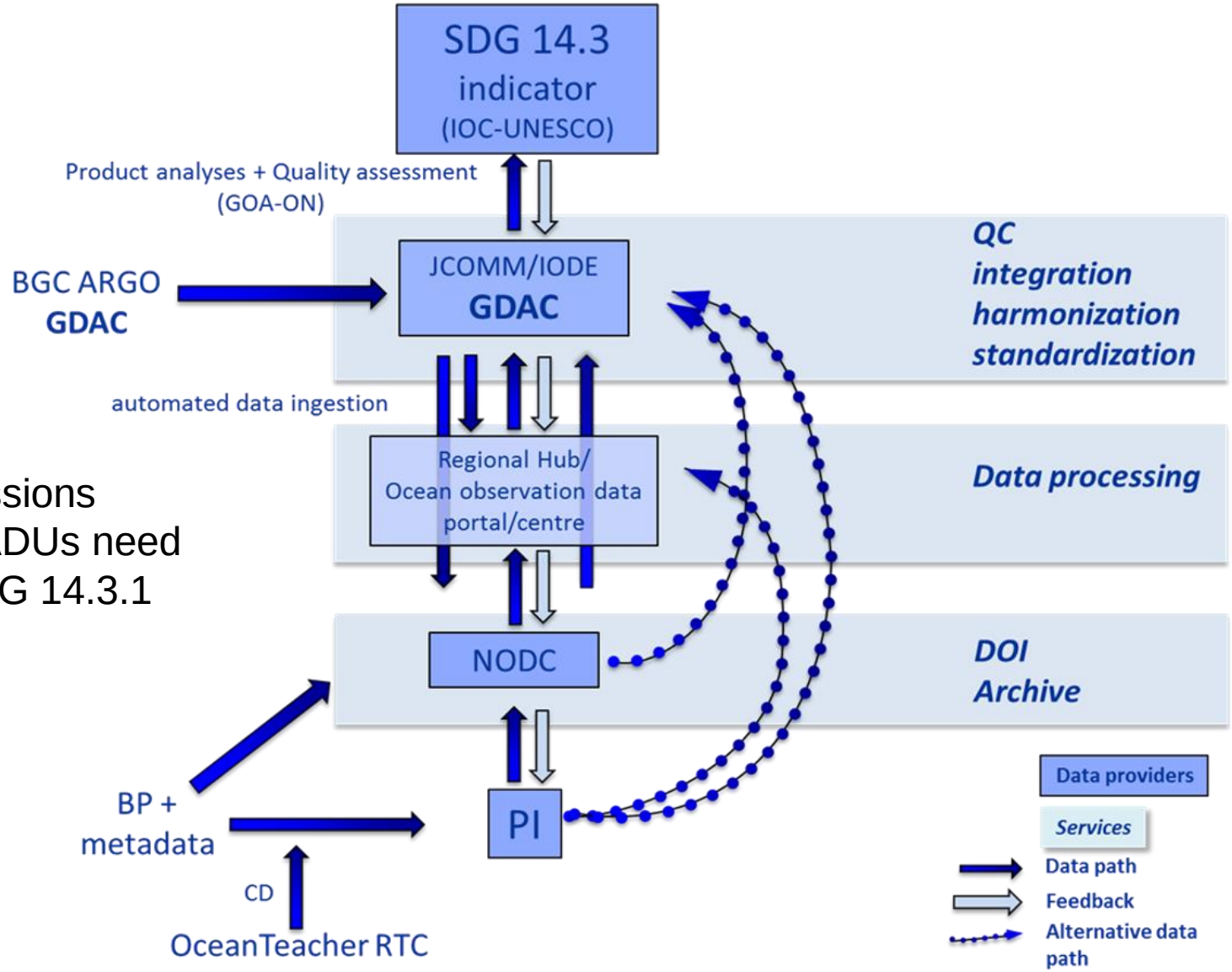
Data collection – facilitated by Benjamin Pfeil and Kevin O'Brien

- What other data bases are collecting relevant data?
- What kind of metadata are requested by other databases?
- How to establish a federated data collection system?
- How to ensure the collection of data of known quality?

