

NSIN/NGA Global Fishing Forecast Challenge Technical Details and Judging Criteria

Technical Requirements

To be successful in this challenge, participants will need to be familiar with the Global Fishing Watch (GFW) Apparent Fishing Effort data product (Source: Automatic Identification System-AIS) and the methods used to create it.

The fishing effort data product is available to the public with a 72-hour latency here:

<https://globalfishingwatch.org/map>

- The scoring team will use the GFW AIS-based Apparent Fishing Effort data as a baseline/ground truth to score participant forecasts.

The code used to develop the fishing effort data is available to the public here:

<https://globalfishingwatch.org/datasets-and-code/>

- This code will help participants understand the methodology by which the GFW creates the AIS-based Apparent Fishing Effort data product. However, participants will need to develop their own methods to forecast future iterations of the Apparent Fishing Effort data product.

Deliverables

Proposal Round – Participants will have three successive attempts to forecast daily and weekly fishing effort for 1, 2, and 3 weeks into the future for each attempt. Appendix A provides the detailed forecast submission schedule and guidelines.

Together with those forecasts, participants will provide a written notional concept of operations (CONOPS) of the solution, including methods and system information (data, software, algorithms, etc.), and an annotated graphic/schematic, illustrating the CONOPS. Appendix B provides details for the CONOPS submission.

Pitch Round – Finalists will have five additional successive attempts to forecast daily and weekly fishing effort, this time up to 5 weeks into the future for each attempt. The finalists will also submit the CONOPS (with updates if applicable) and present it to the judging panel.

Participants selected as finalists will deliver the following by 23:59 **Eastern Time** on the Pitch Round submission close date:

- The final set of forecasts in accordance with the forecast schedule in Appendix A.
- Pitch presentation in accordance with Appendix B.

- At the pitch event, finalists will receive 5 minutes to present their CONOPS, followed by 5 minutes of questions from the judging panel.

Judging Criteria

Category	Criteria
Capability:	<ol style="list-style-type: none"> 1) Clearly, effectively, and comprehensively explains a method to <u>automate</u>: <ol style="list-style-type: none"> a) Accurate forecasts of AIS-based “fishing effort” at 1- and 10- square-kilometer scales for regions around the world in the short term (i.e., daily and weekly). The actual forecast performance will be graded quantitatively in the challenge. b) Succinct summaries of forecast fishing effort for relevant fisheries management zones (EEZ, FAO, MPA, RFMO¹) and by AIS-based vessel characteristics (flag and fishing gear type) and statistical information (i.e., mean absolute scaled error or MASE and Cohen’s Kappa) on past forecast performance in the respective regions. 2) Describes the process for systematic forecast improvements based on observed AIS-based Global Fishing Watch and other ground truth data and user feedback.
Data, Methods, Dissemination:	<ol style="list-style-type: none"> 3) Uses appropriate, credible, and diverse commercial or publicly available data and methods. 4) Explains how the forecast data and methods are public-releasable. 5) Scalable globally and to other regions not assessed in this challenge and temporally for the medium term (monthly, seasonal, etc.) with consideration of the long term.
Innovation and Commercialization	<ol style="list-style-type: none"> 6) Effectively leverages <u>novel</u> data and methods not typically applied in maritime domain awareness applications (e.g., data fusion, visualization; social data: holiday schedule; environmental data: weather, fish stock, etc.). 7) Identifies compelling methods to improve the capability and further innovate to combat IUU fishing including and beyond the scope of the challenge if additional government data sources were furnished (e.g., dark targets). 8) The capability is viable in non-defense markets and applications.

¹ Exclusive Economic Zone, Food and Agricultural Organization major fishing areas, Marine Protected Area, Regional Fisheries Management Organization