Objectives of this presentation

1. Increased understanding of the SDG 14.3 target and 14.3.1 indicator purposes.
2. Understanding what are the different parts of the methodology.
3. Identification of potential areas for improvement at the national level to support data reporting.
17 objectives to transform our world: 2030 Agenda
The work of IOC of UNESCO is relevant to **13 out of 17** Sustainable Development Goals.
SDG indicator framework

- **SDG Goals and Targets were set by Member States** with the adoption of the 2030 Agenda for Sustainable Development (2015).

- The General Assembly tasked the **UN Statistical Commission** with developing a monitoring framework.

- **The Inter-Agency and Expert Group on the SDG Indicators (IAEG-SDG)**, composed of 28 Member States as well as regional and international agencies as observers, was established to develop the indicator framework.

- IAEG-SDG agreed on a **global indicator framework of 231 unique indicators**. The total number of indicators listed in the global indicator framework of SDG indicators is 247. However, twelve indicators repeat under two or three different targets indicators. The IAEG agreed on UN agencies as custodians of the various indicators. (adopted by UN General Assembly in 2017).
## SDG 14 – 10 targets – 10 ways to collect data

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<th>Year</th>
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Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Target 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels

**Indicator: 14.3.1**

Average marine acidity (pH) measured at agreed suite of representative sampling stations

*Tier II Indicator conceptually clear, established methodology and standards available but data are not regularly produced by countries*
What does Custodianship mean?

1. Develop internationally agreed standards, coordinate the indicator development, and support increased adoption and compliance with the internationally agreed standards at the national level;

2. Collect data in relevant domain from countries (or regional organizations) as appropriate through existing mandates and reporting mechanism to provide internationally comparable data and calculate global and regional aggregates;

3. Strengthen national statistical capacity and improve reporting mechanisms

Pendleton et al. 2016
Meeting of Expert Group 16-18 January 2018 at IOC HQ, Review of existing preliminary methodology

51st Session of IOC Executive Council July 2018 – Endorsed 14.3.1 methodology

July-August 2018: Data collection approaching NODCs and ADUs, which stated to have relevant data sets

October 2018: IOC expert meeting, to apply data quality control mechanisms, categorize the data quality of different data sets, review of data collection, strategy to develop related capacity building activities and additional documentation

November 2018: updated metadata and data files, IAEG meeting to apply for upgrade of 14.3.1 methodology from Tier III to Tier II

December 2018-September 2019: 14.3.1 SDG data repository development

March 2019-October 2019: 14.3.1 IOC Manual on 14.3.1 reporting, including step by step guides for data providers and data repositories
Who contributes to the 14.3.1 SDG indicator data collection?

• All UN countries signed up for the 2030 Agenda and accepted regular NATIONAL reporting
• IOC currently follows three paths for data collection: IOC national representatives, NODCs/ADUs and individual scientist because:
  o Capacity for ocean data at the administrative level of different nations is limited.
  o If NODCs exists this is supposed the ‘main contributor’ – however data and meta data collected there might be not sufficient.
  o At this stage you might already contribute your data sets to other relevant data bases, however the data transfer is still not automated and often metadata sets are incomplete for the 14.3.1 purpose.
• Missing National Statistical offices to date, however this is important to increase awareness, connect scientists with higher levels and different stakeholders
• Contributions from scientists, NODCs, IOC focal points and NSOs would increase use of the information obtained, increase visibility and facilitate global, regional comparisons.
• Contributions from scientists would allow IOC to help to increase communication with government representatives and data managers.
14.3.1 not only a piece of paper

SDG 14.3.1 indicator Methodology

- Data file
- ‘Methodology’ explanations and definitions
- Metadata file and instructions
- 14.3.1 data portal
- 14.3.1 trainings and workshops
Metadata

SDG 14.3.1 indicator Methodology

- Data file
- 14.3.1 trainings and workshops
- 'Methodology' explanations and definitions
- Metadata file and instructions
- 14.3.1 data portal

Instructions: Please do not change the order of rows No. 1 through No. 245. Please do not use special characters. Text highlighted in red indicates information needed to conduct quality control of submitted data. Please try to fill in as much as possible for the number of variables relevant for the submitted data sets. Note that all rows in bold contain a drop-down menu, please follow the instructions provided and choose one of the options.
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Metadata http://oa.iode.org
Data file

