBT as well as the 3 available tracks of the longliners with freezing capacity that transhipped SBT.
2021 暦年に関して、2 件の SBT 転載報告を受領したインドネシア運搬船の事例 1（上記 i における「CV1」）の AIS の軌跡及び邂逅／ロイタリング事案、並びに SBT を転載した冷凍能力を有するはえ縄漁船について利用可能な 3 隻の軌跡を表示するためのマップ。

iv. Repeat the mapping exercise in iii. above for the same CV (“CV1”) and 3 longliners with freezing capacity but for 2020 and 2022 – noting that to date no SBT transhipments have been reported by Indonesia for 2020 or 2022.
同じ運搬船（「CV1」）及び 3 隻の冷凍能力を有するはえ縄漁船に関して、2020 年及び 2022 年についても上記 iii のマッピング作業を再度実施した。なお、現在のところ、2020 年及び 2022 年に関してインドネシアよる SBT 洋上

転載は報告されていない。

Results
結果

i. 3 of the 4 CVs reported as receiving SBT transhipments in 2021 have visible AIS tracks in 2021. Many encounter and loitering events are indicated (**Attachment C**: Map 3).
2021 年に SBT 転載物を受け取ったとして報告された運搬船 4 隻のうち 3 隻は、2021 年における AIS の軌跡が視認可能であった。多数の邂逅及びロイタリング事案が示唆された（**別紙 C**：マップ 3）。

ii. 3 of the 15 FVs with freezing capacity confirmed as having transhipped SBT in 2021 have visible AIS tracks in 2021. Some encounter events are indicated (**Attachment C**: Map 4).
2021 年に SBT 転載を行ったことが確認された冷凍能力を有する漁船 15 隻のうち 3 隻は、2021 年における AIS の軌跡が視認可能であった。何度かの邂逅事案が示唆された（**別紙 C**：マップ 4）。

iii. 2021 (SBT transhipments reported in 2021): 1 CV and 3 LSTLVs shown – many encounter/ loitering events indicate there is a lot of potential vessel meeting/ transhipment activity, including in areas where SBT might be found (**Attachment C**: Map 5a).
2021 年（SBT の転載は 2021 年に報告されている）：多数の邂逅／ロイタリング事案が示唆された運搬船 1 隻と LSTLV 3 隻については、SBT が出現する可能性がある海域を含め、多数の船舶との邂逅／転載活動があった可能性が示唆されている。

iv. 2020 and 2022 (no SBT transhipments reported for 20/22 to date): 1 CV and 3 LSTLVs shown - many encounter/ loitering events indicate there is also a lot of potential vessel meeting/transhipment activity, including in areas where SBT might be found (**Attachment C**: Maps 5b & c).
2020 年及び 2022 年（現在のところ、両年については SBT の転載は報告されていない）：多数の邂逅／ロイタリング事案が示唆された運搬船 1 隻と LSTLV 3 隻については、SBT が出現する可能性がある海域を含め、やはり多数の船舶との邂逅／転載活動があった可能性が示唆されている。

EXAMPLE 4
解析例 4
Ad Hoc Observations While Compiling Maps for Example 3
解析例 3 のマップ作成時における臨時的な観察

Elapsed time to look for vessels on the GFW platform and create one map: 30 minutes for the map and 1 hour to add into a paper.
GFW プラットフォームにおける船舶の検索及び各マップの作成に要した時間：1 マップあたり 30 分、及びマップを文書に追加するために 1 時間

- The Secretariat noticed the AIS track of a non-CCSBT authorised vessel located around 30°S in 2021 that appears to have some similar characteristics to the CV tracks in maps 3 and 5 (**Attachment C** – Map 6).

事務局は、2021 年に南緯 30 度付近に位置していた CCSBT 非許可船の AIS の軌跡が、マップ 3 及び 5 に示した運搬船の軌跡とある程度類似した特徴を有していることを認識した（**別紙 C**：マップ 6）。

- The Secretariat noticed a vessel which is CCSBT-authorised as flagged to Indonesia but appears on the GFW platform (in 2022) and on other websites such as Vessel Finder, Marine Traffic and FleetMon as being flagged to Liechtenstein. When queried about this AIS data on its platform GFW advised that, "*all the vessel identity information shown on the Map at this time is based on what identity information the vessel transmits on AIS and no identity information comes from registries currently*". (**Attachment C** – Map 7).
  事務局は、インドネシア船籍として CCSBT で許可されているが、GFW プラットフォーム（2022 年）及び他のウェブサイト（Vessel Finder、Marine Traffic 及び FleetMon 等）ではリヒテンシュタイン船籍となっている船舶を認識した。GFW プラットフォームにおける本 AIS データについて確認したところ、GFW は「*現時点でマップ上に表示される船舶識別情報は全て AIS が送信している船舶識別情報に基づくものであり、現在はレジストリに由来する識別情報はない*」と回答した。（**別紙 C**：マップ 7）

5. Summary
総括

The Secretariat was able to conduct some exploratory example analyses 1 to 4 within short periods of time ranging from 5 to 30 minutes per map plus several days of elapsed time for associated documentation.
事務局は、マップごとに 5－30 分の作業時間及び文書作成に数日間という短期間で上記の解析例 1 から 4 までの探索的解析を実施することができた。

Example analyses 1, 3 and 4 returned some interesting maps of FV/CV activity.
The approach used in Analysis 2 did not seem to be beneficial currently.
解析例 1、3 及び 4 からは、漁船／運搬船の活動に関していくつかの興味深いマップが得られた。解析例 2 で用いた手法は、現時点では有益ではないように思われる。

Example analyses 1, 3 and 4 or similar could be repeated in future by the Secretariat within relatively short timeframes if Members are supportive of such analyses.
メンバーがこうした解析に前向きであるならば、事務局が将来的に解析例 1、3 及び 4 又は類似の解析を比較的短期間で再度実施することは可能である。

CC17 is invited to:
CC 17 は以下を招請されている。

- Review the information provided in this paper regarding potential AIS analyses that the Secretariat could undertake in future within minimal timeframes;
  事務局が将来的に最小限の期間で実施できる可能性がある AIS 解析について本文書が提示した情報をレビューすること。
- Make any recommendations regarding AIS analyses that Members would like the Secretariat to undertake in future and report back on to CC18 and/or later *e.g.* to repeat any of the example analyses presented in this paper with different parameters such as different time periods; and

将来的に事務局が実施し、CC 18 及び／又はそれ以降の CC 会合に対して結果を報告することをメンバーが希望する AIS 解析（例えば、別の期間など異なるパラメータを用いて本文書に示した解析例を再度実施すること等）について勧告を行なうこと。

- Potentially propose any additional ideas for exploratory AIS analyses that the Secretariat could explore and/or undertake prior to CC18.
  CC 18 までに事務局が探索及び／又は実施し得る探索的 AIS 解析についての追加的なアイデアを提案すること。

Prepared by the Secretariat
事務局作成文書

Global Fishing Watch

Considerations when using automatic identification system (AIS) data

Background

Global Fishing Watch is advancing ocean governance through increased transparency of human activity at sea. By creating and publicly sharing map visualizations, data and analysis tools, we enable scientific research and drive a transformation in how we manage our ocean. By 2030, we aim to monitor and visualize the impact of ocean-going vessels, both industrial and small-scale, that are responsible for the vast majority of the global seafood catch.

Considerations

Global Fishing Watch has demonstrated the application of AIS data to model fishing and other activities at sea, including fishing effort, transshipments and port visits. AIS is most effective as a tool for tracking vessel activity when satellite reception is strong, the vessel consistently and accurately transmits its identifiers, and other resources, such as registry records are available. However, consistent satellite and vessel data are not always available, and therefore when analyzing AIS data several factors should be considered.

Distribution of vessel activity may vary due to several factors

AIS isn't adopted equally around the world

The International Maritime Organization (IMO) and other management bodies require large ships, including many commercial fishing vessels, to broadcast their position with AIS in order to avoid collisions. Each year, more than 400,000 AIS devices broadcast vessel location, identity, course and speed information. Ground stations and satellites pick up this information, making vessels trackable even in the most remote areas of the ocean. While only two percent of the world's roughly 2.9 million fishing vessels carry AIS, they are responsible for over half of commercial fishing effort that takes place more than 100 nautical miles from shore, and as much as 80 percent of the fishing that occurs on the high seas.

AIS transmitters vary - differences between Class A and B

Most AIS devices fall into one of three "classes": Class A, Class B, and Class B+. Class A devices broadcast at a stronger power and they broadcast a vessel's position more frequently. Lower wattage Class B and B+ devices are detected less frequently by satellites, and therefore it may seem there is less fishing activity in areas where they are predominantly used. AIS device class often depends on flag State regulations, vessel length and vessel purpose.

Learn more about the differences in AIS transmitters > | Read more about Global Fishing Watch technology >

Global satellite coverage to detect AIS varies

AIS satellite companies aggregate data from both satellite and terrestrial AIS receivers. A single satellite can monitor approximately 5 percent of the earth's surface at a given time. These satellites travel quickly and each satellite will receive messages only from a given location on earth for only a few minutes before passing out of range. For these reasons, a constellation of many satellites is used to obtain coverage of the world's ocean. Many satellite and terrestrial providers also do not record every AIS message that they receive. As a result, those using downloaded data should not assume uniform satellite coverage.

Learn more about satellite coverage and reception quality >

High density areas of vessel traffic can lead to lower activity estimates

In addition to areas with low satellite coverage, areas with a high density of vessel traffic can also limit the number of signals processed, particularly related to Class B (or B+) AIS systems. This may lead to reduced or underestimated vessel activity in the Global Fishing Watch map or data in such areas. Learn more >

Other considerations - ports and manual identification

Fishing effort and vessel activity may be disrupted close to ports due to changes in vessel movements. Identification must be manually entered to AIS transmitters which can lead to errors and complexity. Vessels may have turned their transmitters off for security or other reasons, alongside an intention to avoid detection. Learn more >

Global Fishing Watch

Vessel classification and identification may change over time

Global Fishing Watch activity and vessel identity data may change over time

Changing vessel identity information can make it difficult to track a vessel consistently over time. Raw AIS data needs significant processing before it can be used to understand patterns in human activity. We rely on cloud infrastructure and machine learning models to identify patterns. We filter out noisy or duplicated data, and group positions into logical segments. We combine multiple vessel registry database sources with the predictions from a machine learning model to classify vessels. No algorithm is perfect, so occasional misclassifications will occur (e.g. non-fishing mistakenly identified as fishing). As Global Fishing Watch is constantly adding information to our models and improving how vessels are classified and mapped, vessel identity and activity heatmaps may change over time.

