

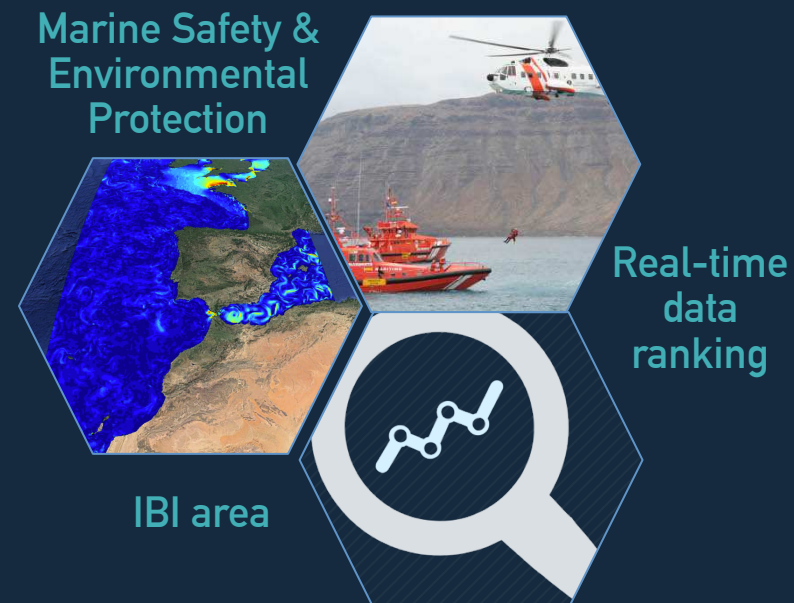
# IBISAR: real-time data ranking in the IBI area for emergency and SAR operators



Emma Reyes, B. Mourre, P. Rotllán, I. Hernández, E. Comerma, T. Tajalli-Bakhsh, A. Rubio, J. Mader, L. Ferrer, C. De Lera, E. Álvarez-Fanjul, A. Orfila and J. Tintoré

## OUTLINE

- 01 Key numbers and facts
- 02 IBISAR service overview
- 03 IBISAR: accurate data in 3 steps
- 04 IBISAR: main elements
  - Copernicus Marine Service products used
  - IBISAR: Viewer
  - IBISAR: Skill Assessment
- 05 IBISAR: Validation - Ibiza Channel
- 06 Benefits for targeted users
- 07 Users & how to use it
- 08 Promotional activities



01 KEY NUMBERS & FACTS



GOBIERNO DE ESPAÑA

MINISTERIO DE FOMENTO



Puertos del Estado

Spanish SAR Agency



310.000

People assisted in 25 years



19+1

Marine Rescue Centres



4

SAR responsibility areas



50 %

SAR cases within 4 km offshore



>4700

SAR operations

IBISAR



>1500

Spanish SAR professionals



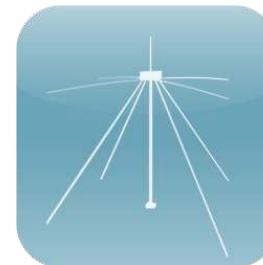
2

Areas of benefits



4

IBI-subregions



4

HF radar sites

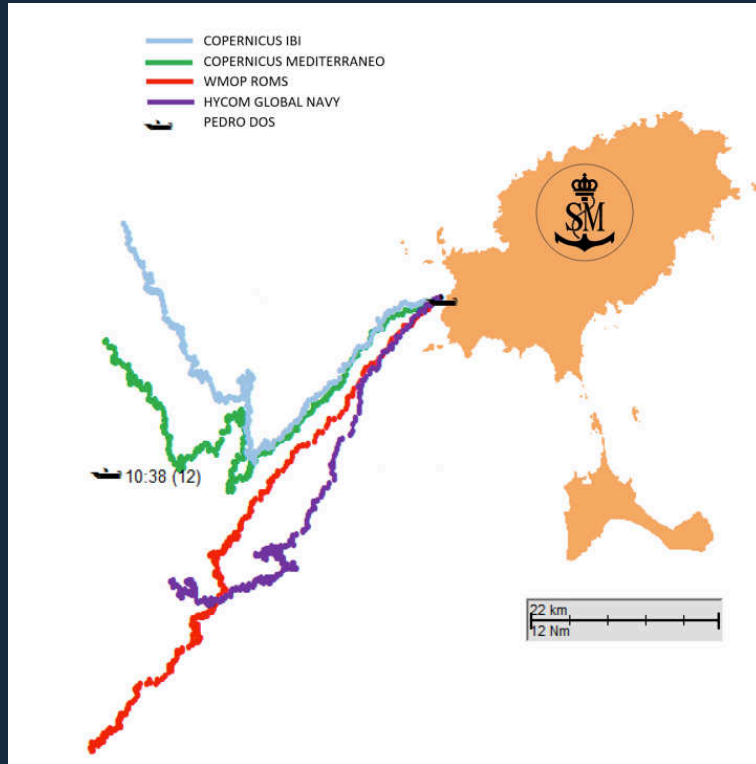


4

Copernicus Marine Service models

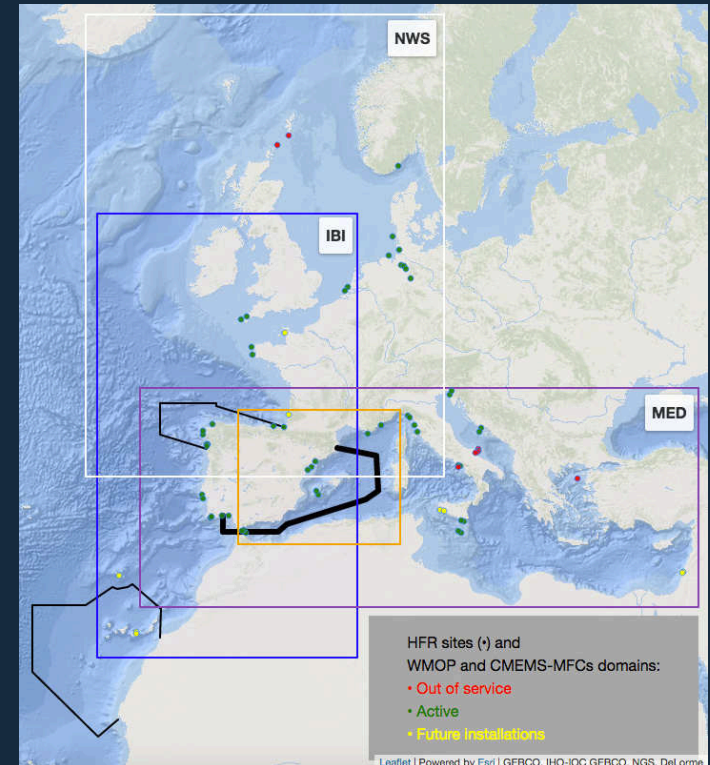
01 KEY NUMBERS & FACTS

End-users overarching concern:  
Impact of inaccurate data on decision-making



Simulated trajectories from different models: drifting motorboat "Pedro II"

Copernicus Marine Service products are crucial...



