

Glider data flow: OceanGliders and GROOM RI

Dan Hayes on behalf of the OceanGliders data management
task team (OGDMTT) and GROOM II



GROOM II has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951842

Data Flow

A bottleneck that needs international cooperation, which is underway, but in need of more participation and contributions.

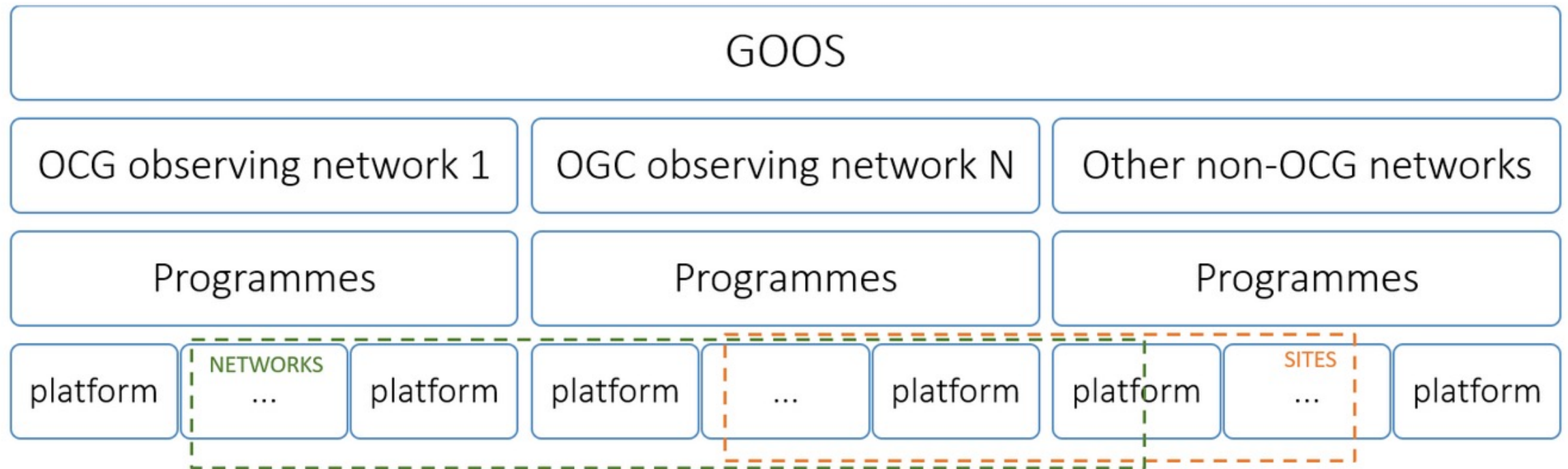
Outline

- Where are we* now?
 - OceanGliders, OG1.0, Vocabs, OceanOps
 - GROOM RI, AMRIT
 - EmodNET, Coriolis, Copernicus
- Where do we want to go? How to get involved?
- More Resources = More Progress

