

Multi-Platform Data Distribution Challenges: from Observing Systems to Data Distribution



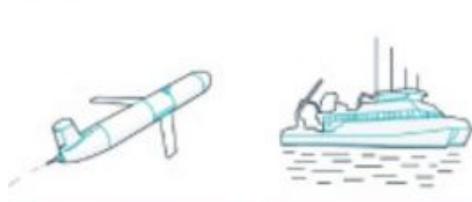
M. V. Charcos, M. À. Rújula, E. Heslop, A. Novellino, P. Gorringe, J. G. Fernández, B. Frontera,
C. Muñoz, X. Notario, E. Reyes, P. Rotllan, I. Ruiz, and J. Tintoré

OUTLINE

1. Coastal Ocean Observing & Forecasting System of the Balearic Islands (SOCIB)
2. SOCIB Data Center Facility
3. SOCIB Data Distribution
4. EMODnet Physics
5. HF Radar: challenges for the standardization
6. HF Radar standardization strategy and road map
7. HF Radar: SOCIB contributions
8. Glider: current framework
9. Glider: current challenges
10. Glider network development plans

Multi-platform observing system - SOCIB

Observing Facilities



www.socib.es

Fully open data
Three key drivers:
- science priorities
- tech. Development
- society needs

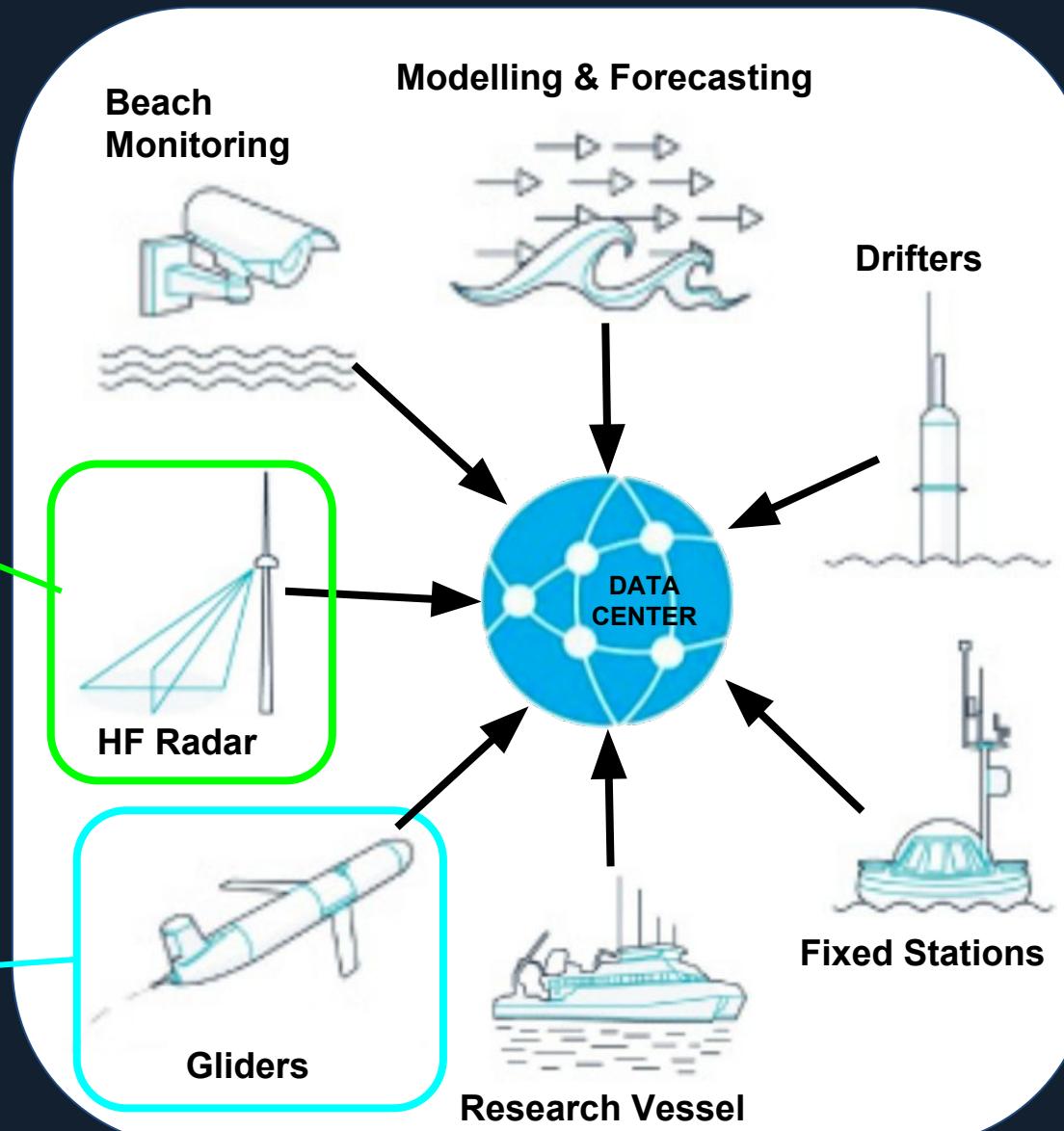


SOCIB Data Center Facility

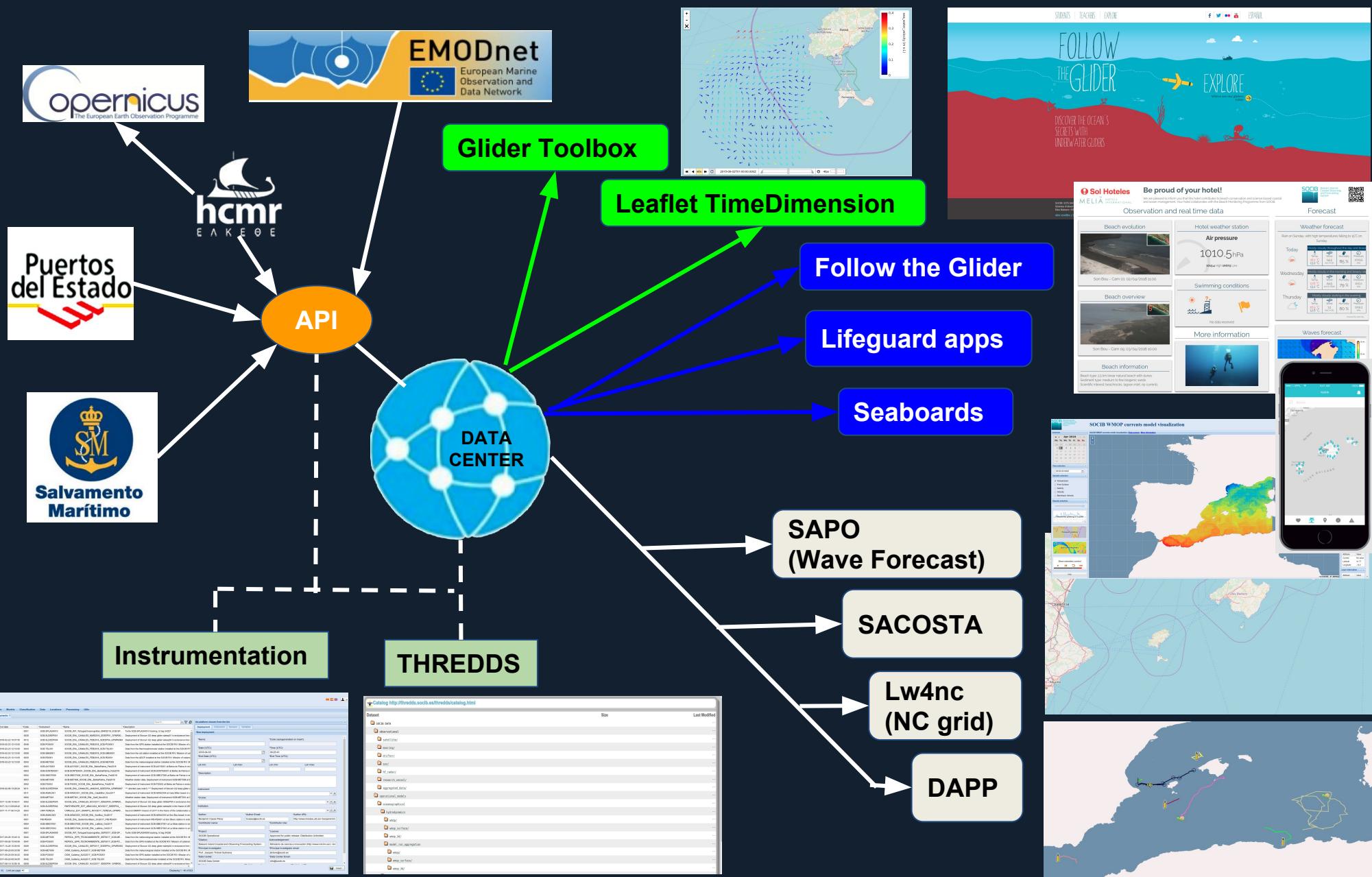
- Platform management and communication
- QC assurance
- Metadata aggregation and standardization
- Data archive
- Data search and discovery
- Data policy and distribution
- Data viewing