Map showing CMEMS-MFC models overlapping in the IBI region and SAR areas

SAR operators needs data confidence

...to support Marine Safety & Environmental Protection

02 IBISAR SERVICE OVERVIEW

How can we improve emergency response at sea?



How can we improve emergency response at sea?

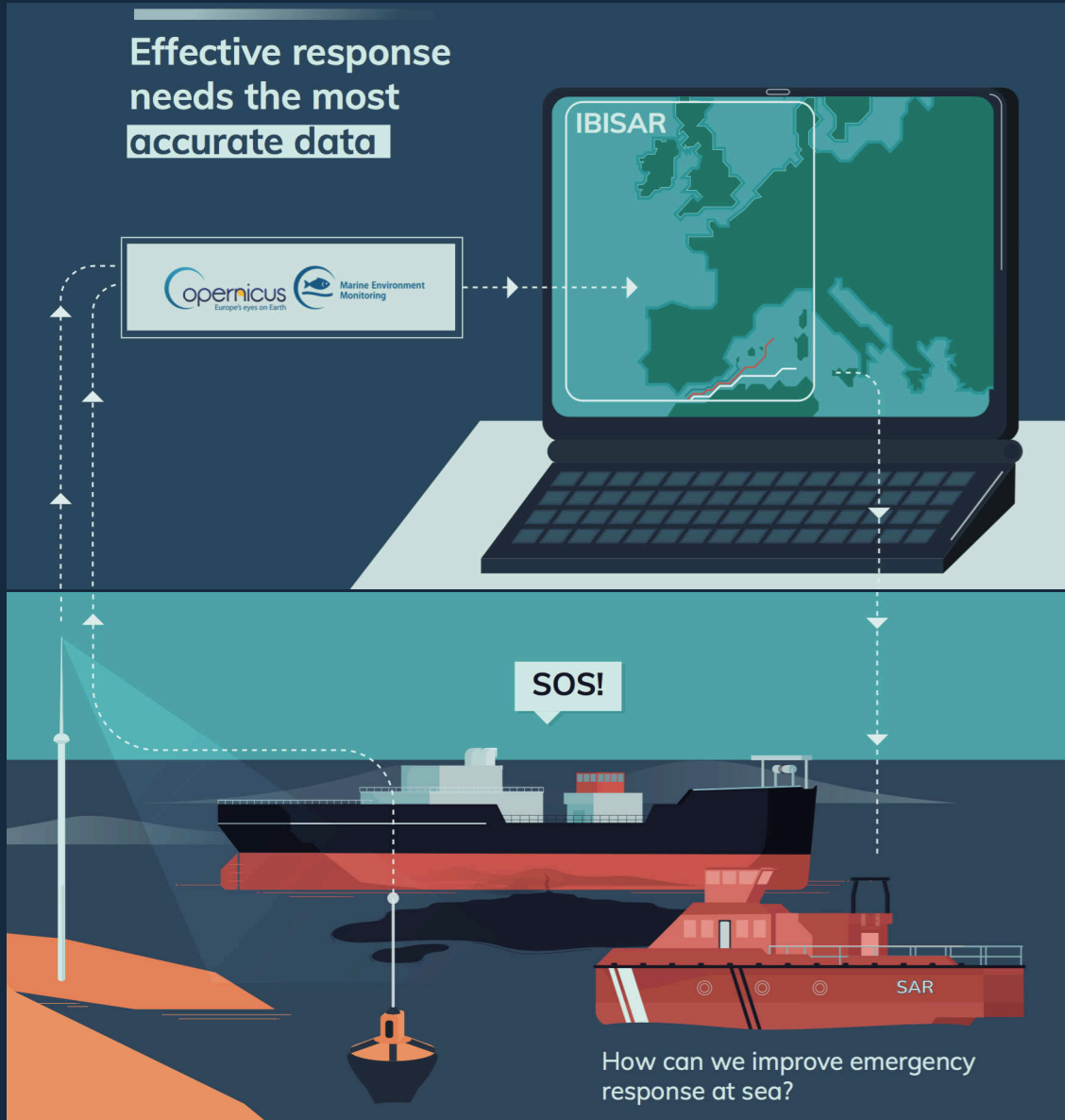
End-users needs

Reliable current observations and forecasting are essential

Easily interpretable metrics

User-friendly automated skill assessment

02 IBISAR SERVICE OVERVIEW



IBISAR service

Provides **real-time** information of the **most accurate** ocean current forecast in the **IBI** area

Facilitates **decision-making** to SAR operators and emergency responders

End-users needs

**Reliable** current observations and forecasting are essential

**Easily interpretable** metrics

**User-friendly** automated skill assessment

## 03 IBISAR: ACCURATE DATA IN 3 STEPS



1.- Simulates trajectories using available forecast models

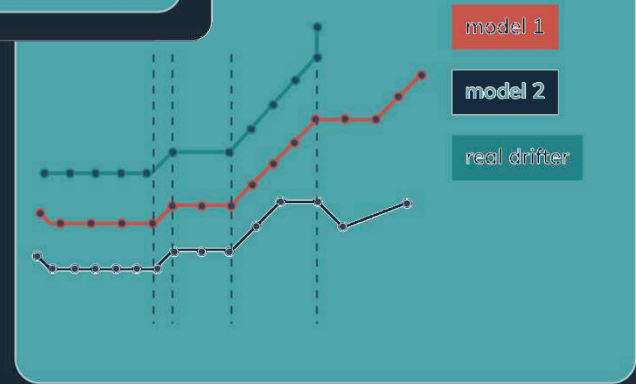




03 IBISAR: ACCURATE DATA IN 3 STEPS



1.- Simulates trajectories using available forecast models



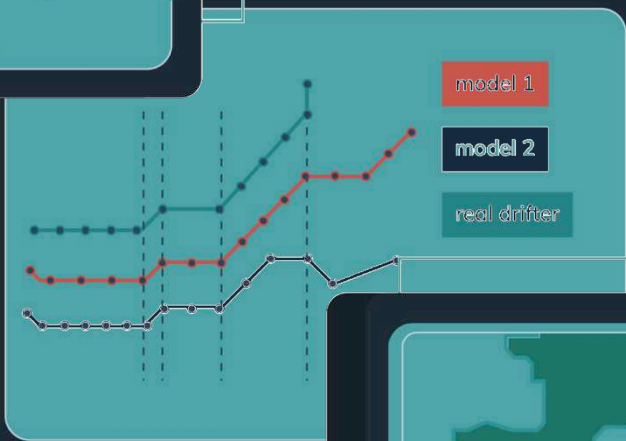
2.- Compares simulated trajectories vs. real drifters