What other data bases are collecting relevant data?

- NOAA OCADS/OAP (USA)
- SeaDataCloud and EMODnet Chemistry (Europe)
- WOD (USA – but not much carbon data)
- GLODAP (Global)
- SOCAT (Global)
- ICOS (Europe)

Data flow



Issues:
National submissions
Many NODCs/ADUs need to follow the SDG 14.3.1 methodology

IODE National Oceanographic Data Centres (NODC) and IODE Associate Data Units (ADU) List

Total number of NODCs: 67
Accredited NODC: 9
Accredited ADU: 1
NODC (other): 57
ADU: 29
(total number of data centres: 96)

Not many data cenntres have the expertise of handling SDG14.3 relevat data

1. NODCs/ADUs – 14.3.1 data

United Nations Educational, Scientific and Cultural Organization | Intergovernmental Oceanographic Commission

Survey in February/March 2018

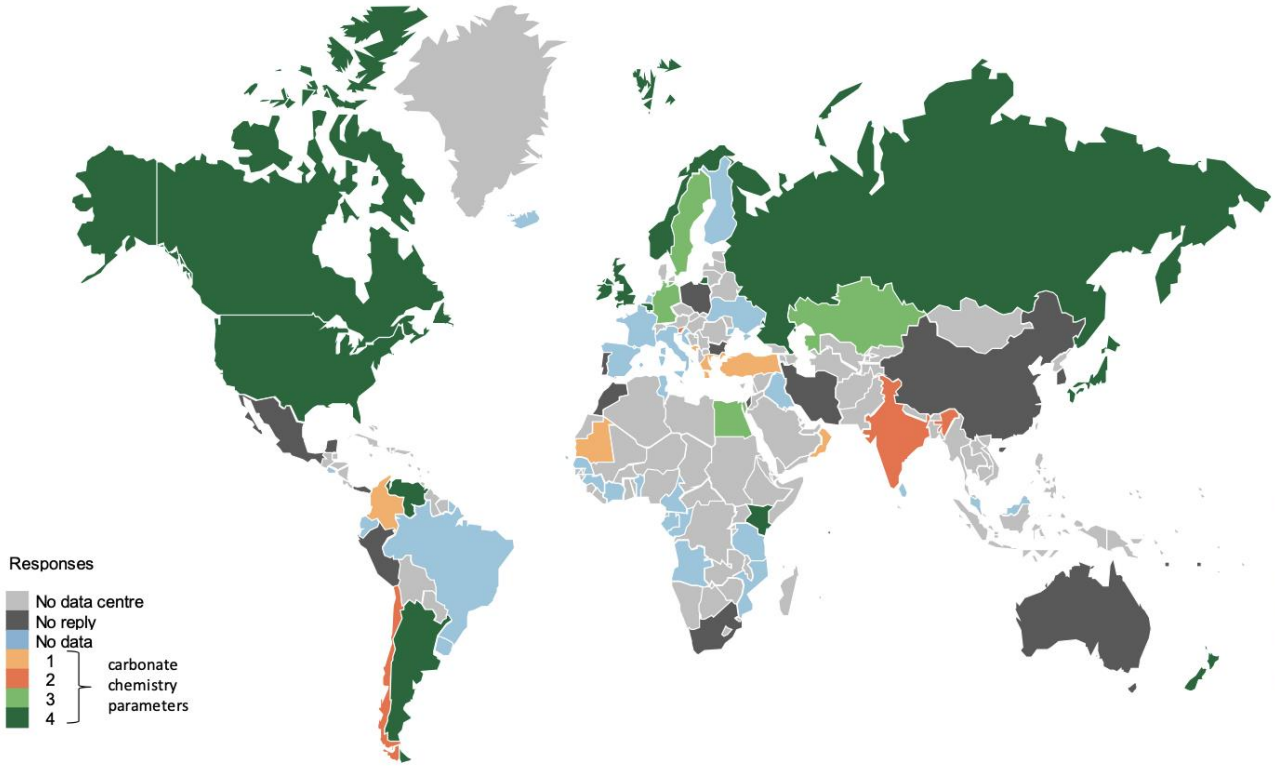


Figure 1. Map illustrating the answers received from NODCs and ADUs regarding the availability of data describing the carbonate system (pH, TA, DIC, CO_2; light grey – no IODE focal point for NODC or ADU, dark grey – no reply, blue – no data, yellow – data for one parameter, orange – data for two parameters, light green – data for three parameters, dark green – data for four parameters).

