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The UN Sustainable Development Goal Indicator 14.3.1 and its data submission process

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Objectives of today



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1. Increasing understanding of the SDG 14.3 target and 14.3.1 indicator purposes.
2. Facilitating the national data submission towards 14.3.1 Indicator.
3. Improving connections between data providers and national governmental organizations responsible for Sustainable Development



SDG Indicator 14.3.1:

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

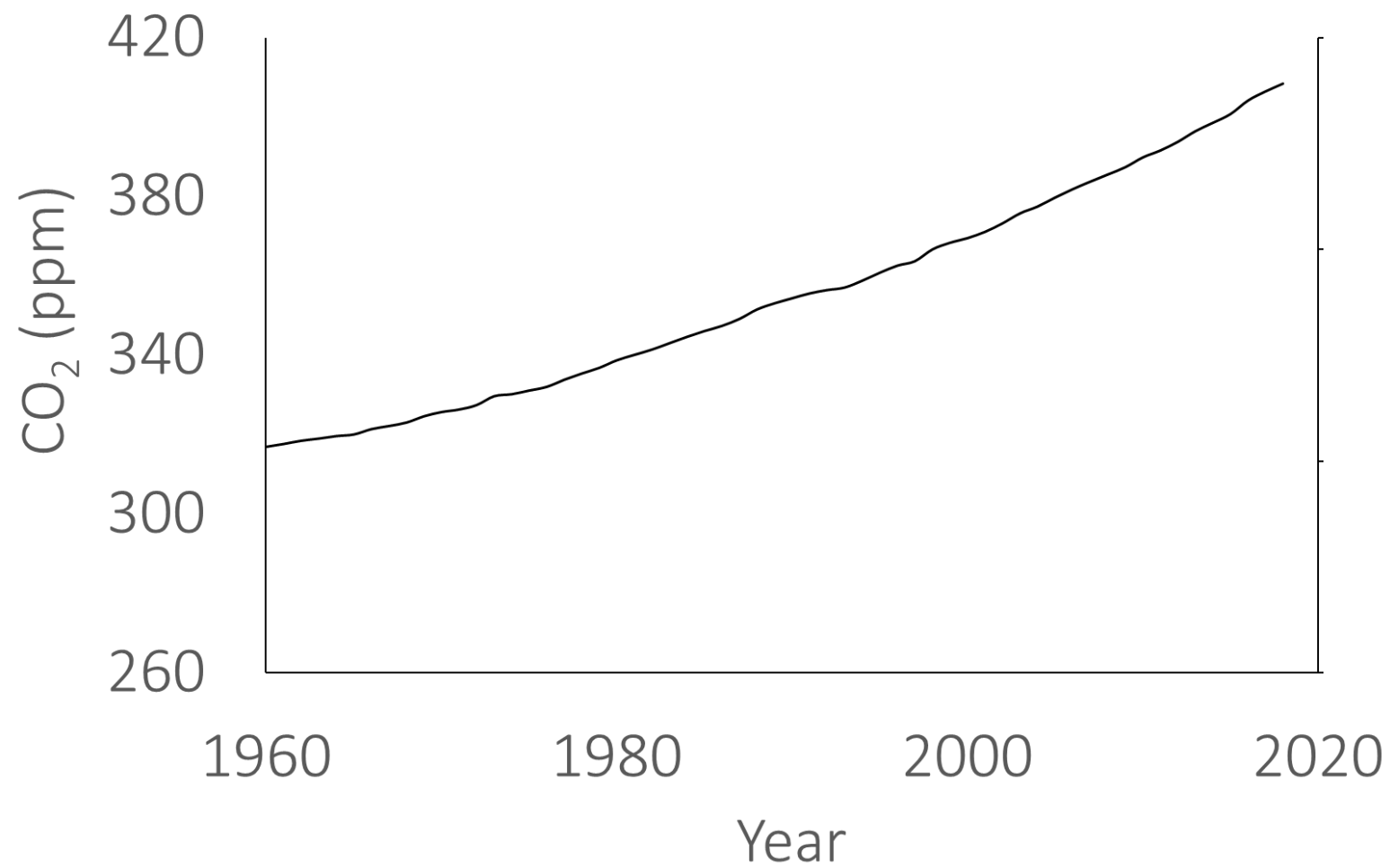
What is marine acidity? What is pH?





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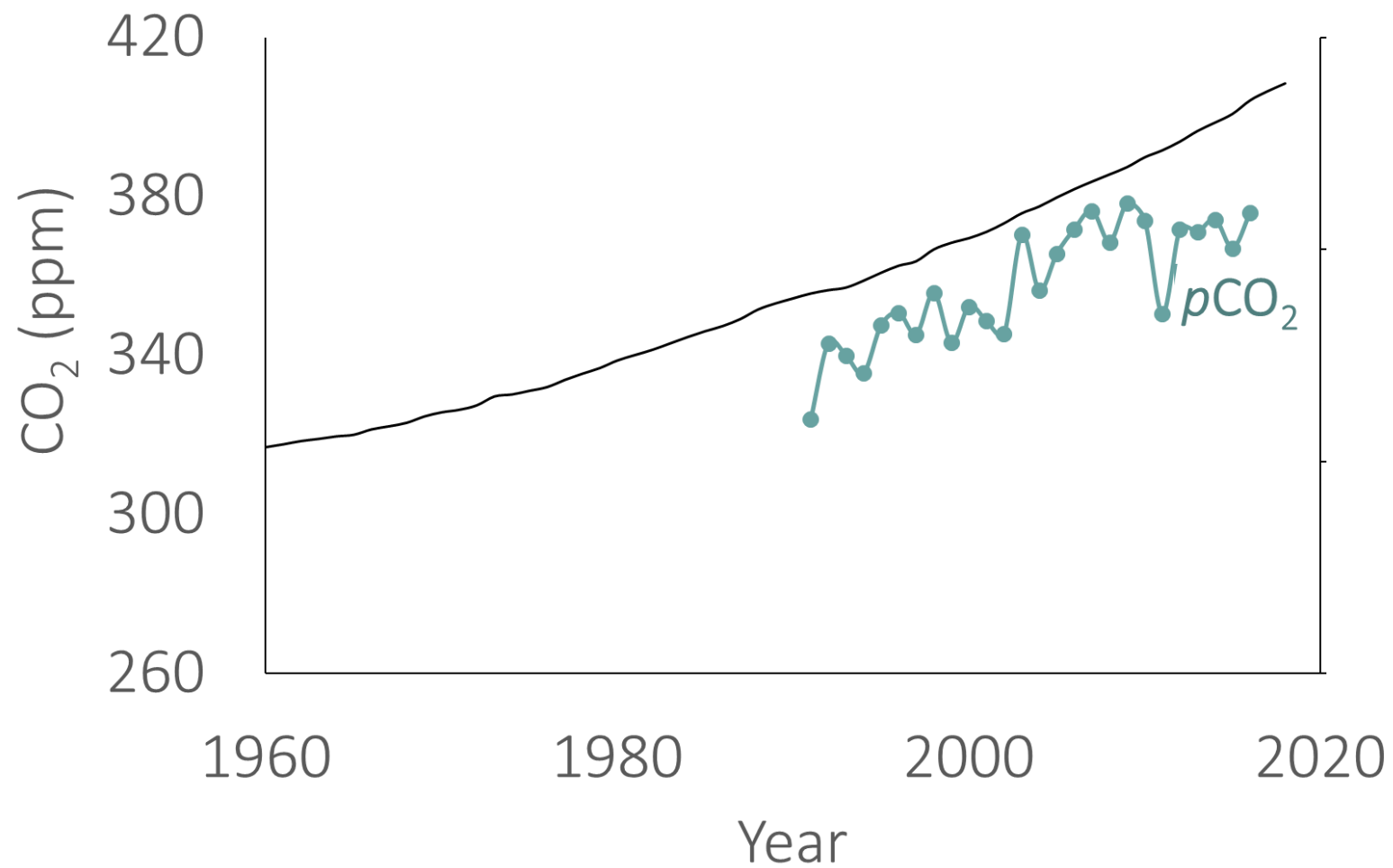
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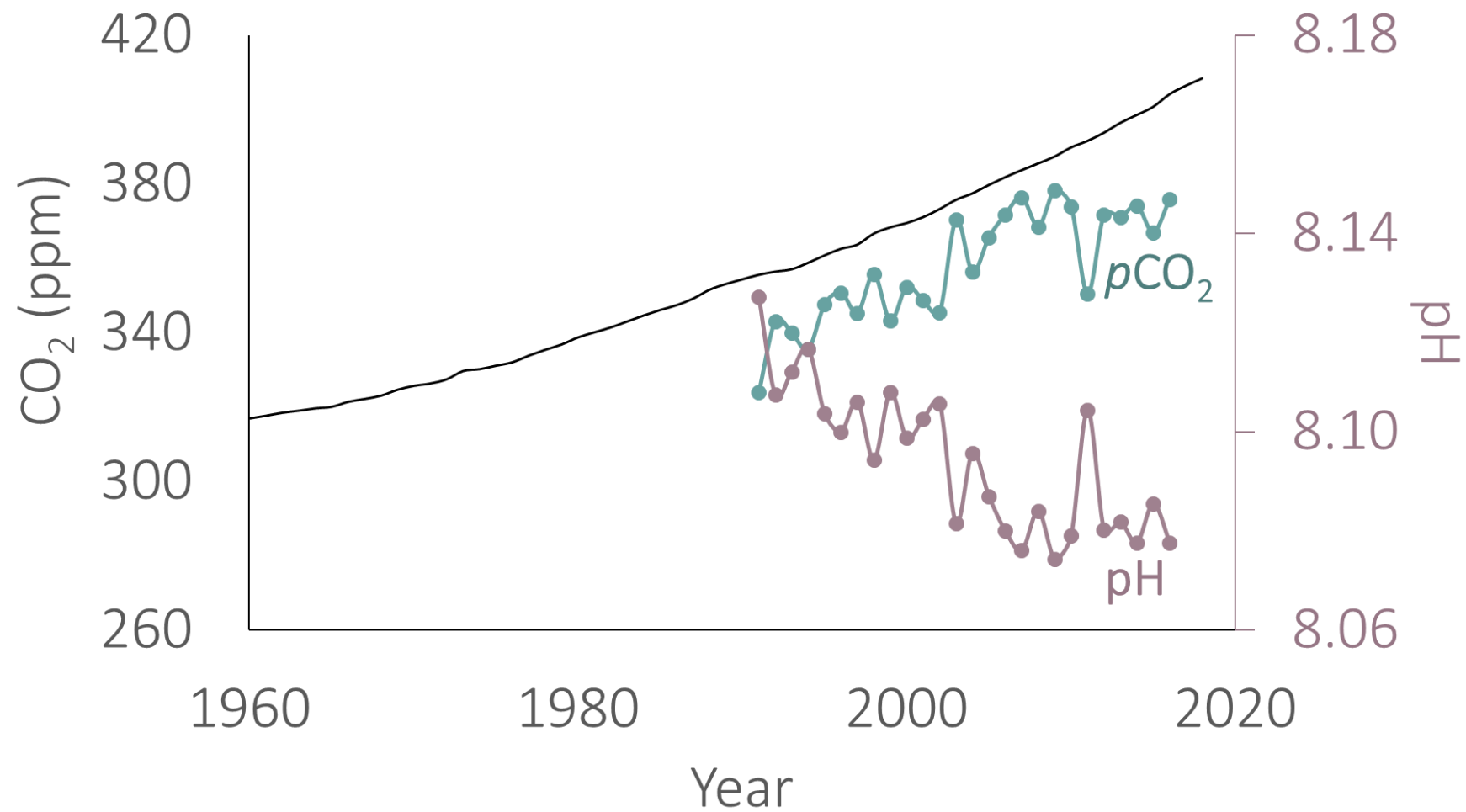
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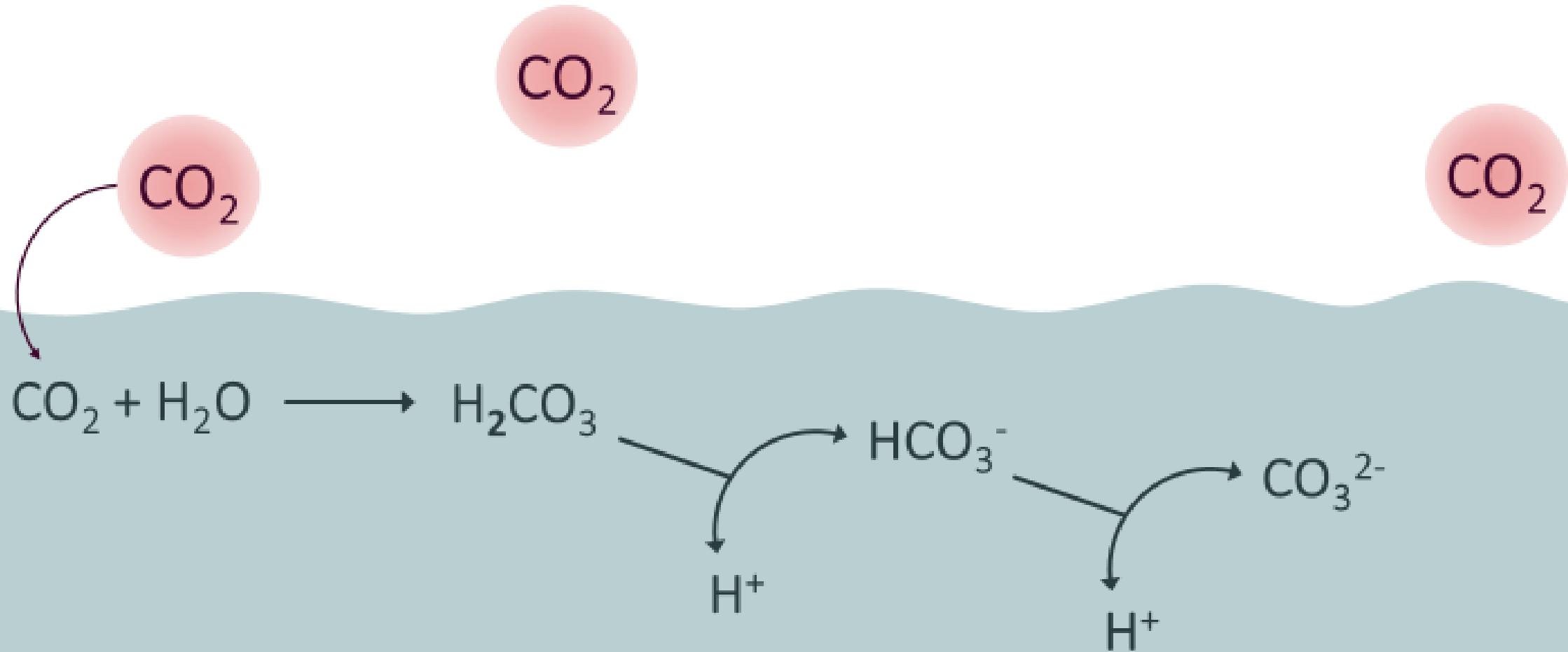


