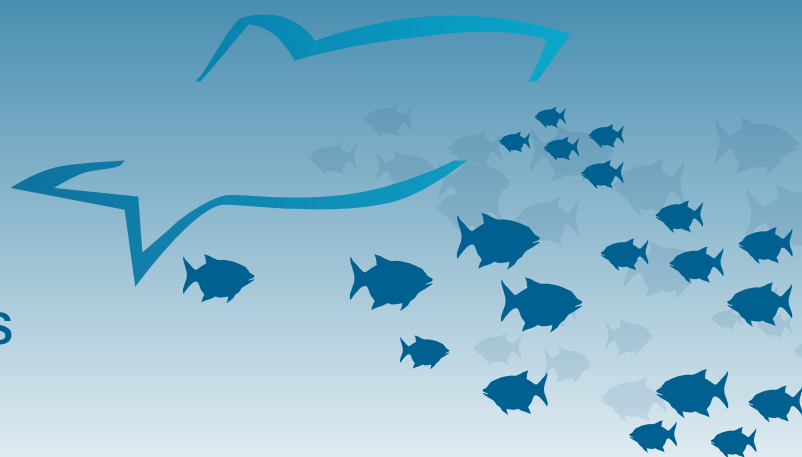




Food and Agriculture
Organization of the
United Nations

FIRMS

FISHERIES AND RESOURCES MONITORING SYSTEM



Fisheries are a fundamental source of food, livelihood and trade all around the globe. Conservation and protection of aquatic resources requires cooperative, careful stewardship. Two thirds of all stocks are sustainably fished with catches up to maximum sustainable limits, while 82 percent of catches by weight are from sustainable sources. However, there are indications that overall, the state of world fishery resources and their ecosystems are deteriorating. To stop and reverse this trend – achieving sustainable harvest of all fisheries resources – coordinated action must be taken by national, regional, and international bodies. FIRMS provides such coordinated action on the global monitoring of fishery resources by collating reliable, relevant and up-to-date information that is necessary to inform evidence-based policies and actions.

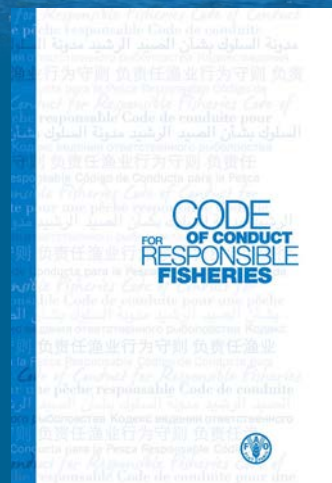


©FAO/Martinus VanDerKnaap

Code of Conduct for Responsible Fisheries

The Code of Conduct for Responsible Fisheries, adopted by FAO Members on 31 October 1995, contains a broad set of principles and methods for developing and managing fisheries and aquaculture. A voluntary, nonbinding instrument, the Code is widely recognized as the global standard for setting out the aims of sustainable fisheries and aquaculture for the coming decades.

Within the framework of the Code, four International Plans of Action and the Strategy for Improving Information on Status and Trends in Capture Fisheries, as well as voluntary international guidelines and binding instruments such as the Ports State Measures Agreement, have been developed as complementary instruments to promote further the objectives of responsible fisheries.



What is FIRMS?

Partnership

The Fisheries and Resources Monitoring System (FIRMS) provides decision-makers and others with high-quality, authoritative information on global marine fisheries resources. This information provides the means to develop informed fisheries and marine resource policies in accordance with the Code of Conduct for Responsible Fisheries.

