

Oceanographic data management at SOCIB

C. Troupin, J.P. Beltran, B. Frontera, S. Gómara,
S. Lora, D. March, K. Sebastian, and J. Tintoré

Balearic Islands Coastal Observing and Forecasting System

✉ ctroupin@socib.es

🐦 [@SOCIB_data](https://twitter.com/SOCIB_data)



To take the right action decision makers, businesses and citizens must be provided with reliable and up-to-date information on how our planet and its climate are changing.

Copernicus, EC

citizens
reliable and up-to-date information
planet and its climate

Context:
paradigm shift

SOCIB Facilities



Coastal HF Radar



SOCIB Facilities



Glider



SOCIB Facilities



Lagrangian platforms

drifters, profilers



SOCIB Facilities



Fixed stations

weather, sea-level stations, buoys

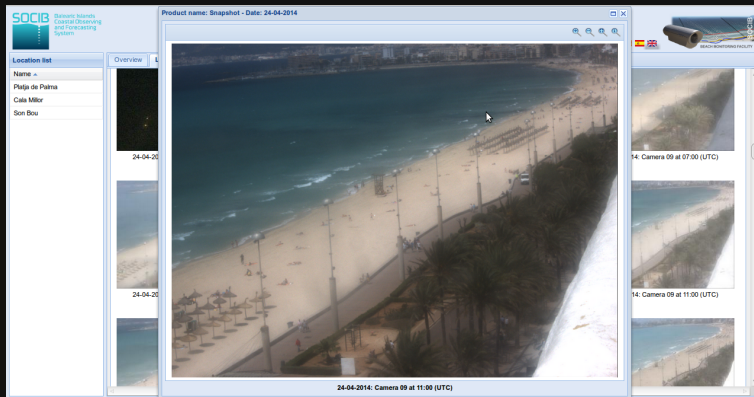


SOCIB Facilities



Beach monitoring

images, morphology, weather



SOCIB Balearic Islands Coastal Observing and Forecasting System

Product name: Snapshot - Date: 24-04-2014

Location list

- Name
- Platja de Palma
- Cala Millor
- Son Bou

Overview

24-04-2014

24-04-2014

24-04-2014

24-04-2014: Camera 09 at 11:00 (UTC)

14: Camera 09 at 07:00 (UTC)

14: Camera 09 at 11:00 (UTC)

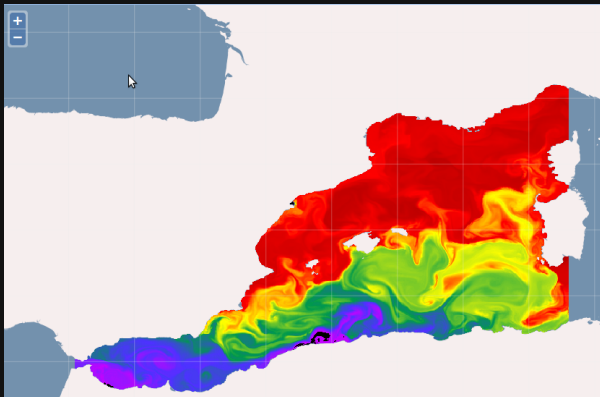
14: Camera 09 at 11:00 (UTC)

SOCIB Facilities



Modelling

hydrodynamics, waves

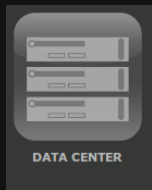


SOCIB Facilities



Data Centre

SOCIB Data centre principles



1. Discoverable and accessible
2. Real-time, freely available
3. Interoperable, standardized and quality controlled

Challenge: integrated data management system

1. Sensors & platforms

Variety of:

Glider, CTD, HF Radar, Satellite, Videos, ADCP, . . .

Challenge: integrated data management system

- Variety of:
1. Sensors & platforms
 2. Data types

Grid, Time series, Trajectory, Mesh, Point, Images, . . .

Challenge: integrated data management system

- Variety of:
1. Sensors & platforms
 2. Data types
 3. Parameters

Ocean: temperature, pollutant, traffic, currents, ...

