

Data management and applications at SOCIB data centre

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Balearic Islands Coastal Observing and Forecasting System

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



How do we provide
free & easy access to
data?

Deployment Application : for all the mobile platforms



Current and completed deployments

The screenshot displays the Dapp web application interface. The main map shows the Balearic Islands region with various deployment tracks overlaid. A legend titled "ROMS Socib currents" indicates sea surface velocity in meters per second, ranging from 0 to 2. The interface includes a sidebar with deployment lists and a table of deployment details.

Current deployments

- Deployment name -
- Glider
 - GF-MR-0035_SOCIB-ENL-Canales-APR2015_ikeep02
- Profiler drifter
 - SCS-APEX005_SOCIB_ENL_Canales_Nov2014
 - SCS-ARVOR001_SOCIB_ENL_Canales_Nov2014
 - OGS-PROVBOLL001_PERSEUS_EPR_ALBOREX_May2...
 - SCS-APEX003_SOCIB_ENL_CanalDeIbiza_Jun2013
 - SCS-APEX002_SOCIB_ENL_CanalDeIbiza_Apr2013
 - SCB-APEX001_SOCIB_ENL_BalearicSea_Aug2012
 - IME-APEX002_SOCIB_ENL_BalearicSea_Jul2012
 - IME-APEX001_SOCIB_ENL_BalearicSea_Mar2012

Completed deployments

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

Filter deployments

Status: Active Completed All

Platform types:

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

Additional information

Deployment name	Deployment date	Last call time	Point density	Last N days	Actions and links
GF-MR-0035_SOCIB-ENL-Canales-A...	2015-04-22 10:00:00	0 days, 00 hours and 40 minutes ago	12	/12	Actions and links
SCB-APEX005_SOCIB_ENL_Canales...	2014-11-22 02:00:00	1 days, 11 hours and 07 minutes ago	30	/161	Actions and links
SCS-ARVOR001_SOCIB_ENL_Canal...	2014-11-21 08:00:00	1 days, 14 hours and 53 minutes ago	30	/162	Actions and links
OGS-PROVBOLL001_PERSEUS EP...	2014-05-25 08:00:00	9 days, 08 hours and 48 minutes ago			Actions and links

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

Deployment Application : for all the mobile platforms



Deployment filtering

status, types

The screenshot displays the Dapp web application interface. On the left, there is a sidebar with a tree view of deployment categories: 'Current deployments' (with sub-items like 'Glider', 'Profiler drifter', 'Research Vessel', 'Surface drifter', 'Turtle') and 'Completed deployments' (with sub-items like 'Glider', 'Profiler drifter', 'Research Vessel', 'Surface drifter', 'Turtle'). Below this is a 'Filter deployments' section with radio buttons for 'Active', 'Completed', and 'All', and checkboxes for platform types: 'Glider', 'Profiler drifter', 'Research Vessel', 'Surface drifter', and 'Turtle'. A 'Filter' button is at the bottom of this section. The main area features a map of the Balearic Islands with a color-coded overlay for 'ROMS Socib currents' and 'sea surface velocity (meter second-1)'. A legend on the left of the map shows a color scale from 0 (blue) to 2 (red). The map also shows various deployment tracks and icons. At the bottom, an 'Additional information' table lists deployment details.

Deployment name	Deployment date	Last call time	Point density	Last N days	Actions and links
GF-MR-0035_SOCIB-ENL-Canales-A...	2015-04-22 10:00:00	0 days, 00 hours and 40 minutes ago	12	/12	Actions and links
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OQS-PROVIBOLL001 PERSEUS EP...	2014-05-25 08:00:00	9 days, 08 hours and 48 minutes ago			Actions and links

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

Deployment Application : for all the mobile platforms



Additional information

ROMS Socib currents
sea surface velocity (meter second¹)