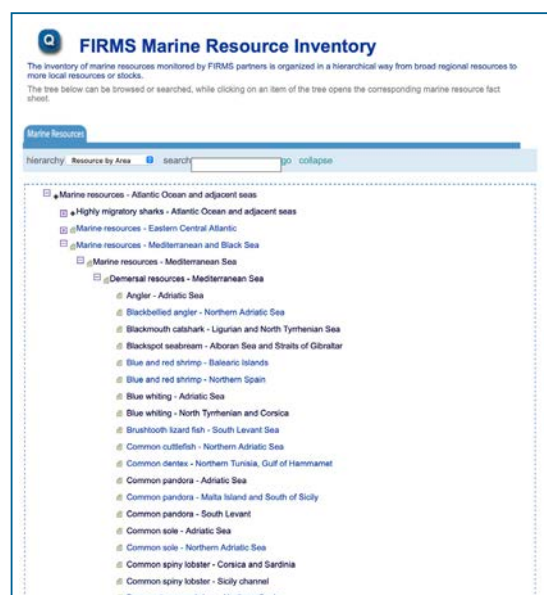
FIRMS is the result of a partnership of intergovernmental fisheries organizations with competence for resource assessment, management and conservation. The partners have committed to providing a single point from which to obtain authoritative fisheries information which they have validated, with a link to original source materials.

FIRMS was established in February 2004 to meet the need for reliable fisheries information. In so doing, FIRMS participates in the development and promotion of global standards for collection, compilation, validation and dissemination of data and information on monitoring and management of marine fishery resources. FIRMS has succeeded by fostering cooperation between partners responsible for implementing fisheries policies at the international level, including through assessment and management. This success broadened FIRMS coverage to national stocks by enlarging the partnership to research institutions playing a key role in global resources monitoring. This also helps to inform the Sustainable Development Goals indicator 14.4.1 "percentage of fish stocks within biological sustainable limits".

What does FIRMS offer?

Inventory of stocks and fisheries and fact sheets on their status

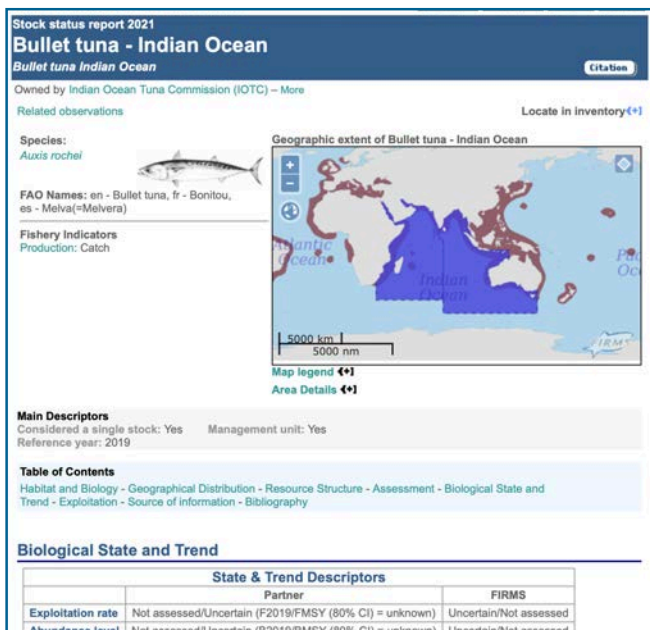
FIRMS works as a monitoring system for capture fisheries. It is conducted under the general framework of the 2003 FAO Strategy for Improving Information on Status and Trends of Capture Fisheries (Strategy-STF), which was endorsed by the United Nations General Assembly.