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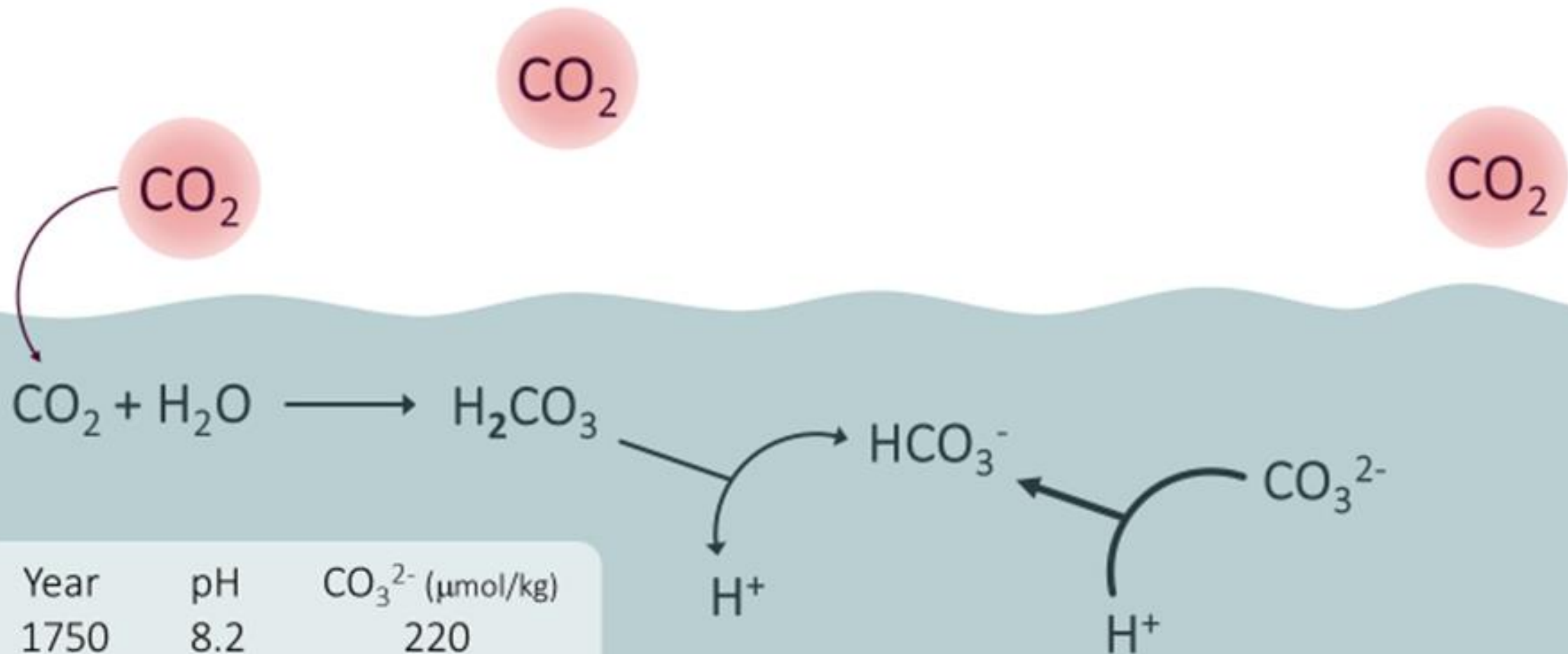
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Ocean Acidification: the other CO₂ problem



Ocean Acidification: the other CO₂ problem



Year	pH	CO ₃ ²⁻ (μmol/kg)
1750	8.2	220
2010	8.1	180
2100	7.8	100

Carbonate chemistry: the big four

Hydrogen ion concentration (**pH**)

$$\text{pH} = -\log_{10} [\text{H}^+]$$

Total dissolved CO_2 (C_T or **DIC**)

$$C_T = [\text{CO}_2]^* + [\text{HCO}_3^-] + [\text{CO}_3^{2-}]$$

Partial pressure of CO_2

$$p\text{CO}_2$$

Total alkalinity (**A_T**)