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

Deployment Application : for all the mobile platforms



Direct access to data files

NetCDF, OPeNDAP

The screenshot shows the Dapp web application interface. The left sidebar contains sections for 'Current deployments', 'Completed deployments', and 'Filter deployments'. The central map displays a geographical area with various deployment tracks and icons. A legend for 'ROMS Socib currents' is visible on the map. The bottom panel, titled 'Additional information', contains a table with the following data:

Deployment name	Deployment date	Last call time	Point density	Last N days	Actions and links
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<http://apps.socib.es/dapp/>

Deployment Application : for all the mobile platforms



Add background layer

model, HF radar, bathymetry

Current deployments

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- Completed deployments
- Deployment name -
- Glider
- Profiler drifter
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Filter deployments

Status: Active Completed All

Platform types:

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

Deployment Application : for all the mobile platforms



A turtle?

Current deployments

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- Glider
 - GF-MR-0035_SOCIB-ENL-Canales-APR2015_ikep02
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- Turtle

Filter deployments

Status: Active Completed All

Platform types:

- Glider
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- Research Vessel
- Surface drifter
- Turtle

Additional information

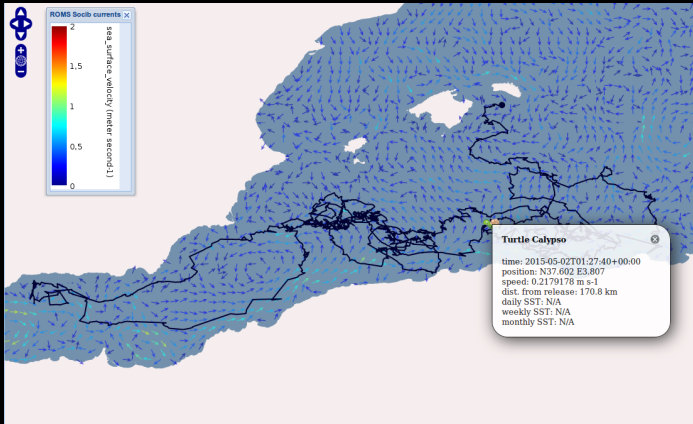
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<http://apps.socib.es/dapp/>

Deployment Application : for all the mobile platforms



Following Calypso for 384 days



<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 ingestion

Calibration

Derivation of new data

Quality Control

access method, format, . . .

from "Instrumentation"

salinity, sea level, . . .

For the gliders: a toolbox in MATLAB/Octave



The screenshot shows the GitHub repository page for `socib / glider_toolbox`. At the top, it displays repository statistics: 317 commits, 3 branches, 2 releases, and 1 contributor. Below this, there's a section for merging branches, currently showing 'develop'. A list of files and their commit history is visible, including `m`, `notes`, `.gitignore`, `LICENSE`, `Makefile`, and `README.md`. On the right side, there are options to view code, issues, pull requests, and a pulse graph. At the bottom right, there's a 'Download ZIP' button. The main content area shows the `README.md` file, which introduces the `glider_toolbox` as a set of MATLAB/Octave scripts for managing glider data.

`socib / glider_toolbox` Watch 2 Star 0 Fork 0

MATLAB/Octave scripts to manage data collected by a glider fleet, including data download, data processing and product and figure generation, both in real time and delayed time.

317 commits 3 branches 2 releases 1 contributor

branch: master glider_toolbox / +

Merge branch 'develop'

joanpau authored 20 hours ago latest commit 78cb9579a8

<code>m</code>	Include Seaglider optics sensor in preprocessing, gridding and figures.	20 hours ago
<code>notes</code>	Update delayed time processing outline diagram and Makefile.	9 months ago
<code>.gitignore</code>	Fix setup helper script for polygon triangulation and ignore GPC libr...	15 days ago
<code>LICENSE</code>	Added GPLv3 license file and copyright notice to every file.	2 years ago
<code>Makefile</code>	Ignore stfp source folder in doc build.	15 days ago
<code>README.md</code>	Upgrade version, copyright dates, doc style, and other documentation ...	15 days ago

README.md

glider_toolbox

The `glider toolbox` is a set of MATLAB/Octave scripts and functions developed at SOCIB to manage the data collected by a glider fleet. They cover the main stages of the data management process both in real time and delayed time mode: metadata aggregation, data download, data processing, and

Code Issues 0 Pull requests 0 Pulse Graphs

HTTPS clone URL `https://github.cc`

You can clone with HTTPS or Subversion.