Not many data centres have the expertise of handling SDG14.3 relevant data

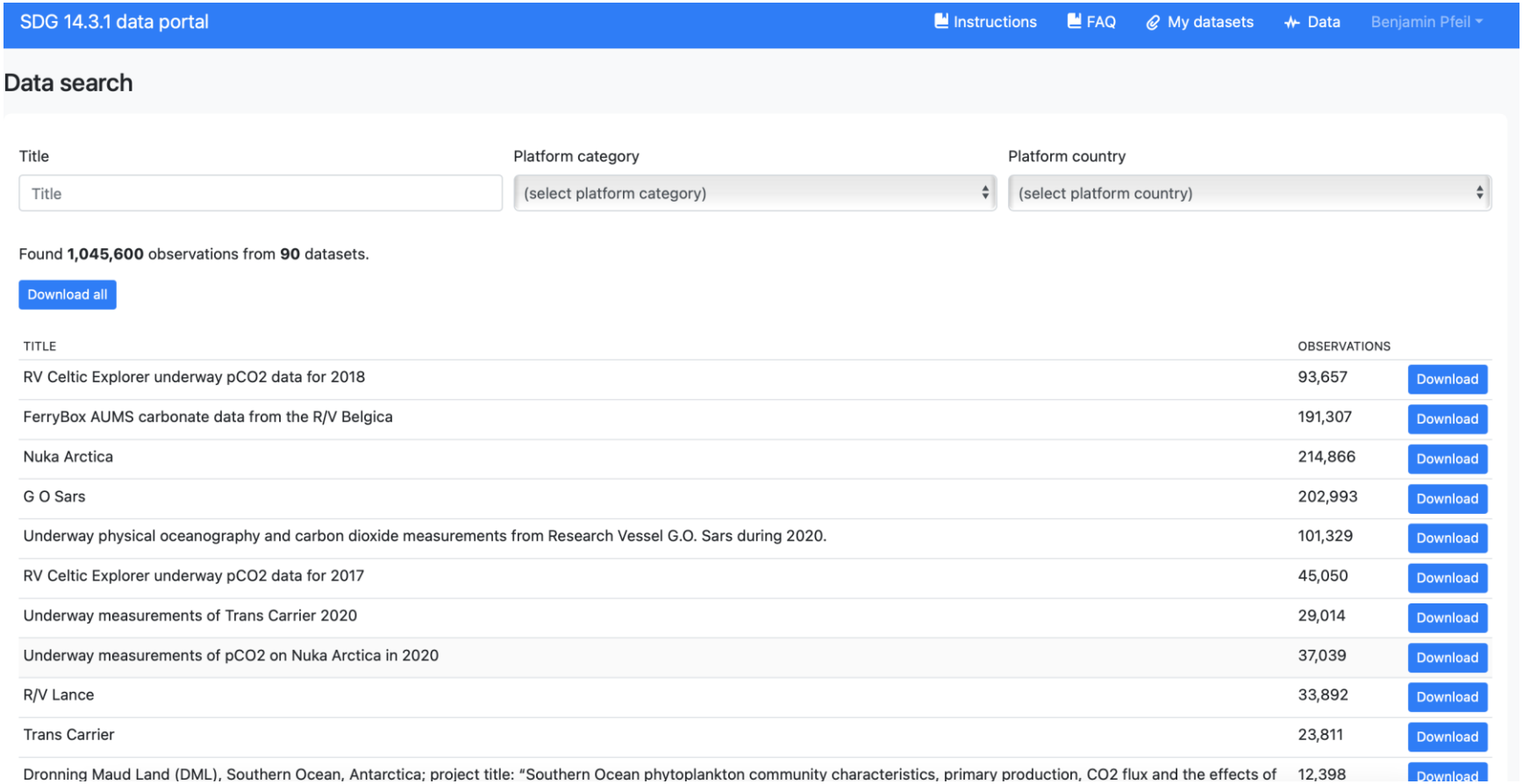
1. NODCs/ADUs – 14.3.1 data

Request out in August 2018 – to a subset with targeted letter explaining methodology, data and meta-data files

Data Centre / Institute	Country	URL	Contact name
Fisheries and Oceans Canada	Canada	www.dfo-mpo.gc.ca	Mathieu Ouellet
Department of Fisheries and Oceans Canada, Institut Maurice Lamontagne	Canada	http://www.qc.dfo-mpo.gc.ca/iml-mli/institut-institute/index-eng.asp	Laure Devine
Kenya Marine and Fisheries Research Institute	Kenya	htttp://www.kmfri.co.ke	Elijah Mokaya
National Institute of Water & Atmospheric Reseach	New Zealand	www.niwa.co.nz	Kevin Mackay
Bierknes Climate Data Centre / RI ICOS Ocean Thematic Centre	Norway	www.bcdc.no https://otc.icos-cp.eu	Benjamin Pfeil
National Centers for Environmental Information (NCEI), Ocean Carbon Data System (OCADS)	USA	https://www.nodc.noaa.gov/ocads/	Alex Kozyr
NOAA National Centers for Environmental Information	USA	https://www.ncei.noaa.gov/	Hernan Garcia
NOAA/National Centers for Environmental Information	USA	https://www.nodc.noaa.gov/oceanacidification/	Liqin Jiang

