The Global Ocean Observing System

Ocean Gliders

Towards OceanGliders Best Practices and Standards

P. Testor and ~165 contributors

IUGC, 9th EGO meeting, Göteborg, Sweden, June 2024

OceanGliders

OceanGliders Best Practices

A best practice is a methodology that has repeatedly produced superior results relative to other methodologies with the same objective, a promising method will have been adopted and employed by multiple organizations." (Simpson et al 2019)

A methodology used by a single team/institution is **not** a best practice. It could be, but it will remain only a "good practice" until proved by the worldwide community. There are three important aspects to consider for the transition from 'Good' to 'Best' Practices:

Convergence, Adoption and Endorsement

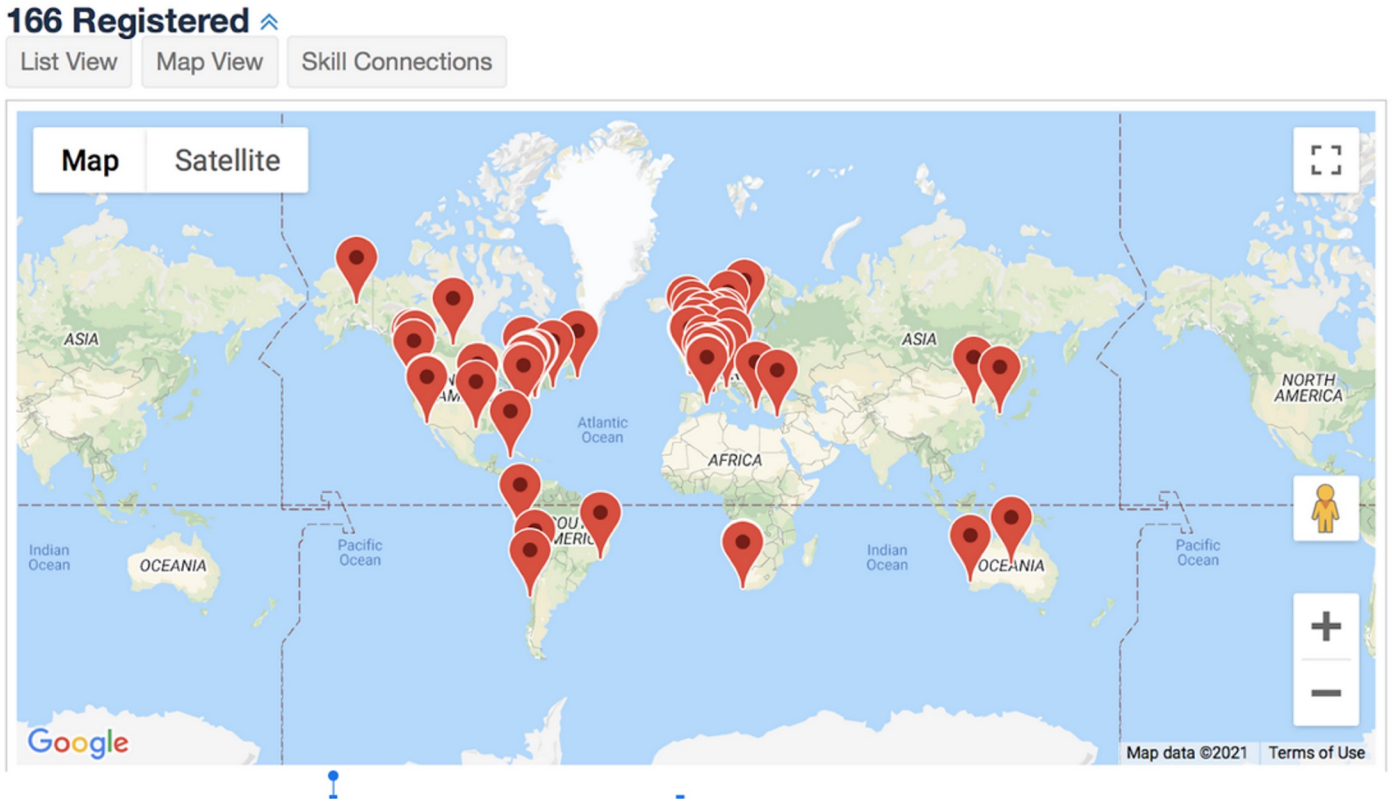
In May 2019, at the 8th EGO conference held in New Jersey, we reached a consensus on the fact that we would need to make progress on best practices documentation in the framework of GOOS/OceanGliders, and we started to work along these lines.