Download ZIP

Result: a common entry point for all the datasets

Dataset	Size	Last Modified
SKCIB DATA		..
observational		..
satellite/		..
mooring/		..
drifter/		..
buoy/		..
bf_radar/		..
research_vessel/		..
aggregated_data/		..
operational_models		..
oceanographical		..
hydrodynamics		..
wmp/		..
model_run_aggregation		..
wmp/		..
wave		..
sops_ib/		..
model_run_aggregation		..
sops_ibr		..
ancillary_data/		..
TEST DATA/		..



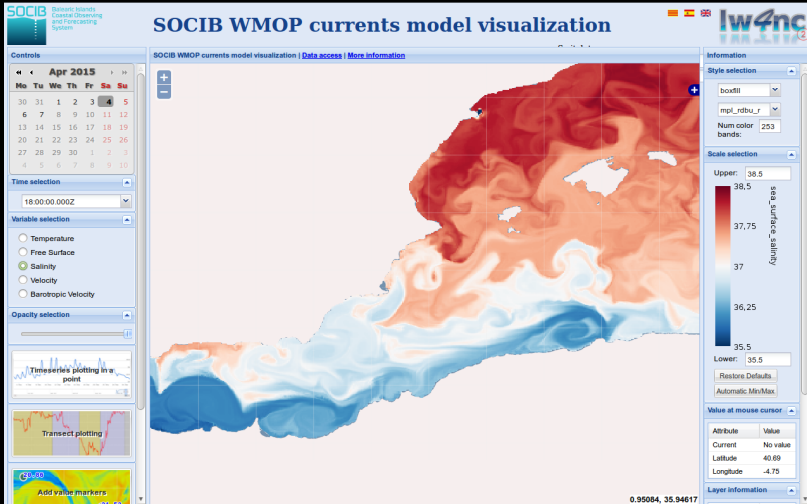
NetCDF format, Conventions: CF-1.6
Global attributes: details from "Instrumentation"

What can we build
on top of that?