Atmosphere: pressure, rainfall, ...

Interface sea-level, waves, ...

Land: coastline, erosion, ...

Challenge: integrated data management system

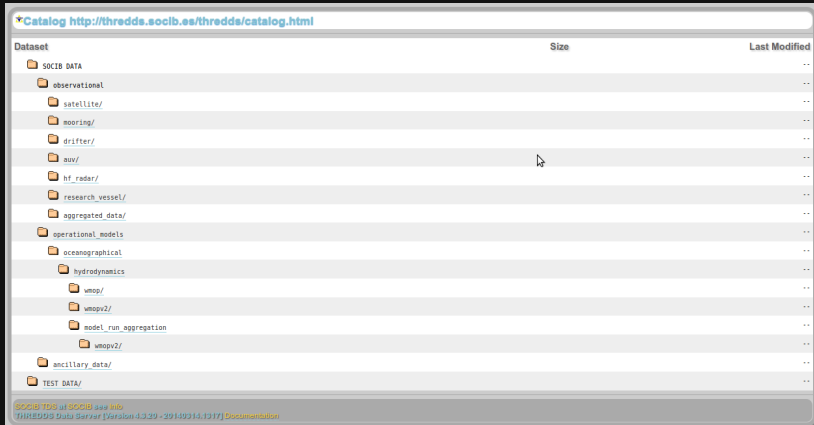
- Variety of:
1. Sensors & platforms
 2. Data types
 3. Parameters
 4. Formats

CSV, KML, HDF, JSON, NetCDF, ...

Data discovery and access

Thredds data server:

<http://thredds.socib.es/thredds/catalog.html>



The screenshot shows a web browser window with the address bar displaying `*Catalog http://thredds.socib.es/thredds/catalog.html`. The main content area is a table with three columns: **Dataset**, **Size**, and **Last Modified**. The table lists a hierarchical structure of datasets under the root **SOCIB DATA**. The **Size** column is empty for all entries, and the **Last Modified** column contains double dashes (--) for all entries. A mouse cursor is visible over the **auv/** dataset entry.

Dataset	Size	Last Modified
SOCIB DATA		--
observational		--
satellite/		--
mooring/		--
drifter/		--
auv/		--
hf_radar/		--
research_vessel/		--
aggregated_data/		--
operational_models		--
oceanographical		--
hydrodynamics		--
umop/		--
umopv2/		--
model_run_aggregation		--
umopv2/		--
ancillary_data/		--
TEST DATA/		--

SOCIB TDS at SOCIB [see info](#)
THREDDS Data Server [Version 4.3.29 - 20140314.1317] [Documentation](#)

Data Centre applications



Observation and real time data

Beach evolution



Son Bou - Cam 01: 24/04/2014 12:00

Beach overview



Son Bou - Cam 03: 25/04/2014 17:18

Beach information

Beach type: 2,5 km linear natural beach with dunes
Sediment type: medium to fine biogenic sands
Scientific interest: beachrocks, lagoon inlet, rip currents

Hotel weather station

Air temperature

16.7°C

17.6°C High 12.9°C Low

Swimming conditions



No data received

More information



Forecast

Weather forecast

Light rain today, with temperatures rising to 22°C on Thursday.

Today



Breezy in the evening, with light rain until evening.

Temp 17.7°C 13.1°C	Wind 13.7 km/h (8.5)	Humidity 80%	Pressure 1012.3 hPa
--------------------------	----------------------------	-----------------	---------------------------

Saturday



Breezy overnight.

Temp 21.4°C 14.9°C	Wind 14.3 km/h (8.9)	Humidity 71%	Pressure 1015.0 hPa
--------------------------	----------------------------	-----------------	---------------------------

Sunday

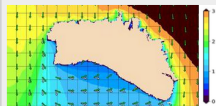


Windy at the morning.