In addition Australia no data yet

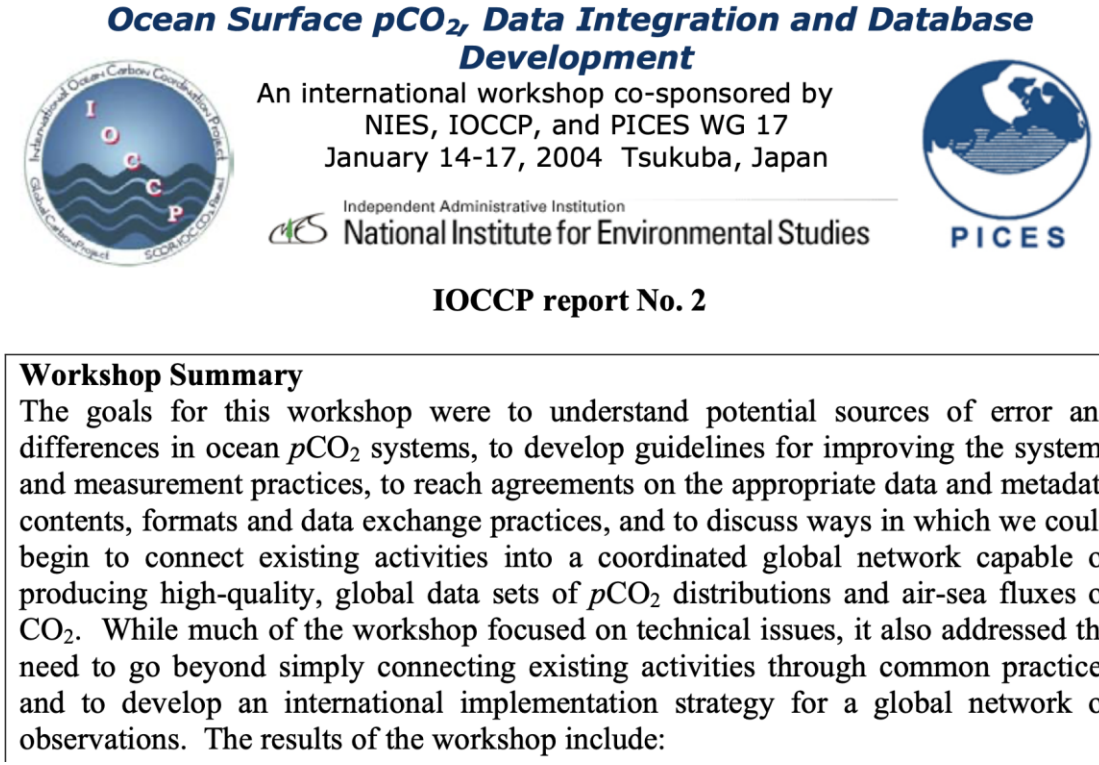
Reflected in submissions



Little data is provided by NODC's

What kind of metadata are requested by other databases?

SDG 14.3.1 metadata is based upon community input from 2004



Ocean Surface pCO_2, Data Integration and Database Development

An international workshop co-sponsored by
NIES, IOCCP, and PICES WG 17
January 14-17, 2004 Tsukuba, Japan

Independent Administrative Institution
National Institute for Environmental Studies

PICES

IOCCP report No. 2

Workshop Summary

The goals for this workshop were to understand potential sources of error and differences in ocean pCO_2 systems, to develop guidelines for improving the systems and measurement practices, to reach agreements on the appropriate data and metadata contents, formats and data exchange practices, and to discuss ways in which we could begin to connect existing activities into a coordinated global network capable of producing high-quality, global data sets of pCO_2 distributions and air-sea fluxes of CO_2. While much of the workshop focused on technical issues, it also addressed the need to go beyond simply connecting existing activities through common practices and to develop an international implementation strategy for a global network of observations. The results of the workshop include:

What kind of metadata are requested by other databases?

- The international marine BGC community improved it over the years.
- CDIAC (now OCADS), SOCAT and ICOS promoted it
- Liqing extended the community agreed templates within NOAA OAP
- SDG14.3.1 ‘group’ added fields and controlled vocabulary

Due to the above history there is a large allignment (> 90-95%) but allignments need to be made.

Agreement to align the metadata across these efforts will significantly improve interoperability

What kind of metadata are

SeaDataNet

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

BODC VOCAB LIBRARY

Natural Environment Research Council

National Oceanography Centre
British Oceanographic Data Centre BODC

A higher level of enriched metadata as requested by SDG 14.3.1 is currently lacking but needed in order to provide minimum requested metadata – allignements can be done but will take time (have to be brought back to collaborating NODCs) and will require resources in order to be SDG14.3.1 compliant

NVS

Vocabula

SeaDataNet

URI

Description

EQUIL

with air that is subsequently analysed for carbon dioxide to give pCO2 in the water sample.