NetCDF viewer



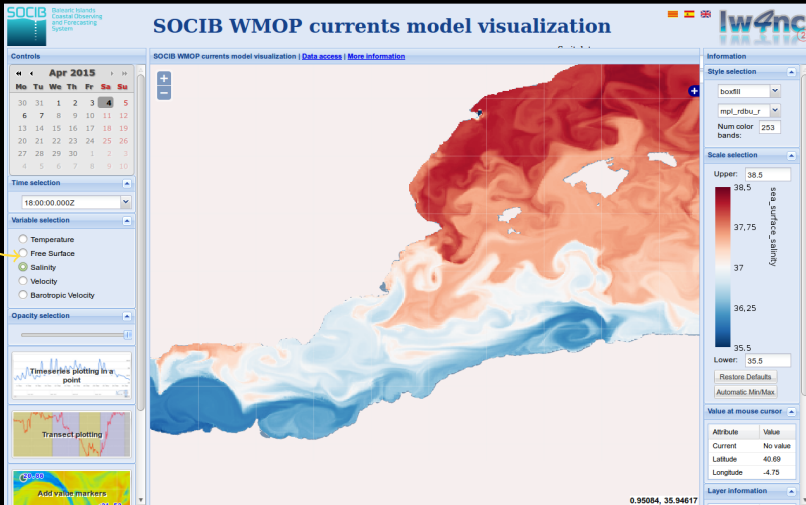
 <http://thredds.socib.es/lw4nc2/>



NetCDF viewer



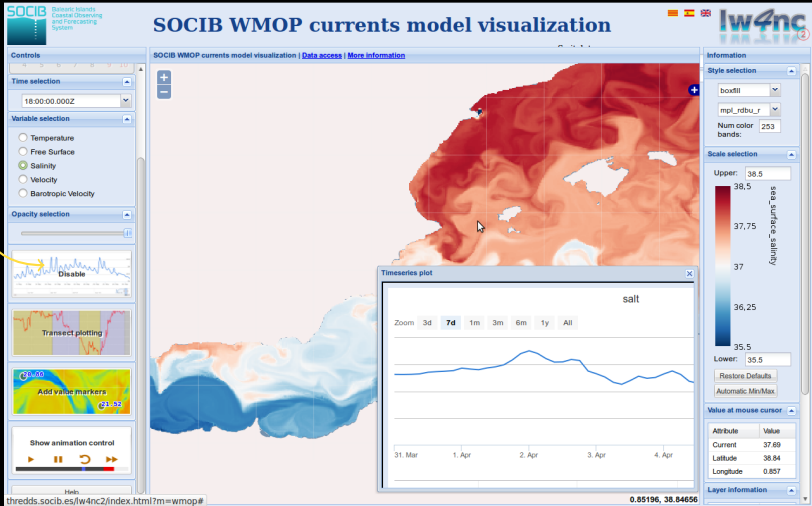
Select variable



NetCDF viewer



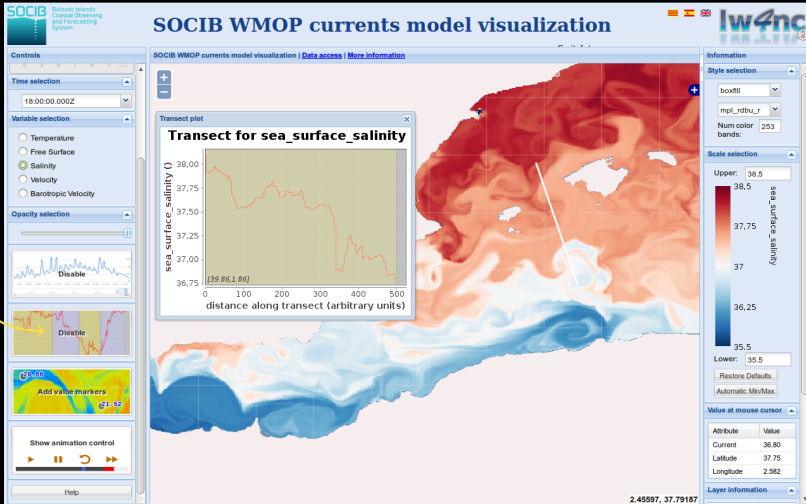
Extract time series



NetCDF viewer



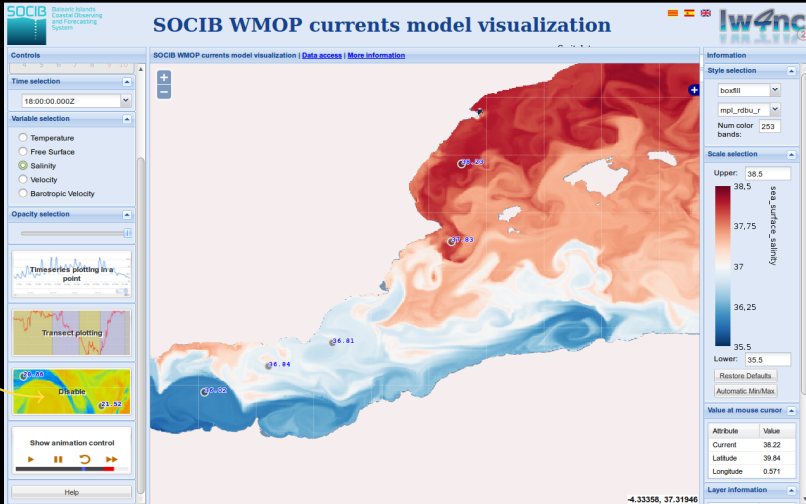
Extract values at markers



NetCDF viewer



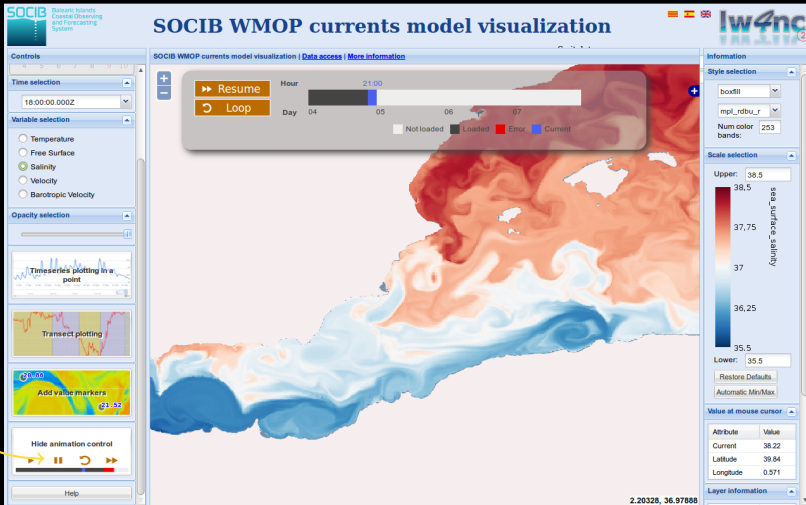
Extract transect values



NetCDF viewer



Generate animation



Leaflet.TimeDimension

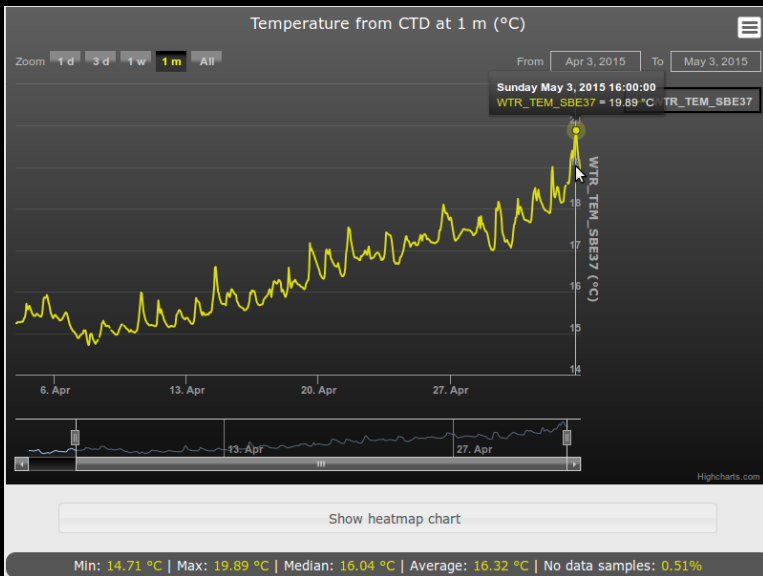


<https://github.com/socib/Leaflet.TimeDimension>

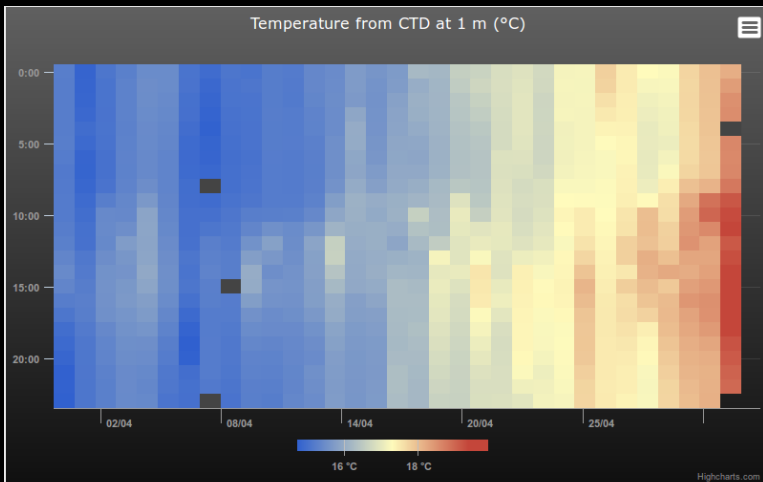
Fixed station data



Fixed station data



Fixed station data