- Since June 2012, 1779 days (95% of operating time, 75% area coverage)
- 2 Direction Finding HFR stations
- QA/QC implementation
- Data validation with in-situ data
- CF1.6 + OceanSites + INSPIRE metadata compliance
- Future integration in CMEMS Apr. 2019 (NRT) & Apr. 2020 (Reproc.)
- Integration in EDS - SASEMAR

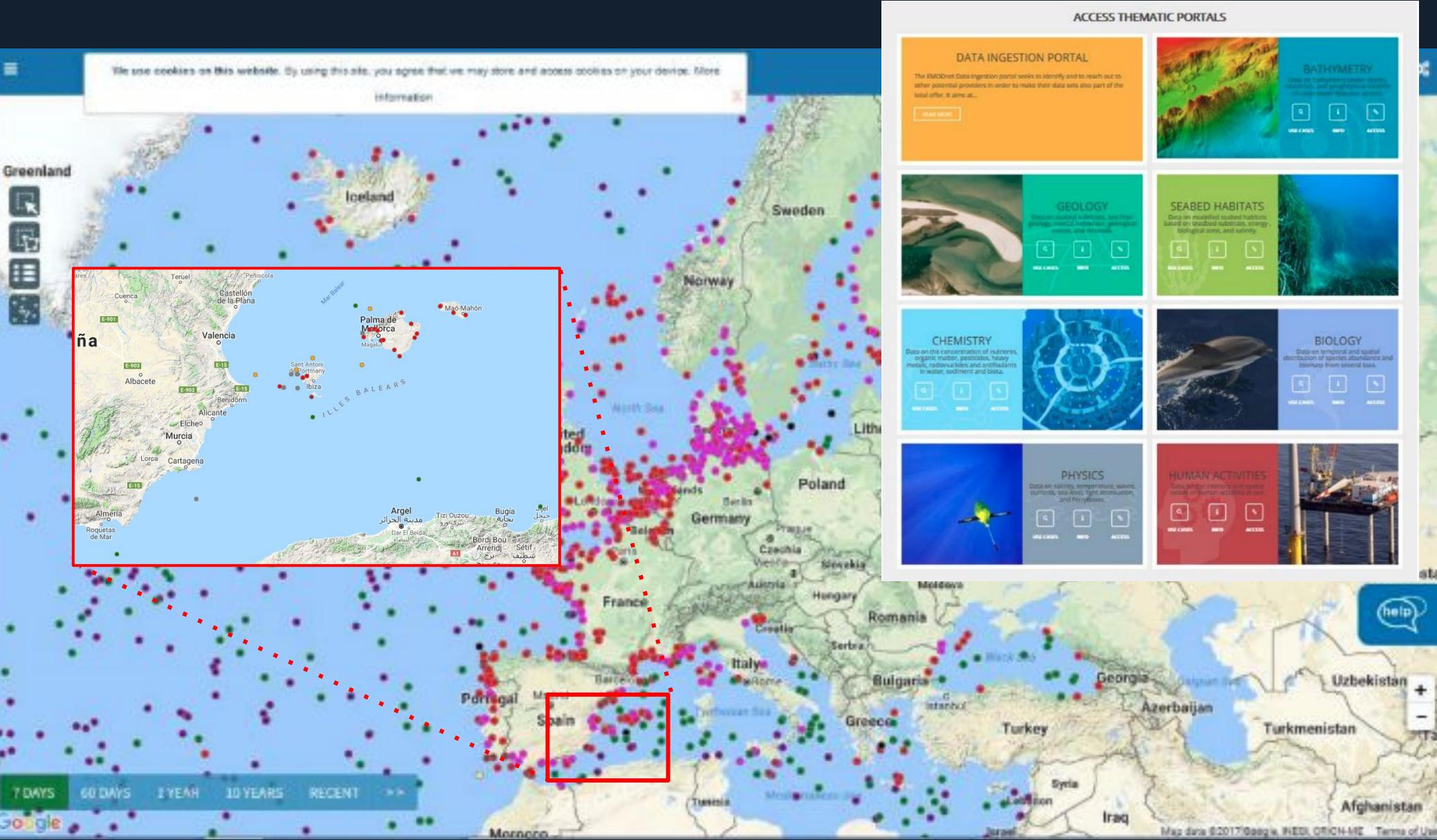
- Since 2011, Glider 'endurance' lines (Quasi-continuous)
- 74 missions
- 3 G1 & 4 G2 Slocum gliders, 2 Seaglider
- QA/QC implementation almost operational
- Biogeochemical calibration
- CF1.6 + EGO metadata compliance
- Integration in Coriolis + EMODnet