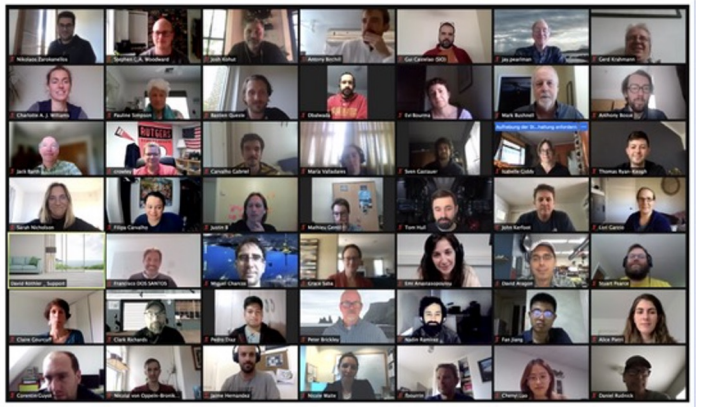
OceanGliders Best Practices expert workshop

We have organized the “Towards OceanGliders Best Practice and Standards” virtual workshop in May 2021.

During two weeks, sessions of about 1h30 were held:

- 3 general assemblies (introduction, mid-term discussion and wrap-up)
- several parallel workshops every working day



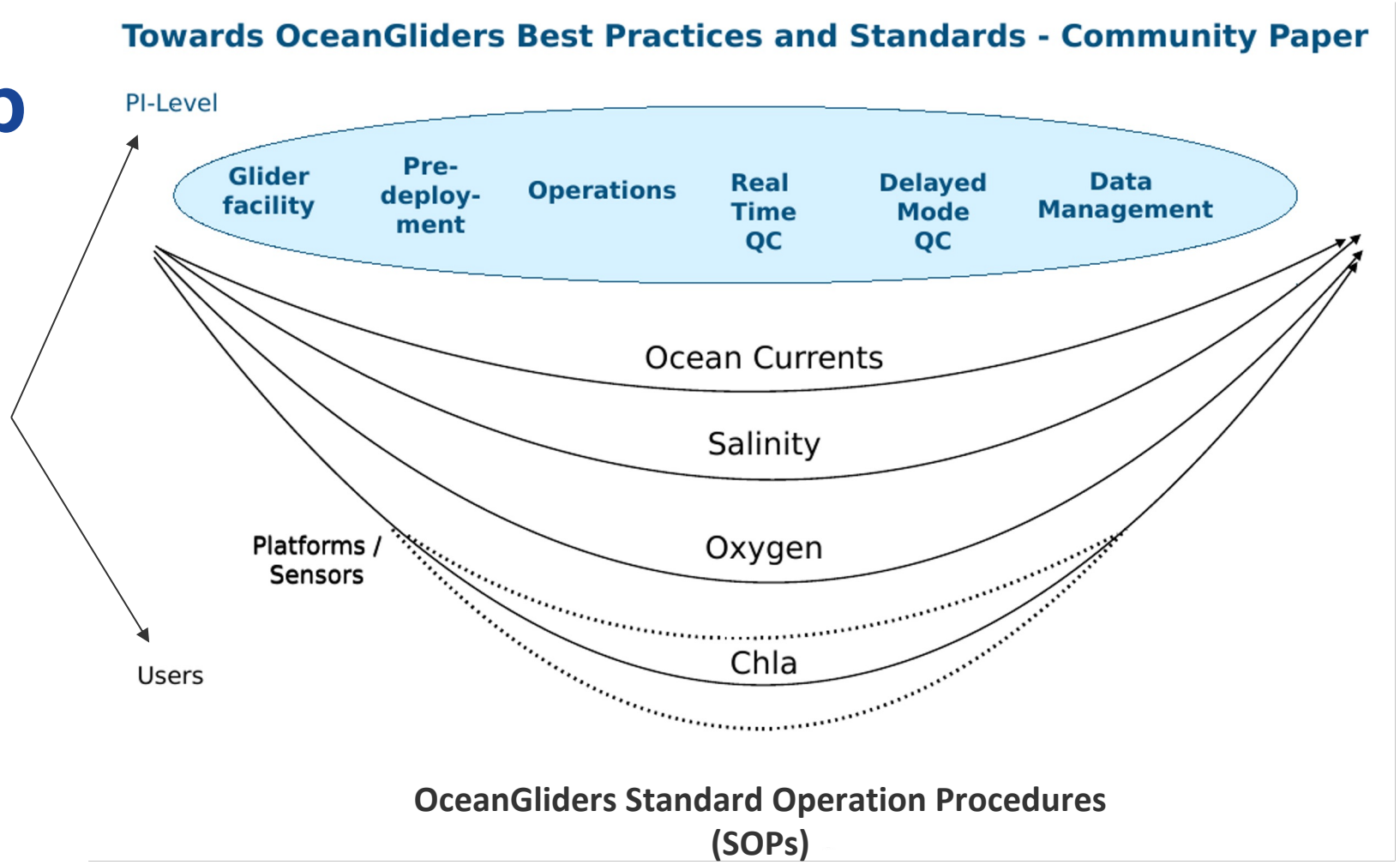


OceanGliders Best Practices expert workshop

OceanGliders

Expert Workshop Objective:

To work on several **Best Practices documents** describing all aspects of the glider activity in OceanGliders, and **targeted for different audiences** (PIs and Operators/Users)



OceanGliders Standard Operation Procedures (SOPs)

OceanGliders Best Practices documents

1) Overview paper / Targeted audience: PIs who run/want to setup a glider facility

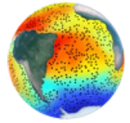
- Expert and synthetic curated review of the existing range of 'best practices' on all aspects of the glider activities.
- Very general. Focus on the methodologies and principles, not on details. Try to avoid glider/sensor specifics
- As exhaustive as possible but concise (12 000 words max!!!)
- Recognize/cite all the work done, convergence process

Abstract style

2) SOPs (mostly variable-based: Oxygen, Nitrate, Ocean Currents, Salinity,...) / Targeted audience: glider operators, data users

- All details required for users
- Living documents, ideally connected with code
- Target submission to OceanBest Practices System (OBPS)

Detailed style



1) “Towards OceanGliders Best Practices” overview paper

Authors: P. Testor, S. Thomsen, leads of chapters (in chapter order), other authors (alphabetical order)

Introduction (Co-lead: Pierre Testor, Soeren Thomsen, Emma Heslop, Matthew Palmer) 1500 words

1. Setting up a glider facility (Co-lead: Jack Barth, Sandy Thomalla, Sebastiaan Swart) 7300 words

2. / 3. Pre-deployment preparation / Operations (Co-lead: Josh Kohut, Álvaro Lorenzo Lopez) 7000 words

4. Real Time Quality Control (Co-lead: Guilherme Pimenta Castelão, Mark Bushnell) 0 words

