

SOCIB applications for oceanographic data management

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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)



A voyage through scales...



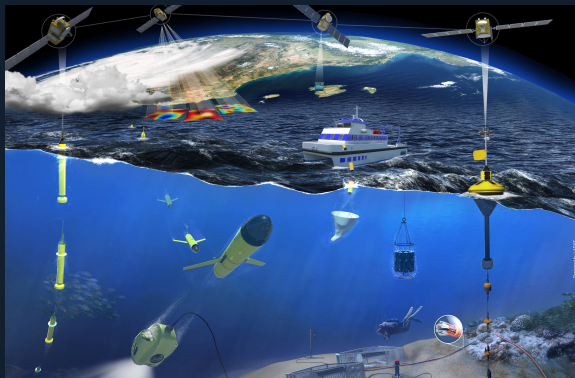
A voyage through scales...



- 1 Ocean observation
- 2 Data availability

multi-platform

all and now!



How do we provide
free & easy access to
data?

All mobile platforms available through "Deployment Application"



SOCIB Bahama Islands Coastal Observing and Forecasting System

IMEDEA

Overview + Add map

Distances Layers Adjust map Map permalink Speed units lon: 6.0210 lat: 40.5710 Update in 02:26 About Dapp

Current deployments

Deployment name -

Gliders

- GF-MR-0034_SOCIB-ENL-Canales-Mar2015_ide...

Profiler drifters

Surface drifters

Turtles

- ALNITAK_PRJ_WestMed_Apr2014_Calypeo

Completed deployments

Deployment name -

Gliders

Profiler drifters

Research Vessel

Surface drifter

Filter deployments

Status: Active Completed A

Platform types:

- Glider
- Profiler drifter
- Research Vessel
- Surface drifter
- Turtle

Filter

Surface drifter OGS-SVP002

time: 2015-04-04T14:00:00+00:00

position: N37.952 E3.296

speed: 0.0244 m s-1

water temp.: 15.5 C

location class: 2.0

volt: 11.4 V

drogue: 2.0

[EMODnet Bathymetry](#)

Additional information

Deployment name	Deployment date	Last call time	Point density	Last N days	Actions and links
GF-MR-0034_SOCIB-ENL-Canales...	2015-03-16 09:00:00	0 days, 00 hours and 07 minutes ...	19	19	Actions and links
SCB-APEX005_SOCIB_ENL_Canal...	2014-11-22 02:00:00	0 days, 15 hours and 39 minutes ...	30	133	Actions and links
SCB-ARVOR001_SOCIB_ENL_Ca...	2014-11-21 08:00:00	2 days, 10 hours and 15 minutes ...	30	132	Actions and links
OGS-PROVBIOLL001 PERSEUS ...	2014-05-25 08:00:00	36 days, 04 hours and 21 minutes ...			Actions and links

<http://apps.socib.es/dapp/>

All mobile platforms available through "Deployment Application"



Current and completed deployments

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All mobile platforms available through "Deployment Application"



Deployment filtering

SOCIB Bahare Islands Coastal Observing and Forecasting System
IMEDEA

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Distances Layers Adjust map Map permalink Speed units lon: 6.0210 lat: 40.5710 Update in 02:26 About **Dapp**

Current deployments

- Deployment name -
- Glider
 - GF-MR-0034_SOCIB-ENL-Canales-Mar2015_ide...
- Profiler drifter
- Surface drifter
- Turtle
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Completed deployments

- Deployment name -
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Filter deployments

Status: Active Completed A

Platform types:

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All mobile platforms available through "Deployment Application"



Additional information

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[EMODnet Bathymetry](#)

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All mobile platforms available through "Deployment Application"

Access to latest data



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position: N37.952 E3.296
speed: 0.0244 m s-1
water temp.: 15.5 C
location class: 2.0
volt: 11.4 V
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[EMODnet Bathymetry](#)

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All mobile platforms available through "Deployment Application"

Direct access to data files



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[EMO Dnet Bathymetry](#)

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All mobile platforms available through "Deployment Application"

Add background layer



Surface drifter OGS-SVP002
time: 2015-04-04T14:00:00+00:00
position: N37.952 E3.296
speed: 0.0244 m s⁻¹
water temp.: 15.5 C
location class: 2.0
volt: 11.4 V
drogue: 2.0

[EMODnet Bathymetry](#)

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All mobile platforms available through "Deployment Application"



A turtle?