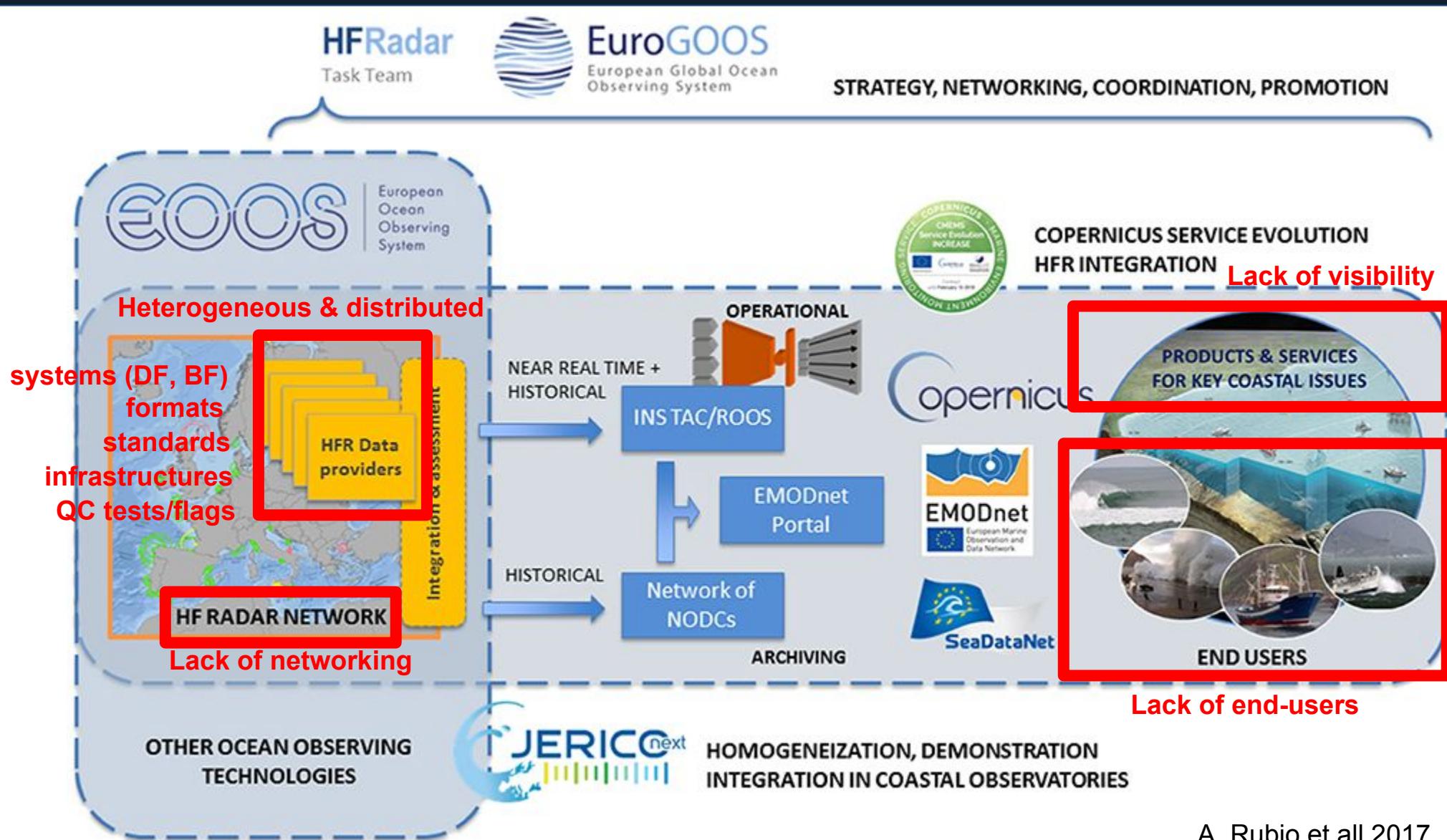
SOCIB Data Distribution - API as Key Component