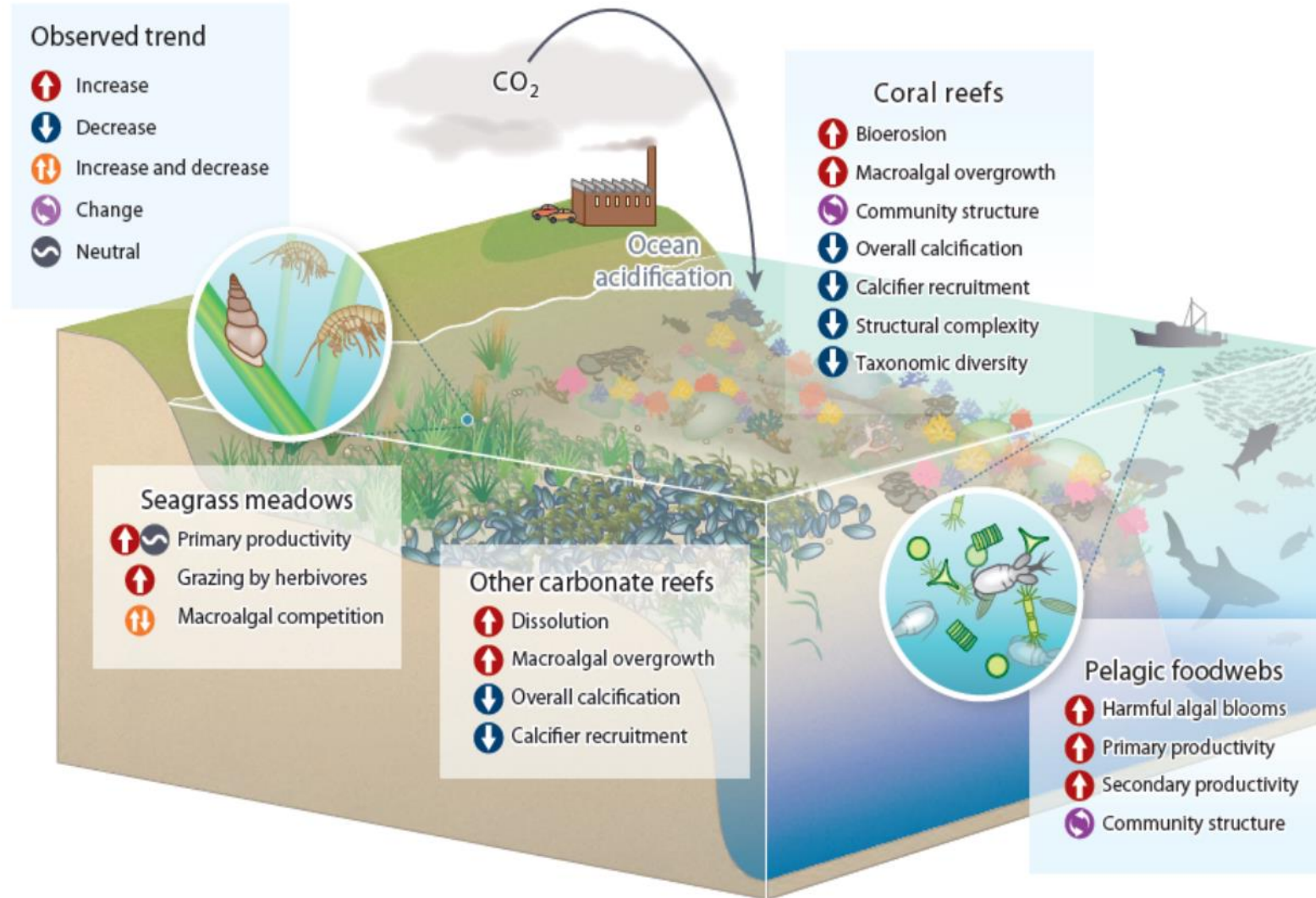
If you measure two of these parameters (and salinity, temperature and depth), you can characterise the complete carbonate system.

Impacts of ocean acidification



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IOC in the UN



UNESCO is the only body of the UN system containing the
“E” for Education and the “S” for Science

The Intergovernmental Oceanographic Commission (IOC) is the
only body of the UN with a mandate in Ocean Sciences

17 objectives to transform our world: 2030 Agenda



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 <p>1 NO POVERTY</p>	 <p>2 NO HUNGER</p>	 <p>3 GOOD HEALTH</p>	 <p>4 QUALITY EDUCATION</p>	 <p>5 GENDER EQUALITY</p>	 <p>6 CLEAN WATER AND SANITATION</p>
 <p>7 RENEWABLE ENERGY</p>	 <p>8 GOOD JOBS AND ECONOMIC GROWTH</p>	 <p>9 INNOVATION AND INFRASTRUCTURE</p>	 <p>10 REDUCED INEQUALITIES</p>	 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	 <p>12 RESPONSIBLE CONSUMPTION</p>
 <p>13 CLIMATE ACTION</p>	 <p>14 LIFE BELOW WATER</p>	 <p>15 LIFE ON LAND</p>	 <p>16 PEACE AND JUSTICE</p>	 <p>17 PARTNERSHIPS FOR THE GOALS</p>	 <p>THE GLOBAL GOALS For Sustainable Development</p>

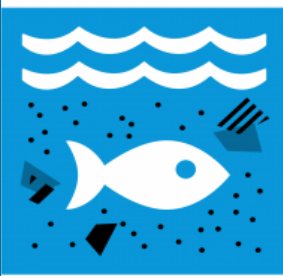
SDG 14 – 10 targets – 10 ways to collect data



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TARGET 14-1



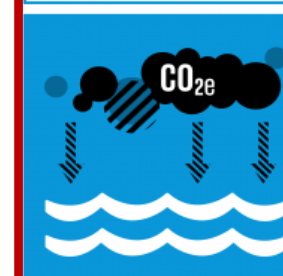
REDUCE MARINE POLLUTION

TARGET 14-2



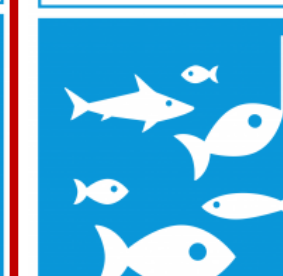
PROTECT AND RESTORE ECOSYSTEMS

TARGET 14-3




REDUCE OCEAN ACIDIFICATION

TARGET 14-4



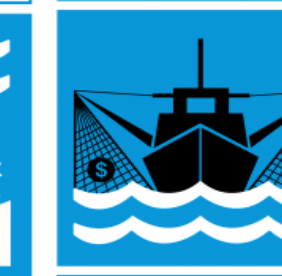
SUSTAINABLE FISHING

TARGET 14-5




CONSERVE COASTAL AND MARINE AREAS

TARGET 14-6




END SUBSIDIES CONTRIBUTING TO OVERFISHING

TARGET 14-7




INCREASE THE ECONOMIC BENEFITS FROM SUSTAINABLE USE OF MARINE RESOURCES

TARGET 14-A




INCREASE SCIENTIFIC KNOWLEDGE, RESEARCH AND TECHNOLOGY FOR OCEAN HEALTH

TARGET 14-B



SUPPORT SMALL SCALE FISHERS

TARGET 14-C



IMPLEMENT AND ENFORCE INTERNATIONAL SEA LAW

14.1	UNEP supported by IOC-UNESCO	Tier II	2025
14.2	UNEP supported by IOC-UNESCO	Tier II	2020
14.3	IOC-UNESCO	Tier II	-
14.4	FAO	Tier I	2020
14.5	UNEP-WCMC supported by IUCN	Tier I	2020
14.6	FAO	Tier I	2020
14.7	FAO supported by UNEP-WCMC	Tier II	2030
14.A	IOC-UNESCO	Tier II	-
14.B	FAO	Tier I	-
14.C	DOALOS	Tier II	-

SDG Indicator 14.3.1



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

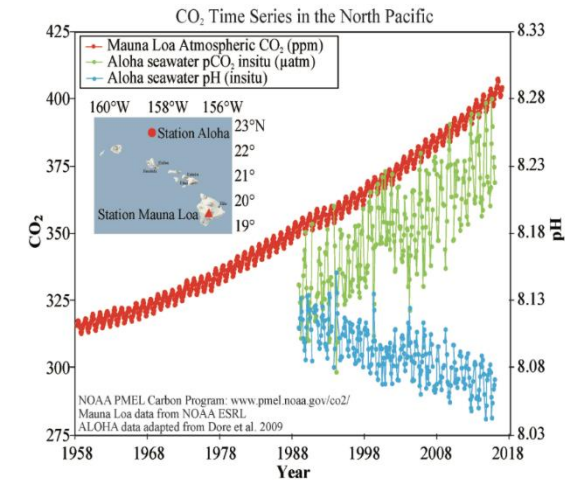
Indicator 14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations

Tier II Indicator conceptually clear, established methodology and standards available but data are not regularly produced by countries

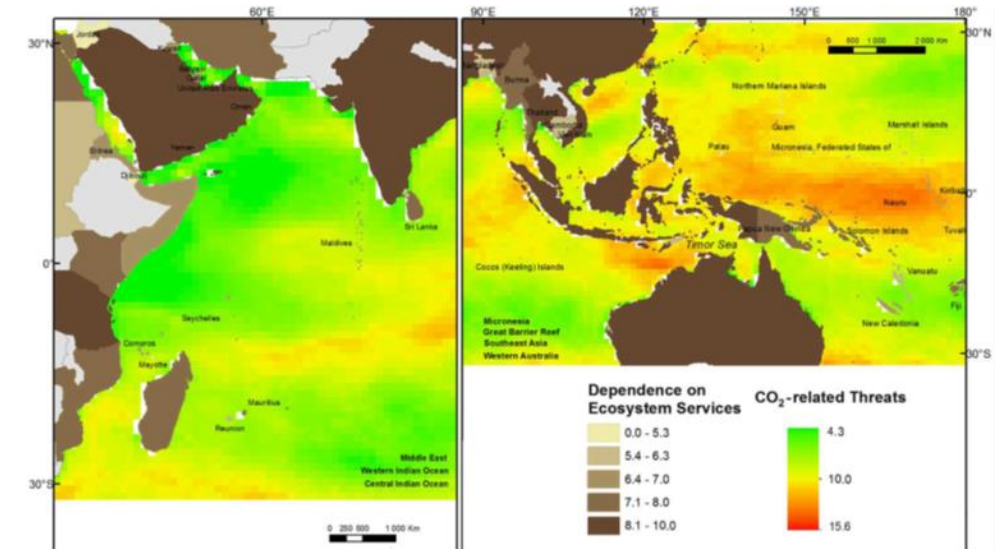


What does custodianship mean?