Temp 20.3°C 15.0°C	Wind 9.0 km/h (5.6)	Humidity 70%	Pressure 1013.3 hPa
--------------------------	---------------------------	-----------------	---------------------------

Powered by Forecasto

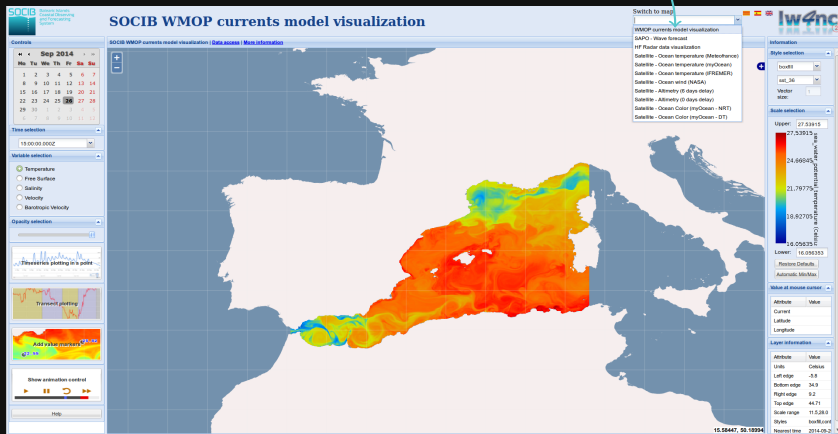
Waves forecast



Waves at 26/04/2014 08:00

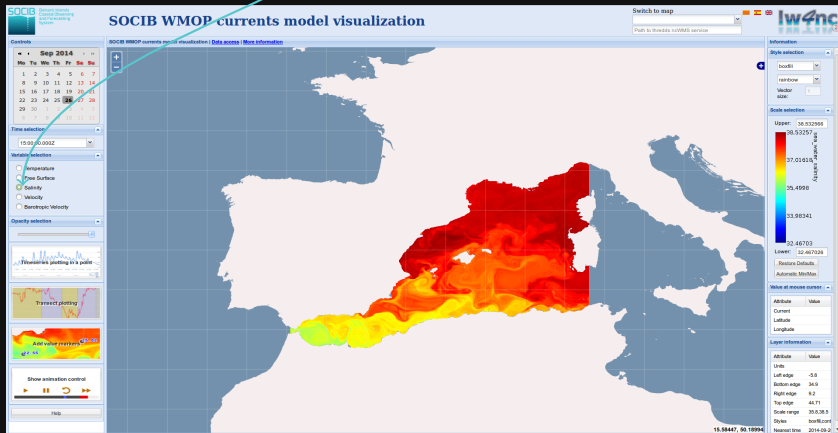
Iw4nc2 (lightweight NetCDF viewer)

Select data source



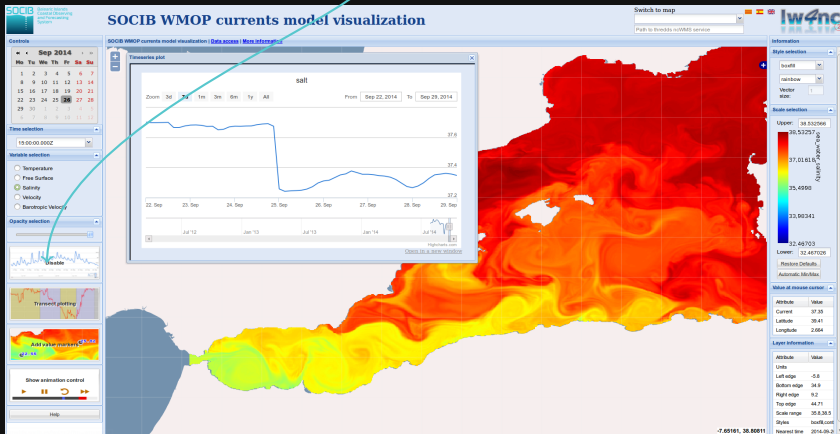
Iw4nc2 (lightweight NetCDF viewer)