For example, if new vessel identity information is found showing that two vessels that were previously thought to be separate are actually the same vessel, this update may lead to changes in how these vessel track segments are formed. This may lead to changes in how vessel movements or fishing is recorded. Additionally, if a vessel is determined to be a fishing vessel, when there was previously insufficient information, the update will cause fishing effort to be displayed when there may not have been previously. Learn more >

Use of AIS transmitters has increased over time, as has number of satellites

The number of fishing vessels using AIS transmitters is increasing by 10 to 30 percent each year. The number of satellites able to detect AIS launched has also increased between 2012 to present day. This increase in detectability of fishing vessels disrupts our ability to infer changes over time. As a result, any increases in fishing activity since 2012 should be interpreted with caution. Analysts and researchers can mitigate these impacts by focusing on more recent years (e.g. 2017 onwards) or by selecting for vessels that were present in both the initial and subsequent times of interest.

Factors driving changes in human activity can be difficult to identify

Patterns in human activity at sea can often be attributed to multiple factors that are not always easy to detect or isolate. When viewing changes in activity, managers and researchers should ensure that as many factors as possible (e.g. socioeconomic, environmental etc.) are considered and seek relevant stakeholder input to determine the main drivers. The annual calendar of human events should be considered when viewing distribution and patterns in global human activity, particularly large scale cultural events that may impact our presence on the ocean. Notably, cultural events that don't occur on the same date each year should be reviewed as they may impact results or conclusions.

Mitigating impacts of AIS data considerations

Using Global Fishing Watch AIS data in your work or research

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 platform is as accurate as possible, but should be used with the above considerations in mind. When using Global Fishing Watch AIS data in your work or research:

- Always read the attached readme file alongside any downloaded data, and take note of the data version.
- Use multiple sources of data to corroborate any conclusions drawn or decisions.
- Use more than one field when searching for vessels e.g. MMSI, name and IMO number.
- When completing time series analyses, ensure that mitigation approaches are used to reduce likelihood of false assumptions e.g. factor in increased satellite coverage, use of AIS, and human events calendar.
- Review the Global Fishing Watch resources and contact information below.

Global Fishing Watch resources and contact information

Further supporting Global Fishing Watch resources:

- Read the FAO global atlas of AIS-based fishing activity >
- Read the Global Fishing Watch AIS-based fishing activity methodology paper >
- Read these articles about: vessels reporting false locations > & vessels sharing one identity >
- Review the Global Fishing Watch FAQs > | Watch the Global Fishing Watch tutorials >

Global Fishing Watch is constantly looking to improve the data in our products, to share any feedback on our data:

- Share feedback through the built-in feedback form in the left sidebar on the Global Fishing Watch map >
- Email any data inquiries to support@globalfishingwatch.org >

Notification by General Office of Ministry of Agriculture and Rural Affairs on Further Strictly Comply With International Tuna Measures

Nongbanyu[1] (2019) No.1

Related Provincial (Autonomous Regional and Municipal) Fisheries Authorities, China Overseas Fisheries Association, Shanghai Ocean University, China Agricultural Development Group Co., Ltd. and All Tuna Fishing Companies:

In order to faithfully implement all kind of resources conservation and management measures adopted by the International Commission for Conservation of Atlantic Tunas (ICCAT), Indian Tuna Commission (IOTC), Western and Central Pacific Fisheries Commission (WCPFC) and Inter-American Tropical Tuna Commission (IATTC) (hereinafter as the Commissions), this Ministry issued a *Notification by General Office of Ministry of Agriculture on Strictly Comply With International Tuna Measures* [Nongbanyu (2013) No.21] on 20 February 2013, the Notification played an active role in terms of practical comply with Regional Tunas Management Organizations' resources conservation and management measures by the Chinese tuna industry and reduce infringement events concerning foreign affairs. In recent years, Commissions successively made amendment of original measures and added new measures along with the variation of tuna resources and development of international fisheries governance. For the purpose of further enhancing capability of compliance by China's tuna industry and promoting standardized and orderly distant water fisheries development of China, it is hereby to notify the followings:

I. Fishing Vessels Registration

Commissions request that all fishing vessels operating in the respected conversion areas shall register in the secretariats of Commissions through the flag state's authority or its authorized agency, fishing vessels not registered in the secretariats of Commissions shall not fish in the conversion areas, and any change of vessels' data and information shall also be registered in the secretariats of Commissions in a timely manner. Based on above measures, the enterprises have fishing vessels fish for tunas and obtained High Seas Fishing Permit from this Ministry shall register its fishing vessels through China Overseas Fisheries Association (COFA), the authorized organization by this Ministry, in accordance with the request of Commissions, and fishing operation can only commence after the completion of the register. Any change of registered information shall be timely notified for change.

COFA shall register the relevant vessels in the Commissions without delay, in strict accordance with the operation condition described in High Seas Fishing Permit and request by Commissions.

II. Fishing Log Books

Chinese tuna enterprises shall ensure its fishing vessels to seriously fill out Tuna Fishing Log Book (*inter alia*, including faithfully record incident catch of no retained shark species, sea birds, sea turtles, marine mammal as well as situation of no harm

[1] Means document related to fisheries issued by General Office of Ministry of Agriculture and Rural Affairs.

release), according to the request by *Notification by General Office of Ministry of Agriculture on Regulation of Tuna Fishing Log Books* [Nongbanyu (2008）No. 44], and submit each vessel's log book for last year to Data Center of China Distant Water Fisheries (Marine Science College, Shanghai Ocean University) before 31 March of each year. Meanwhile, The tuna enterprises shall monthly report catch by species in a truthful manner to COFA (weekly report for Atlantic bluefin tuna catch).

III. Fishing Quota

This Ministry allocates tuna fishing quota obtained in different oceans and by species to tuna enterprises and fishing vessels each year, based on situation of tuna fishing operation, tuna resources status in different oceans and relevant measures of Commissions as well as principle of openness, equity and fairness.

All tuna enterprises and fishing vessels shall conduct fishing operation under quota allocated by this Ministry, and shall not fish without fishing quota or fishing after its quota be exhausted. As soon as its fishing quota be exhausted, the relevant enterprises and fishing vessels shall immediately cease fishing operation, and conduct no harm release the over harvested portion.

COFA shall timely collect tuna catch from all enterprises and fishing vessels, and shall strictly observe the quota allocated by this Ministry while dealing with certificating products to be imported and exported.

IV. Limitation and prohibition of Fishing Area and Fishing Gear (including supporting equipment)

1. All tuna fishery enterprises and fishing vessels shall strictly follow fishing area and condition specified in the High Seas Fishing Permit while conducting fishing operation. It is prohibited from conducting fishing activities in the jurisdiction of other countries without authorization. Fishing vessels conducted fishing operation on the high seas shall keep at least three nautical miles of safe distance from outer limit of nearby jurisdiction of other countries. It is prohibited from using large scale drift net on the high seas.

2. In Atlantic Ocean, fishing for eastern Atlantic Bluefin tuna shall limit its fishing period from 1 January to 31 May; however in the area west of 10^{o} W and north of 42^{o} N, the fishing period shall be limited from 1 August to 31 January of next year. All vessels must not enter into the Mediterranean Sea for fishing operation.

3. In Western and Central Pacific, except otherwise stipulated for the situation of Chinese vessels be chartered by Pacific small islands states, the purse seiner vessels shall prohibit from using Fish Aggressive Devises (FADs) in the area between 20^{o} N and 20 ℃ from 1 July to 30 September. If the purse seiner vessels conducting fishing operation on the high seas, the period from 1 April to 31 May or from 1 November to 31 December shall be additional FADs prohibition period. China's fishing days for purse seiner vessels on the high seas shall be limited no more than 26 days, and purse seine vessels shall have deployed at sea, at any one time, no more than 350 drifting FADs with activated instrumented buoys.

4. It is prohibited from using aircrafts and unmanned aerial vehicles in Atlantic bluefin tuna fishery and Indian tuna fishery for the purpose of fish finding and other fishing aids.

5. It is prohibited from using, installing or operating surface or submerged artificial lights for the purpose of aggregating tuna and tuna-like species in Indian Ocean tuna fisheries.

V. Minimum Size

1. Fishing vessels operating in the Atlantic Ocean shall comply with the following minimum size:

a. Eastern Bluefin tuna: 30 kg (115 cm fork length); each individual vessel shall not be over 5% of number of fish that lower than the minimum size (between 8 kg and 30 kg or between 75cm and 115 cm).

b. Swordfish: 25 kg (125cm low jaw fork length); each individual vessel shall not be over 15% of number of fish that lower than the minimum catch size.

2. Fishing vessels operating in the Indian Ocean shall comply with the following minimum size:

It shall not retain on board, transship, land any specimen smaller than 60 cm lower jaw fork length (LJFL) of Indian Ocean Striped Marlin, Black Marlin, Blue Marlin and Indo Pacific Sailfish.

VI. Fishing Vessel Position Monitoring

Before this Ministry making a new regulation on fishing vessel position monitoring, the fishing vessels fish for tunas in different oceans shall report its position according to the followings:

1. In Atlantic: The fishing vessels shall report its position with interval of four hours (the fishing vessels target eastern Atlantic bluefin tuna shall also report its position to secretariat of ICCAT directly). Starting from 1 January 2020, long line vessels and purse seiner vessels shall report its position with interval of at least two hours and at least one hour respectively.

2. In East Pacific Ocean (Pacific area east of 150^{o} W): the fishing vessels operating in the area shall report its position with interval of four hours.