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<http://apps.socib.es/dapp/>

What is behind
this application?

Two in-house applications to process observational data

1

"Instrumentation"

all the information concerning a platform

2

"Processing":

Data Access

Calibration

Derivation of new data

Quality Control

protocols, ...

from "Instrumentation"

salinity, sea level, ...

Result: a common entry point for all the datasets

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

Dataset	Size	Last Modified
SOCSIB DATA		--
observational		--
satellite/		--
mooring/		--
drifter/		--
aus/		--
hf_radar/		--
research_vessel/		--
aggregated_data/		--
operational_models		--
oceanographical		--
hydrodynamics		--
wmoop/		--
model_run_aggregation		--
wmoop/		--
wave		--
sapo_ib/		--
model_run_aggregation		--
sapo_ib/		--
ancillary_data/		--
TEST DATA/		--



NetCDF format, Conventions: CF-1.6

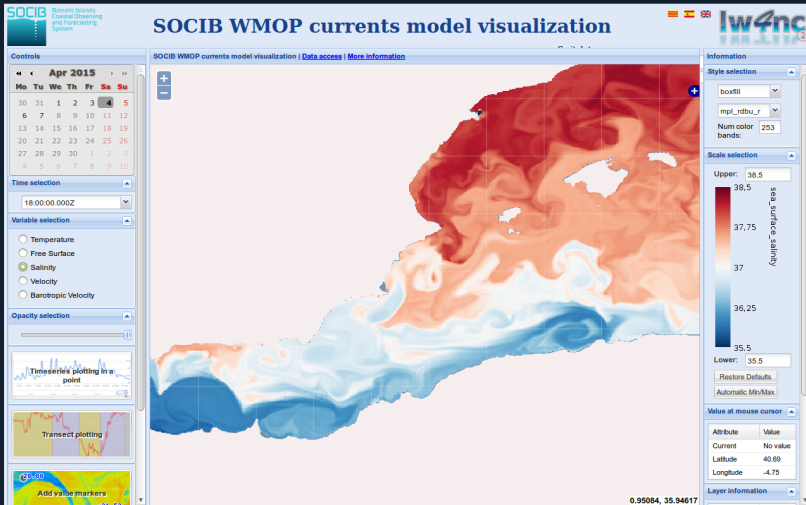
Global attributes: details from "Instrumentation"

What can we build
on top of that?