EMODnet Physics



HF Radar - European integration challenges



HF radar - INCREASE & HF Radar TT

Launched by EuroGOOS HFR TT to provide:

- General overview of EU HFR system
- Main HFR operation & maintenance issues
- Standardization
- Data sharing protocols
- Main areas of applications
- Main identified users
- Main related research lines

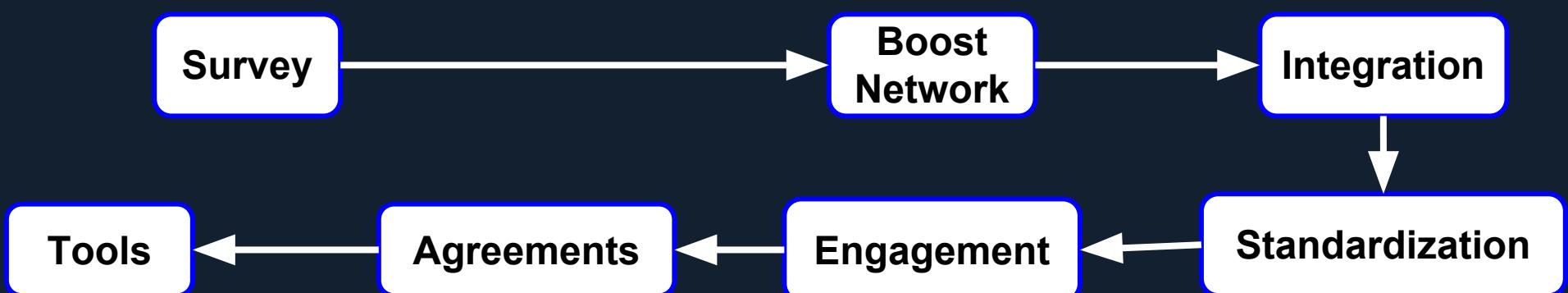
ACTIVE INITIATIVES
EuroGOOS HFR Task Team
EMODnet Physics
CMEMS (INCREASE)

PROJECTS
EU project Jerico-Next
EU project SeaDataCloud
CMEMS INSTAC Phase 2

COLLABORATION
IOOS
IMOS-ACORN
ROWG

Join proposals,
Essential role of
EuroGOOS HFR TT

Foster HFR network integration
in EU marine portals
(e.g. EMODnetPhys, CMEMS)



Provide and promote tools exchange, assessment metrics and methodologies (e.g. JRadar software by AZTI, OMA know-how..)

Improve administrative procedures (e.g. agreements to avoid interferences France-Spain-Italy)

Engage end-users (e.g. Integration of HFR data in EDS-SASEMAR)

Ensure data availability in standard formats (e.g. definition of guidelines and software for converting formats into standards)

HF radar - SOCIB Contributions

Helped implementing common data format and metadata structure for NRT HFR derived current data

(see poster: The European common data and metadata model for real-time High Frequency Radar surface current data, L. Cognati)

data format	metadata structure	QC flagging scheme	QC tests
<ul style="list-style-type: none">netCDF-4 data, and netCDF-3.6.1.CMEMS IN-SITU TAC archiving strategy and folder structure,CMEMS IN-SITU TAC naming convention. <p>Data var names:</p> <ul style="list-style-type: none">SeaDataNet P09*	<p>Mandatory Attr.</p> <ul style="list-style-type: none">to comply with CF-1.6 and OceanSITES conventions. <p>Recommended Attr.</p> <ul style="list-style-type: none">to comply with INSPIRE and Unidata Dataset Discovery conventions. <p>Suggested Attr.</p> <ul style="list-style-type: none">relevant in describing the data, whether it is part of the standard or not.	CMEMS IN-SITU TAC –OceanSITES: O. unknown, no QC 1. good, all QC passed 2. probably good, 3. Probably correctable, data used without scientific correction/calibration 4. Bad data, one or more QC failed 7. Nominal value, data not observed but reported 8. interpolated value 9. Missing value	<ul style="list-style-type: none">chosen among the ones listed in the QARTOD manual.are manufacturer-independent, i.e. they do not rely on particular variables or information provided only by a specific device.defined for both radial and total velocity datarequired for labelling the data as Level 2B (for radial velocity) and Level 3B (for total velocity) data.