*think big

GOOS-OCG architecture in OceanOPS

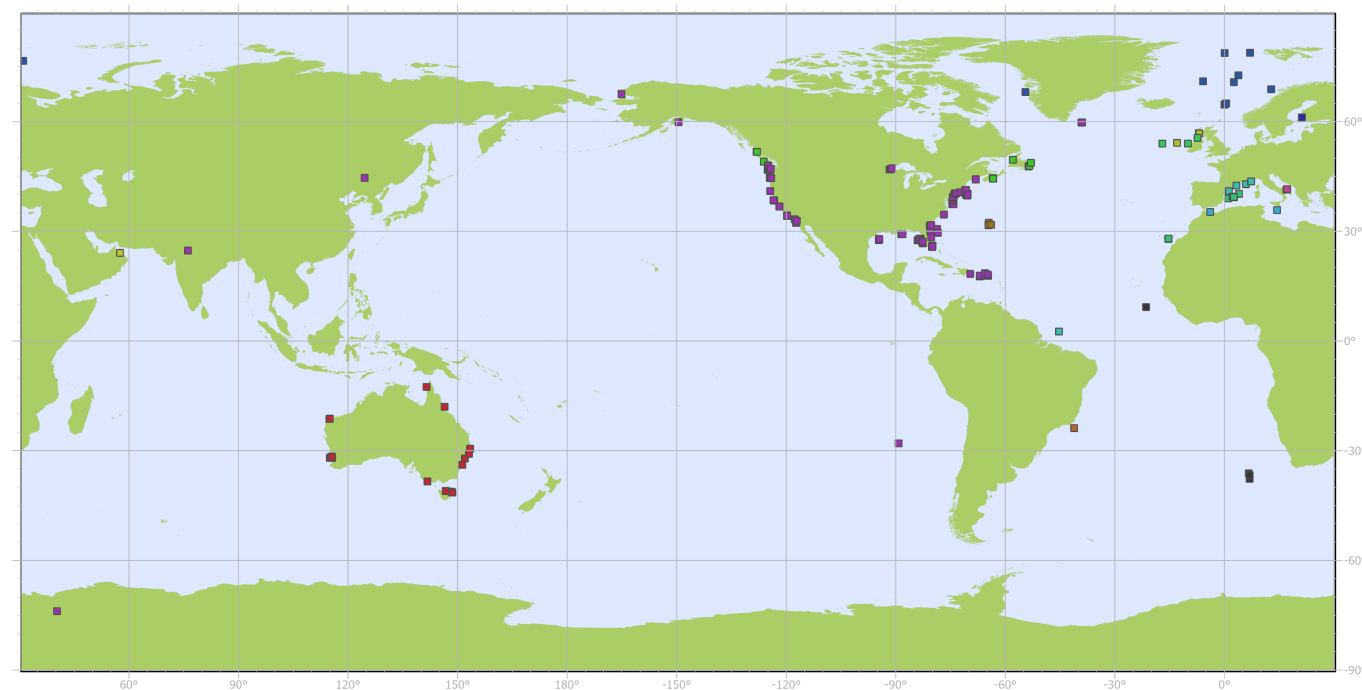
Monitoring the GOOS-OCG networks: OceanGliders is a Programme in GOOS, supported part-time by Victor Turpin and many volunteers like yourselves.



Activity of OceanGliders

Several Task Teams, including Data Management

- ✈ Emma Gardner new co-chair
- ✈ Focused on OG1.0 format and BUFR so far
- ✈ New road map in discussion (on line)
- ✈ Session planned at IUGC 2024 (Sweden)
- ✈ Regular virtual meetings



OceanGliders

National contribution to the OceanGliders program
All glider mission deployment locations registered at OceanOPS (247 during the last 12 months)