3. In Indian Ocean: the fishing vessels operating in the area shall report its position with interval of four hours.

4. In Western and Central Pacific Ocean (including the area south of 4^{o} S, 130^{o} W-150^{o} W that overlapping with IATTC):

a. The fishing vessels operating in the area shall report its position to COFA and WCPFC secretariat with interval of one hour.

b. During the period of prohibition of using FADs, the purse seiner vessels shall report its position to COFA and WCPFC secretariat with interval of thirty minutes. In the case of vessel monitoring equipment has problem, the purse seiner vessel shall immediate return to port for repair, and no manual reporting be allowed.

c. Some vessel position monitoring equipment formerly approved by WCPFC are no longer in meeting the requirement decided by this Commission (Argos: FVT, MAR GE, MAR GE V2 and MAR GE V3), the fishing vessels currently using such equipment shall replace it by vessel position motoring equipment of other type before the end of December, 2022.

d. Except the regulation for purse seiner vessels during the period of prohibition of use FADs, if vessel monitor equipment has problem, the related enterprise shall immediately report the situation to COFA, and shall conduct manual report of vessel position to COFA and WCPFC secretariat based on unified form with interval of six hours before trouble of equipment be cleared, and shall repair the equipment or replace the position monitoring equipment within 30 days. If the vessel in question cannot recover automatic position reporting within 30 days, the fishing vessel shall stop fishing, retrieve all of its fishing gear and return to port. However, if the vessel cannot return to port due to malfunction of satellite network or mechanical fault of the vessel, the enterprise concerned may apply for a period of additional 15 days of manual report to WCPFC secretariat via COFA, interval of manual report shall be four hours during the additional 15 days.

VII. Transshipment and Accept Observers

1. Products fished by a purse seiner vessel and Atlantic bluefin tuna harvested by a long line vessel shall not be transshipped at sea. The above products can only be landed or transshipped in designated ports reported by relevant states and recorded by Commissions.

2. Starting from 1 January 2019, all tuna fishing vessels shall be prohibited from transshipping its products in east high seas pocket (high seas area surrounding by Exclusive Economic Zones of Cook Inlands, French Polynesia and Kiribati) of Western and Central Pacific Ocean.

3. Except the above regulation, other fishing vessels fish for tunas may transship its products at sea, but shall only transship to the carry vessels that registered in Commission of respective ocean and has a regional observer on board. It shall report to COFA before each of transshipment happened.

4. All tuna fishing vessels shall have obligation to accept a national observer dispatched by this Ministry based on request of Commissions, as well as a regional observer deployed by Commissions under relevant measures, and shall strictly follow the request by *Implementation Regulation on National Observer Management in Distant Water Fisheries* [Nongbanyu (2016) No. 72], provide living and working convenience to observers as to official crew. The observer is not obstructed, intimidated, interfered with, influenced, bribed or is attempted to be bribed in the performance of his/her duties. In the event that an observer presumed fallen overboard and other accidents, the relevant fishing vessels shall immediately cease all fishing operations and commence search and rescue, and report the situation to this Ministry and COFA.

VIII. High Seas Boarding and Inspection

Currently the WCPFC is an only Commission that has measures to board and inspect fishing vessels fish for tunas on the high seas, enforcement vessels shall be registered in the Commission and fly the flag of the Commission's unified enforcement flag. The fishing vessels fish for tunas in the area shall cooperate with duly authorized enforcement officials to board and inspect the fishing vessel under the situations to ensure the safety of fishing vessel and crew and after verification of

identity of enforcement vessel and officials. If any problem occurred, the fishing vessel shall immediately, through its enterprise, report the problem to this Ministry and COFA.

IX. Catch Documentation System (CDS)

The enterprises conducting tuna fisheries shall go through the procedure for certificating its Statistic Documents and Catch Documentation in this Ministry and General Administration for Customs via COFA when carrying back or importing, exporting or re-exporting frozen bigeye tuna, swordfish and Atlantic bluefin tuna. Enterprises conducting Atlantic Bluefin tuna Import and export shall be registered and using e-BCD.

COFA shall complete the work related to CDS strictly according to the relevant regulation issued by this Ministry and General Administration for Customs, With respect to online verification of customs clearance certification for the legal catch of frozen bigeye tuna, swordfish and Atlantic bluefin tuna, COFA shall conduct the verification strictly in accordance with the request stipulated in *the No. 2157 Announcement by Ministry of Agriculture- General Administration for Customs*, so that to deter the IUU caught above products entering into customs area of China.

X. Bycatch Species

1. Sharks

(1) This Ministry does not approve any distant water fisheries project that targeting sharks, all tuna enterprises and fishing vessels shall, to the greatest possible, avoid or reduce catching sharks. Except the no retention shark species, fishing vessels fish for tunas shall fully utilize harvested sharks (i.e. keeping shark carcass and fin, excepting head, guts, and skins). The weight of shark fin on board shall not be over 5% of the weight of sharks on board up to the first point of landing. Fishing vessels are encouraged to take measures including shark fin and shark carcass naturally attached, fin and carcass binding together or using corresponding labels.

(2) It shall prohibit retaining on board, transshipping and landing the following shark species:

a. Atlantic Ocean: bigeye thresher sharks, whitetip sharks, hammerhead sharks (including *Sphyrna lewini*, *Sphyrna mokarran* and *Sphyrna zygaena*), silky sharks and North Atlantic shortfin mako (north of 5^{o} N).
b. Indian Ocean: bigeye thresher sharks and whitetip sharks.
c. Western and Central Pacific Ocean: whitetip sharks and silky sharks.
d. East of Pacific Ocean: whitetip sharks and Mobulid rays (includes Manta rays and Mobula rays) (in the area of south of 4^{o} S,130^{o} E to 150^{o} E, the fishing vessels fish for tunas registered in IATTC shall observe the prohibition of Mobulid rays). Longline vessels shall limit its bycatch of silky sharks to a maximum of 20% of the total catch by one fishing trip in weight.

If fishing vessels caught the above shark species incidentally, the sharks shall be immediately released without further harm under the precondition of ensuring the safety of crew, and to record the details in the fishing log books accurately (with

indication of status when releasing: dead/alive).

(3) Prohibition of using "shark lines": longline vessels operating in the Pacific Ocean shall be prohibited using "shark lines" (individual lines attached to the floatline or to the floats directly, and used to target sharks).

2. Seabirds

Longline vessels operating in the area south of 25° S in the Atlantic Ocean, in the area south of 25° S in the Indian Ocean and in the area north of 23° N and south of 30° S in the Pacific Ocean shall use two mitigation measures from equipping tori lines, night setting and weighted branch lines.

Longline vessels operating in the area south of 30 °S in the Western and Central Pacific Ocean may use hook-shielding devices to replace the above three measures. Starting from 1 January 2020, among mitigation measures of tori lines, weighted branch lines and hook-shielding devices, longline vessels fishing in the area 25 °S-30 °S in the Western and Central Pacific Ocean shall use one of three measures.

3. Sea Turtles

All longline vessels shall equip de-hooks, to minimum the harm to possible bycaught sea turtles. As far as possible, longline vessels shall use circle hooks to reduce damage of possible incident caught sea turtles. The longline vessels operating in Indian Ocean are encouraged to use finfish as bait, using squid as bait is not encouraged.

4. Cetaceans or Whale Sharks

If a cetacean or a whale shark is sighted prior to commencement of the set, a tuna purse seiner vessel is prohibited from setting a purse seine net on a school of tuna associated with a cetacean or a whale shark. In the event that a cetacean or a whale shark is unintentionally encircled in the purse seine net, the purse seiner vessel shall stop the net roll, release the cetacean or the whale shark, and report the incident to WCPFC secretariat and COFA via enterprise it belongs to.

5. Atlantic Sailfish and Marlin

Longline vessels operating in Atlantic Ocean are encouraged to use circle hooks, to reduce damage of incident caught sailfish and marlin. Fishing vessels are encouraged to take appropriate steps in conducting no harm release the incident caught sailfish and marlin, and to reduce the mortality rate to the greatest possible.

XI. Marine Environment Protection

1. Fishing vessels operating on the high seas in the Indian Ocean and in the Pacific Ocean shall be prohibited from fishing within one nautical mile of a data buoy that collect data used to conduct oceanographic research, and shall be prohibited from cutting a data buoy anchor line and taking a data buoy on board of a fishing vessel.

2. Starting from 1 January 2019, the fishing vessels operating in the Western and Central Pacific Ocean shall be prohibited from discharging any plastics (including plastic packaging, items containing plastic and polystyrene).

3. If fishing vessels caught a tuna with label from tag programme, it should record species, fork length, weight, position of harvest (longitude and latitude) and other information of the caught tuna as far as possible, and should report to COFA as soon as possible.

XII. Temporary Access

COFA should strengthen the organizing and coordinating fishing vessels fish for tunas temporarily access to other countries' national jurisdiction. When fishing vessels fish for tunas need to temporarily access to other countries' national jurisdiction under chartering or access agreement, the enterprises that own the fishing vessels shall report number of fishing vessels accessed, actual fishing days, catch, observers on board of the fishing vessels and other information to COFA before the access and within 5 days after the access completed.

XIII. Prohibition of fishing for South Bluefin Tuna (SBT)

Currently China is not yet a member of the Commission for the Conservation of Southern Bluefin Tuna established in 1994, and does not obtain the fishing quota of SBT, in order to avoid illegal fish for or incident catching SBT, the fishing vessels of China shall observe the following measures:

1. No retention on board, transshipping and landing SBT, the incident caught SBT shall be released immediately and recorded in the log book.

2. In the Indian Ocean: It shall prohibit from fishing in the areas of 30° S to 45° S, 20° E to 45° E and 30° S to 45° S, 70° E to 140° E from 1 September to 31 October. It shall prohibit from fishing in SBT spawning ground of 10° S to 20° S, 100° E to 130° E all year round.

3. In the Western and Central Pacific Ocean: It shall prohibit from fishing in the areas of 37° S to 45° S, 170° E to 180° E and 45° S to 50° S, 150° E to 170° E all year round.

4. In the Atlantic Ocean: It shall prohibit from fishing in the area of 40° S to 45 °S and 10° W to 20° E all year round.

COFA shall complete its work on vessel monitor and early warning, once detecting a fishing vessel is in violation of above regulation, it shall immediately ask the vessel to leave the prohibited area, and report the case to this Ministry.

XIV. Fishing Vessel Marking

The distant water fishing vessels shall painted name of the vessel, call sign and port of registry and other marking on the hull according to relevant regulation of this Ministry, and shall ensure the marking always keeping clearness.

All tuna enterprises shall serious comply with above management measures, and earnestly work out training of relevant persons, so as to enhance the level of observing law and discipline as well as implementation. The Provincial (Autonomous Regional and Municipal) fisheries authorities shall supervise and urge the enterprises conducting distant water fisheries under its respective jurisdiction to seriously implement the above management measures, reduce the number of infringement events concerning foreign affairs. COFA shall do its best for the work entrusted and authorized by this Ministry and shall publish the detailed measures on its website, so that the enterprises can easily follow the measures. COFA shall not collect charges from enterprises related to the work entrusted by this Ministry. COFA should strengthen the organizing and coordinating the industry, and improve organizational degree and self-discipline level of the industry continually.