03 IBISAR: ACCURATE DATA IN 3 STEPS



1.- Simulates trajectories using available forecast models

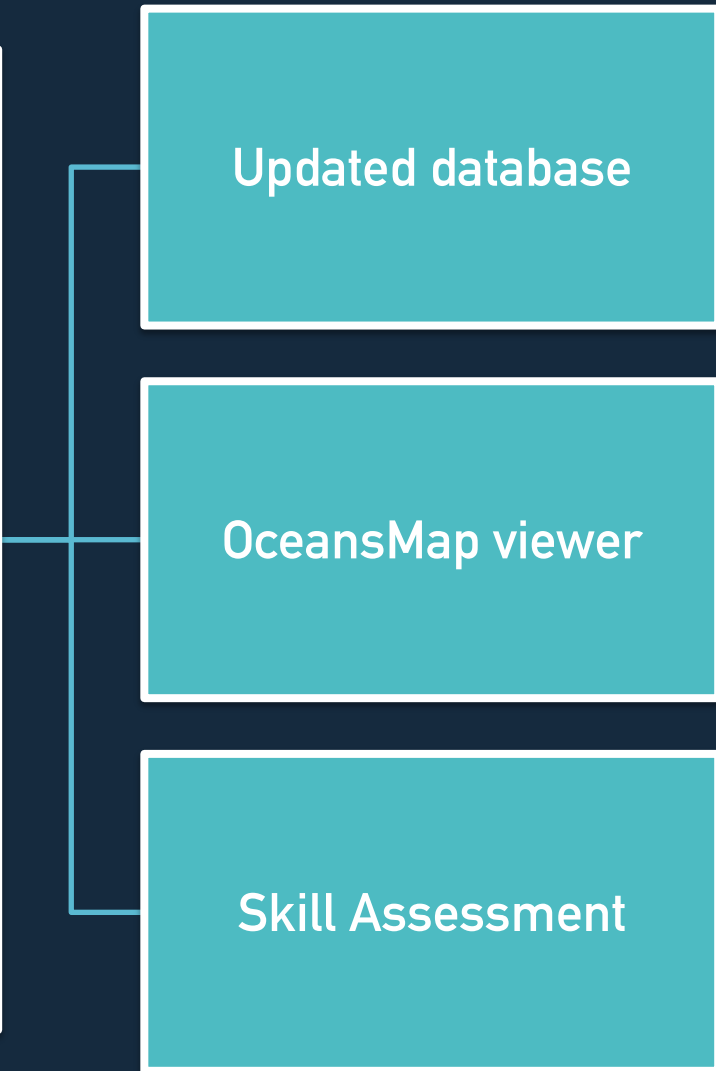


2.- Compares simulated trajectories vs. real drifters



3.- Ranks models based on their performance

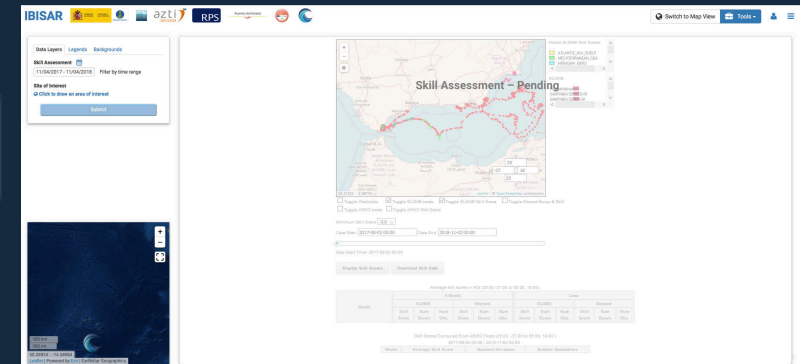
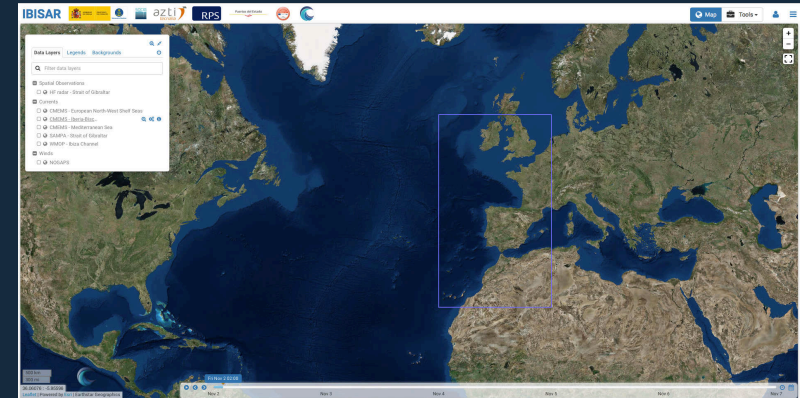
IBISAR  
 downstream service



Drifters

Other observations (HF radars)

Ocean model forecasts



04 COPERNICUS MARINE SERVICE PRODUCTS USED

Ocean models

What? Current forecast

How? Target sources



•Global Ocean

[GLOBAL ANALYSIS FORECAST PHYS 001 015](#)

[GLOBAL ANALYSIS FORECAST PHY 001 024](#)

•European North-West Shelf Seas

[NORTHWESTSHELF ANALYSIS FORECAST PHYS 004 001 b](#)

•Iberia-Biscay-Ireland Regional Seas

[IBI ANALYSIS FORECAST PHYS 005 001](#)

•Mediterranean Sea

[MEDSEA ANALYSIS FORECAST PHYS 006 013](#)

[MEDSEA REANALYSIS PHYS 006 004](#)

In-Situ Data

What? Current surface observations

How? Reference source



•Global Ocean

[INSITU GLO NRT OBSERVATIONS 013 030](#)

•Iberia-Biscay-Ireland Regional Seas

[INSITU IBI NRT OBSERVATIONS 013 033](#)

Satellite

What? Current surface observations

How? Model assessment and data assimilation



•European Seas

[SEALEVEL EUR PHY ASSIM L3 NRT OBSERVATIONS 008 043](#)

•Mediterranean Sea

[SEALEVEL MED PHY L3 REP OBSERVATIONS 008 049](#)

[SEALEVEL MED PHY L4 REP OBSERVATIONS 008 051](#)