Select variable



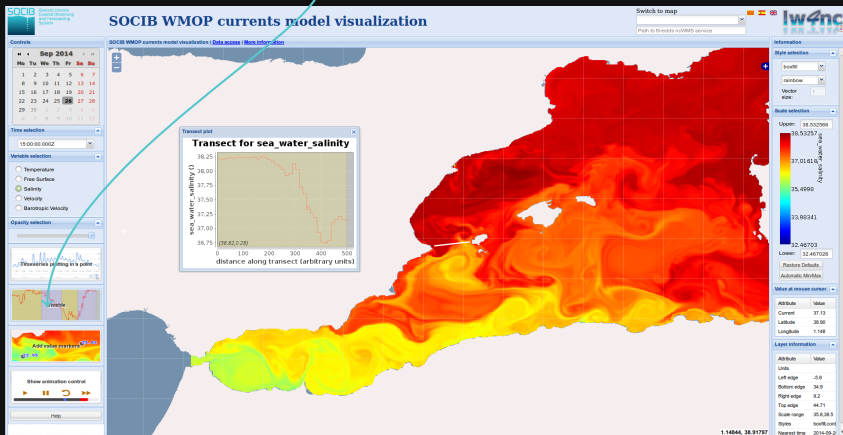
Iw4nc2 (lightweight NetCDF viewer)

Extract time series



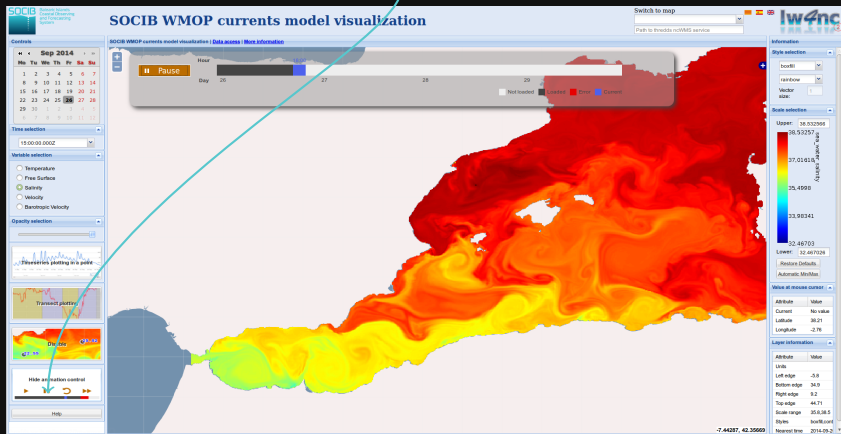
Iw4nc2 (lightweight NetCDF viewer)

Extract transect

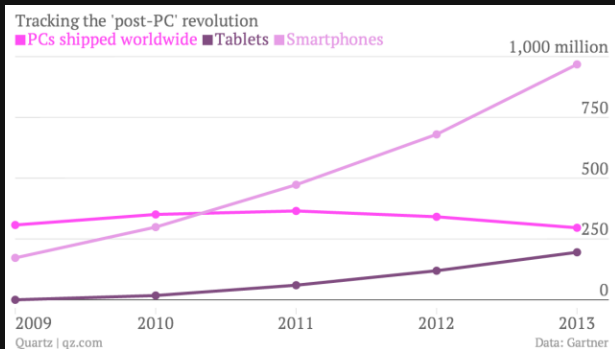


lw4nc2 (lightweight NetCDF viewer)

Generate animation



<http://thredds.socib.es/lw4nc2/>



Source: qz.com

Data: Gartner

Applications for smartphones



Android: <https://play.google.com/store/apps/details?id=com.socib>

iOS: <http://itunes.apple.com/us/app/socib/id482542716>

Applications for smartphones

Near-real time images
from cameras installed
on top of hotels

Educational web: "Follow the glider"

STUDENTS | TEACHERS | EXPLORE

f | | | |

ESPAÑOL

FOLLOW THE GLIDER

EXPLORE

Where are our gliders today →


DISCOVER THE OCEAN'S SECRETS WITH UNDERWATER GLIDERS





SOCB: ICTS SOCIB
Sistema d'observació i predicció costaner
Illes Balears +034 971 43 99 98
site credits | legal notice


ICJERICO CEFAS CSIC SOCIB

followtheglider.socib.es (dev. with CEFAS)


Educational web: "Follow the glider"

FOLLOW THE GLIDER 

STUDENTS | TEACHERS | EXPLORE |     ESPAÑOL

CURRENT MISSIONS 

Canales

PAST MISSIONS 

Canales


FEB 2014

DEC 2013

NOV 2013

SET 2013

Jerico

SHEET | SALINITY | TEMPERATURE | CHLOROPHYLL | OXYGEN 

In Situ Salinity (Thermal Lag corrected)





Depth (m)

Distance (Km)

Salinity (PSU)

What does it mean?