For detailed management measures, please refer to the website of Commissions as well as COFA (see the attachment).

Notification by General Office of Ministry of Agriculture on Strictly Comply With International Tuna Measures [Nongbanyu (2013) No.21] is no longer in effective starting on the date of this Notification issued.

General Office of Ministry of Agriculture and Rural Affairs
(With official stamp)
7 January 2019

Attachment: Relevant website.

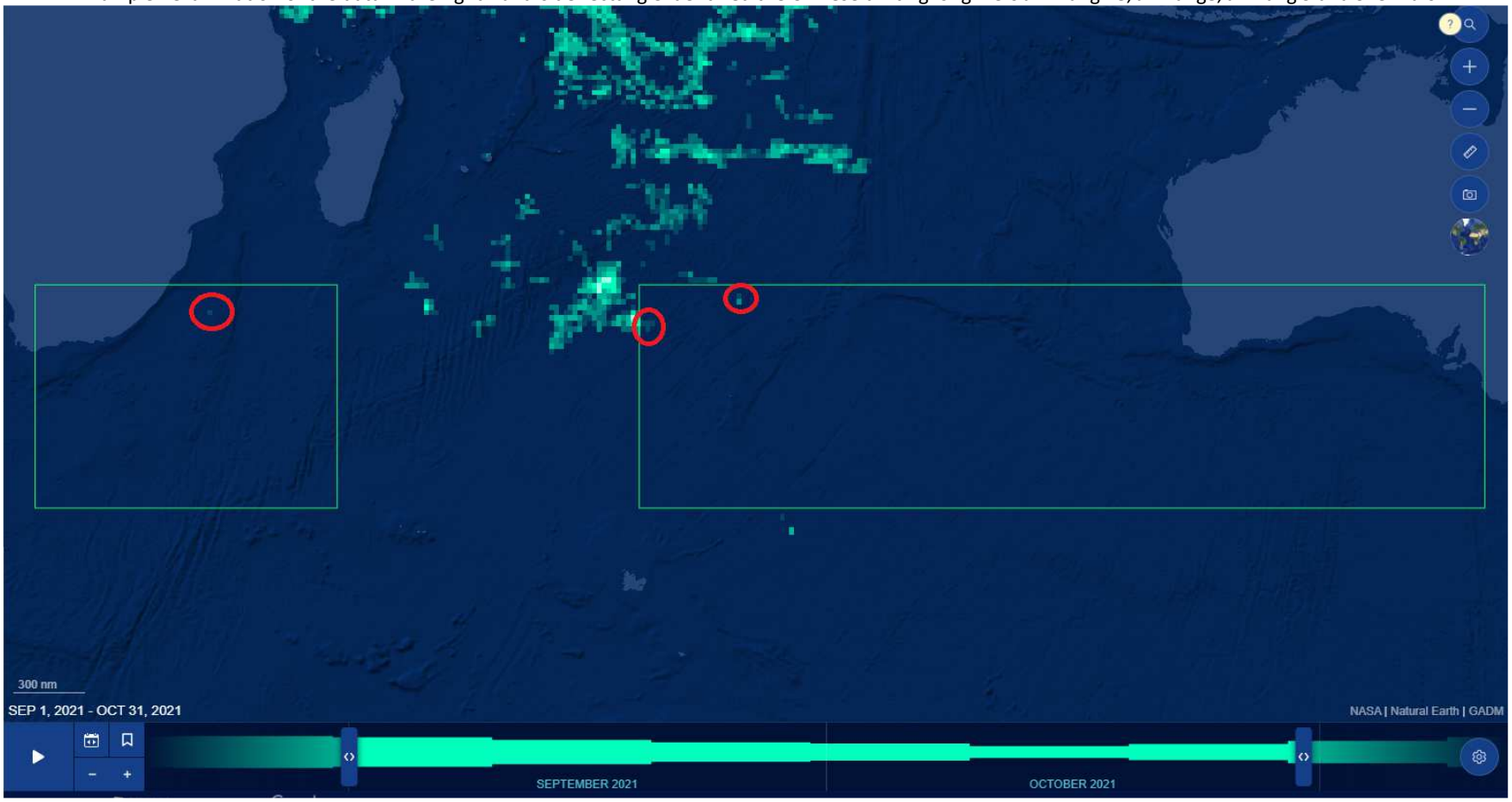
Attachment:

Relevant Website

1. the International Commission for Conservation of Atlantic Tunas (ICCAT)
   http://www.iccat.int/en/RecsRegs.asp
2. Indian Tuna Commission (IOTC)
   http://www.iotc.org/cmms
3. Western and Central Pacific Fisheries Commission (WCPFC)
   https://www.wcpfc.int/conservation-and-management-measures
4. Inter-American Tropical Tuna Commission (IATTC)
   http://www.iattc.org/ResolutionsActiveENG.htm
5. China Distant Water Fisheries Information Network
   www.cndwf.com

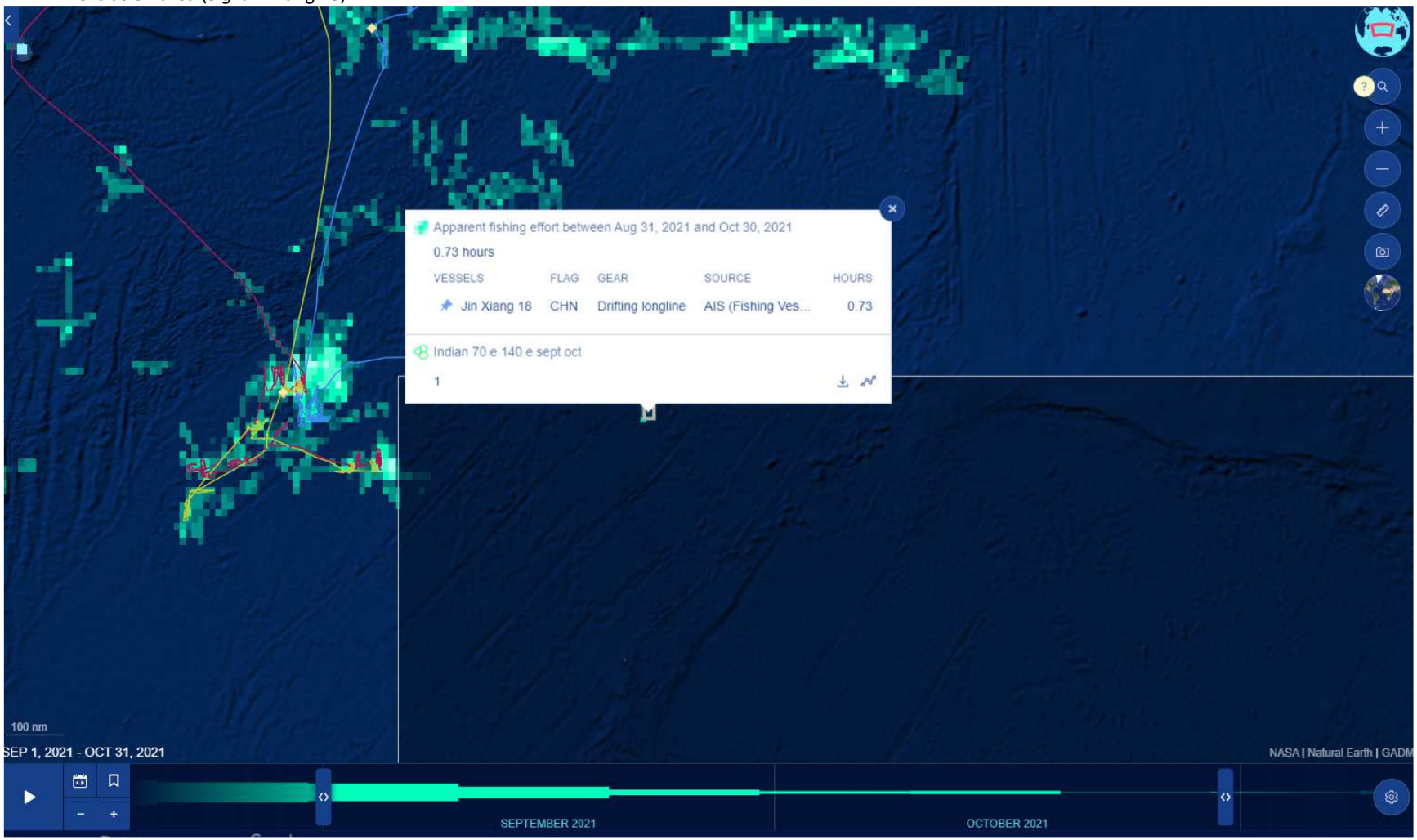
Map 1b: **2021 Calendar Year, Chinese Legislation, part-year exclusion areas**

- The 2 green rectangles representing the annual 1 September to 31 October exclusion zones for fishing by Chinese vessels described in the Chinese legislation
- Green/blue squares indicate apparent fishing effort - a small amount of activity by Chinese vessels appears to be indicated in both rectangles
- Example - examination of the data in the left-hand-side rectangle identified the Chinese drifting longliner Haishang 78 (BZ7UW)
- Example - examination of the data in the right-hand-side rectangle identified the Chinese drifting longliners Jin Xiang 18, Jinxiang8, Jinxiang 9 and Shenhui04