**Data Layers** | **Legends** | **Backgrounds**

Filter data layers

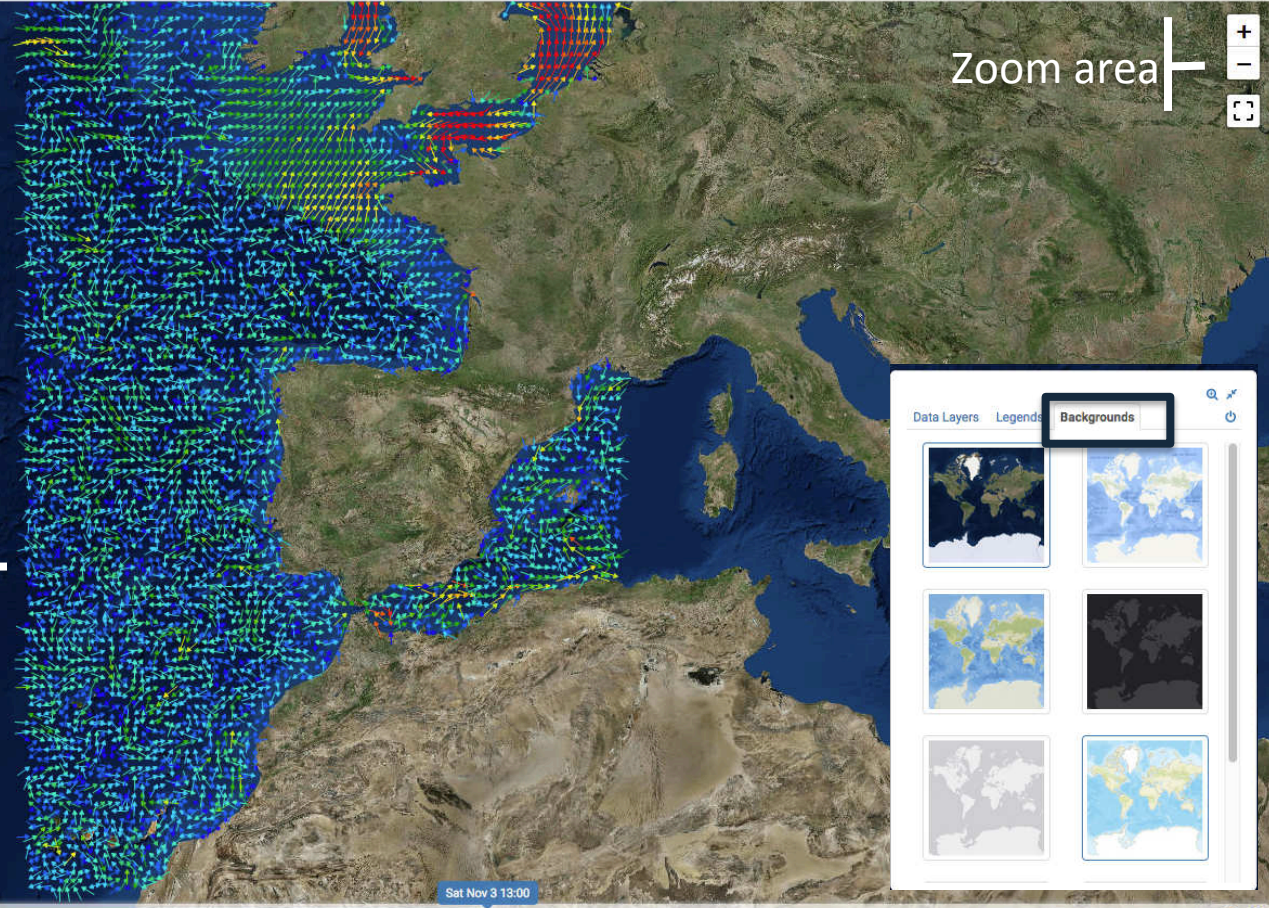
- Spatial Observations
  - HF radar - Strait of Gibraltar
- Currents
  - CMEMS - European North-West Shelf Seas
  - CMEMS - Iberia-Biscay-Ireland Regional S...  
Valid Time: Nov 3, 2018 12:30 (GMT +01:00)
  - CMEMS - Mediterranean Sea
  - SAMPA - Strait of Gibraltar
  - WMOP - Ibiza Channel
- Winds
  - NOGAPS

Backgrounds Search box

Layers with info

Current forecast/ observation

Time Slider



Zoom area

**Data Layers** | **Legends** | **Backgrounds**

Backgrounds panel showing a grid of map background options.