Helped homogenizing QA/QC procedure

For Radial Data

- Syntax
- Over water
- Variance threshold
- Velocity threshold
- Median filter
- Average radial bearing

For Total Data

- Data density threshold
- Balanced contributing radials
- GDOP threshold
- Velocity threshold

Boosting network by coordinating and participating in joint proposals
<http://crusoe-hfradar-training.eu>



Promote data use
(integration in EDS-SASEMAR)



Sign collaboration agreements



Glider - What about the glider network?

European Glider Data Management Meeting, March 2018, Milan

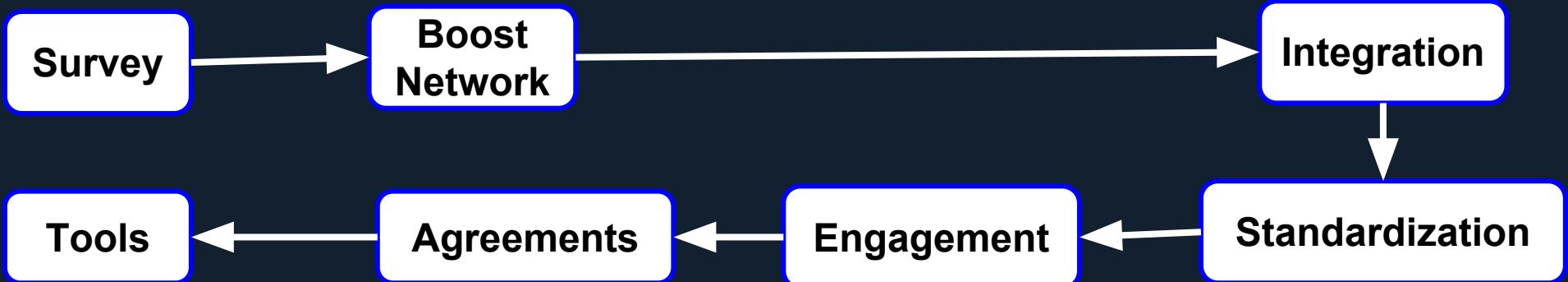


Glider - Should we follow the same path?

OceanObs'09
White Paper
(Testor et al
2009)

EGO community
GROOM-FP7
EuroGOOS Glider TT

Coriolis (RT)
EMODnet (planned DT)