Min: 14.71 °C | Max: 19.89 °C | Median: 16.04 °C | Average: 16.32 °C | No data samples: 0.51%

How to reach
a wider public?

"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




MISSION DATA: CANALES

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 	

Map: A satellite map showing the glider's path from the Canary Islands (labeled 'START') to the Balearic Islands (labeled 'END'). The path is marked with blue dots and a dashed line.

Footer:


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www.followtheglider.socib.es

"Follow the glider"




FOLLOW THE GLIDER 


STUDENTS | TEACHERS | EXPLORE |     | ESPAÑOL

CURRENT MISSIONS 

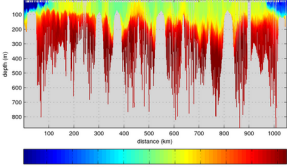
- Canales

PAST MISSIONS 

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

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

In situ salinity (raw)



depth (m)

distance (m)





salinity (PSU)

What does it mean?

START

END

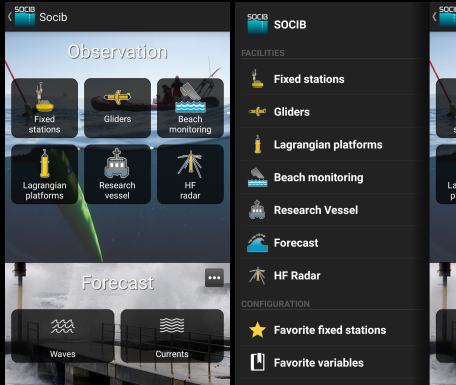
SOCIB: ICTS SOCIB
Sistema d'observació i predicció costaner
Illes Balears +034 971 43 99 98
[site credits](#) | [legal notice](#)

www.followtheglidersocib.es

Seabords: dashboard visualisation of real-time data

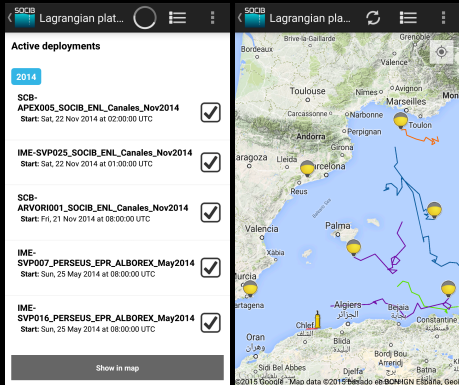
Smart-phones app: all SOCIB data



Available on the
 **App Store**

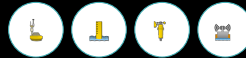
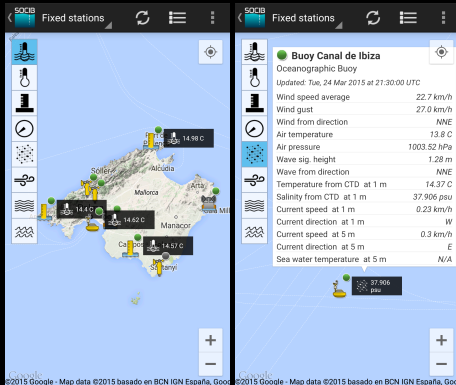
ANDROID APP ON
 **Google play**