NetCDF viewer



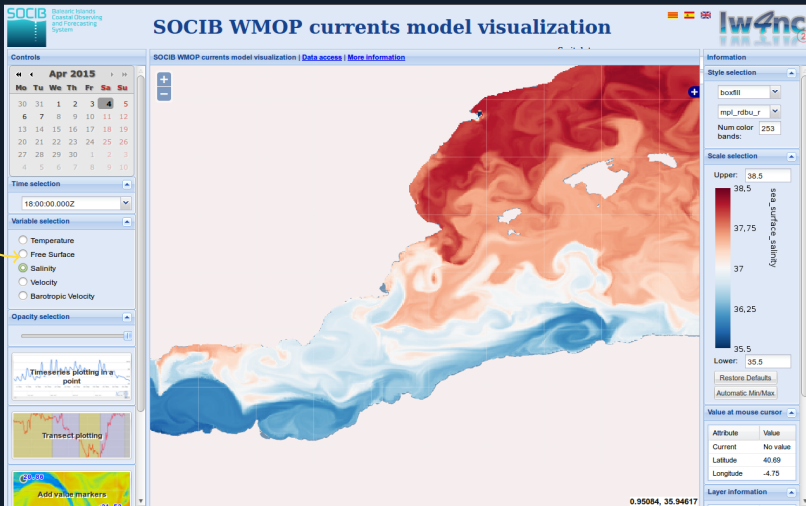
<http://thredds.socib.es/lw4nc2/>



NetCDF viewer

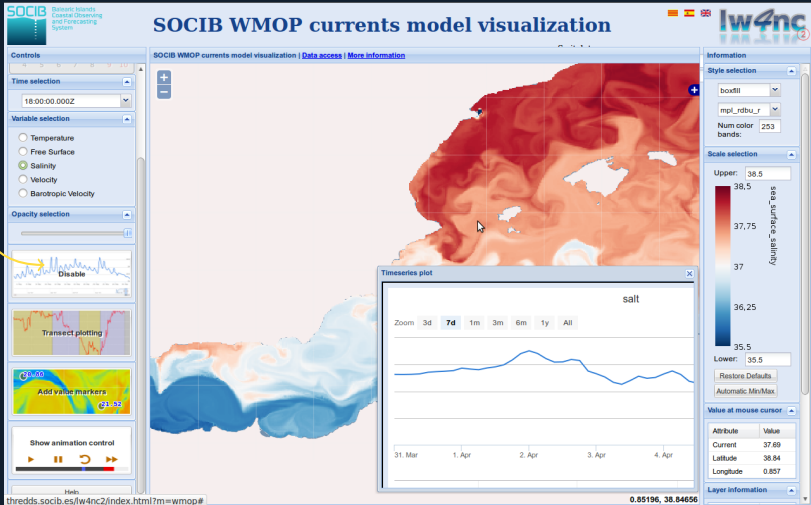


Select variable



NetCDF viewer

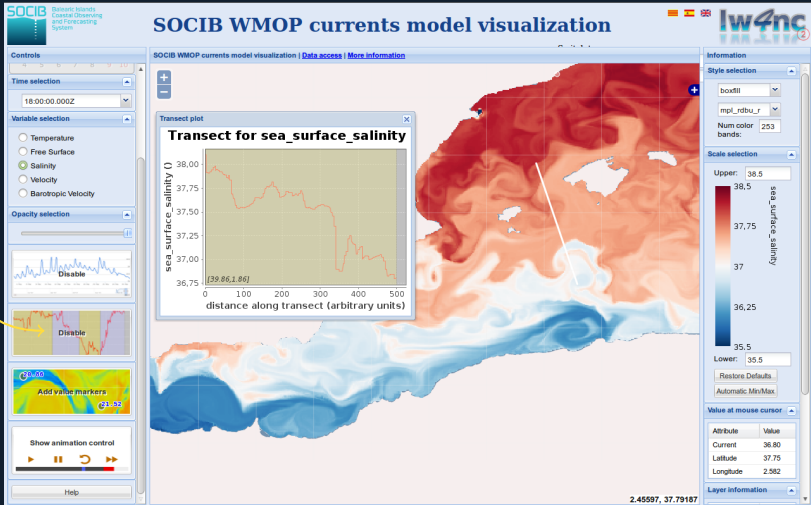
Extract time series



NetCDF viewer



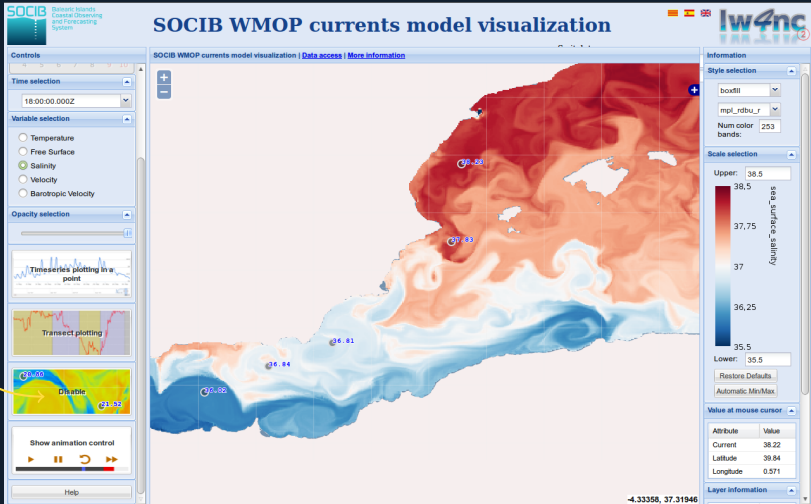
Extract values at markers



NetCDF viewer

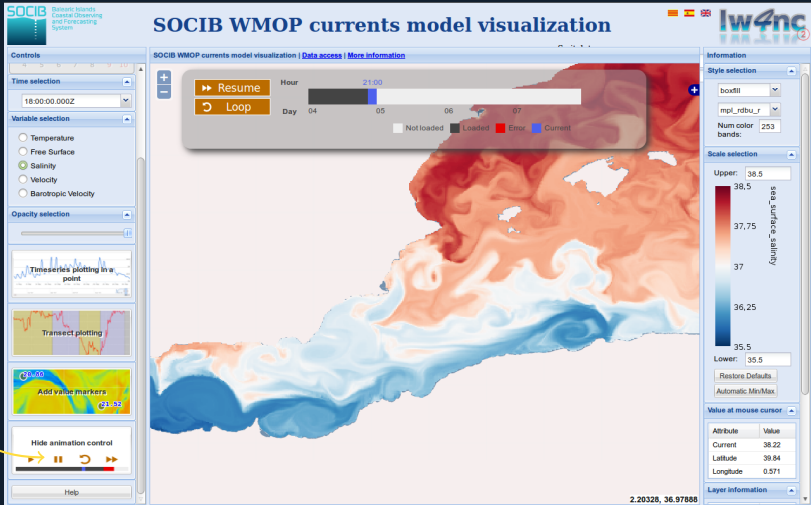


Extract transect values

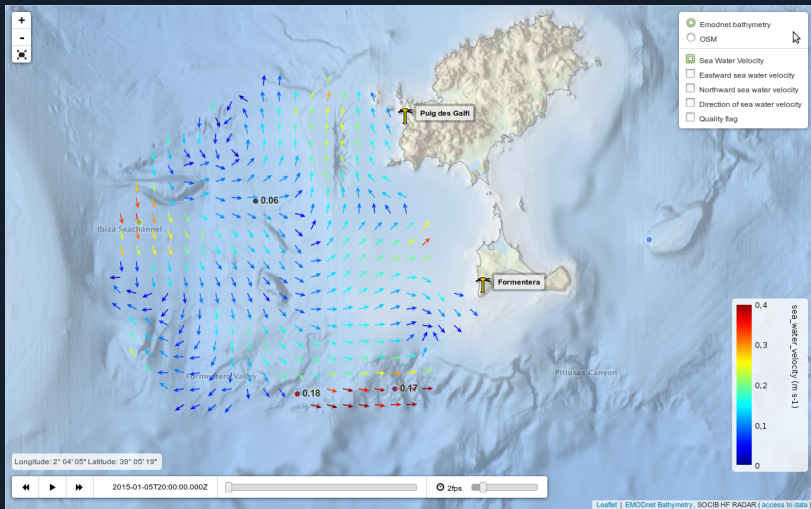


NetCDF viewer

Generate animation



Leaflet.TimeDimension



<https://github.com/socib/Leaflet.TimeDimension>

"Follow the glider"



STUDENTS | TEACHERS | EXPLORE



ESPAÑOL

FOLLOW THE GLIDER

EXPLORE

Where are our gliders today



DISCOVER THE OCEAN'S
SECRETS WITH UNDERWATER
GLIDERS

SOCIB: ICTS SOCIB
Sistema d'observació i predicció costaner
Illes Balears +034 971 43 99 98


site credits | legal notice








www.followtheglider.socib.es

"Follow the glider"