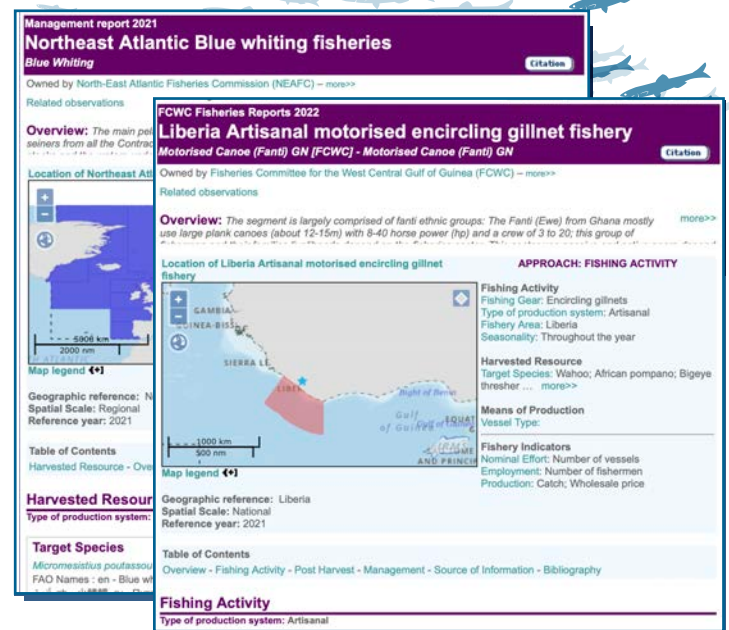
Inventory of stocks and fisheries

The unique fisheries resources monitored by FIRMS partners span from globally ranging stocks, to those occurring on smaller, more localized scales. Each partner agrees to regularly provide the information needed by decision makers for species and fishing areas for which they have primary responsibility. In this way, FIRMS contains a comprehensive and unique world list of stocks and fisheries defined at different area levels. As the partnership has grown and is growing, so has the number of marine resources included in the global inventory.

FIRMS information is presented in “Fact sheets” and “State of resources summaries” in a common format that makes it easy to locate information of interest for any resource in the inventory. For each resource, the FIRMS website pages include images and species descriptions, maps of geographical distributions, and statements of status and trends. These are backed by general biological and habitat characteristics and scientific assessment results including catch, plus management and conservation considerations. Every fact sheet is provided with a partner’s relevant links, easing the navigation to sources.




Marine resource fact sheet



Fishery fact sheet

Strategy for improving information on status and trends in capture fisheries

Strategy-STF, adopted by FAO in 2003 and supporting the principles of the Code of Conduct, provides a framework, strategy and plan to improve the knowledge and understanding of fishery status and trends as a basis for fisheries policy-making and management for the conservation and sustainable use of aquatic resources. 