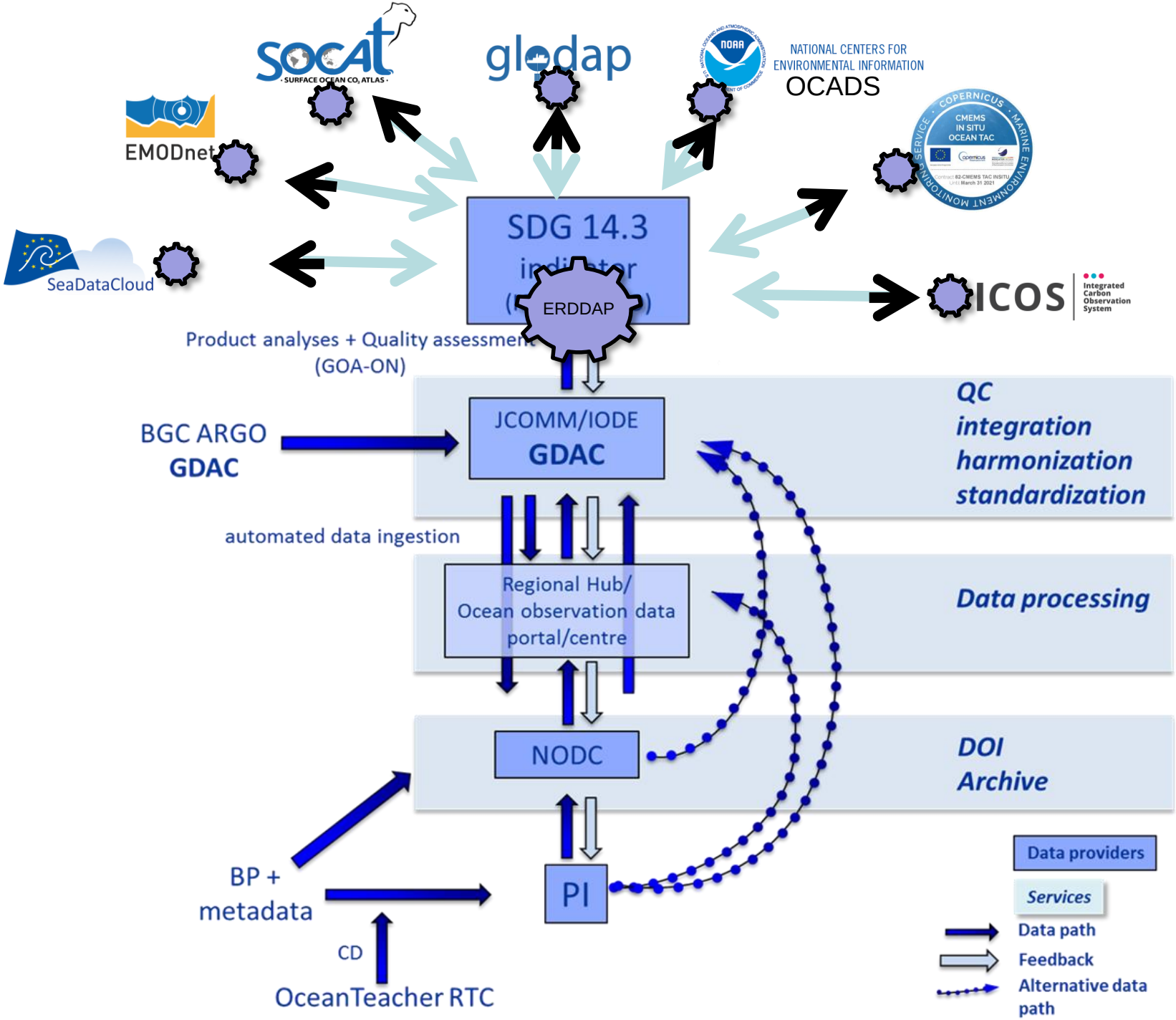
See Also https://github.com/nvs-vocabs/L05

How to establish a federated data collection system?

We aim at one time submission in the future

How to achieve it:

- Use of automated submission system
- Metadata allignment
- Machine readability for data and metadata
- Use of DAP services e.g. ERDDAP to stream data
- OA Data Portal will harvest relevant data holders using ERDDAP.


socat
SURFACE OCEAN CO2 ATLAS
gledap
NOAA
NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
OCADS
EMODnet
COPERNICUS
CMEMS IN SITU OCEAN TAC
MARINE ENVIRONMENT MONITORING SERVICE
SeaDataCloud
SDG 14.3
ERDDAP
ICOS
Integrated Carbon Observation System
Product analyses + Quality assessment
(GOA-ON)
BGC ARGO
GDAC
JCOMM/IODE
GDAC
QC
integration
harmonization
standardization
automated data ingestion
Regional Hub/
Ocean observation data
portal/centre
Data processing
NODC
DOI
Archive
BP +
metadata
CD
OceanTeacher RTC
PI
Data providers
Services
Data path
Feedback
Alternative data path