14.3.1 trainings and workshops

SDG 14.3.1 indicator Methodology

Metadata file and instructions

14.3.1 data portal
14.3.1 provides guidance on:

- Definitions,
- Units
- Rationale for inclusion
- Computation method – aggregation and disaggregation
- Sampling strategy, including sampling frequency
- Methods and guidance available to countries for the compilation of data at the national level, including:
  - overview on best practices,
  - standard operating mechanisms,
  - measurement and data collection,
  - measurement and data quality
- Data sources, including:
  - the collection process,
  - data visualization and
  - quality control mechanisms
14.3.1 data portal – Facilitating Reporting
https://oa.iode.org/

Welcome to the SDG 14.3.1 data portal

This SDG 14.3.1 Data Portal is a tool for the submission, collector Sustainable Development Goal 14.3.1 Indicator: Average marine and In 2015, the United Nations adopted the 2030 Agenda and set a to “conserve and sustainably use the oceans, seas and marine environment UNESCO was identified as the custodian agency for the SDG "scien of cooperation at all levels," and the associated SDG indicators).2"

Thanks to the cooperation and support received by the Intergovernmental Oceanographic Commission (IOC), international ocean acidification experts (including data that was developed and is now freely available.

The SDG Indicator 14.3.1 Methodology provides the necessary guidelines for best practice and methods approved by the scientific ocean acidification community. It further offers support on how to and what kind of data to ensure the production of quality controlled global and possibly regional products.

14.3.1 data portal

Frequently Asked Questions

Welcome to the FAQ section of the SDG 14.3.1 Data Portal. We invite you to read the information on the ‘Instructions’ tab first.

Q: I cannot upload any data sets. How do I get access to this function?
A: When can I submit my data through the SDG 14.3.1 Data Portal?
    A: The SDG 14.3.1 Data Portal is always open for data submissions.

In order to remind the community of this, IODC-UNESCO sends out annual calls for data submissions to its Member States, national data centres and ocean acidification scientists. The annual reporting by IODC-UNESCO on the progress of the SDG 14.3.1 Indicator is due in February; the call will therefore be sent out several months before that date.

Q: What will the submitted data be used for?
Q: Where should ocean acidification be measured? What is a "representative sampling station"?
Q: Can I submit my raw data without any quality control?
Q: What are the different data quality categories defined in the Indicator methodology?
Q: Which units should I use for the different parameters?
Q: Do I have to fill in the metadata each time I submit a data set?
Q: The abbreviations for parameters in the data template are different from the ones I use. Can I use my abbreviations for the data submission?
Q: Why are some fields in the metadata file marked in red in the metadata excel file? What does the star mean to some fields in the online metadata file mean?
Q: Should I only submit carbonate data?
Q: What are the numbers in column D of the metadata excel template? Where do I find the "Help reference number"?
Q: I have time series data sets from cruises. The cruises are repeated seasonally, sampling the same locations. Do I need to prepare a separate metadata form for each cruise and each location?
Q: I am already submitting data to other platforms and portals (such as SIDC, GLDAP, NCEI). Should I also submit my data to the SDG 14.3.1 Data Portal?
Q: Can I access and download other submitted data sets?
Q: The SDG 14.3.1 Indicator calls for the "average marine acidity (pH) measured at agreed suite of representative sampling stations." Should I submit all of my pH and carbonate data or the average value of my pH data over the year?
Q: What is the minimum number of parameters for data submission to SDG 14.3.1?
Q: Is only measured data acceptable for submission, or can I also include calculated values for certain carbonate chemistry parameters?
14.3.1 data

Grays Reef – USA, 2014-2015

Tasman Bay – New Zealand, 2015-2017

HOTS – USA, 2010-2018
14.3.1 data

*pCO₂* and pH records from the Hawaii Ocean Time Series (HOTS) in the Pacific Ocean.

*pCO₂* and pH records from the Bermuda Atlantic Time Series (BATS).

*pCO₂* and pH records from the European Station for Time series in the Ocean Canary Islands (ESTOC).