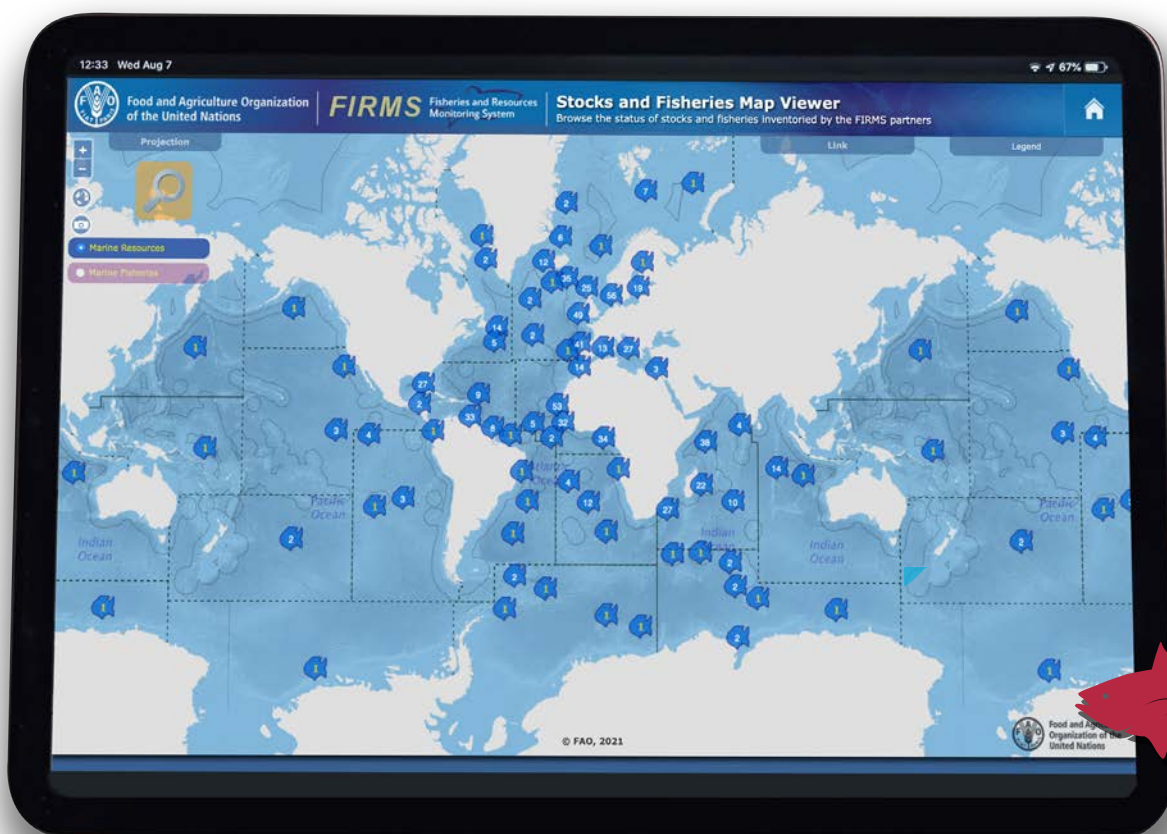


A map viewer for firms stocks and fisheries

A geospatial interface to browse the status of stocks and fisheries inventoried by the FIRMS partners.

Web data services for stocks and fisheries

Web-data services are available enabling users, partner's websites or systems to query and retrieve specific subsets of factsheets given an area or a species. Available formats: Excel, HTML, XML, JSON. Via data services, users can also generate reports extracting selected data and information upon specific criteria (e.g., filtering by species, areas, gears, years).



FIRMS map viewer



Global Record of Stocks and Fisheries (GRSF)

GRSF is the newest tool for a critical expansion of FIRMS information towards a world coverage. GRSF enables collation, standardization and harmonization across multiple data providers to facilitate and promote monitoring of all world stocks and fisheries status and trends. Four major database sources contribute to GRSF under the FIRMS governance:



- Fisheries and Resources Monitoring System (FIRMS): <http://firms.fao.org>
- RAM Legacy Stock Assessment Database: <http://ramlegacy.org>, owned by University of Washington
- FishSource: <http://www.fishsource.com>, owned by Sustainable Fisheries Partnership
- SDG14.4.1 Questionnaire for which FAO is custodian agency

Acting a global repository of a transparent inventory of stocks and fisheries records, GRSF offers a comprehensive worldwide coverage of over 2 000 fish stock records:

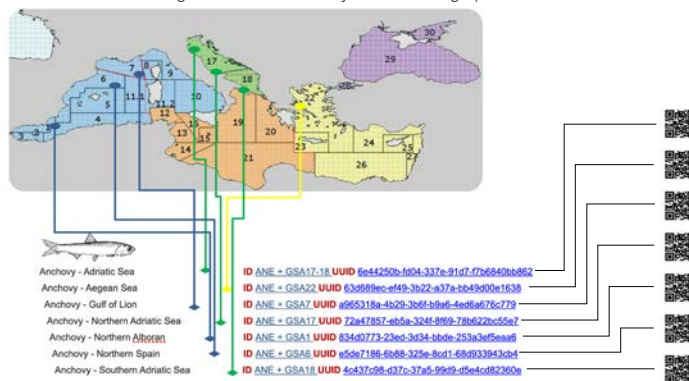
During the collation process under a shared harmonized standard, unique identifiers are carefully assigned to stocks and fisheries, and these are published through the GRSF catalogue. Unique identifiers consist of a machine readable universally unique identifier (UUID) and a human-readable semantic identifier with codes and labels.

The information in GRSF is intended to serve the needs of regional fisheries bodies and their member countries, national government agencies dealing with stocks and fisheries reporting, researchers analysing the state of global fishery resources, the fish food industry (from suppliers to retailers), and Non-governmental organizations promoting sustainable fisheries.