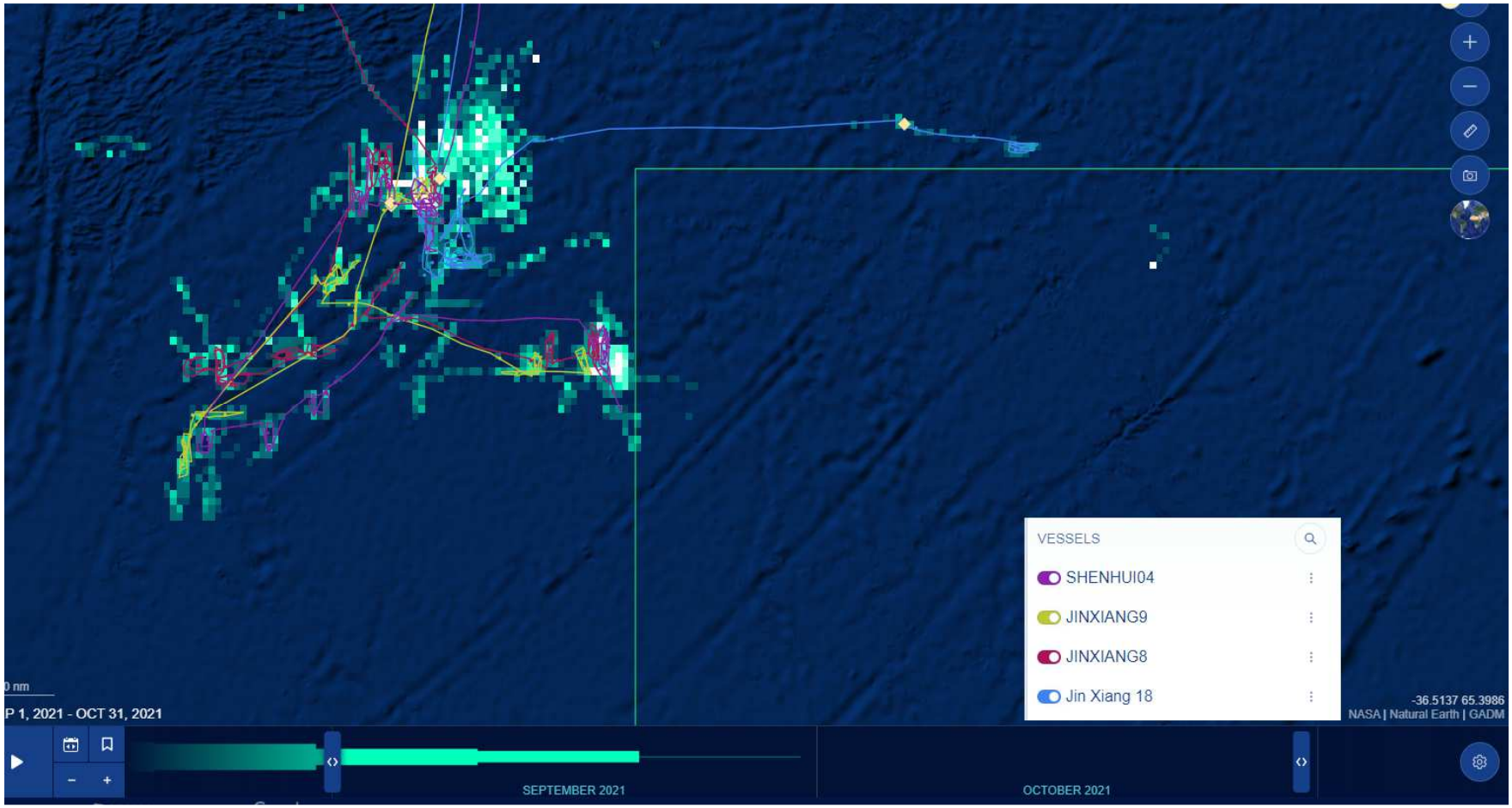
Map 1c: **2021 Calendar Year, Chinese Legislation, part-year exclusion areas *(continued)***

- Example - clicking on an individual square (right-hand-side rectangle) shows information about vessels which seem to be in the 1 September to 31 October exclusion area (*e.g.* Jin Xiang 18)



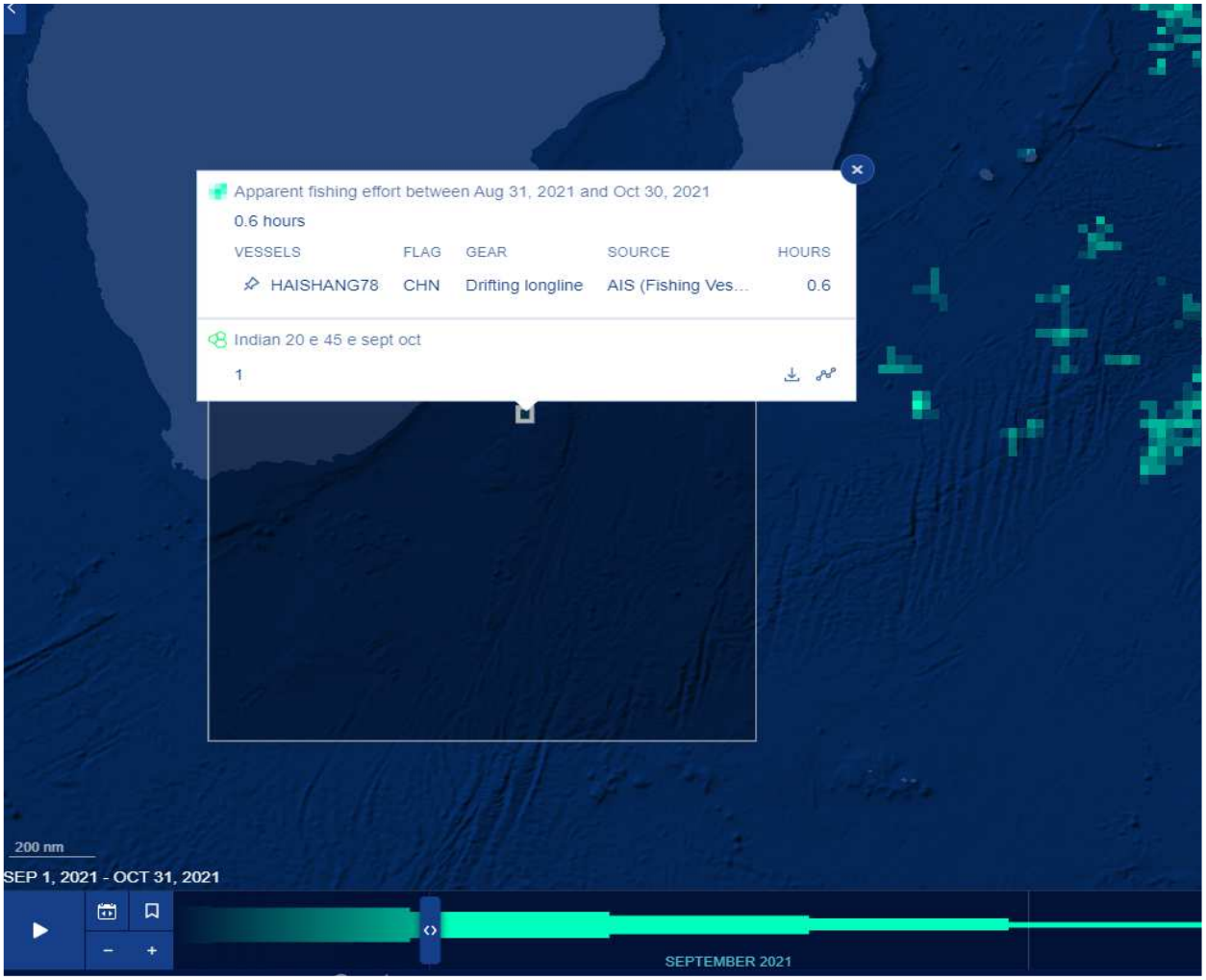
Map 1d: **2021 Calendar Year, Chinese Legislation, part-year exclusion areas *(continued)***

- Representing the data for Jin Xiang 18, Jinxiang8, Jinxiang 9 and Shenhui04 as tracks appears to show these stopping outside the 1 September to 31 October exclusion area



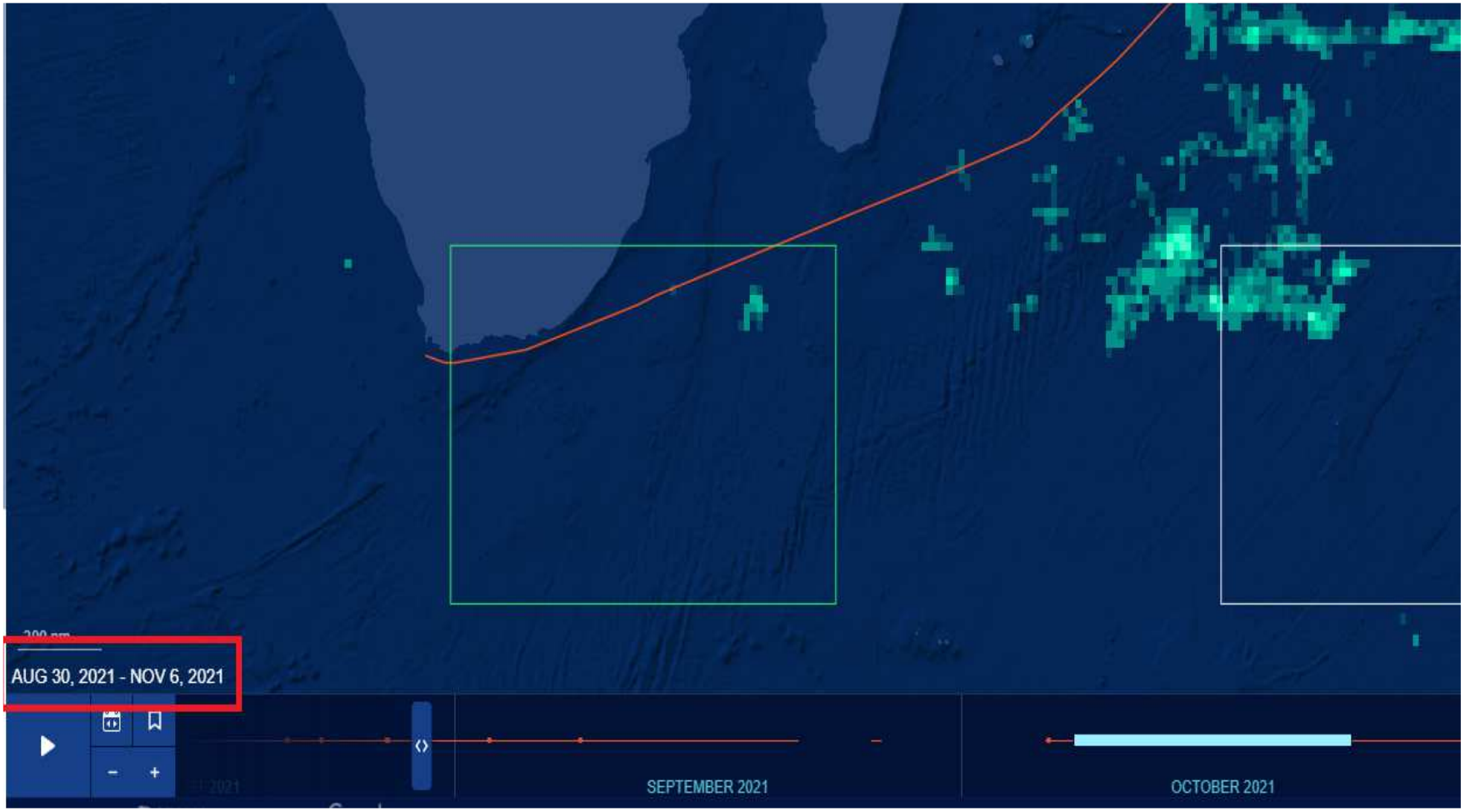
Map 1e: **2021 Calendar Year, Chinese Legislation, part-year exclusion areas *(continued)***