May 2022

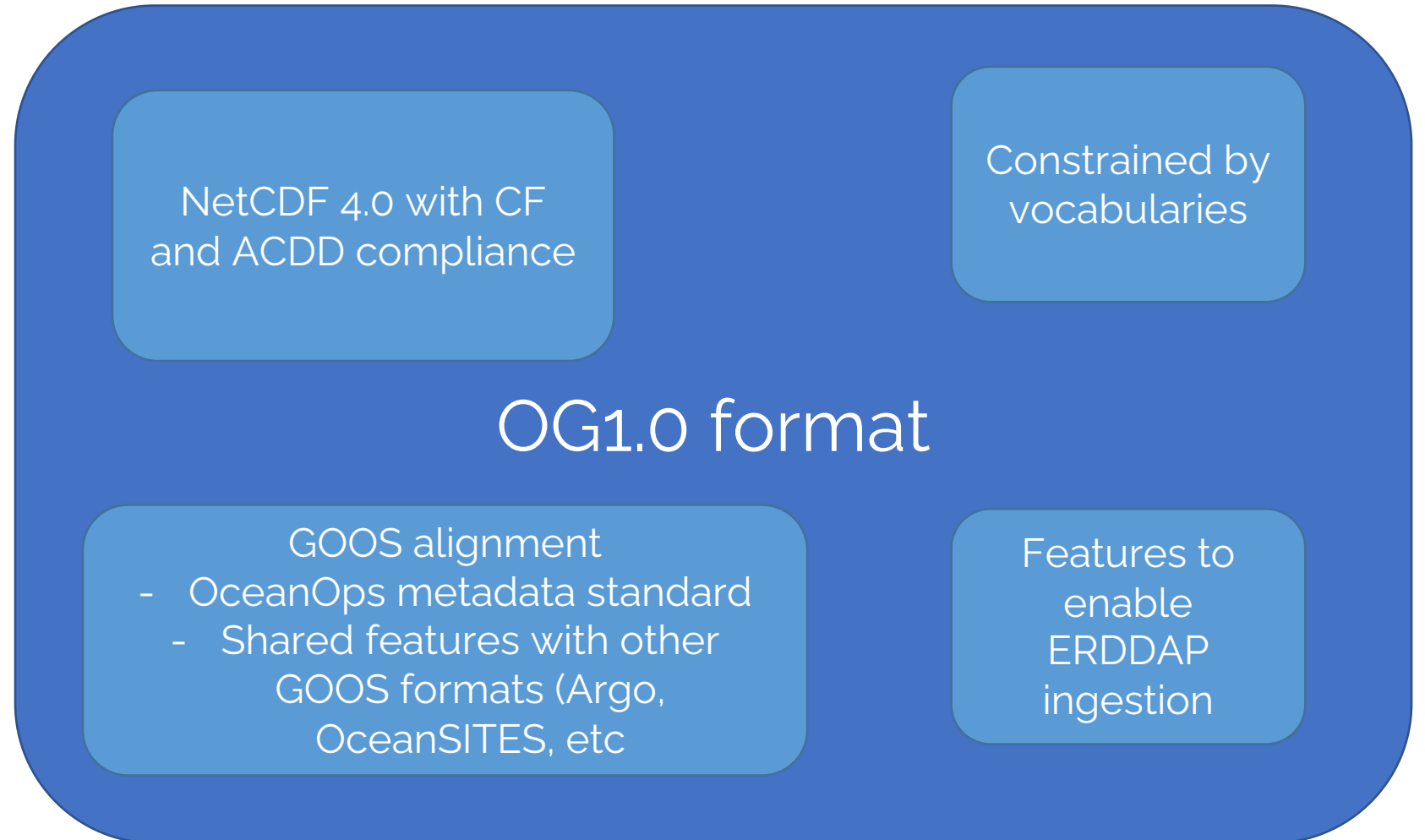


AUSTRALIA (20)	FRANCE (6)	UK (3)	FINLAND (2)	ITALY (2)
BRAZIL (1)	GERMANY (5)	USA (158)	GREECE (2)	NORWAY (12)
CANADA (17)	SPAIN (11)	BERMUDA (4)	IRELAND (3)	SWEDEN (1)

Alignment with standards

The [OG 1.0 format](#) is being developed for the GOOS network to achieve a minimum level of interoperability globally

Designed for broad oceanographic community interoperability



Community governance via GitHub

GitHub repository includes:

- Documentation
- Issues
- Pull requests with approvals
- Example files

<https://github.com/OceanGlidersCommunity/OG-format-user-manual>

The screenshot shows the GitHub repository page for `OceanGlidersCommunity / OG-format-user-manual`. The repository is public and has 15 issues, 5 pull requests, 1 project, 1 wiki, and 1 security issue. The main branch is `main` with 8 branches and 0 tags. The repository contains a file tree with the following files and their commit history:

File	Commit History	Last Commit
<code>.github</code>	Creating list of code owners (#46)	last month
<code>figures</code>	Adding figures	9 months ago
<code>src</code>	Typo in table for platform type (#66)	6 days ago
<code>CODE_OF_CONDUCT.md</code>	Small typos (#61)	last month
<code>OG_Format.adoc</code>	NETCDF4.adoc (#50)	5 days ago
<code>README.md</code>	Small typos (#61)	last month
<code>logo-ocean-gliders.png</code>	Add files via upload	9 months ago
<code>sp041_20191205T1757.cdl</code>	Second version of OG-1.0 prototype (#35)	last month

The `README.md` file is selected, showing the OceanGliders logo and the title `OceanGliders format-user-manual`. The text below the title reads: "Here we review issues related to OceanGliders (OG) format and vocabularies. A discussion section is also available for".