GRSF was developed as an initiative funded by the European Union Horizon 2020 BlueBRIDGE project using advanced IT solutions implemented by renowned IT research partners (CNR-ISTI, FORTH).

Universally Unique Identifier (UUID)

A web-resolvable digital identifiers for any data exchange protocols



Unique identifiers for fish stocks

STANDARD CODING SYSTEM FOR:

- Stocks <Species> + <Assessment Area(s)>
- Fisheries <Species> + <Fishing area(s)/Management area(s)> + <Management Authority(ies)> + <Geotype> + <Flag State>

EXAMPLE OF SEMANTIC IDENTIFIER, AND OF ITS FULL LABEL

asfis:COD + faa:21.3.M + authority:INT:NAFO + isscf:03.12 + iso3:LTU
Gadus morhua - Atlantic, Northwest/21.3.M - Northwest Atlantic Fisheries Organization (NAFO) - NAFO area of competence - Single boat bottom otter trawls - Lithuania

Species: *Gadus morhua*
Species code: COD
Fishing Area: FAO 21.3.M
Management Authority: Northwest Atlantic Fisheries Organization (NAFO)
Jurisdiction: NAFO area of competence
Fishing Gear: Single boat bottom otter trawls
Fishing Gear code: 03.12
Flag State: Lithuania
Flag State Code: LTU
ID: asfis:COD + faa:21.3.M + authority:INT:NAFO + isscf:03.12 + iso3:LTU
UUID: <http://.../a99fd03e-709e-3139-9f5d-133df0b103fd>

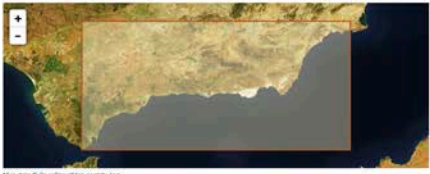
Traceability

Global Record of Stocks and Fisheries

Engraulis encrasicolus - Northern Alboran Sea

Short Name: Anchovy - Northern Alboran
 GRISF Semantic Identifier: asfs:ANE:glcm:1
 Record URL: <https://data.d4science.org/ctg/GRISF/b9a98fd-6deb-35d2-a931-82c8a3ab6714>

Dataset extent



Map data © OpenStreetMap contributors
 Tiles by MapBox

Tags

Assessment Unit Code 1 System glcm Name Northern Alboran Sea
 Code ANE Classification System ASFS Scientific Name Engraulis encrasicolus connected
 without similar records

Data and Resources



To access the resources you must log in. [Go to Login...](#)

- firms**
Fisheries and Resources Monitoring System aims to provide access to a wide...
- sdg**
FAO SDG14.4.1 measures the sustainability of the world's marine capture...
- fishsource**
FishSource is an online information resource about the status of stocks and...
- ram**
RAM Legacy Stock Assessment Database is a compilation of stock assessment...
- Abundance Level (FIRMS Standard)**
Engraulis encrasicolus - Northern Alboran Sea
- Fishing Pressure (FIRMS Standard)**
Engraulis encrasicolus - Northern Alboran Sea
- Fishing Pressure**
Engraulis encrasicolus - Northern Alboran Sea
- State and Trend**
Engraulis encrasicolus - Northern Alboran Sea
- Scientific Advice**
Engraulis encrasicolus - Northern Alboran Sea
- Catch**
Engraulis encrasicolus - Northern Alboran Sea