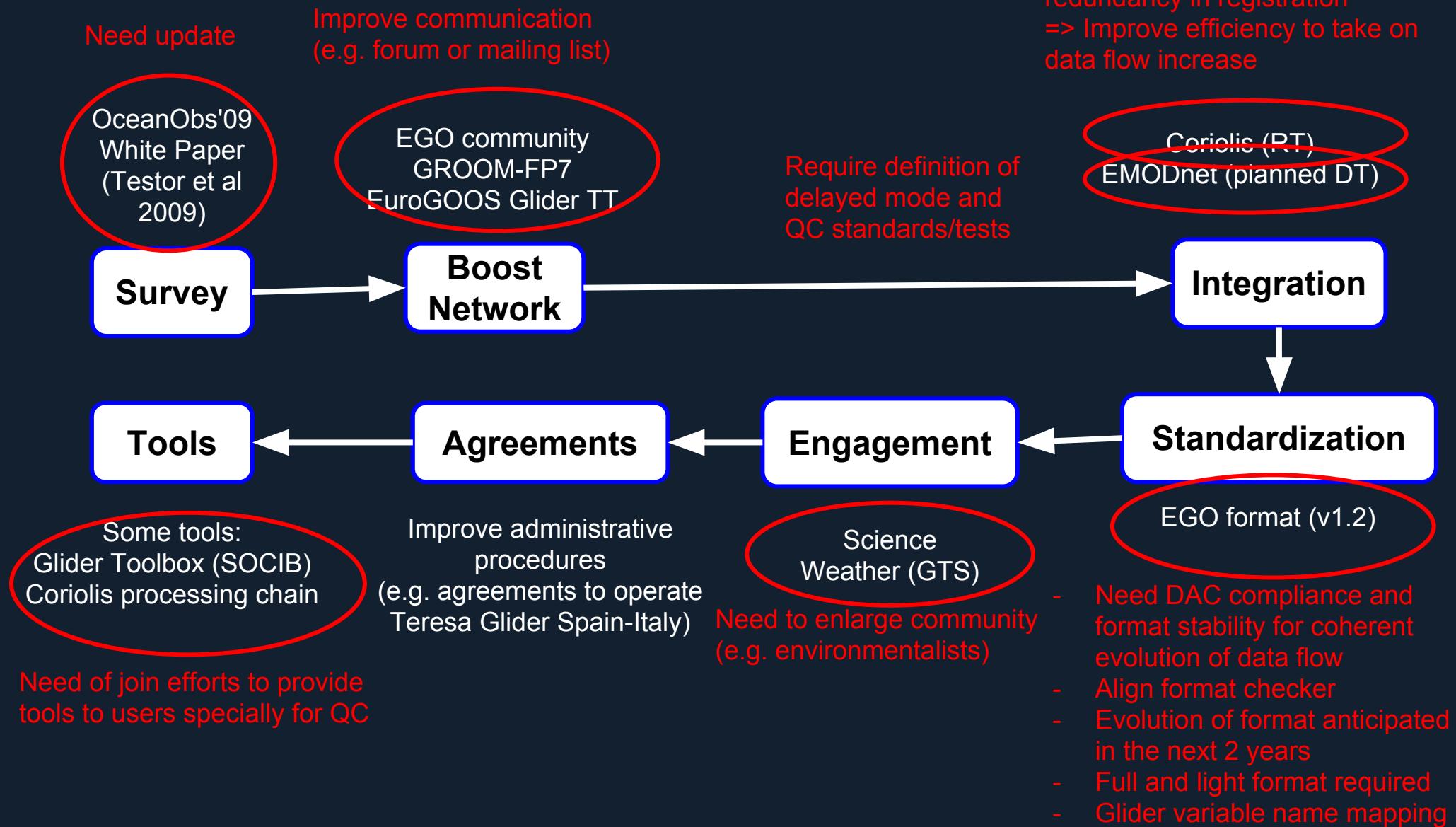
Some tools:
Glider Toolbox (SOCIB)
Coriolis processing chain

Improve administrative
procedures
(e.g. agreements to operate
Teresa Glider Spain-Italy)

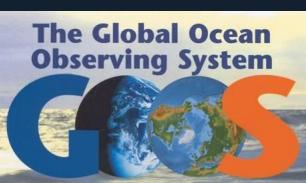
Science
Weather (GTS)

EGO format (v1.2)

Glider - Should we follow the same path?



Glider - What is next?



**EUROGOOS Glider TT
Data management meeting
September 2018 (coming soon)**

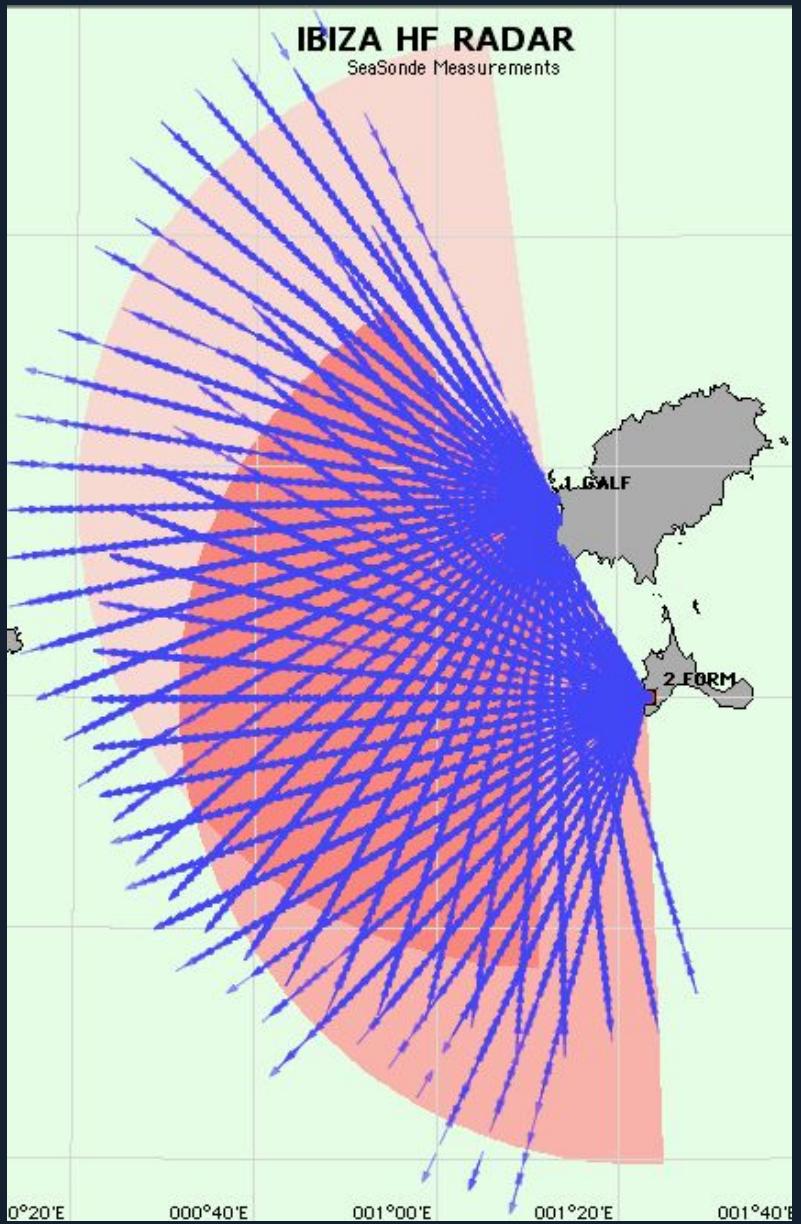
**European Glider Data
Management Meeting
March 2018, Milan**