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 to calculate global and regional aggregates;
3. Strengthen national statistical capacity and improve reporting mechanisms



Data: Mauna Loa (http://ftp.cmi.noaa.gov/products/trends/co2/co2_mm_mlo.txt), ALOHA (http://hawaii.seost.hawaii.edu/ftp/products/NOT_surface_CO2.txt)
Ref: J.E. Dore et al. 2009: Physical and biogeochemical modulation of ocean acidification in the central North Pacific. *Proc. Natl. Acad. Sci. U.S.A.* 106:12235-12240.

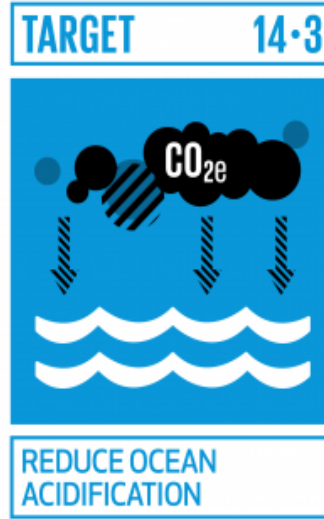
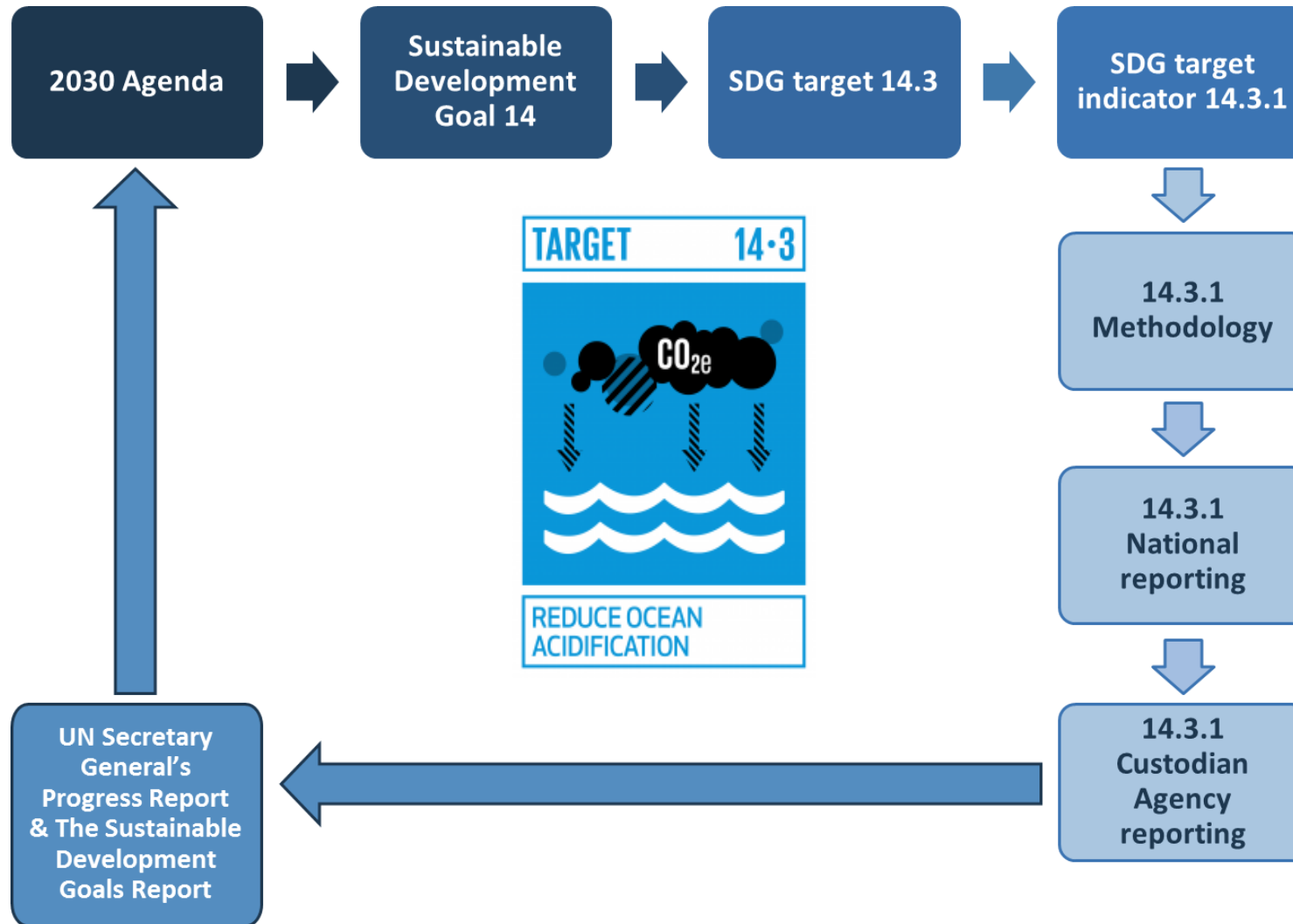


Pendelton et al. 2016



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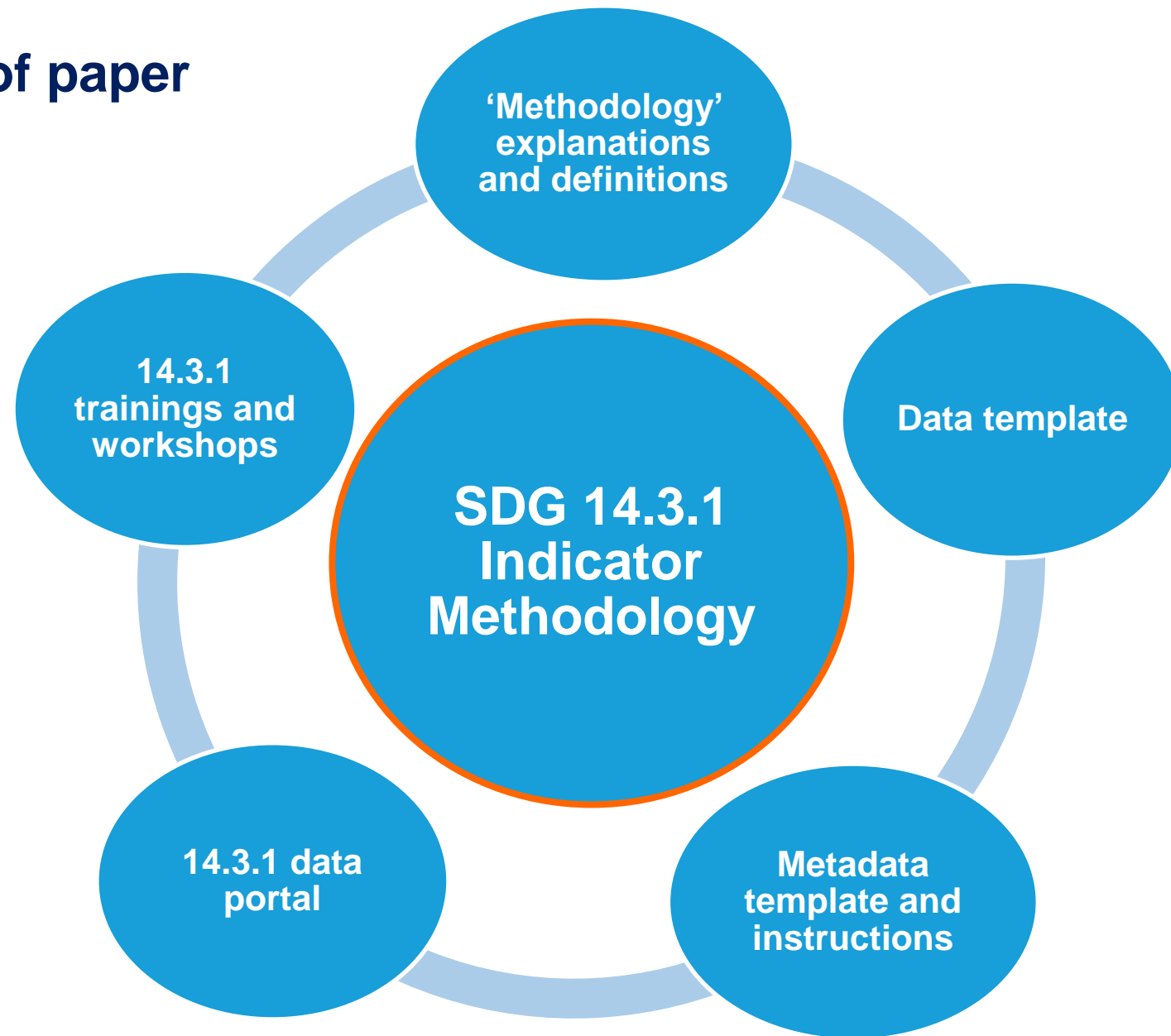