04 IBISAR: VIEWER

<http://jovellanos.oceansmap.com/IBISAR/#>

Search your region

More info

Customize appearance

Find on map

300 km  
200 mi

48.37085 ; -33.79395

Leaflet | Powered by Esri | Earthstar Geographics

Nov 1 Nov 2 Nov 3 Nov 4 Nov 5 Nov 6

Sat Nov 3 13:00



<http://jovellanos.oceansmap.com/IBISAR/#>



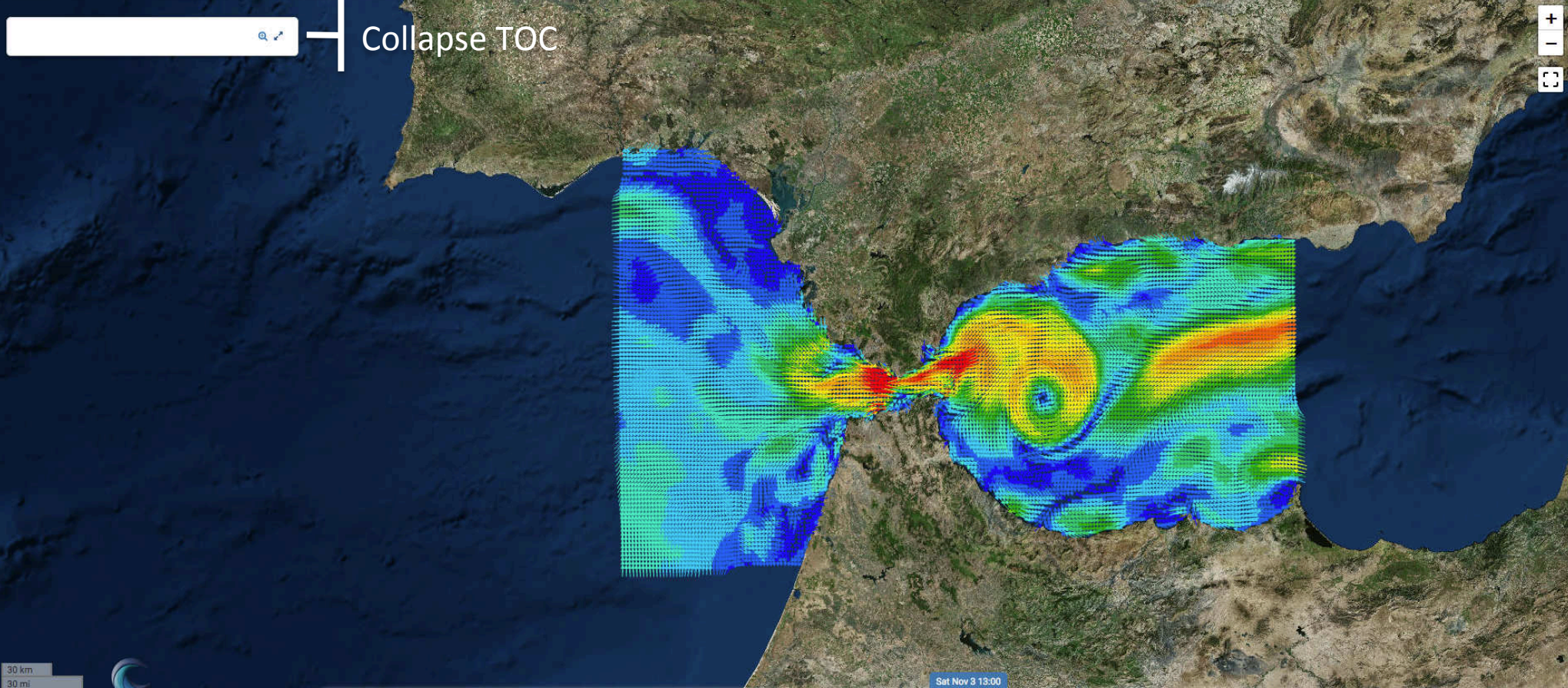
MINISTERIO DE FOMENTO



Puertos del Estado

jovellanos.oceansmap.com/IBISAR/#

Más visitados presentations - Goo... pdf list\_of\_products\_ED...



30 km  
30 mi

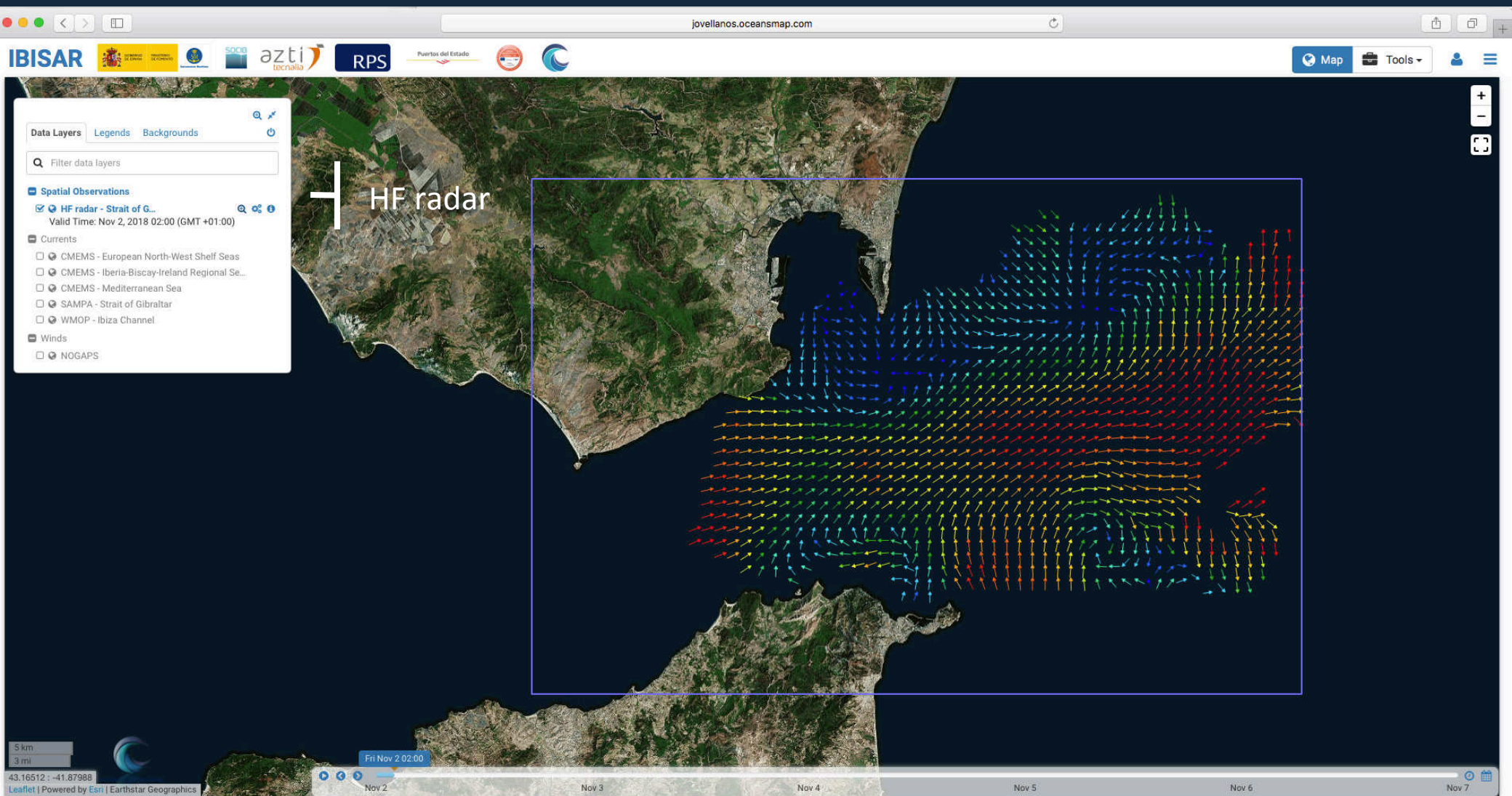
Leaflet | Powered by Esri | Earthstar Geographics

Nov 1 Nov 2 Nov 3 Nov 4 Nov 5 Nov 6



04 IBISAR: VIEWER

<http://jovellanos.oceansmap.com/IBISAR/#>





**Data Layers** | Legends | Backgrounds

Filter data layers

- Spatial Observations
  - HF radar - Strait of Gibraltar
- Currents
  - CMEMS - European North-West Shelf Seas
  - CMEMS - Iberia-Biscay-Ireland Regional Se...
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Valid Time: Nov 3, 2018 12:30 (GMT +01:00)
  - SAMPA - Strait of Gibraltar
  - WMOP - Ibiza Channel  
Valid Time: Nov 3, 2018 13:00 (GMT +01:00)
- Winds
  - NOGAPS