FOLLOW THE GLIDER 


STUDENTS | TEACHERS | EXPLORE |     ESPAÑOL




CURRENT MISSIONS 

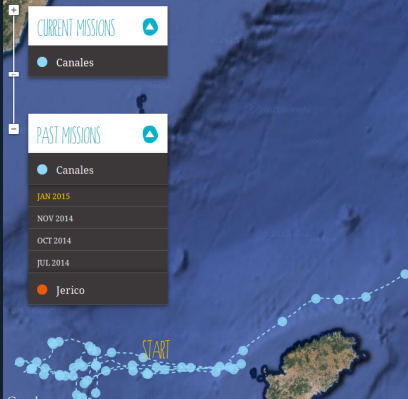
- Canales


PAST MISSIONS 

- Canales
- JAN 2015
- NOV 2014
- OCT 2014
- JUL 2014
- Jerico





SHEET | SALINITY | TEMPERATURE | CHLOROPHYLL | OXYGEN 

Name of the glider	Departure date	Day data
CANALES	28 JAN 2015	11 MAR 2015
Battery 	Distance traveled 415.56 KM	Average speed 0.286 M/S
Water speed 0.022 M/S 	Direct. of the current 	

START 

END 


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    Networks: Interch
Current Observing
and Forecasting
System


www.followtheglider.socib.es

"Follow the glider"




FOLLOW THE GLIDER 


STUDENTS | TEACHERS | EXPLORE |     ESPAÑOL

CURRENT MISSIONS 

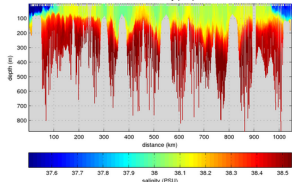
- Canales

PAST MISSIONS 

- Canales
- JAN 2015
- NOV 2014
- OCT 2014
- JUL 2014
- Jerico

SHEET | **SALINITY** | **TEMPERATURE** | **CHLOROPHYLL** | **OXYGEN** 

In situ salinity (raw)




depth (m)





distance (km)

salinity (PSU)

What does it mean?

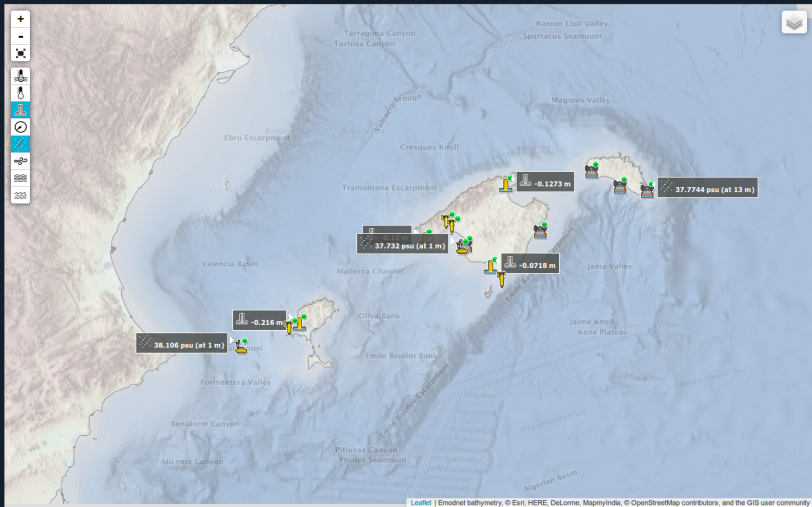
START  END

SOCIB: ICTS SOCIB
Sistema d'observació i predicció costaner
Illes Balears +034 971 43 99 98
[site credits](#) | [legal notice](#)