SOCIB: ICTIS SOCIB
Sistema d'observació i predicció costaner
Illes Balears +354 971 43 99 98
[site credits](#) | [legal notice](#)

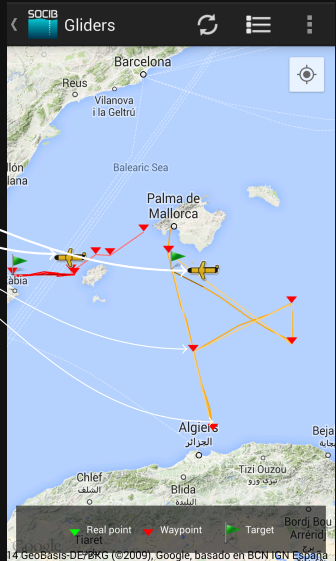
followtheglider.socib.es (dev. with CEFAS)

Examples of users

1. Glider Pilot

- ▶ Current position
- ▶ Waypoints

Glider pilot: "Now I can control the position anytime and from everywhere!"

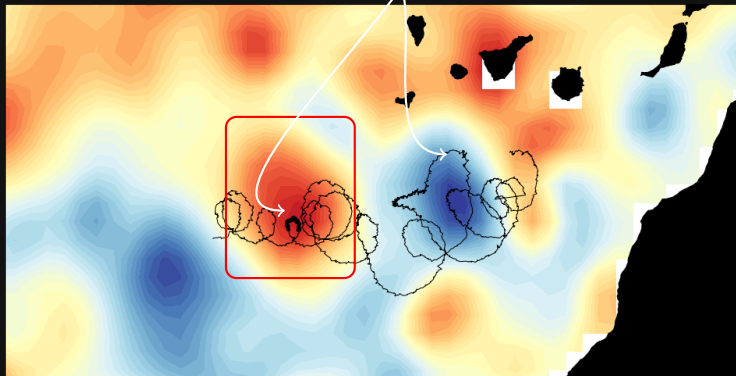


2. Scientist *chasing* an anticyclonic eddy

- ▶ Eddy to be studied
- ▶ Drifter trajectory

PUMP project

LAGAPOCE project



Scientist: "*Thanks, your system is fantastic!*"

Conclusions

citizens

specific users

reliable and up-to-date information

quality controlled

data provided in near real-time

planet and its climate

multi-platform system sampling at the

scales that matter

Summary

Challenge: Integrated, multi-platform system

Summary

Challenge: Integrated, multi-platform system

Principles: discoverable,
open-access,
quality-controlled

Summary

Challenge: Integrated, multi-platform system

Principles: discoverable,
open-access,
quality-controlled

Priorities: service to scientists,
technology developments,
response to societal needs

Summary

Challenge: Integrated, multi-platform system

Principles: discoverable,
open-access,
quality-controlled

Priorities: service to scientists,
technology developments,
response to societal needs

Future work: increase user community,
create tailored products

A composite image illustrating oceanographic data collection. At the top, several satellites are shown in orbit around Earth, with beams of light directed towards the ocean surface. Below the surface, a research vessel is visible. Numerous buoys and sensors are deployed in the water column. Underneath the surface, various underwater instruments are shown, including a large green autonomous underwater vehicle (AUV), a diver, and a deep-sea sampling station. The text "Thanks for your attention" is overlaid in the center.

Thanks
for your attention

✉ datacentre@socib.es

🐦 [@SOCIB_data](https://twitter.com/SOCIB_data)