Domain Stock

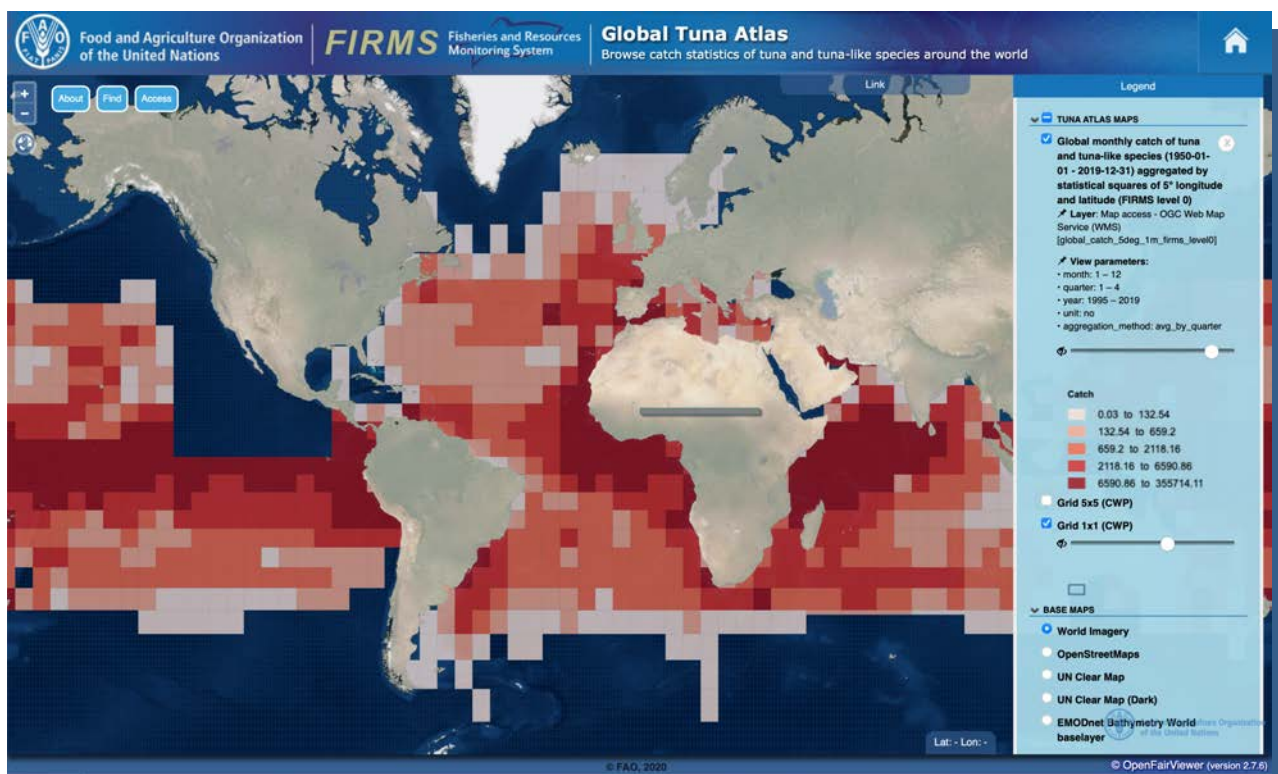
GRISF UUID b9a98fd-6deb-35d2-a931-82c8a3ab6714

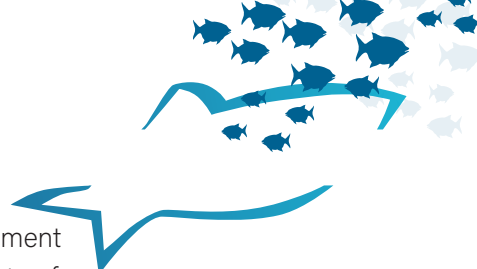
Record URL <https://data.d4science.org/ctg/GRISF/b9a98fd-6deb-35d2-a931-82c8a3ab6714>

Spatial catches of tuna and tuna-like species (Global Tuna Atlas)

The FIRMS Global Tuna Atlas (GTA) builds on historical atlases which were merged in 2019 into one coordinated initiative under governance responsibility of the FIRMS partnership. All currently available information is provided by the five tuna regional fishery management organizations which, under the coordination of the FIRMS Secretariat, agreed to harmonize the submissions of their public datasets and update the GTA on an annual basis.





The initiative is also supported by the Research Institute for Sustainable Development (IRD) and implemented in close collaboration with the Coordinating Working Party of Fishery Statistics (CWP).