    Marine's Interact
Coastal Observing
and Forecasting
System

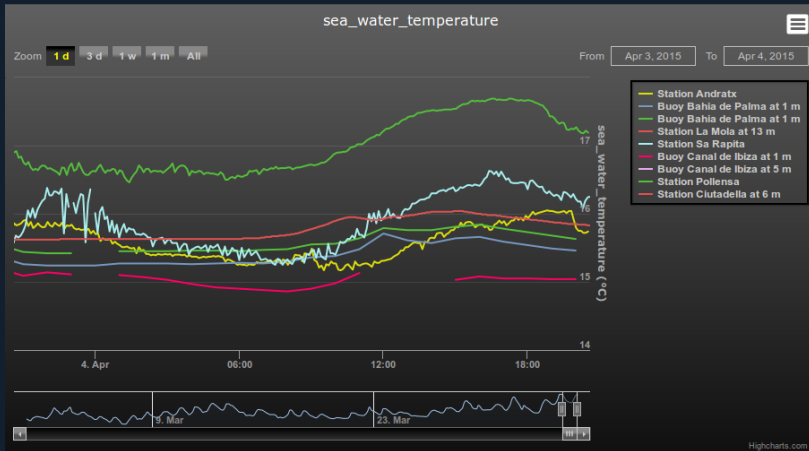
www.followtheglider.socib.es

Fixed station data



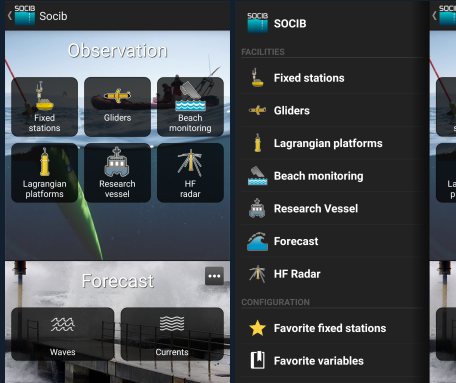
<http://socib.es/index.php?seccion=observingFacilities&facility=mooring>

Fixed station data



<http://socib.es/index.php?seccion=observingFacilities&facility=mooring>

Smart-phones app: all SOCIB data



Smart-phones app: all SOCIB data

The screenshot displays the SOCIB mobile application interface. The top navigation bar includes the SOCIB logo, the text 'Lagrangian pla...', and standard mobile UI icons (back, refresh, list, and settings). The main content is divided into two panels. The left panel, titled 'Active deployments', lists five entries for the year 2014, each with a checkmark icon:

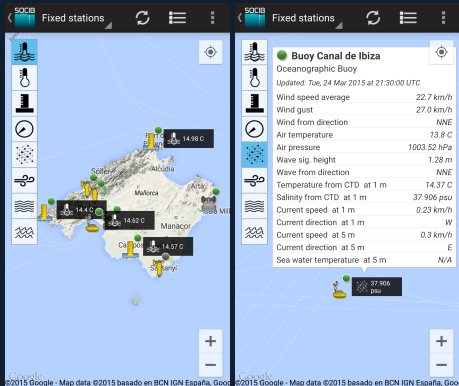
- SCB-APEX005_SOCIB_ENL_Canales_Nov2014**
Start: Sat, 22 Nov 2014 at 02:00:00 UTC
- IME-SVP025_SOCIB_ENL_Canales_Nov2014**
Start: Sat, 22 Nov 2014 at 01:00:00 UTC
- SCB-ARVORI001_SOCIB_ENL_Canales_Nov2014**
Start: Fri, 21 Nov 2014 at 08:00:00 UTC
- IME-SVP007_PERSEUS_EPR_ALBOREX_May2014**
Start: Sun, 25 May 2014 at 08:00:00 UTC
- IME-SVP016_PERSEUS_EPR_ALBOREX_May2014**
Start: Sun, 25 May 2014 at 08:00:00 UTC

A 'Show in map' button is located at the bottom of this list. The right panel shows a map of the Mediterranean region, with various colored trajectories (blue, purple, green, orange) overlaid on the sea. Yellow circular icons with a lightbulb symbol are placed along these trajectories. The map includes labels for major cities like Toulouse, Marseille, Barcelona, and Algiers.