IODE International Oceanographic Data and Information Exchange

National Oceanographic Data Centre NODC

IODE International Oceanographic Data and Information Exchange

Associate Data Unit ADU

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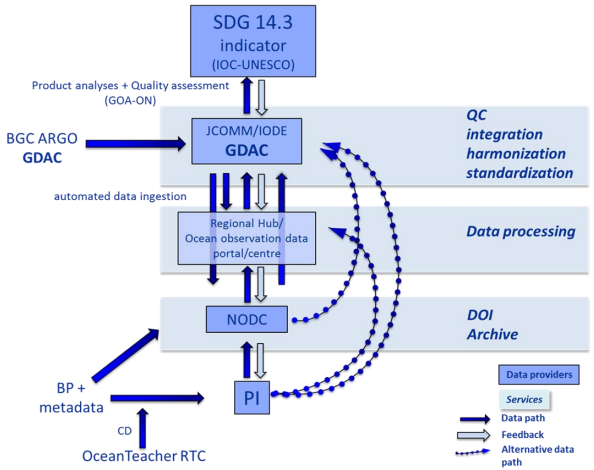


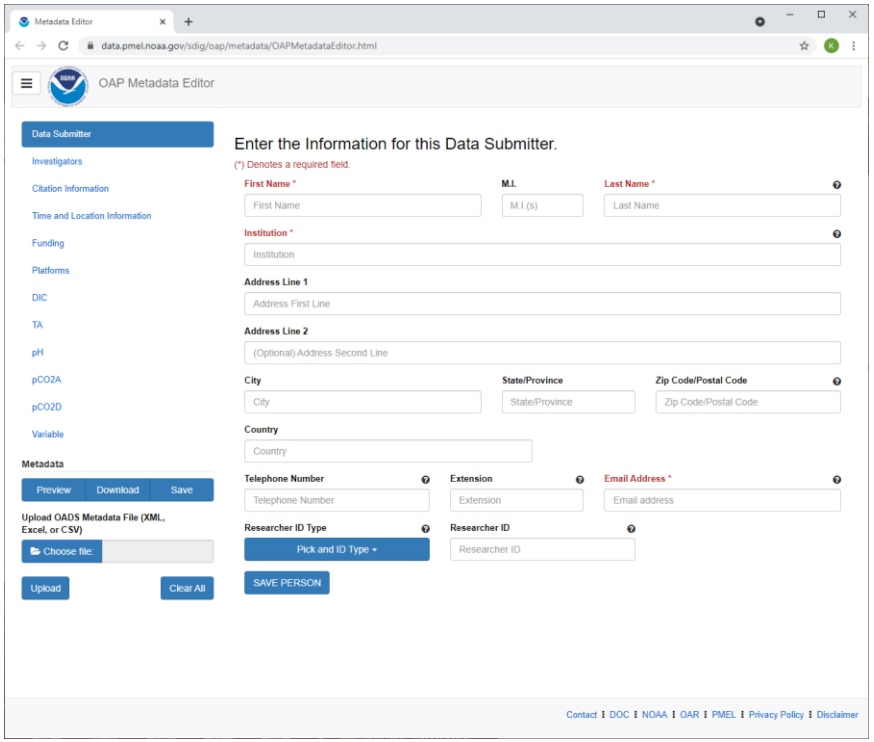
Strengthen Key Players and data submission systems

- Depending on nearly 100 data centres seems demanding
- Lower hanging fruit - to have good ingestion systems for PIs or NODCs and direct support for key players
- Exchange data from these systems with NODCs

Example NOAA OAP and SOCAT submission system

- Flexible and scaleable infrastructure

SOCAT Submission system



NOAA OAP metadata submission dashboard

How to ensure the collection of data of known quality?

- Learnig from key players
- Capacity building
- Best Practices and SoPs