On the right side of the repository page, the `About` section states: "OceanGliders format and vocabularies". It includes a `Readme` link, a `Code of conduct` link, 10 stars, 5 watching, and 8 forks. The `Releases` section states: "No releases published" and includes a `Create a new release` link. The `Packages` section states: "No packages published" and includes a `Publish your first package` link. The `Contributors` section shows 6 contributors.

Collection OG1

OG1 - Ocean Glider Network Parameter Usage
Vocabulary

URI-

<https://vocab.nerc.ac.uk/collection/OG1/current/>

Governed by the Ocean Glider Data Management

Task Team

89 terms (June 2022)

**12. (Meta)data use vocabularies that follow FAIR
principles**



The NERC Vocabulary Server (NVS)

Service Status

[NVS Home](#) | [Vocabularies](#) | [Thesauri](#) | [Search NVS](#) | [SPARQL](#) | [Other Tools](#) | [About NVS](#)

Search for a term in a vocabulary collection

Enter search string using % as wildcard if required. Example: chlorophyll%sediment.

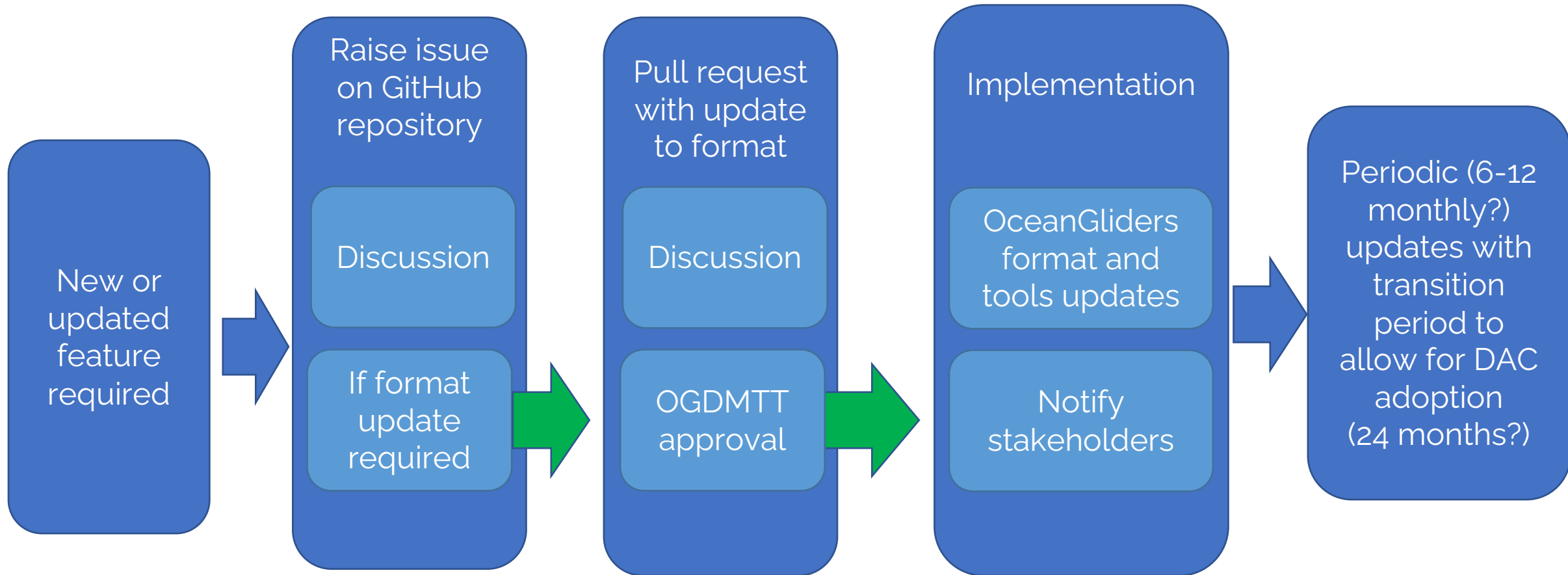
☒ Identifier ☒ Preferred label ☒ Alternative label ☐ Definition ☐ Exact match ☐ Case sensitive [toggle advanced options](#)