5. Delayed Mode Quality Control (Co-lead: Soeren Thomsen, Pierre Testor, Emma Heslop, Matthew Palmer) 8400 words

6. Data Processing and Management (Co-lead: Victor Turpin, Justin Buck, Emma Slater) 4800 words

Conclusion 400 words (bullet points list)

1) “Towards OceanGliders Best Practices” overview paper

Authors: P. Testor, S. Thomsen, leads of chapters (in chapter order), other authors (alphabetical order)

Introduction (Co-lead: Pierre Testor, Soeren Thomsen, Emma Heslop, Matthew Palmer) 1500 words

First draft of overview paper deadline long overdue (agreed but too ambitious Oct. 2021) but good overall progress.

Wonderful wealth of information with 29700 words on BP at this stage. Still a long way to go and we miss chapter 4 (impressive work done but no document yet…).

Considering the constraint of 12000 words max (~27 pages) from the “Ocean Best Practices” Special Issue in Frontiers in Marine Science we chose to split paper in Part I and Part II.

It would be great to create more SOPs to refer to (to especially empty a bit the long “Delayed Mode Quality Control” section)

Conclusion 400 words (bullet points list)

1) “Towards OceanGliders Best Practices” overview paper

Part I

Introduction Part I

1. Setting up a glider facility

2.(2./ 3.) Pre-deployment preparation / Operations

Summary (Conclusion Part I)

Part II

Introduction Part II

1.(4.) Real Time Quality Control

2.(5.) Delayed Mode Quality Control

(Summary) Conclusion Part II

General Conclusions

Master Document: https://docs.google.com/document/d/1-Y_XHjroZuydq8dmp9dBVI7uPvvk4cJsycSI3Q4QBBk/edit#

First drafts soon to be disseminated? Of course, we would appreciate some help.

2) OceanGliders Standards Operation Procedures

During the virtual workshop, it was decided to launch a GitHub Community to face such issues and to better manage the glider activities focusing on **Standard Operation Procedures**.

OceanGliders GitHub Community: a new tool to foster global collaboration in an effective, inclusive, open, transparent and asynchronous way.