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Annual average change pH 0.0017 0.0017 0.001
Continuing ocean acidification threatens the marine environment and ecosystem services

The ocean is the planet’s largest carbon sink, absorbing around 23 per cent of annual CO₂ emissions generated by human activity and helping to mitigate the impacts of climate change. However, the absorbed CO₂ has caused seawater to become more acidic, evidenced by a 26 per cent drop in pH levels since pre-industrial times. Ocean acidification endangers coral reefs and other key species that are the base of the marine food chain, and has negative effects on marine ecosystem services, including fisheries and aquaculture, coastal protection, transportation and tourism. The more acidic the ocean becomes, the lower its capacity to absorb CO₂ from the atmosphere and to moderate climate change. Information drawn from a new ocean acidification data portal shows an increase in pH variability (up to 10–30 per cent in the past five years) and in ocean acidity. By the end of this century, a 100–150 per cent rise in acidity is projected, affecting half of all marine life.
IOC contributes to the ‘WMO Statement on the State of the Global Climate’ and ‘The Global Climate in 2015-2019’

pCO₂ and pH record for the Hawaii Ocean Time-Series in the Pacific Ocean, with five-year running average pCO₂ and pH indicated by black bars.

Clearly visible increase in the pCO₂ and simultaneous decrease in pH
Calculated surface pH values based on ocean acidification data submitted to the 14.3.1 data portal (http://oa.iode.org). Blue crosses – average annual pH reported from quality assured measurements; orange diamonds – annual minimum pH values reported for each station; green circles – annual maximum pH values reported for each station.

Map illustration surface ocean carbonate chemistry measurement locations received for the 14.3.1 ocean acidification reporting. Blue – countries whose data was reported in accordance with the SDG 14.3.1 Indicator Methodology; dark grey – countries reporting ocean acidification observation data not collected in accordance with the SDG 14.3.1 Indicator Methodology.
2019 – 8 countries submitted data and information
2020 – 30 countries submitted data and information

Capacity training done by GOA-ON and partners actively supports this initiative
Federated data system for ocean acidification data
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Target 14.3 Minimize and address the impacts of ocean acidification, incl. through enhanced scientific cooperation at all levels.

Indicator 14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations.
Currently a number of national and international projects and databases also collect and host data relevant for the SDG 14.3.1 reporting.

To avoid duplication of efforts, and to increase the amount of data sets collected towards the SDG Indicator, it is envisaged to develop a federated system to automatically harvest data from these other relevant databases on a regular basis.

With the development of the federated system the 14.3.1 portal would become one of the platforms to be harvested on a regular basis and could act as a mirror to support visualization/exchange and ensure long term availability of the data.
Currently the portal fulfils basic functions related to the collection of data towards the SDG 14.3.1 Indicator. Users can:

1. upload data and metadata files in excel format directly to the portal;
2. fill in the metadata information online;
3. include several data sets per metadata file (e.g. for repeated measurements);
4. check data automatically to ensure the files were uploaded/prepared correctly;
5. verify the localization data on a map.
6. search for data sets submitted and download;
7. see available data sets on the map,
8. find more information on a dedicated FAQ webpage.
Steps development

- Agreement on minimum metadata and data
- Technical support secured
- Improvement of SDG 14.3.1 data portal (interface etc)
- Agreement on vocabulary
- Establishment of ERDDAP at relevant databases, including 14.3.1
Tasks

i. **Set up a federated data integration/ingestion system using DAP (preferably ERDDAP) services for data relevant to the SDG 14.3.1 Indicator.** The main outcome would be to establish ways to harvest data and metadata from different NODCs, and international data bases to obtain information relevant for the 14.3.1 SDG indicator involving relevant NODCs, NOAA, SOCAT, EMODNET, GLODAP among others, to **agree on the metadata and data** as well as with IODE’s Ocean Data and Information System (ODIS) and IODE Ocean InfoHub.

ii. **Develop visualization tools embedded in the federated system,** according to the SDG 14.3.1 methodology, to include maps showing the origin of the datasets received, organised by data quality; maps depicting trends for long-term datasets (>5 years).

iii. **Improve the ingestion of relevant data provided by individual scientists, research organizations, as well as other data centres and data platforms to the SDG 14.3.1 Data Portal,** and ensure interoperability of relevant data; Update and upgrade the SDG 14.3.1 Data Portal to include additional settings for data providers and users, including search functions, downloading of data sets, data quality assurance mechanisms, FAQs and help desk. The **newly established 14.3.1 data portal would be part of the federated system; however, to ensure the compatibility and that it in turn feeds into the other relevant databases some further work is required,** such as enabling the uploading of different formats in addition to the excel.
THANK YOU