OG1

A01	A02	A03	A04	A05	B02	B03	B04	B05	B06	B07	B09	B11	B12	B20	B21	B22	B39	B75	B76	C00	C10	C16	C17	C18	C19	
C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C43	C45	C46	C47	C48	C59	C60	C61	C62	C64	C67	C71	C72	C75	
C77	C86	C87	C88	C89	C96	C98	D01	E01	E02	F02	G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G14	G15	
G17	G18	G20	G21	G22	G23	G25	G26	G28	G29	G30	GBX	GGB	GGG	GGT	GS1	GS2	GS3	GS4	GS5	GS6	GS8	GS9	GSA	GSB	GSC	
GXM	H01	H02	H03	H04	H05	H06	HA2	I01	I02	I03	I10	I11	I12	I13	I14	I15	L02	L03	L04	L05	L06	L07	L08	L10	L11	
L12	L13	L14	L15	L18	L19	L20	L21	L22	L23	L24	L26	L27	L30	L31	L33	L34	L35	L36	L37	L38	M01	M03	M04	M05	M06	
M09	M10	M11	M12	M13	M14	M15	M16	M17	M18	M20	M21	M22	M23	M24	M25	M26	M27	MVB	N01	N02	N03	N04	N05	N06	OD1	
OG1	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	P13	P14	P15	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	
P27	Ocean Glider Network Parameter Usage Vocabulary									Q01	R01	R03	R04	R05	R06	R07	R08	R09	R10	R11	R12	R13	R15	R16	R19	R20
R21	R22	R23	R24	R25	R26	R27	RD2	RMC	RP2	RR2	RTV	S01	S02	S03	S04	S05	S06	S07	S09	S10	S11	S12	S13	S14	S15	
S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	T01	T02	V12	V22	V23	W01	W02	W03	W04	W05	W06	W07	W08	
W09	W10	W11																								

Vocabulary collection selector: hover on the coloured cells to see the collection's title and click to select. Note that the codes and the colours have no meaning but related vocabularies tend to be given a code starting with the same letter.

OG 1.0 format evolution



Current status of the format

To be officially released at IUGC,
Sweden (June 2024)


We encourage those with an
interest and/or dependency in the
format to engage with us via
GitHub or directly.



Role of GROOM RI

Effort to formalize plan for glider-specific infrastructure, including data management