- Example - examination of the data in the left-hand-side rectangle identified the Chinese drifting longliner Haishang 78 (BZ7UW) – closer view

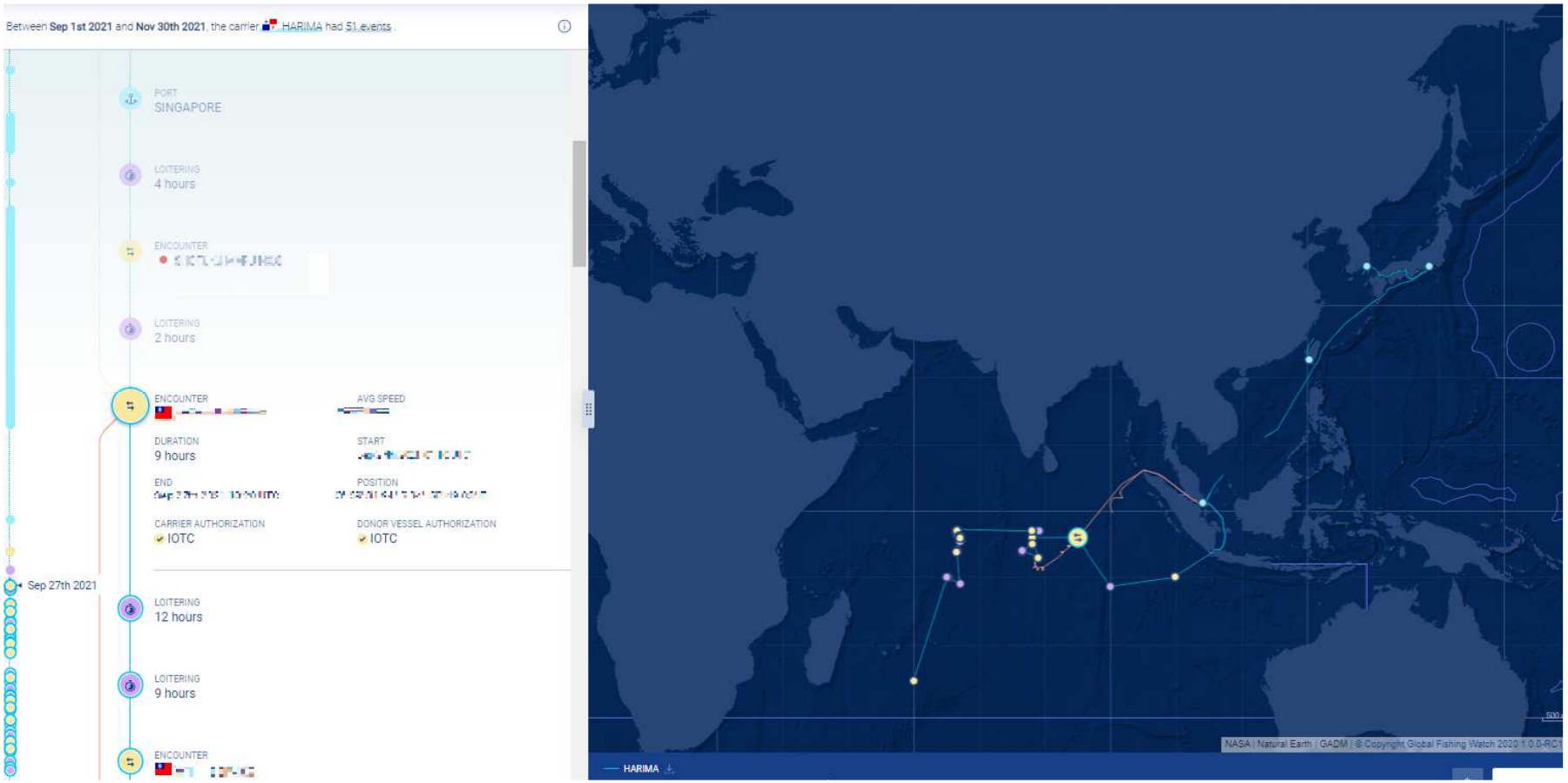


Map 1f: **2021 Calendar Year, Chinese Legislation, part-year exclusion areas *(continued)***

- By extending the timeframe to 30 Aug – 6 Nov 2021 using the bottom left-hand-side date slider and adding a track (rather than a point) for Haishang 78, it seems clear that this vessel is only transiting through the left-hand side 1 September to 31 October exclusion area

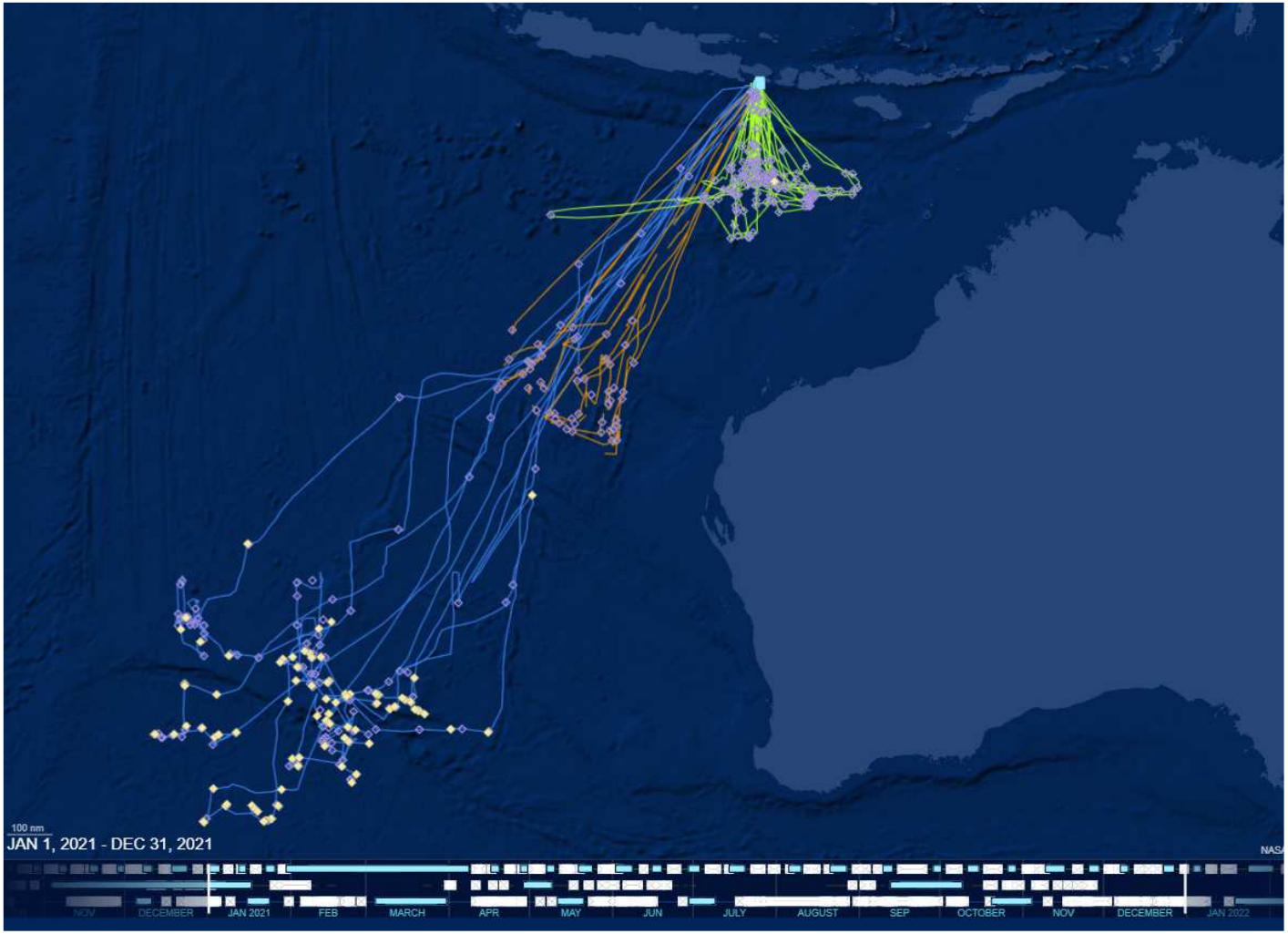


Map 2: September 2021 – Example of CV Harima Encounter/ Loitering/ Port events (source: GFW CV Portal)



