

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

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.

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Encoding UTF-8

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

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

Depends R (>= 2.10)

LazyData true

Contents

artdata	2
distart	3
read_artdata	3
remo_dup	4
SAbarrida	5

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

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
```

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)
```

SAbarrida	<i>Calcula el área barrida (SA) en función de la distancia y el ancho del arte de pesca.</i>
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Description

Calcula el área barrida (SA) en función de la distancia y el ancho del arte de pesca.

Usage

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

Arguments

distancia	Un vector que representa las distancias en metros.
ancho	Un vector que representa el ancho del arte de pesca en metros. Debe ser del mismo tamaño que 'distancia' o un solo valor.

Value

Un vector con el área barrida calculada.

Examples

```
# Cálculo del área barrida con un ancho de 2.5 metros
distancias <- c(100, 200, 300)
area_barrida <- SAbarrida(distancias, ancho = 2.5)
area_barrida_pre <- SAbarrida(distancias, ancho = 2.5)
```