14.3.1 not just a piece of paper



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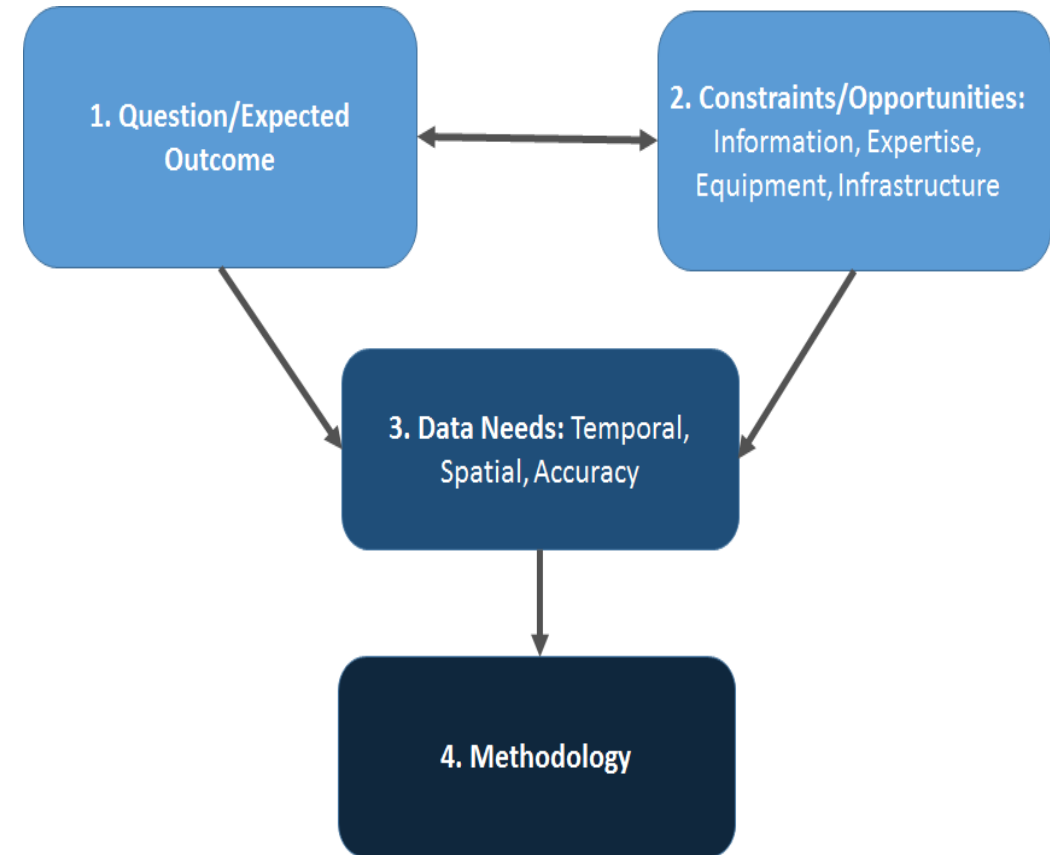
14.3.1 provides guidance on:

- 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



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14.3.1 Data Portal

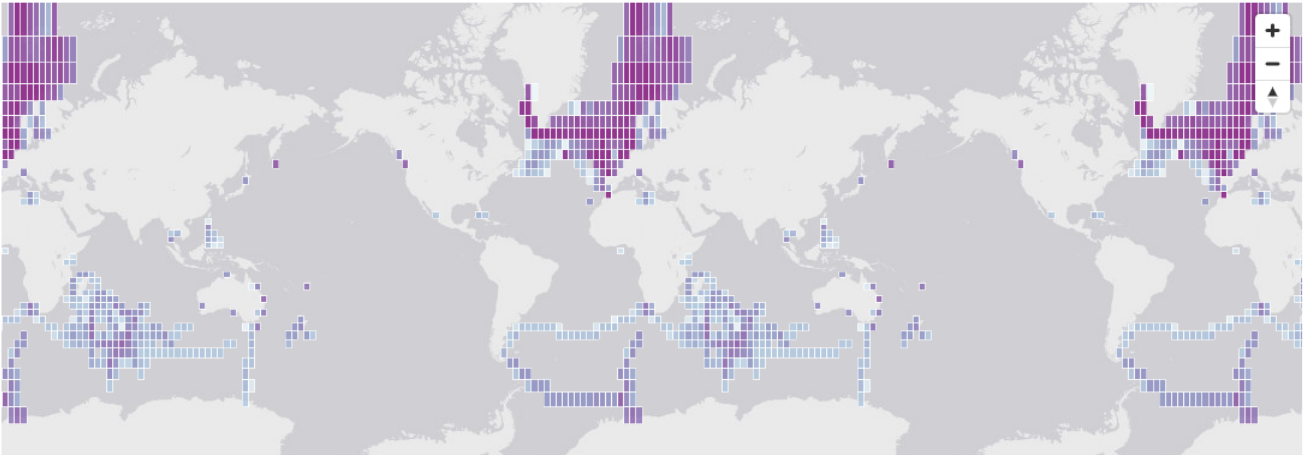


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SDG 14.3.1 data portal

Instructions FAQ My datasets Data Katherina School

Welcome to the SDG 14.3.1 data portal



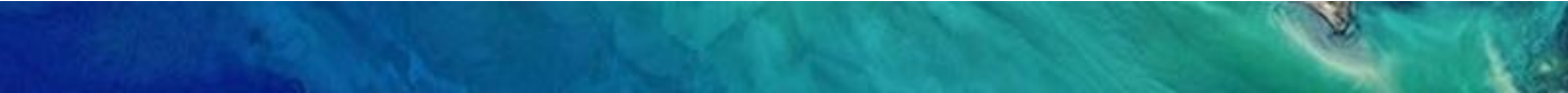
This SDG 14.3.1 Data Portal is a tool for the submission, collection, validation, storage and sharing of ocean acidification data and metadata submitted towards the Sustainable Development Goal 14.3.1 Indicator: Average marine acidity (pH) measured at agreed suite of representative sampling stations.

In 2015, the United Nations adopted the 2030 Agenda and a set of Sustainable Development Goals (SDG), including a goal dedicated to the ocean, SDG 14, which calls to "conserve and sustainably use the oceans, seas and marine resources for sustainable development". The [Intergovernmental Oceanographic Commission \(IOC\)](#) of UNESCO was identified as the custodian agency for the [SDG Target 14.3](#): "Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels", and the associated SDG Indicator 14.3.1 ("Average marine acidity (pH) measured at agreed suite of representative sampling stations").

Thanks to the cooperation and support received by the Commission in the past years from its [International Oceanographic Data and Information Exchange Programme \(IODE\)](#), international ocean acidification experts (including data managers) and the [Global Ocean Acidification Observing Network \(GOA-ON\)](#) the indicator methodology was developed and is now freely available.

The SDG Indicator 14.3.1 Methodology provides the necessary guidance on how to conduct ocean acidification observation, what to measure and how, providing best practice and methods approved by the scientific ocean acidification community. It further offers support on how to and what kind of data sets to submit to IOC, to ensure the production of quality controlled global and possibly regional products.

<https://oa.iode.org/>



14.3.1 Data Portal



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The full text of the SDG 14.3.1 Indicator Methodology, the data template, the metadata template and the metadata instructions file can all be found and downloaded here:

- [Indicator methodology](#)
- [Metadata template](#)
- [Data template](#)
- [Metadata instructions](#)

We are looking forward to your contributions! Please be assured that all your submissions will be attributed a Digital Object Identifier (DOI), allowing for the tracing and correct citation of your results in derived products. We encourage open data access and expect that your data and metadata contributions will be shared and used. We welcome data sets which can be freely shared without restrictions (CC0, CC BY), with restrictions for commercial use (CC BY-NC), as well as those which only allow for IOC-UNESCO to derive products used for the purpose of the SDG indicator 14.3.1 reporting. The data submission process includes all of the steps outlined above.

<https://oa.iode.org/>

14.3.1 Data Portal



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Instructions: Please do not change the order of Rows No. 1 through No. 240. 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.

Number	Metadata element name	Your Input	Help reference number
1	Submission Date		1
2	Accession no. of related data sets on the 14.3.1 data platform or any other data base		2
3	URL of metadata set		3
4	URL of associated data set		4
5	DOI of dataset (if applicable)		5
6	Investigator-1 name		6.1
7	Investigator-1 institution		6.2
8	Investigator-1 institution ID (OceanExpert)		6.3
9	Investigator-1 address		6.4
10	Investigator-1 phone		6.5
11	Investigator-1 email		6.6
12	Investigator-1 researcher ID		6.7
13	Investigator-1 ID type (OceanExpert, ORCID, ResearcherID, etc.)		6.8
14	Investigator-2 name		6.1
15	Investigator-2 institution		6.2
16	Investigator-2 institution ID (OceanExpert)		6.3
17	Investigator-2 address		6.4

MOORING_NAME	LATITUDE	LONGITUDE	DATE_UTC	TIME_UTC	DEPTH	ISAMI PH	ISAMI PH FLAG	ISAMI TEMP	ISAMI T
	decimal degrees	decimal degrees			meter	total scale		degrees C	
WHOTS	22.67	-157.97	2012-05-03	8:33:36	1.00	8.1	2	25.3254	
WHOTS	22.67	-157.97	2012-05-03	8:36:22	1.00	8.1	2	25.328	
WHOTS	22.67	-157.97	2012-05-03	8:42:21	1.00	8.1	2	25.3178	

<https://oa.iode.org/>

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:
 - Capacity for ocean data at the administrative level of different nations is limited.
 - If NODCs exists this is supposed the 'main contributor' – however data and meta data collected there might be not sufficient.
 - 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.



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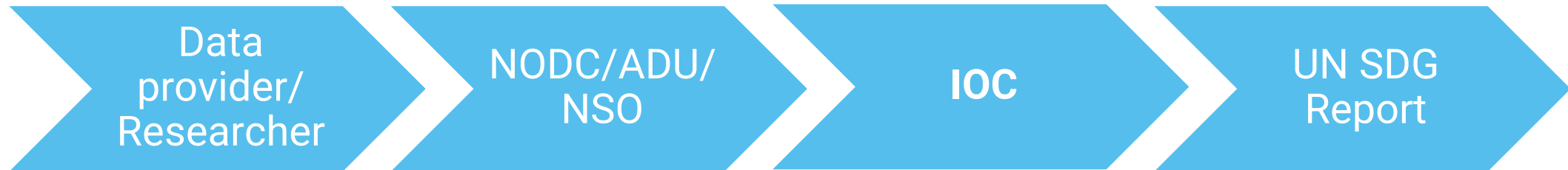
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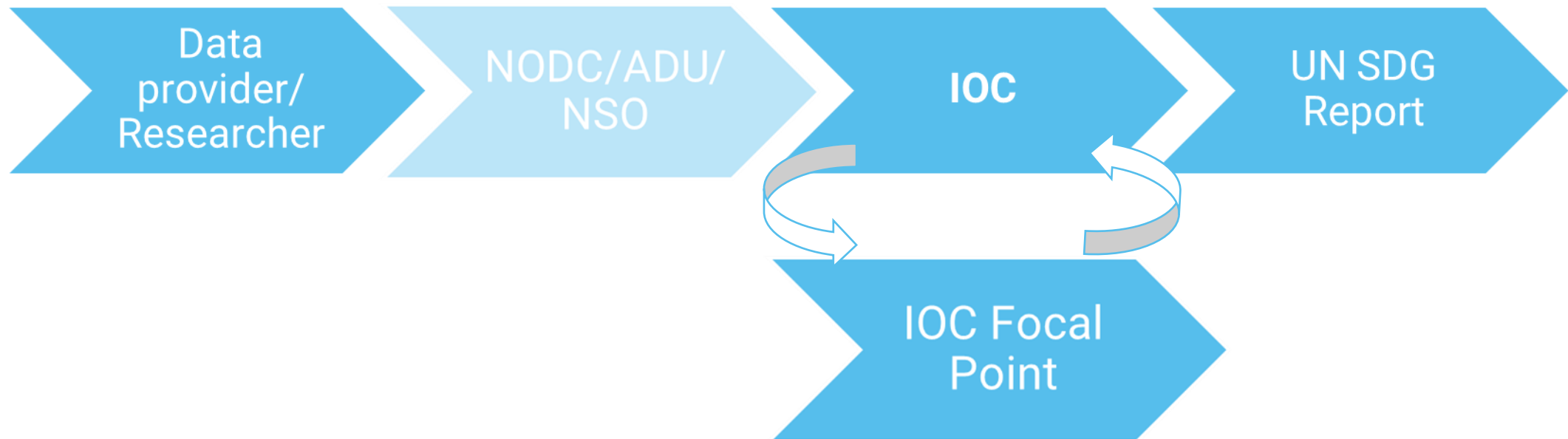