Two models selected

Select a point

Virtual Station @ 36.4743 N 2.1753 W

Model Intercomparison

Save the figure

**Data Download and Export**

- CSV Data
- PNG Image
- JPEG Image
- SVG Image
- PDF Image

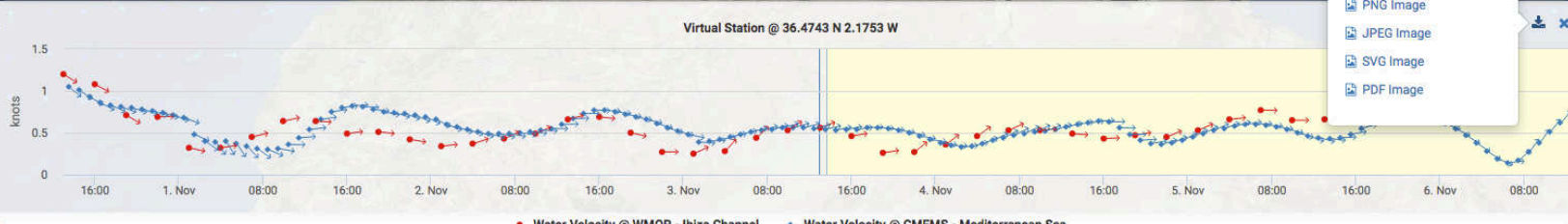
Virtual Station @ 36.4743 °N 2.1753 °W  
Nov 3, 2018 13:00 (GMT +01:00)

Update coordinates

Currents @ WMOP - Ibiza Channel  
69.73 °  
0.56 knots

Currents @ CMEMS - Mediterranean Sea  
76.88 °  
0.54 knots

Add to map | Explore



**Data Layers** | Legends | Backgrounds

**Skill Assessment**

10/27/2018 - 11/03/2018 Filter by time range

**Site of Interest**

[Click to draw an area of interest](#)

**Submit**

Select period

Select area of interest (AOI)



Skill Assessment

Switch to Map View **Tools**

Skill Assessment

Target sources

Reference sources

Map showing real and simulated trajectories



Display Skill Scores (SS)

COMING SOON

November 2019

Toggle Graticules  Toggle SLDMB tracks  Toggle SLDMB Skill Score  Toggle Moored Buoys & Skill

Toggle ARGO tracks  Toggle ARGO Skill Score

Minimum Skill Score: -3.0

Case Start: 2017-08-02 00:00 Case End: 2018-11-02 00:00

Map Start Time: 2017-08-02 00:00

Download skill data

Average skill scores in AOI (25.00, -37.00 to 55.00, 18.00)

Model	6 Month						Case					
	SLDMB			Moored			SLDMB			Moored		
	Skill Score	Num Buoys	Num Obs	Skill Score	Num Buoys	Num Obs	Skill Score	Num Buoys	Num Obs	Skill Score	Num Buoys	Num Obs

Table presenting SS

Skill Scores Computed From ARGO Floats (25.00, -37.00 to 55.00, 18.00)