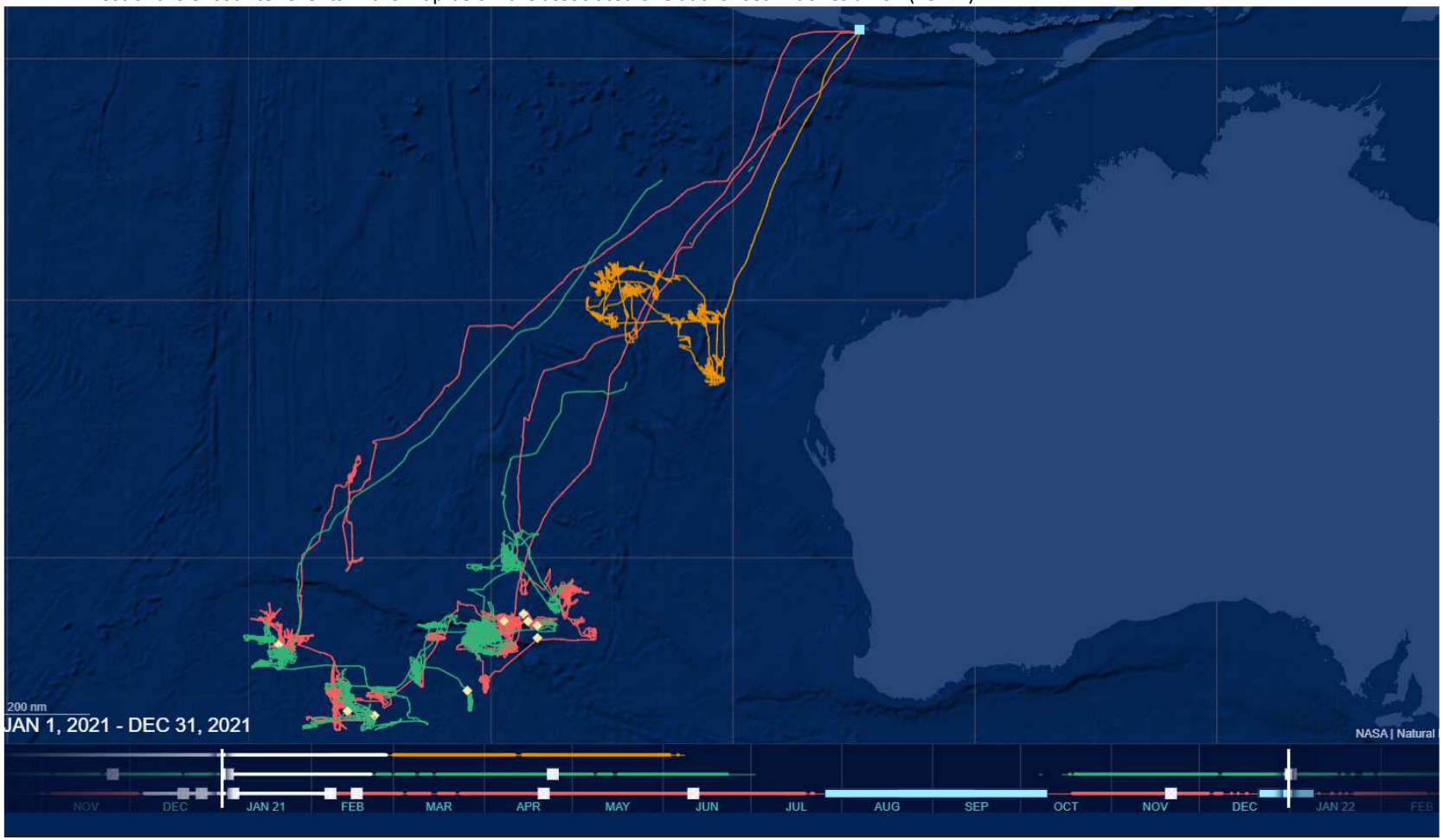
Map 3 Calendar Year 2021: AIS Tracks of 3 of 4 Indonesian CVs that Received SBT Transhipments

- 3 of the 4 Indonesian-authorised CVs for which the Secretariat received transipment observer reports for during 2021 were visble as AIS tracks on the GFW main map – “CV1” in blue, “CV2” in orange, “CV3” in green

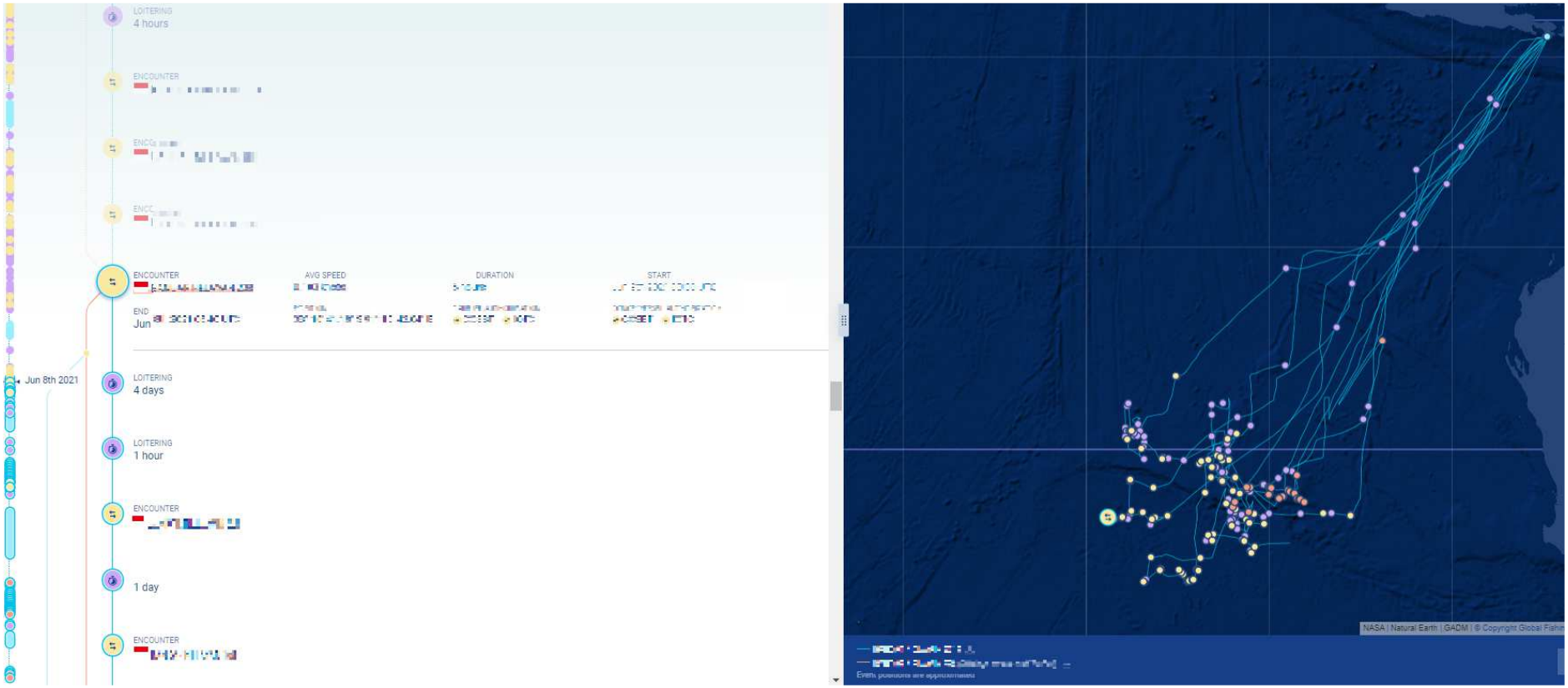


Map 4: Calendar Year 2021: AIS Tracks of 3 Indonesian Longliners with Freezing Capacity

- AIS tracks of 3 of the 15 Indonesian longliners with freezing capacity were visible on AIS during 2021 - the yellow diamonds (9) are 'encounter' events
- Encounter events are indicated for the 2 longliners with red and green tracks but not for the longliner with the orange track
- Most of the encounter events in the map below are associated one authorised Indonesian CV ("CV1")



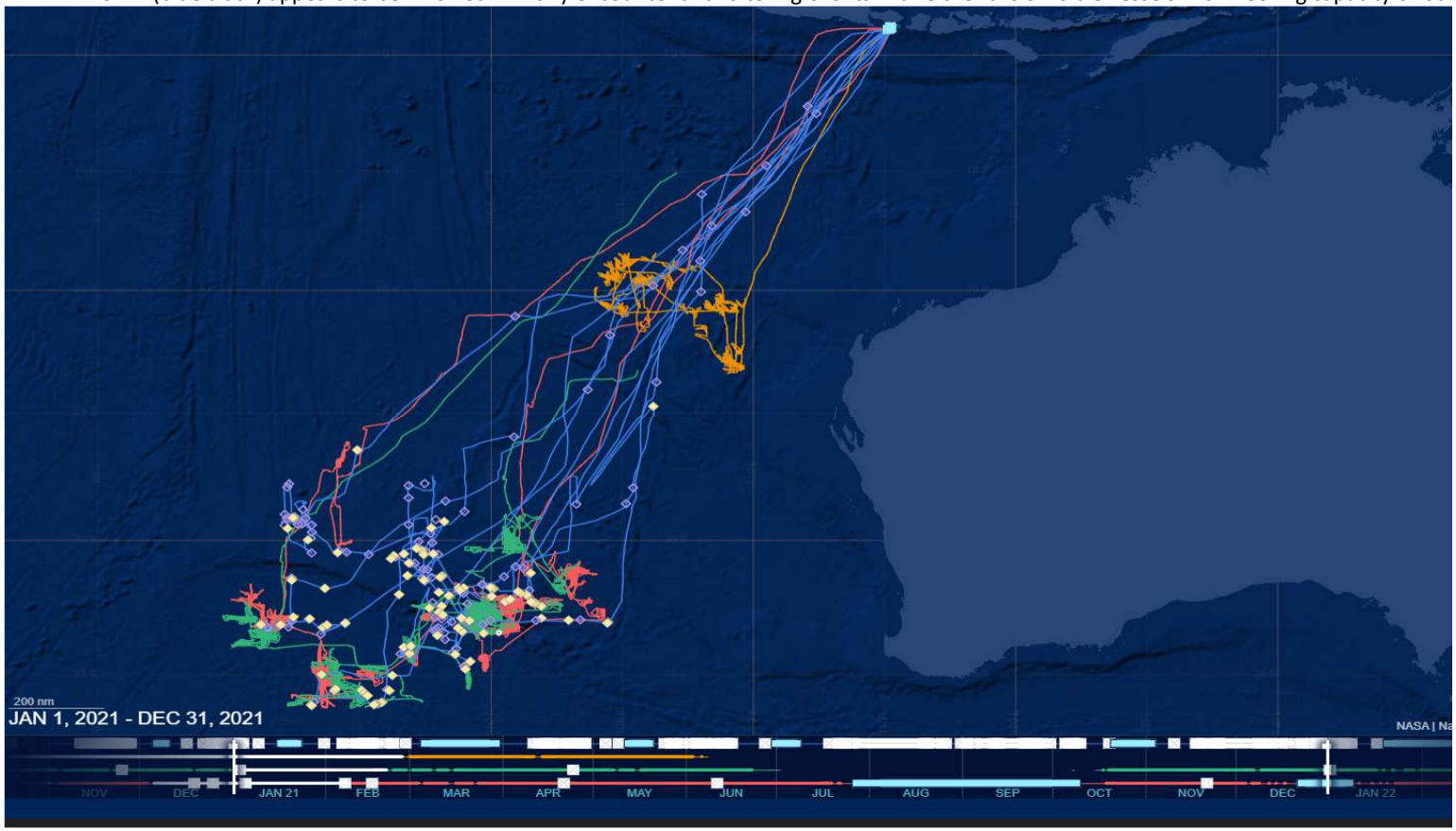
Map 5: 2021 Calendar Year (1 Jan – 31 Dec 2021): Example - Indonesian Authorised Carrier Vessel ("CV1") Encounter/Loitering Events over a Short Time Period during 2021