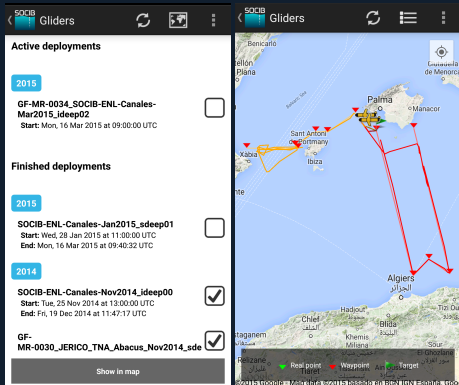
Trajectory for the last 30 days

Smart-phones app: all SOCIB data



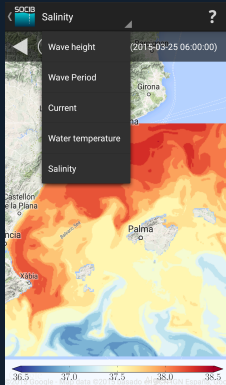
Latest values on map and time evolution

Smart-phones app: all SOCIB data



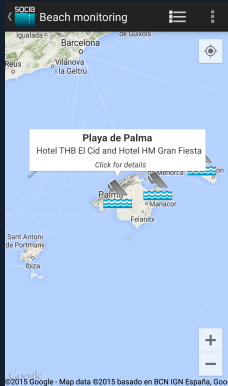
Present position and
way-points

Smart-phones app: all SOCIB data



Wave properties, currents, sea temperature and salinity

Smart-phones app: all SOCIB data



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

What is behind?

The app relies on a layer of *RESTful* services

SOCIB DataDiscovery:

<http://apps.socib.es/DataDiscovery/index.jsp>

- obtain a list of fixed stations or deployments (active and archived)
- extract measurements for a given platform or a selected variable
- obtain a time series for a given data product
- get images model, HF radar

What are we working
on now?

API to further improve data access

- data discovery and catalogue
- easier developments
- information on user queries

websites, programs, applications

Product catalogue

Products

Filter


From date 01/05/2014 **To date** 31/05/2014 **Status** -Select status **Variable** Select variables

Platform type Glider **Instrument type** -Select instrument type **Data type** -Select data type


Bounding box min longitude min latitude max longitude max latitude [Show map](#)

▼ Filter


3 products found 1



bfly preCARTEX
Butterfly cruise serving as Engineering Trial for Slocum scientific mission
13/05/2014 → 19/05/2014
10/03/2015
Glider ⓘ
[Trajectory](#)
[see water_safety](#) [see water_temperature](#)



canales2013
Canales cruise, defined and followed by SOCIB (with in kind collaboration of IMEDEA-CSIC) to... (more)
07/04/2014 → 09/05/2014
06/03/2015
Glider ⓘ
[Trajectory](#)
[see water_safety](#) [see water_temperature](#)



SOCIB EPR alborex May2014
icoast00 ideep00
PERSEUS project multi-platform experiment of which two IMEDEA gliders are part: U050 (icoast00... (more)
25/05/2014 → 30/05/2014
09/03/2015
Glider ⓘ
[Trajectory](#)
[see water_safety](#) [see water_temperature](#)

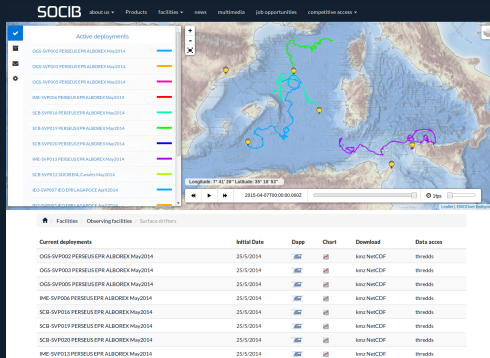
- filtering

- access to data files

platform, period, bounding box, ...

http, OPeNDAP, ...

New corporative web




- Improved back-office
- Responsive design
- Data still *at two clicks*

Summary & conclusions




1

Applications for data
visualisation and access



1 Applications for data
visualisation and access

2 Developments allowing
flexibility, scalability and time saving



1 Applications for data
visualisation and access

2 Developments allowing
flexibility, scalability and time saving

3 In-line with SOCIB priorities:

service to scientists

technological developments

response to societal needs



Thanks
for your attention

 @SOCIB_data