Data submission process



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Outcome Documents/information

The Sustainable Development Goals Report 2019



14 oceans CONSERVE AND SUSTAINABLY USE THE OCEANS, SEA AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT

OCEAN ACIDITY HAS INCREASED BY 26% SINCE PRE-INDUSTRIAL TIMES

IT IS EXPECTED TO RAPIDLY INCREASE BY 100-150% BY 2100

THE INCREASE IN OCEAN ACIDITY IS A NEGATIVE PHENOMENON. IT IMPACTS THE ABILITY OF THE OCEAN TO ABSORB CO₂ AND ENDANGERS MARINE LIFE.

104 OUT OF 220 COASTAL REGIONS IMPROVED THEIR COASTAL WATER QUALITY (2012-2018)

17% OF WATERS UNDER NATIONAL JURISDICTION ARE COVERED BY PROTECTED AREAS

MORE THAN DOUBLE THE 2010 COVERAGE LEVEL

THE PROPORTION OF FISH STOCKS WITHIN BIOLOGICALLY SUSTAINABLE LEVELS DECLINED FROM 90% (1974) TO 67% (2013)

87 COUNTRIES SIGNED THE AGREEMENT ON PORT STATE MEASURES, THE FIRST BINDING INTERNATIONAL AGREEMENT ON ILLEGAL, UNREPORTED AND UNREGULATED FISHING

United Nations → Department of Economic and Social Affairs → Statistics Division

SUSTAINABLE DEVELOPMENT GOALS

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SDG indicators
United Nations | United States | United Kingdom

Welcome to the dissemination platform of the Global SDG Indicators Database. This platform provides access to data compiled through the UN System in preparation for the Secretary-General's annual report on "Progress towards the Sustainable Development Goals"

Please read our [Frequently Asked Questions](#) if you need help using this site. The development of this global SDG database dissemination platform is an ongoing process. Please send your feedback and suggestions for improvements to statistics@un.org

Starting 2019, major updates are expected to be released in March, June/July, September and December. Earlier versions of the database are available [here](#).

Explore the [Metadata repository](#)

This interface works best with Google Chrome and Firefox and may not properly work under other browsers.

Last updated on Tuesday, August 6, 2019 ([see history](#)) [Show table](#) [Download](#) [Reset](#)

Data Series (selected 7 of 394) Geographic Areas (selected 295 of 295) Years 2000 to 2018 **12,867 observations**

Select from all series
Search and select indicators

All

- GOAL 1 End poverty in all its forms everywhere
- GOAL 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- GOAL 3 Ensure healthy lives and promote well-being for all at all ages
- GOAL 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- GOAL 5 Achieve gender equality and empower all women and girls
- GOAL 6 Ensure availability and sustainable management of water and sanitation for all
- GOAL 7 Ensure access to affordable, reliable, sustainable and modern energy for all
- GOAL 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- GOAL 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- GOAL 10 Reduce inequality within and among countries
- GOAL 11 Make cities and human settlements inclusive, safe, resilient and sustainable
- GOAL 12 Ensure sustainable consumption and production patterns
- GOAL 13 Take urgent action to combat climate change and its impacts
- GOAL 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- GOAL 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and desertification
- GOAL 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions
- GOAL 17 Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development



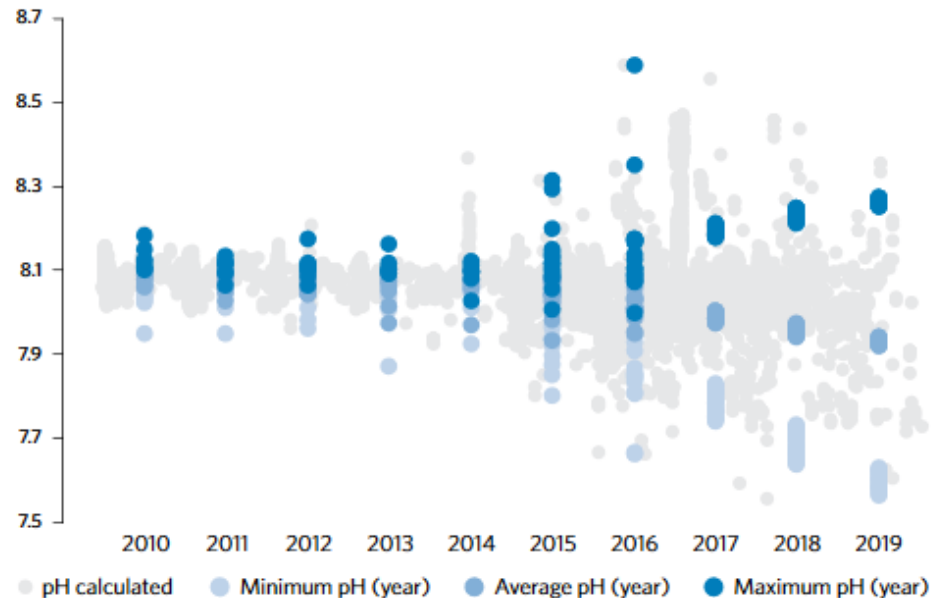
The Sustainable Development Goals Report 2020



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.

Calculated ocean surface pH values (minimum, average and maximum) for the period 1 January 2010 to 8 January 2020 from global measurements

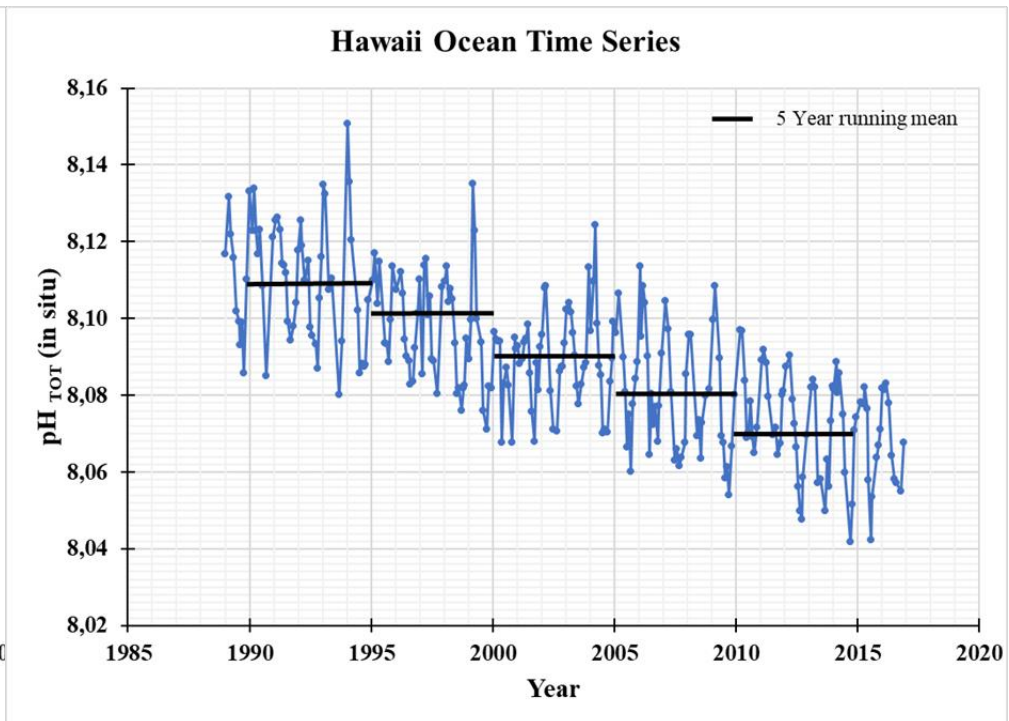
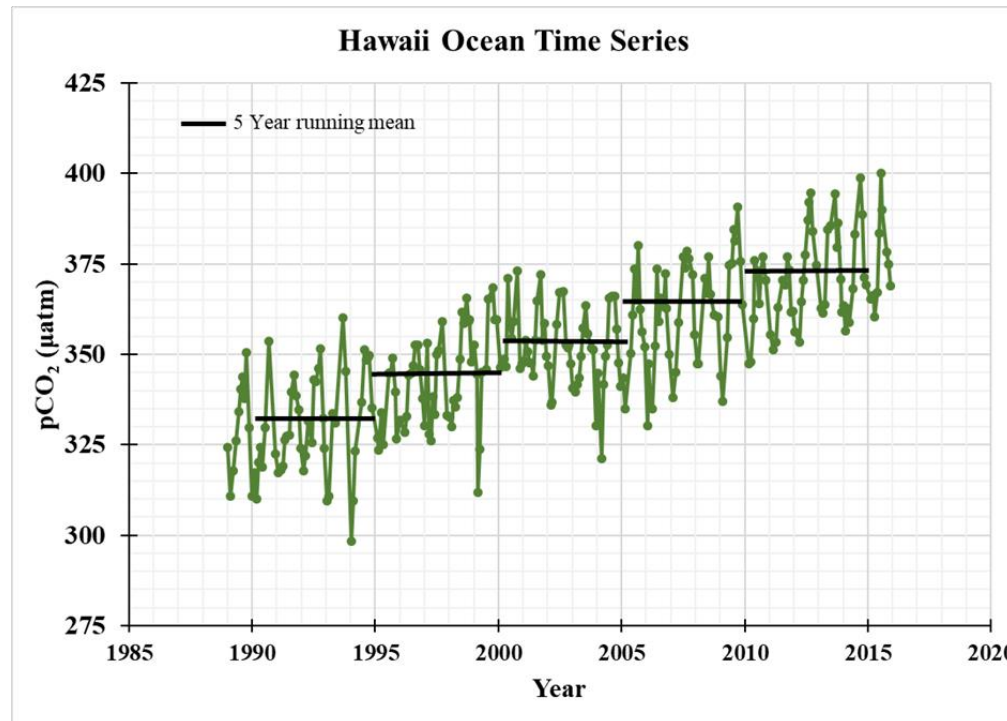
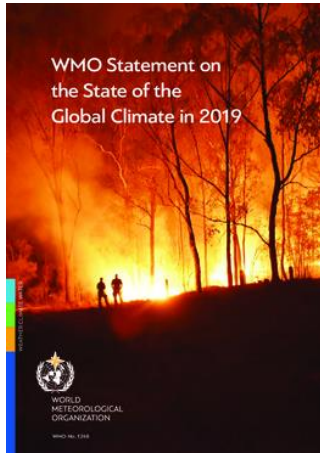