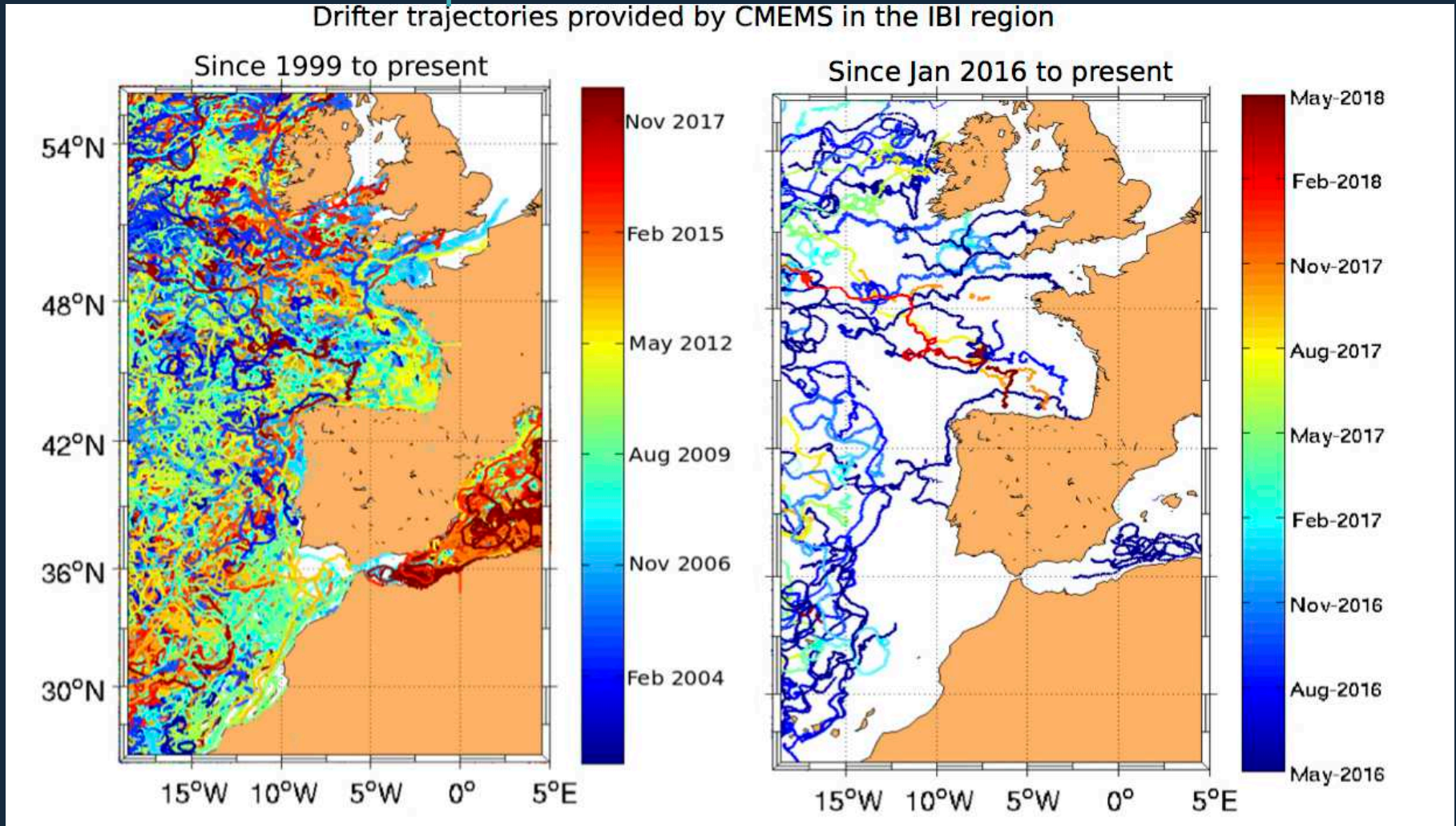
2017-08-02 00:00 - 2018-11-02 00:00

Model	Average Skill Score	Standard Deviation	Number Simulations



## Drifter trajectories available in Copernicus Marine Service – InSitu TAC

Drifter trajectories provided by CMEMS in the IBI region



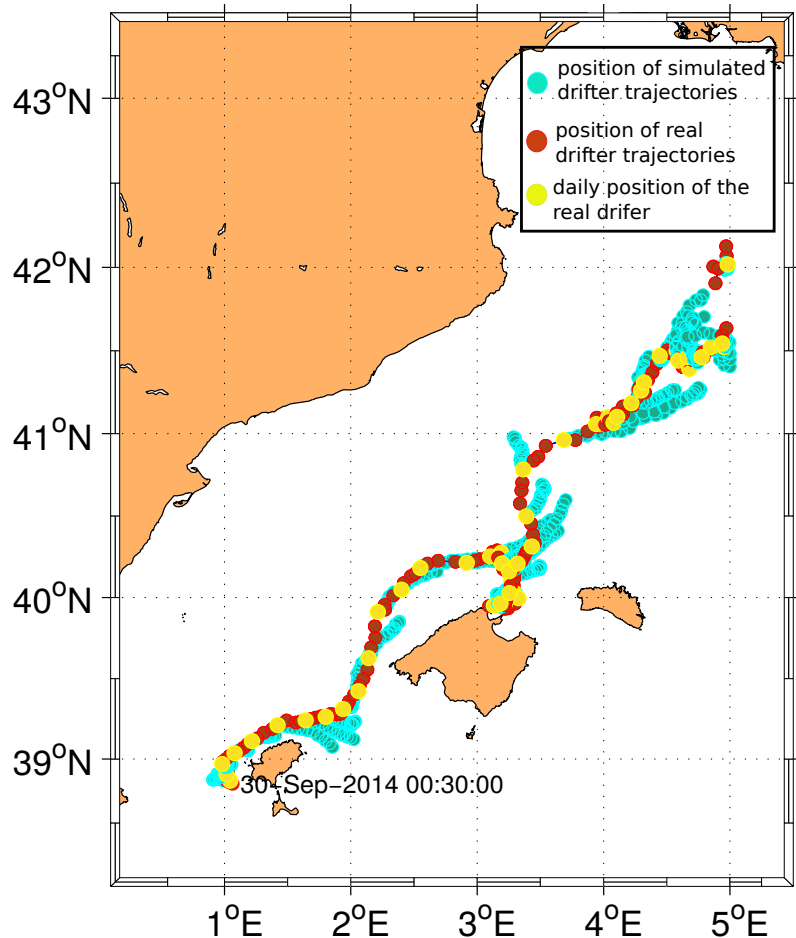
1999 - present

2016 - present

05 IBISAR: VALIDATION - IBIZA CHANNEL

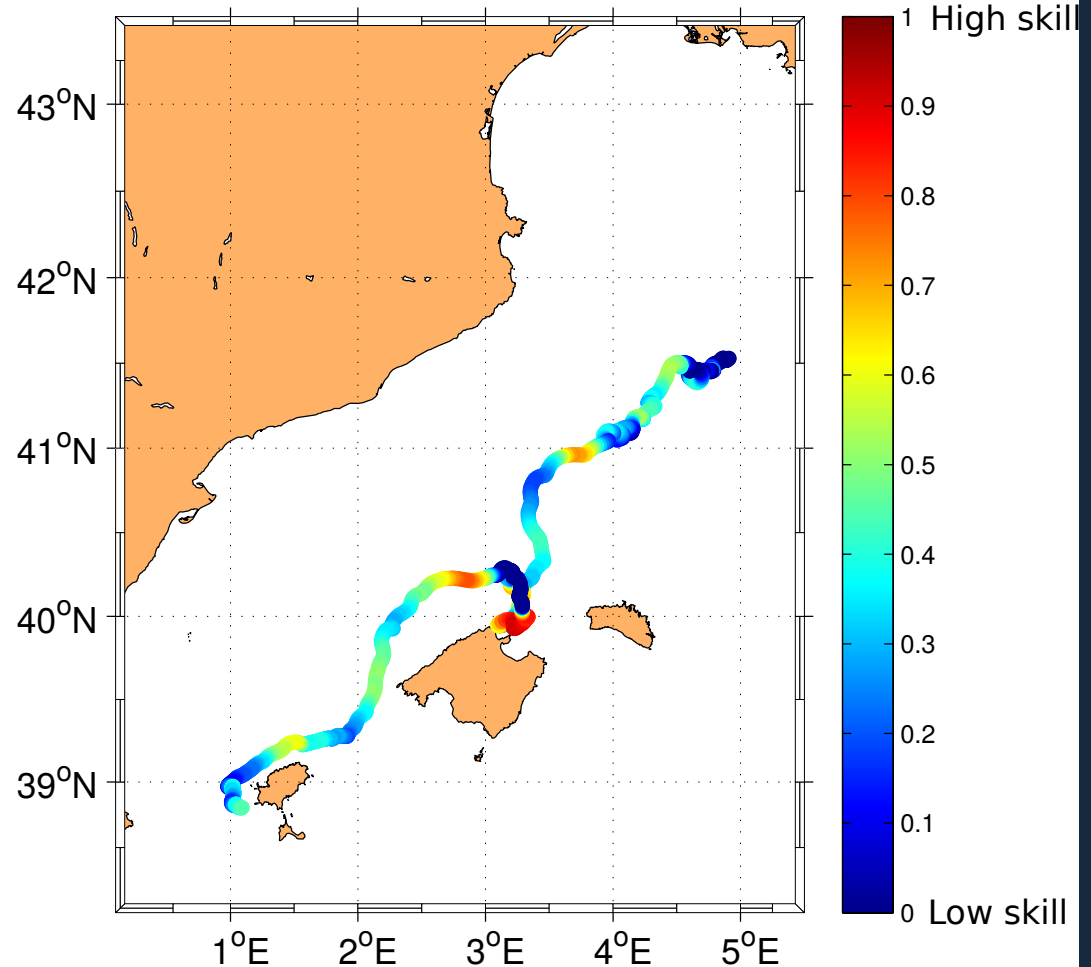
### CMEMS-IBI simulated vs. CODE drifter trajectories

Comparison of virtual trajectories of particles advected with the IBI model velocity field with a real CODE drifter trajectory