- It provides community tools like issues, approval mechanisms and document governance.
- It allows people to engage in their time zone, their schedule and pace.

One key action was also to define **a roadmap for SOPs**:

- Living document in the OceanGliders GitHub repository
- Deposit on OBPS (get doi)
- GOOS endorsement (through OceanGliders Exec/Steering Team)
- Short summary published in “Ocean Best Practices” special issue in Frontiers in Marine Science (mainly describing the BP system implementation for such a SOP)
- Regular and official updates.

OceanGlidersCommunity

Here the https://www.oceangliders.org community shares and discusses best practices.

https://www.oceangliders.org

Unfollow

README.md

Here the OceanGliders community shares and discusses best practices, data formats and vocabularies.

How to contribute

We are an open community! If you want to join the effort just browse through the different repositories, raise issues or start a discussion. A good start is also to introduce you.

Ongoing community efforts

- GitHub training 🤓🎖️
- Meeting notes
- Access and discuss the new OceanGliders format.
- SOPs for Data Assembly Centers are available here.
- Join the Oxygen SOP. v1.0.0 released on June 1 2022, doi
- Join the Salinity SOP community review: Open until June 30 2022.
- Join the Nitrate SOP community review: Open until June 30 2022.
- Join the Depth Average Currents (DACs) SOP.

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https://github.com/OceanGlidersCommunity?view_as=public

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Here the https://www.oceangliders.org community shares and discusses best practices.

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README.md

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People

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TeX

GitHub is a social media

There is today only text in the repositories, there is no code yet (hopefully in the future).

OceanGliders Oxygen SOP

Search this book...

OceanGliders Oxygen SOP

1. Authors, development process and contributions
2. Introduction
3. Sensors and integrations
4. Pre-deployment operations and calibrations
5. Missions execution
6. Required Metadata, Real Time Data Processing & Quality Control
7. Post-recovery operations and calibrations
8. Delayed Mode Quality Control
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OceanGliders Oxygen SOP

This GitHub repository is for the OceanGliders Oxygen Standard Operating Procedure (SOP).

Read the SOP here. If you are reading a pdf or other offline version of this SOP, please click on this link to read the most recent online version.

How to cite the SOP

López-García,, P., Hull, T., Thomsen, S., Hahn, J., Queste, B.Y, et al (2022) OceanGliders Oxygen SOP, Version 1.0.0. OceanGliders, 55pp. DOI: http://dx.doi.org/10.25607/OBP-1756. (GitHub Repository, OceanGliders Oxygen SOP. Available: https://oceangliderscommunity.github.io/Oxygen_SOP/sections/authors_SOP_development_process.html.)

Continous community review

Feedback by the global glider community is possible at any time. Everyone is welcome to join the SOP.

Who is invited to review?

Constructive feedback by anyone is welcome. We encourage both experts and new gliders users who want to start observing oxygen to feedback on the document. For example: Experts are welcome to critically assess the specific methods and uncertainty ranges outlined in the SOP. New users can help to improve the SOP by providing a feedback from the user perspective. Please let us know that you use the SOP.

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How to cite the SOP

López-García,, P., Hull, T., Thomsen, S., Hahn, J., Queste, B.Y, et al (2022) OceanGliders Oxygen SOP. Version 1.0.0. OceanGliders, 55pp. DOI: http://dx.doi.org/10.25607/OBP-1756. (GitH
SOP. Available: https://oceangliderscommunity.github.io/Oxygen_SOP/sectio
/authors_SOP_development_process.html.)

- deposited on OBPS with doi: http://dx.doi.org/10.25607/OBP-1756 (López-García et al. 2022).
- Received GOOS endorsement.
- Short summary to be submitted soon to Frontiers

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Salinity SOP

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Community review

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How to contribute

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Nitrate SOP

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5. Missions execution

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Everyone is welcome to join the SOP at any time.

Community review

The community review is planned to start in December 2021.

Who is invited to review?

Constructive feedback by anyone is welcome. We encourage both experts and new gliders users who want to start observing nitrate to feedback on the document. For example: Experts are welcome to critically assess the specific methods and uncertainty ranges outlined in the SOP. New users can help to improve the SOP by providing a feedback from the user perspective. Please let us know that you use the SOP.

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OceanGliders Depth Average Currents (DACs) SOP

This GitHub repository is for the OceanGliders Depth Average Currents (DACs) Standard Operating Procedure (SOP).

Read the SOP here.

Everyone is welcome to join the SOP at any time.

Community review

The community review will be opened in mid 2022.

Who is invited to review?