Smart-phones app: all SOCIB data



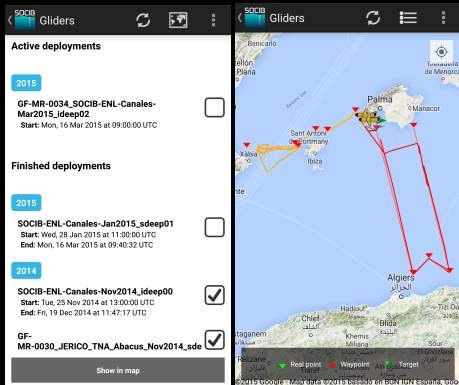
Trajectory for the last 30 days

Smart-phones app: all SOCIB data



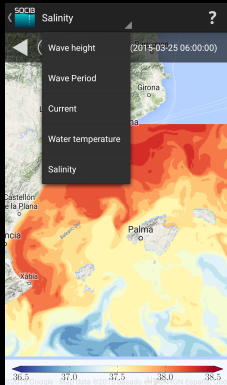
Latest values on map and time evolution

Smart-phones app: all SOCIB data



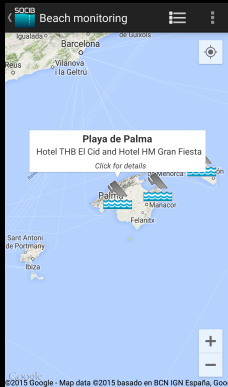
Present position and way-points

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>

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 access in different format NetCDF, JSON, . . .
- data discovery and catalogue
- easier developments websites, programs, applications
- information on user queries

Product catalogue

The screenshot displays a web interface for a product catalogue. At the top, the word "Products" is followed by a "Filter" section. This section includes several filter categories: "From date" (01/05/2014), "To date" (31/05/2014), "Status" (- Select status), and "Variable" (Select variables). Below these are "Platform type" (Glider), "Instrument type" (- Select instrument type), and "Data type" (- Select data type). A "Bounding box" section contains fields for "min longitude", "min latitude", "max longitude", and "max latitude", along with a "Show map" button. A blue bar with a downward arrow and the word "Filter" is positioned below the filter options. Underneath, it states "3 products found" with a small "1" in a box. Three product cards are displayed in a grid. Each card features a thumbnail image, a title, a description, a date range, a "Glider" icon, and a "Trajectory" icon. The first card is titled "bfly preCARTEX" and describes a Butterfly cruise. The second is "canales2013", a Canales cruise. The third is "SOCIB EPR alborex May2014 icoast00 ideep00", a PERSEUS project experiment. Each card also includes links for "see water salinity" and "see water temperature".

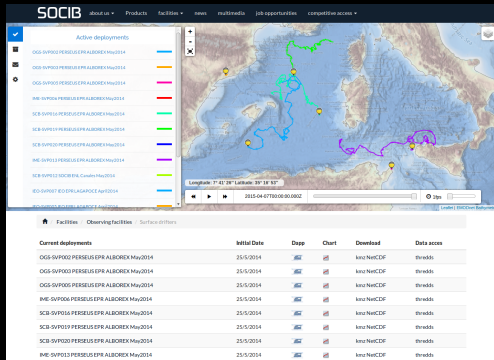
- filtering

- access to data files

platform, period, bounding box, . . .

http, OPeNDAP, . . .

New corporative web




- Improved back-office
- Responsive design
- Data still at ✌️ clicks

Summary & conclusions

Bringing data closer to users

- 1 Applications for data visualisation and access

Bringing data closer to users

- 
- 1 Applications for data visualisation and access
 - 2 Developments allowing flexibility, scalability and time saving

Bringing data closer to users

- 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