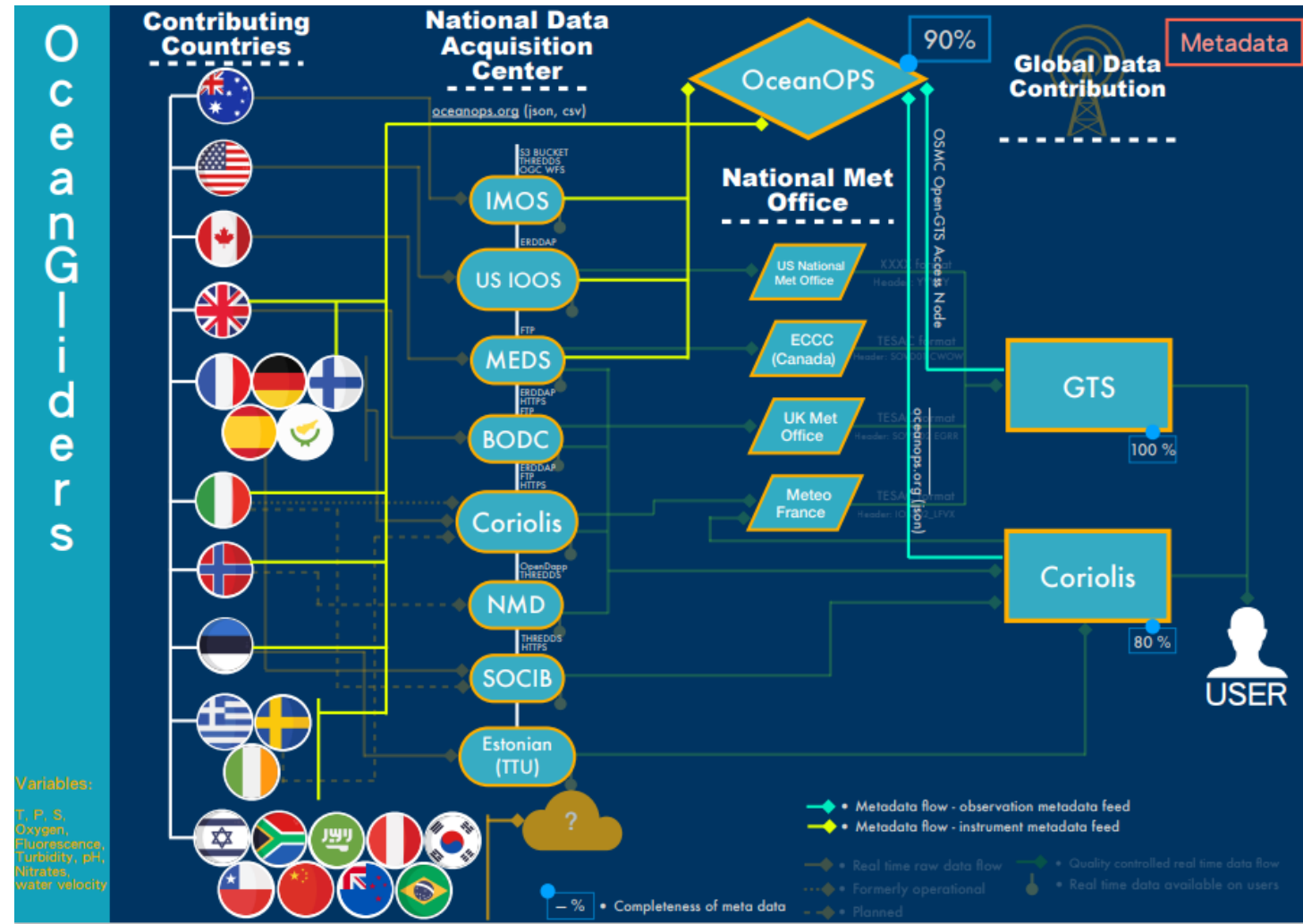
- ✈ Ending March 2024
- ✈ Documented plan
- ✈ Possible ESFRI application
- ✈ AMRIT (Advance Marine Research Infrastructures Together) now funded

Roadmap			
			CHECK OUR DETAILED ROADMAP HERE
Research Infrastructure data management	1-2 years	5 years	10 years
Infrastructure	<ul style="list-style-type: none"> Proposed structure for future development (cloud-native services & open-source community development) International agreement Define the data portal's scope 	<ul style="list-style-type: none"> Operational exemplars of DAC & GDAC managed with open-source community & deployed in EOOS Tools and services aligned with international policies Operational data portal 	<ul style="list-style-type: none"> Open source solutions for DAC & GDAC management (OceanGliders community) Unambiguous and seamless data flows
Tools and services	<ul style="list-style-type: none"> Scoping of FAIR data Meeting with OceanGliders 1.0 format Data visualisation requirements WIS 2.0 - BUFR implementation RTQC consensus on standard tests Integration data methodologies into OBS framework 	<ul style="list-style-type: none"> FAIR data alignment with IOC data policy Data visualisation and user interface for priority WIS 2.0 - BUFR implemented RTQC - standard tools DMQC - 1-2 EOVS + cloud native tools Alignment and publication of data methodologies with OBS framework 	<ul style="list-style-type: none"> Data visualisation and user interface to meet the diverse range of users RTQC- Operational BGC RTQC DMQC - 90% of observed EOVS allowing for new ones to come through + cloud native tools Sustainable & efficient route for new EOVS
Network management	<ul style="list-style-type: none"> Agreement of the scope of MAS Scope tools to harmonize metadata management & planning tools for EOOS observations 	<ul style="list-style-type: none"> Sensor and platform metadata integrated into the EOOS Complete vocabulary collections Agreement of the scope of MAS Tools to harmonize metadata management & planning tools for observations across marine RI 	<ul style="list-style-type: none"> Planning and network management integrated in the EOOS Globally recognised processes to entrain new sensors and platforms
Network evolution	<ul style="list-style-type: none"> New networking groups on emerging sensors and platforms Scope processes to entrain new sensors and capabilities 	<ul style="list-style-type: none"> Process to entrain new sensors and capabilities as part of wider OG activity 	<ul style="list-style-type: none"> Globally recognised processes to entrain new sensors and platforms
Skills and training	<ul style="list-style-type: none"> Data skills audit 	<ul style="list-style-type: none"> Training courses on the gaps in data skills 	<ul style="list-style-type: none"> Training network and activities
The GROOM RI user community	<ul style="list-style-type: none"> Define the user community 	<ul style="list-style-type: none"> Establish coordination groups and committees 	<ul style="list-style-type: none"> Sustainable data user community

