

# Package ‘SARtisanal’

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**Title** A Comprehensive R Package for Analyzing the Swept Area Ratio (SAR) of Artisanal Fishing Fleets

**Version** 0.0.0.9000

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## Description

The SARtisanal package is designed to calculate the Swept Area Ratio (SAR) for artisanal fishing fleets that have information on green boxes related to monitoring their fishing activities. It includes functions to compute the SAR as an indicator of fishing pressure, allowing users to evaluate the sustainability of fishing practices in a given temporal and spatial context. The package also offers tools for incorporating and analyzing data from green boxes, facilitating a better understanding of fishing activities and their impact on marine ecosystems. Additionally, it features custom plotting functions to visualize SAR results, providing clear insights into fishing pressure over time and across different geographical areas. The package is designed to be accessible for both novice and experienced R users, enabling effective data analysis and visualization.

**License** MIT + file LICENSE

**Encoding** UTF-8

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.3.2

**URL** <https://github.com/MauroMardones/SARtisanal>, <https://mauromardones.github.io/SARtisanal/>

**BugReports** <https://github.com/MauroMardones/SARtisanal/issues>

**Depends** R (>= 2.10)

**LazyData** true

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artdata

*Fisheries Monitoring Data from "Green boxes"***Description**

This dataset contains monitoring information from various fishing vessels, including timestamps, geographic coordinates, and operational details.

**Usage**

artdata

**Format**

artdata:

A data frame with 182,176 rows and 20 columns:

**FK\_ERES** Unique identifier for the fishing event

**FECHA** Date of the fishing event (in character format)

**DIA** Day of the week (in character format)

**HORA** Time of the fishing event (in character format)

**FK\_BUQUE** Unique identifier for the fishing vessel

**MATRICULA** Registration number of the fishing vessel

**PUERTO** Port of departure or arrival (in character format)

**FK\_TIPO\_F** Type of fishing activity (as a factor)

**F\_LOCALIZA** Locality identifier (in character format)

**N\_LONGITUD** Longitude of the vessel's position (in decimal degrees)

**N\_LATITUD** Latitude of the vessel's position (in decimal degrees)

**N\_X** X-coordinate in a projected coordinate system

**N\_Y** Y-coordinate in a projected coordinate system

**N\_VELOCIDAD** Speed of the vessel (in knots)

**N\_RUMBO** Heading of the vessel (in degrees)

**N\_SATELITES** Number of satellites used for position fixing

**N\_EN\_PUERTO** Indicator if the vessel is in port (0 = No, 1 = Yes)

**L\_BACKUP** Backup indicator (0 or 1)

**FK\_ACTIVI** Activity type code

**FK\_ESTADO** Status code

**FK\_MODAL** Modal code of the fishing activity

**Source**

Internal monitoring system data

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distart	<i>Calculates the Euclidean distance in meters using the Haversine formula</i>
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### Description

This function computes the distance between two geographical points specified by their latitude and longitude coordinates using the Haversine formula, which accounts for the curvature of the Earth.

### Usage

```
distart(lat1, lon1, lat2, lon2)
```

### Arguments

lat1	Latitude of point 1 (in degrees).
lon1	Longitude of point 1 (in degrees).
lat2	Latitude of point 2 (in degrees).
lon2	Longitude of point 2 (in degrees).

### Value

The calculated distance in meters.

### Examples

```
# Example usage:
# Distance between two points: (lat1, lon1) and (lat2, lon2)
distancia <- distart(
  40.7128, -74.0060, # New York coordinates
  34.0522, -118.2437 # Los Angeles coordinates
)
print(distancia) # Distance between New York and Los Angeles
```

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read_artdata	<i>Reads and combines multiple data files, retaining the source of each file</i>
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### Description

This function reads multiple text files located in a specific folder, adds a column indicating the source file, and then combines them into a single data frame.

### Usage

```
read_artdata(archivos, carpeta, sep = ",", header = TRUE)
```

**Arguments**

archivos	Un vector de nombres de archivos (por ejemplo, "archivo1.txt", "archivo2.txt", ...).
carpeta	La ruta de la carpeta donde se encuentran los archivos.
sep	El separador de los archivos (por ejemplo, "," para coma, ";" para punto y coma, o " " para espacio). Este separador se aplica a todos los archivos.
header	Lógico, TRUE si los archivos tienen encabezado.

**Value**

Un data frame con todos los archivos combinados, incluyendo una columna "archivo\_origen" que indica el archivo de origen para cada fila.

**Examples**

```
archivos <- c("Draga_01.txt", "Draga_02.txt", "Draga_03.txt")
carpeta <- "ruta/a/tu/carpeta"
# Verificar que todos los archivos existen antes de ejecutar la función
if (all(file.exists(file.path(carpeta, archivos)))) {
  datos_combinados <- read_artdata(archivos, carpeta, sep = ",")
  print(datos_combinados)
} else {
  warning("Uno o más archivos no se encuentran en la carpeta especificada.")
}
```

remo\_dup

*Remove duplicates from a data frame***Description**

This function identifies and removes duplicate rows in a data frame that commonly occur in this type of records. You can choose to remove duplicates while keeping only the last occurrence of each duplicated row.

**Usage**

```
remo_dup(datos, mantener_ultima = FALSE)
```

**Arguments**

datos	A data frame in which duplicates will be searched (for example, artdata).
mantener_ultima	Logical, TRUE to keep the last occurrence of each duplicated row. Defaults to FALSE, which keeps the first occurrence.

**Value**

A data frame without duplicate rows.

**Examples**

```
artdata_without_duplicates <- remo_dup(artdata, mantener_ultima = TRUE)
```

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SAbarrida	<i>Calculates the Swept Area (SA) based on distance and the width of the fishing gear.</i>
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**Description**

Calculates the Swept Area (SA) based on distance and the width of the fishing gear.

**Usage**

```
SAbarrida(distancia, ancho)
```

**Arguments**

distancia	A vector representing distances in meters.
ancho	A vector representing the width of the fishing gear in meters. It must be the same size as 'distancia' or a single value.

**Value**

A vector with the calculated swept area.

**Examples**

```
# Calculate the swept area with a width of 2.5 meters
distances <- c(100, 200, 300)
swept_area <- SAbarrida(distances, ancho = 2.5)
swept_area_pre <- SAbarrida(distances, ancho = 2.5)
```