Constructive feedback by anyone is welcome. We encourage both experts and new gliders users who are interested in depth average currents to provide feedback on the document. For example: Experts are welcome to critically assess the specific methods and uncertainty ranges outlined in the SOP. New users can help to improve the SOP by providing a feedback from the user perspective. Please let us know that you use the SOP.

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❖ In preparation for community review.

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How to contribute

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main 13 branches 0 tags Go to file Code

sophieclayton Merge pull request #32 from castelao/spray_sesnor ... b69d3de 17 hours ago 55 commits

.github/workflows	oxygen to chla	3 months ago
_ext	Initial commit	3 months ago
images	add all required images	3 months ago
sections	Informing Spray's fluormeter sensor	19 days ago
.gitignore	Initial commit	3 months ago
CONTRIBUTING.md	Initial commit	3 months ago
LICENSE.md	Initial commit	3 months ago
README.md	bump for netlify build	3 months ago
_config.yml	oxygen -> Chla	3 months ago
_toc.yml	oxygen_* -> chla_*	3 months ago
chla.bib	Create chla.bib	3 months ago
environment.yml	oxygen -> chla	3 months ago
requirements.txt	Initial commit	3 months ago

README.md

About

Chlorophyll a Standard Operating Procedure (SOP)

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1 star

3 watching

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Releases

No releases published

Packages

No packages published

Contributors 4

soerenthomsen Sören Thomsen

sophieclayton Sophie Clayton

callumrollo Callum Rollo

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GitHub - OceanGlidersCom

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_ext	Initial commit	3 months ago
images	add all required images	3 months ago
sections	Informing Spray's fluormeter sensor	19 days ago
.gitignore	Initial commit	3 months ago
CONTRIBUTING.md	Initial commit	3 months ago
LICENSE.md	Initial commit	
README.md	bump for netlify build	
_config.yml	oxygen -> Chla	
_toc.yml	oxygen_* -> chla_*	3 months ago
chla.bib	Create chla.bib	3 months ago
environment.yml	oxygen -> chla	3 months ago
requirements.txt	Initial commit	3 months ago

README.md

About

Chlorophyll a Standard Operating Procedure (SOP)

oceangliderscommunity.github.io/chla...

Readme
View license
1 star
3 watching
3 forks

❖ Just initiated by the community. Writing started end of June 2022.

Packages

No packages published

Contributors 4

soerenthomsen Sören Thomsen
sophieclayton Sophie Clayton
callumrollo Callum Rollo

Conclusion

Very nice community effort with a lot of progress made so far:

- Participated to the consolidation of the OceanGliders Community by **integrating the glider network in the GOOS on Best Practices**
- Gathered **a wealth of information for an overview paper**, that is delayed but still on track.
- Launched **OceanGliders GitHub Community** as a central place to discuss and develop best practices, data formats and vocabularies.
- **Built capacity** of the glider community (in total 7 GitHub training sessions have been carried out since September 2021 with +50 community members to learn how to use these tools for future asynchronous community work).
- Developed O**ceanGliders Standard Operating Procedures** on Salinity, Depth Average Currents, Oxygen, Nitrate and Chlorophyll a

Still a lot of work:

- Finalize the 6 scientific papers (overview papers and 5 SOP summaries) for them to be submitted to community review and peer-review for publication in a journal (Frontiers or other)
- Organize the regular update cycle
- A community animator is key (we really miss Soeren Thomsen!)

Conclusion

Next important steps in our convergence process are linked to the **quantitative testing and comparison of different methodologies** i.e. Quality Control Tests or post-processing efforts. This would be fostered by increasing interoperability of existing software packages (hopefully OceanGliders V1.0 format could help)

Establishing "Best Practices" is a slow process (converge, adopt, endorse) relying on good will of many people generally contributing outside their normal working hours. This can only work as an asynchronous community effort on the long term, and continuous support from the OceanGliders community is key.

We definitely need **champions** to animate the github on the topics already there (probably the priority) but also on others. Best Practices can apply to every aspects (scientific, technical, organizational, logistical,...), especially when considering the multi variable context and that gliders are getting more intelligence, ears/voice (passive/active acoustics), eyes (video) and even gills in a near future !

Please engage !!!

Acknowledgements:

EuroGOOS European Global Ocean Observing System Glider Task team and Horizon 2020 European Union Funding for Research & Innovation EuroSea GROOM II GLIDERS FOR RESEARCH, OCEAN OBSERVATION & MANAGEMENT : INFRASTRUCTURE AND INNOVATION

The Global Ocean Observing System

OceanGliders

Thank you

OceanOPS