The Atlas facilitates access to authoritative, spatialized and standardized public data on tuna fisheries, offering a comprehensive overview of the catches of tuna and tuna-like species by industrial - dating back as far as 100 years in some areas – and increasingly artisanal fisheries. As such, it intends to provide the kind of science that experts need to address critical issues such as adaptation to climate change, or sustainable fisheries management.

Two of the key products of the GTA are its metadata catalogue and the interactive map viewer, which – in its current version - presents the global distribution of catches in the period from 1950 to 2019, at various levels of spatio-temporal resolutions - 5° or 1° squares - and for about 50 species of temperate and tropical tuna (including oceanic principal market tuna species and more coastal/shallow water species), billfish, tuna-like species such as bonitos and mackerels, and more than 100 bycatch species including several species of pelagic sharks.

How does FIRMS work?

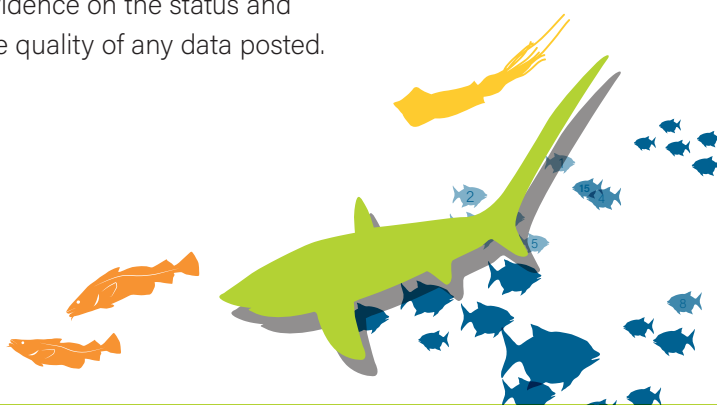
Shared concepts and standards

FIRMS has established core concepts, definitions and data presentation formats and standards to ensure consistency and to provide a basis for a common understanding of the information presented on the FIRMS website. These protocols and standards in reporting were developed by the partners in order to enhance the overall authoritative value and quality of the information shared in FIRMS.

Commitments to the provision of quality data

FIRMS is powered by the FAO Fisheries Global Information System (FIGIS) and benefits from its content management system and information exchange protocol features. Information provided by Partners through streamlined protocols is published on the Web for general access. FIRMS provides partners with the appropriate tools and training to ensure controlled dissemination of high-quality and updated information.

Partners are committed to providing the best scientific evidence on the status and trends of fishery resources and fisheries and to ensure the quality of any data posted.



FIRMS partners



CCAMLR

Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)



Commission for the Conservation of Southern Bluefin Tuna (CCSBT)



Directorate-General for Maritime Affairs and Fisheries (DG MARE)



Food and Agriculture Organization of the United Nations



General Fisheries Commission for the Mediterranean



Fishery Committee for the West Central Gulf of Guinea (FCWC)



Inter-American Tropical Tuna Commission (IATTC)



International Commission for the Conservation of Atlantic Tuna (ICCAT)



International Council for the Exploration of the Sea (ICES)



Indian Ocean Tuna Commission (IOTC)



Northwest Atlantic Fisheries Organization (NAFO)



North Atlantic Salmon Conservation Organization (NASCO)



North-East Atlantic Fisheries Commission (NEAFC)



North Pacific Fisheries Commission (NPFC)



Southeast Asian Fisheries Development Center (SEAFDEC)



South East Atlantic Fisheries Organization (SEAFO)



Southern Indian Ocean Fisheries Agreement (SIOFA)



South Pacific Regional Fisheries Management Organization (SPRFMO)

FIRMS collaborative institutions



Foundation for Research and Technology – Hellas (FORTH)



Institut de Recherche pour le Développement (IRD)



Sustainable Fisheries Partnership (SFP)

Other collaborating institutions

University of Washington
ISTI-CNR (D4Science Data Infrastructure)

FOR MORE INFORMATION, CONTACT:

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Viale delle Terme di Caracalla
00153 Rome, Italy
E-mail: FIRMS-Secretariat@fao.org
<http://firms.fao.org>



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