Role of EmodNET, Coriolis, Copernicus

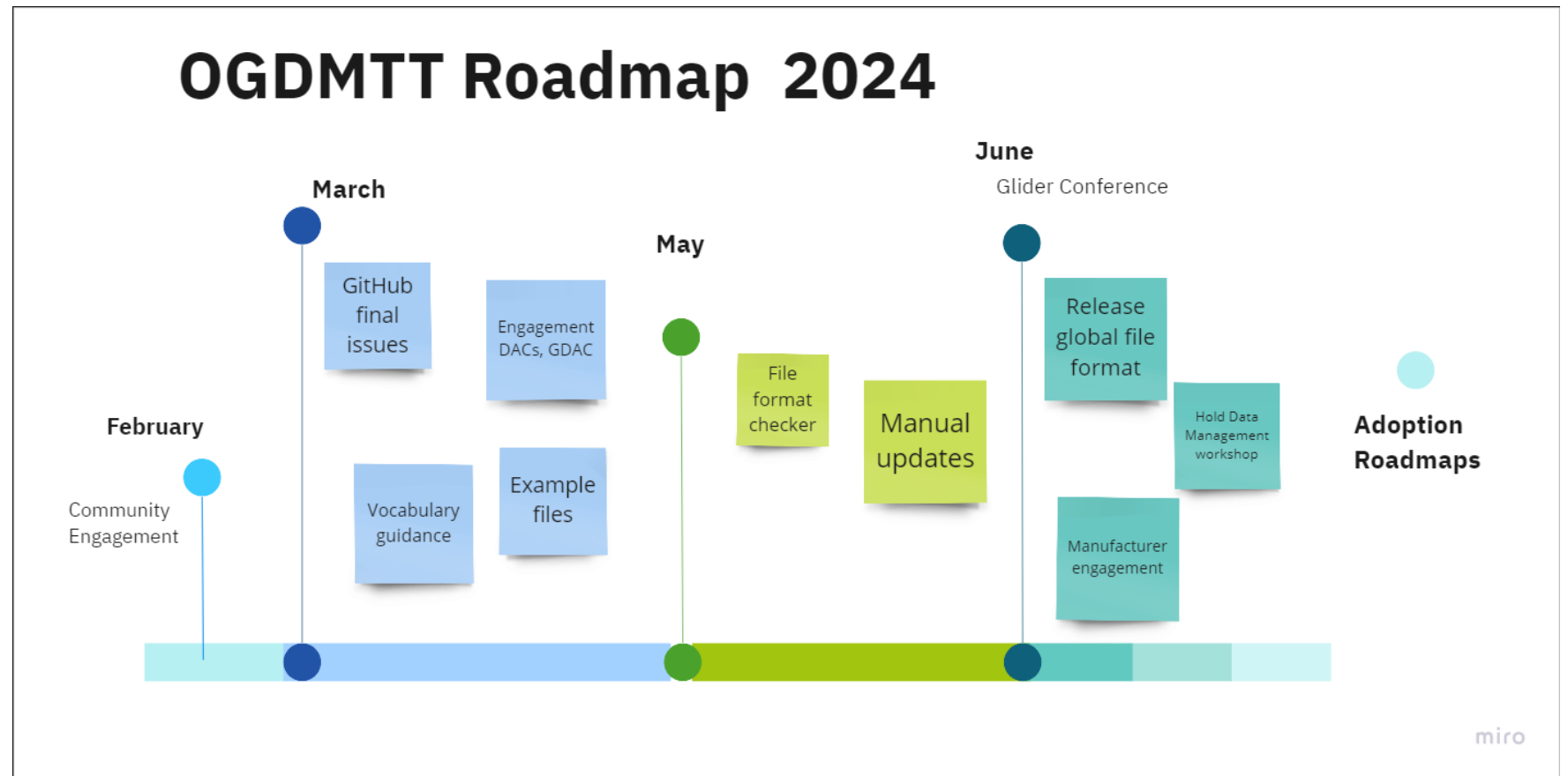
Effort to harmonize data flow and QC

- ✈ Complicated pathways for metadata and data
- ✈ Next speakers
- ✈ Next tasks in OGDMTT to help



From Victor Turpin, OceanOPS

Future Plans



Led by Emma Gardner, NOC

Future Plans (OGDMTT)

OG1.0 assimilation plan by Coriolis	Such plan would allow data providers to plan their own assimilation of the new format
RTQC	Register the decisions made along a few meetings in the past years. Similar to what was done for the data format, identify the common procedures used, and recommendations to be used. Connection to the OBPS.
Vocabularies	common database of SDN vocab codes for sensor data
delayed mode workflow - PI - DAC - GDAC?	Connection to the OBPS.
Federation from DAC to GDAC	
investigate which technical parameters to include in community format	
Global architecture	Central place to archive OceanGliders data under unique format?
Compliance checker	Be able to validate metadata
OG1.0 ADOption Roadmap	OG1.0 is a significant departure from the previous formats. DAC users may have processing chains written to work with the previous formats. A clear adoption plan needs to be created; will legacy formats and the new format coexist?. What are the timelines?
Alternative data format using groups	The feature groups is already used internally, so why not standardize early what could be one day a common public format? Note: It must be fully compatible with the main format (flat file without groups)
Example dataset on ERDDAP	Have a reference point for new users
OGDM Task Team work organisation	How to make progress, report, review on any topic