IOC contributes to the 'WMO Statement on the State of the Global Climate' and 'The Global Climate in 2015-2019'



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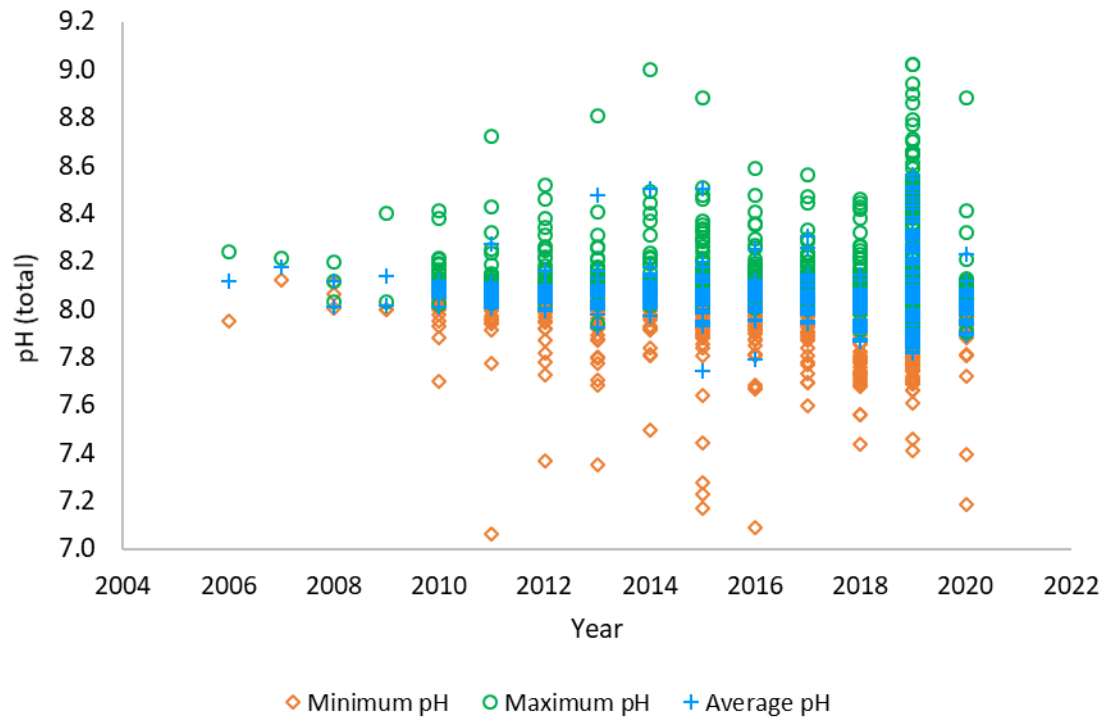
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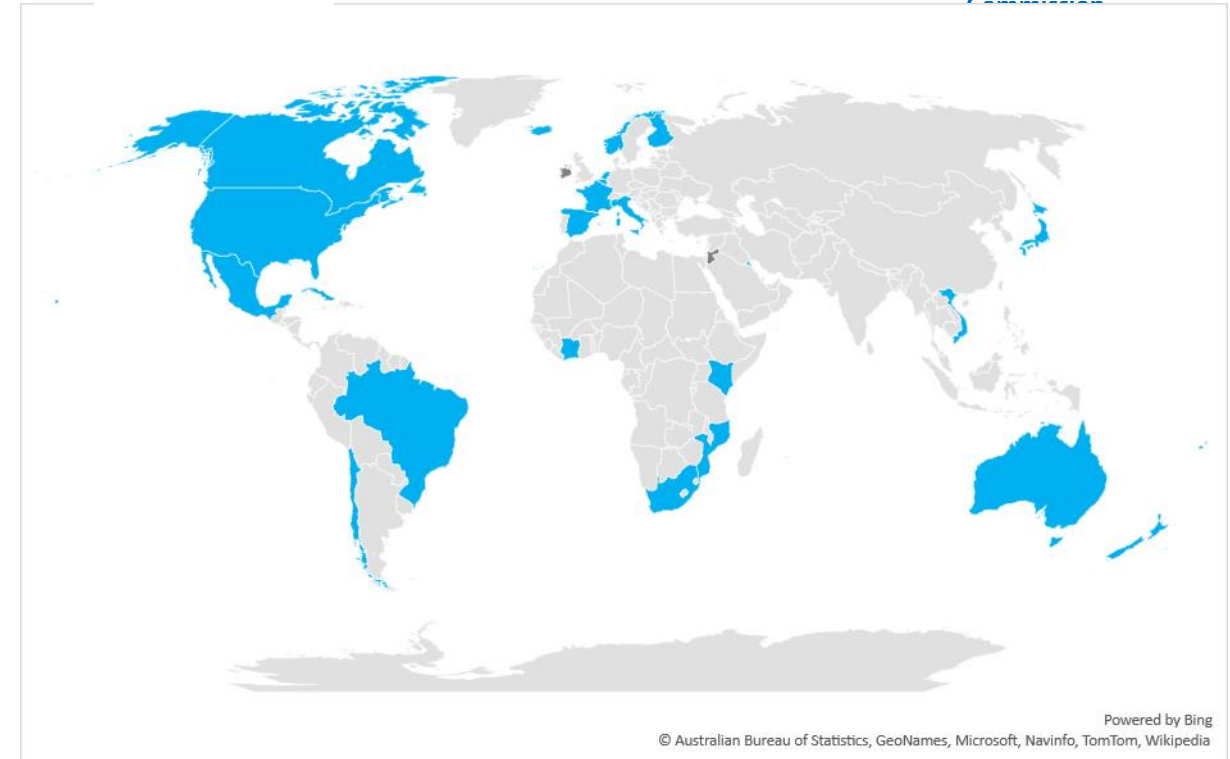
pCO₂ and pH record for the Hawaii Ocean Time-Series in the Pacific Ocean, with five-year running average pCO₂ and pH indicated by black bars. Clearly visible increase in the pCO₂ and simultaneous decrease in pH



The Sustainable Development Goals Report 2021



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.