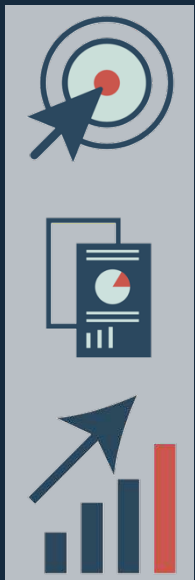


### IBI Skill Score after 72 hours

Model skill score after 72 hours of trajectory simulations



### User-friendly service with:

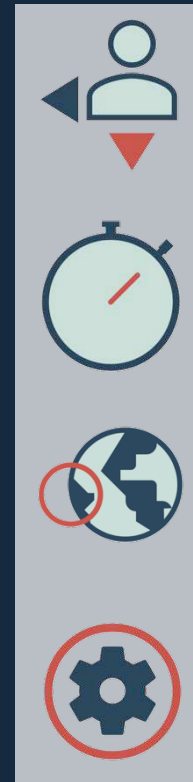


Single access point

Regularly updated database

Easily interpretable metrics of accuracy

### Complements decision-making support tools:



Improve SAR and pollution control operations

Minimize response time

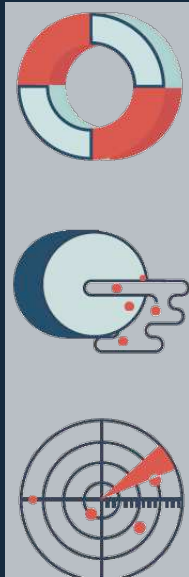
Optimize search area planning

Allocate resources effectively

07 USERS & HOW TO USE IT

Users:

Government agencies & private companies



Search and rescue

Marine pollution control

Maritime traffic control

How to use it?



Online in  
November 2019



Visit [www.ibisar.es](http://www.ibisar.es)  
"Access IBISAR"



Select area &  
period > display





GOBIERNO DE ESPAÑA

MINISTERIO DE FOMENTO

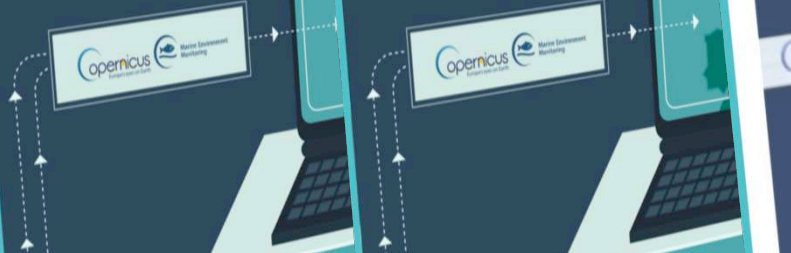


Salvamento Marítimo

Puertos del Estado

### IBISAR

Effective response needs the most accurate data

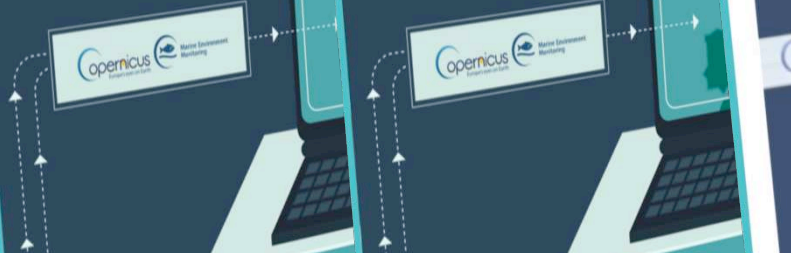


SOS!

SOS!

### IBISAR

Una respuesta efectiva precisa datos más fiables



SOS!

SOS!

YouTube

Watch IBISAR service introduction

Buscar

Inicio Momentos Notificaciones Mensajes

### 4TH GEO BLUE PLANET SYMPOSIUM

JULY 4-6 TOULOUSE, FRANCE

Our Future is Blue: Linking Ocean and Coastal Information with Societal Needs

#GEOBLUEPLANET4  
<https://symposium.geoblueplanet.org>

Late registration from 05 June

Mercator Ocean

French producer of ocean analyses & forecasts. Delegate of the European Union's Copernicus Marine Environment Monitoring Service (CMEMS\_EU) since November 2014

SOCIB @socib\_jctc - 23 may. Last week, we have organized the kick-off meeting of the IBISAR project. This project is funded by @MercatorOcean to improve the response capabilities and the efficiency of maritime operations. #ICTSNews



- Copernicus EU @Coperni...
- Copernicus ECMWF @C...
- EMODnet @EMODnet

Encuentra a personas que conoces

Tendencias para ti



- Multi-lingual (ES/EN)
- Content:
  - Service Overview
  - CMEMS products used
  - Benefits for users
- Link to **IBISAR service** “Access Page”
- Link to active **social media** accounts
- “News”
- “Other related services” section
- **Promotional materials:** leaflets, posters, graphic-motions
- **Contact details**

Show me IBISAR!

Illustrations Video News Related Services Contact Us

IBISAR  
contact

ibisar@socib.es



servicedesk.cmems@mercator-ocean.eu



### IBISAR

Service for real-time data ranking in the IBI area for emergency responders and SAR operators. How can we improve emergency response at sea?

#### Service overview

- IBISAR provides real-time information of the most accurate ocean current forecast in the Iberia-Biscay-Ireland (IBI) regional seas.
- IBISAR facilitates decision-making to Search and Rescue (SAR) operators and emergency responders, ensuring our seas are safer and cleaner.

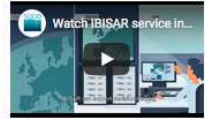


#### Copernicus Marine Service products used

- + Ocean Models: current forecast from ocean models
- + In-Situ Data: current surface observations from different platforms
- + Satellite: for model assessment and data assimilation

#### Usefulness of Copernicus Marine Service information:

- In-situ observations will be used to estimate errors in near-real time of the current forecast outcomes, using easily interpretable metrics.



### IBISAR: accurate data in 3 steps

Simulates trajectories using available forecast models



Compares simulated trajectories vs. real drifters



Ranks models based on their performance



#### Benefits of the service:

User-friendly service with

IBISAR complements decision-making support tools



Single access point



Improve search & rescue and pollution control operations



Regularly updated database



Minimize response time



Easily interpretable metrics of accuracy



Optimize search area planning



Allocate resources effectively

## ACKNOWLEDGEMENTS



Spanish Maritime Safety and Rescue Agency



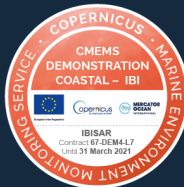
Spanish Port System



COSMO Project (CSIC-ICM)



INCREASE (Copernicus Marine Service – Service Evolution)



IBISAR (Copernicus Marine Service – User Uptake)



Copernicus Marine Service – INSTAC –phase2



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Puertos del Estado

# SOCIB

Balearic Islands  
Coastal Observing  
and Forecasting  
System

THANKS FOR YOUR ATTENTION



Visit [www.ibisar.es](http://www.ibisar.es)

*Effective response needs the most accurate data*



@socib\_icts #IBISAR