Map 6a: 2021 Calendar Year

AIS Tracks of 3 Indonesian Longliners with Freezing Capacity plus the AIS track of example "CV1" (blue)

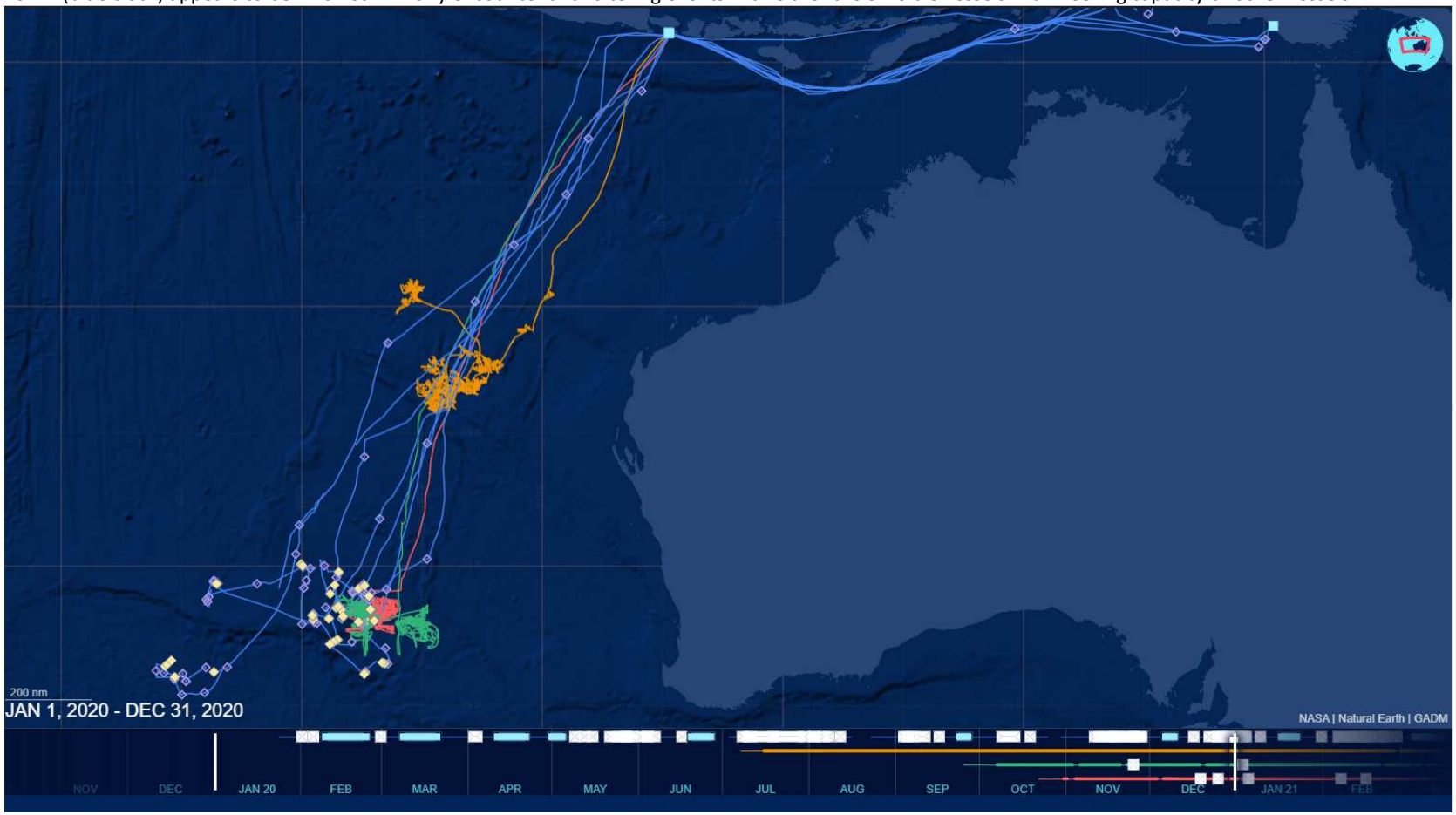
- The map shows the AIS tracks of the same 3 Indonesian longliners with freezing capacity during 2021 (as in map 4) as well as the blue AIS track of "CV1" (as in map 3); any encounters (yellow diamonds) or loitering events (purple diamonds) associated with "CV1" are also shown
- "CV1" (blue track) appears to be involved in many encounter and loitering events with either the 3 visible vessels with freezing capacity or other vessels



Map 6b: 2020 Calendar Year

AIS Tracks of 3 Indonesian Longliners with Freezing Capacity plus the AIS track of example Carrier vessel "CV1" (blue)

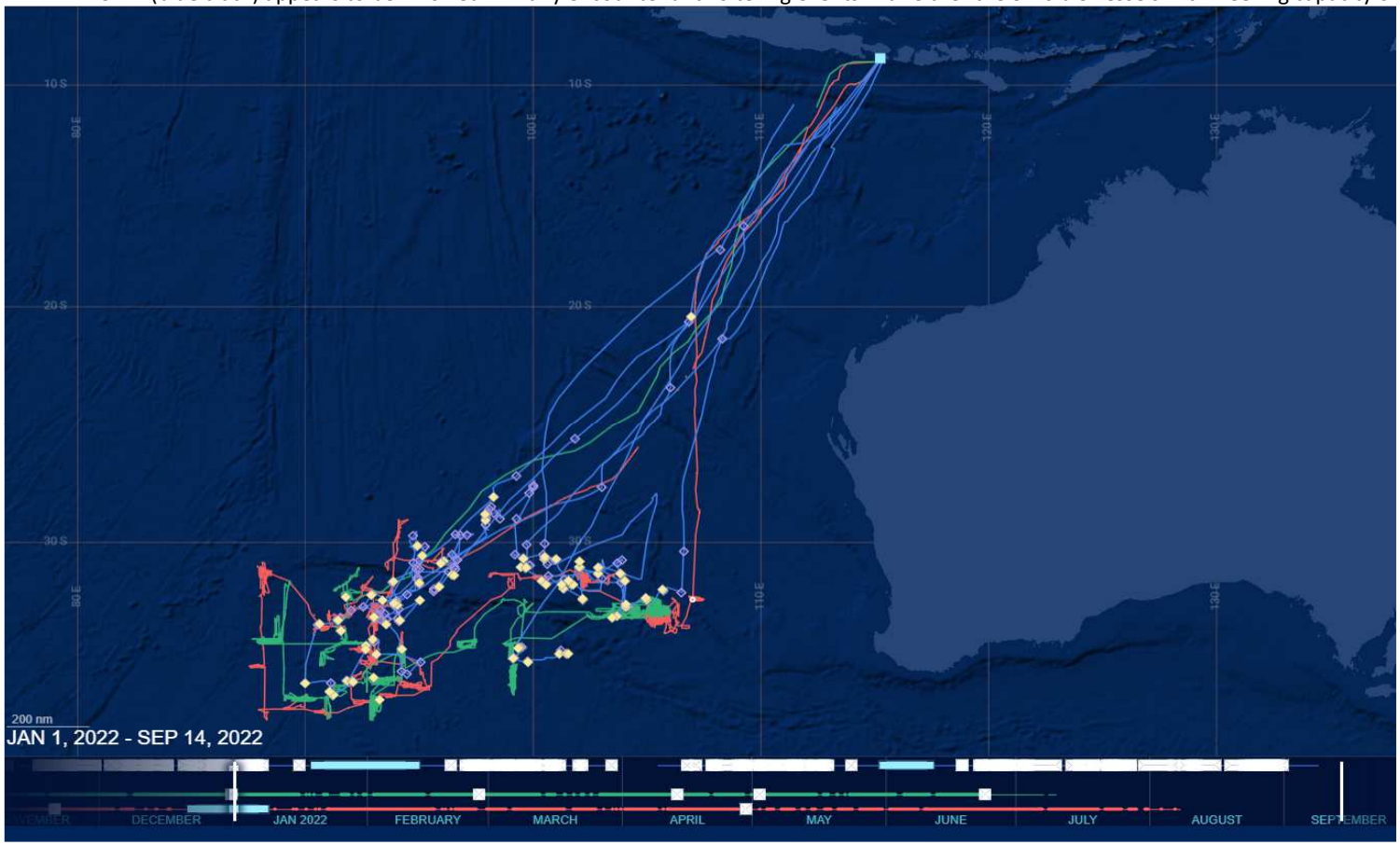
- The map shows the AIS tracks of the same 3 Indonesian longliners with freezing capacity during 2020 as well as the blue AIS track of "CV1"; any encounters (yellow diamonds) or loitering events (purple diamonds) associated with "CV1" are also shown
- "CV1" (blue track) appears to be involved in many encounter and loitering events with either the 3 visible vessels with freezing capacity or other vessels



Map 6c: 2022 Calendar Year (01/01/2022 to 14/09/2022)

AIS Tracks of 3 Indonesian Longliners with Freezing Capacity plus the AIS track of example "CV1" (blue)

- The map shows the AIS tracks of the same 3 Indonesian longliners with freezing capacity during 2022 as well as the blue AIS track of "CV1"; any encounters (yellow diamonds) or loitering events (purple diamonds) associated with "CV1" are also shown
- "CV1" (blue track) appears to be involved in many encounter and loitering events with either the 3 visible vessels with freezing capacity or other vessels



Map 7: 2022 Calendar Year (01/01/2022 to 14/09/2022)

- The Secretariat noticed the vessel below which on the GFW platform appears as being flagged to Leichtenstein; the same vessel is CCSBT-authorised and noted as being flagged to Indonesia