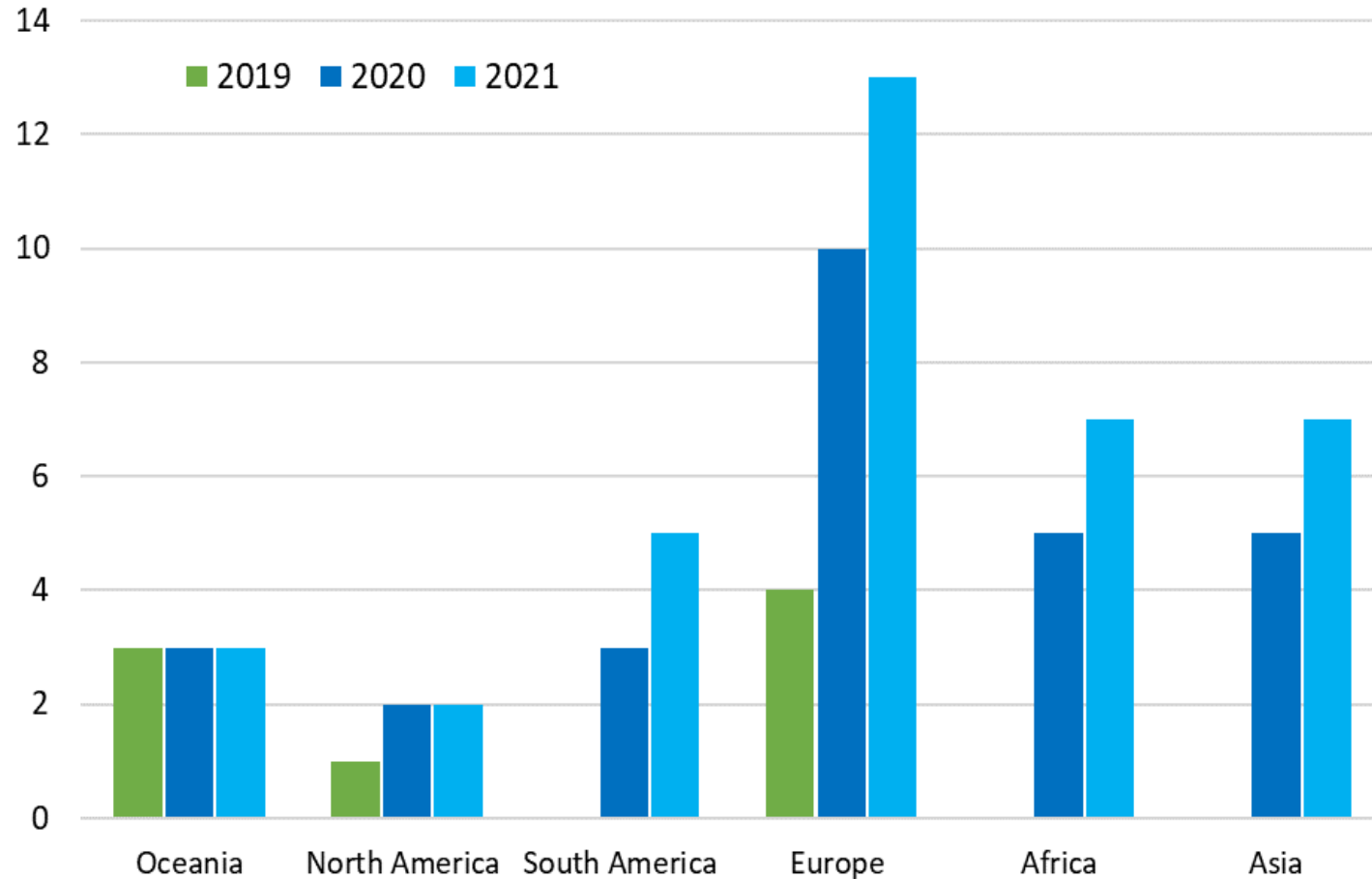


Map illustration surface ocean carbonate chemistry measurement locations received for the 14.3.1 ocean acidification reporting. Blue – countries whose data was reported in accordance with the SDG 14.3.1 Indicator Methodology; dark grey – countries reporting ocean acidification observation data not collected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

SDG 14.3.1 reporting – GOOD news



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2019 – 8 countries submitted data and information

2020 – 28 countries submitted data and information

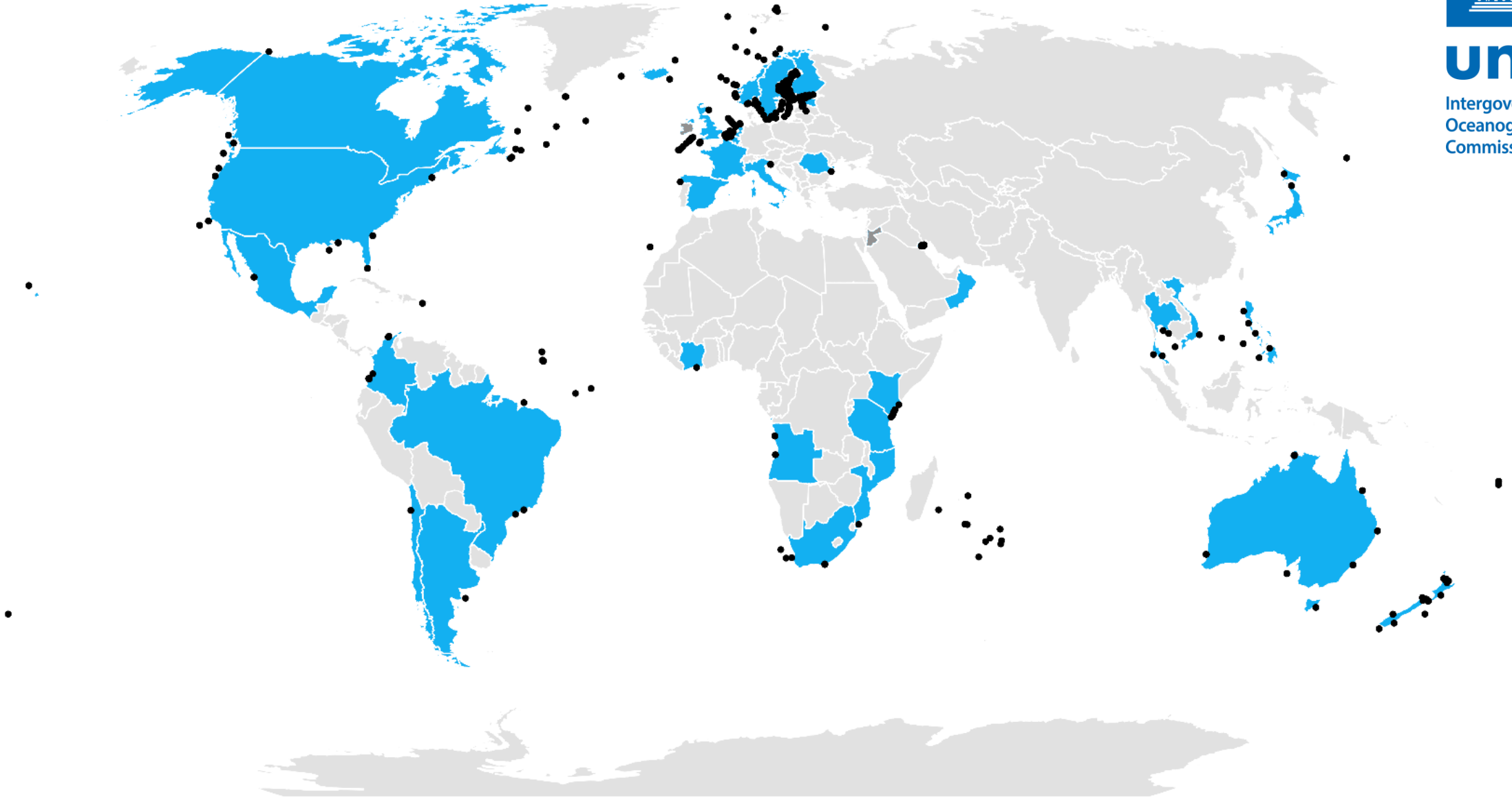
2021 – 37 countries submitted data and information



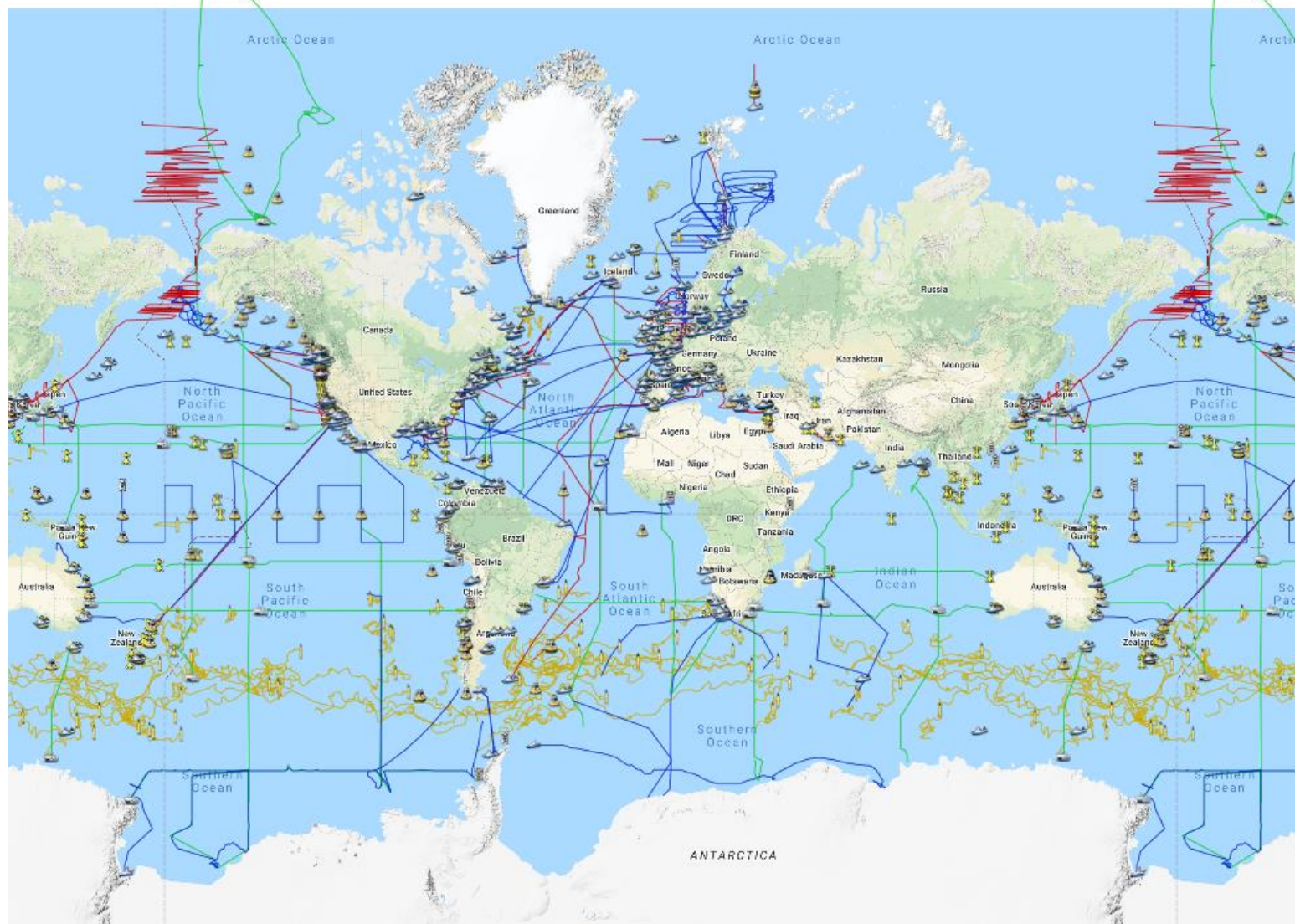


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308 stations in 37 countries reported data in 2021



GOA-ON Data Explorer: <http://portal.goa-on.org/Explorer>



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THANK YOU

QUESTIONS?