Thanks for listening!

Questions?

Miguel Charcos Llorens
Contact Info: mcharcos@socib.es

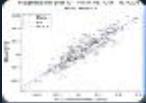
HF Radar - SOCIB experience



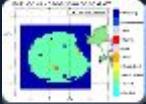
MAIN ACHIEVEMENTS



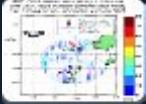
Real-time data acquisition and dissemination



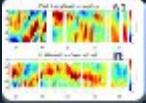
Validation of the HFR data: NRT¹ & DM



QA/QC procedures and monthly reports¹



New products: data-gap filled¹



HFR data assimilation & model assessment¹



Contributions to international conferences



Outreach activities - HFR leaflets¹



Participation in EC funded projects



International / national collaborations



Integration of SOCIB data sources into SASEMAR-EDS¹

¹ Specifically in 2016-2017

Glider - SOCIB experience

SUSTAINED OBSERVATIONS & PROCESS TYPE STUDIES (OPEN ACCESS)



CTD & BIOGOCHEM CALIBRATION



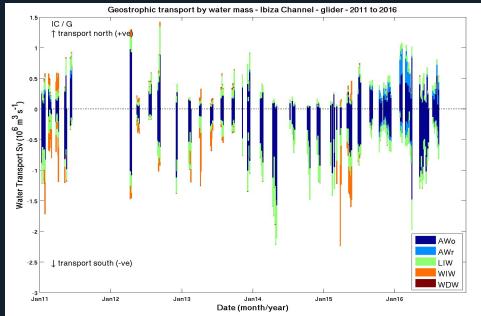
GLIDER FLEET



Name	Model	(m)Depth Range	Science Sensors	Days Max. Autonomy	Property Of	Mgt/Managed	Year Purchase
sdeep00	Slocum G2	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2011
sdeep01	Slocum G2	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2011
sdeep04	Slocum G2	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2015
sdeep05	Slocum G2	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2015
sdeep02	Sea Glider	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2012
sdeep03	Sea Glider	0-1000	CTD, Oxygen, FLNTU	60	SOCIB	SOCIB	2012



WATER MASS FLOW TOOLS



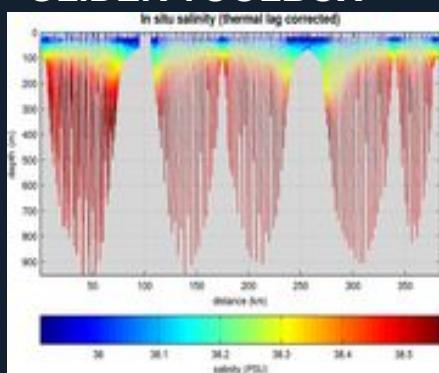
GLIDER LAB



GARICAST



GLIDER TOOLBOX



GLIDER DATA DISTRIBUTION



Glider - SOCIB Glider Toolbox