Merging the OG1.0 format and IOOS format?	Have a target date when both IOOS and OG 1.0 has the same format and announce it to users.


Led by Emma Gardner, NOC

How to get involved


✈️ GitHub (OG1.0, BUFR, SOPs around parameters: [HERE](#))

✈️ Road Map: [HERE](#)

✈️ Last minutes discussing status: [HERE](#)

**OceanGlidersCommunity**
Here the <https://www.oceangliders.org> community shares and discusses best practices.
61 followers <https://www.oceangliders.org>

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 OceanGliders format - [OG1.0](#).
- Ocean Glider's BUFR format defined in [WMO's table D by descriptor 3-15-012](#). The archived proposal and related discussions can be found at: [wmo-im/BUFR4#16](#)
- 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](#).
- Join the [Chla SOP](#).
- Join the [Vertical Velocities SOP](#)
- Join the [BOON task team repository](#).

If you wish to contribute to the SOP development just let us know [here](#).

Code of Conduct

Please read and follow our [Code of Conduct](#).

Thank you from the OGDMTT Steering Team

Dan Hayes (hayesdan@cyprus-subsea.com)

Buck, Justin J.H. juck@bodc.ac.uk;

Callum rollo callum.rollo@voiceoftheocean.org;

Carval Thierry (IFREMER) (Contact) thierry.carval@ifremer.fr;

Corentin GUYOT corentin.guyot@ifremer.fr;

Guilherm Pimenta Castelao castelao@ucsd.edu;

Hebden Mark mahe@bodc.ac.uk;

Jennifer Sevadjian jpsevadjian@ucsd.edu;

John Kerfoot kerfoot@marine.rutgers.edu;

Juan Gabriel Fernández jfernandez@socib.es;

Kevin O'Brien <kevin.m.o'brien@noaa.gov>;

Miguel Charcos Llorens mcharcos@socib.es;

Mun Woo mun.woo@uwa.edu.au;

Emma Gardner emmer@noc.ac.uk

Victor Turpin vturpin@ocean-ops.org

For more information :

✉ contact@groom-h2020.eu

✉ Twitter : @GROOM2RI

✉ www.groom-h2020.eu

