

Working Group Report

- WG of Ocean and Society in the AP region -



Co-chaired by Ken Ando, Andy Steven, and Somkiat

Aims

Since 2012, the Oceans and Society working group of the GEOSS-AP Symposium has been working to define, enhance and integrate the inventory of information exchanges of issues related to coastal and regional ocean data in the Asia-Pacific region which spans multiple jurisdictional waters.

This working group aims to further evolve the current observation inventory system of in-situ ocean observations to better support the WESTPAC community and to meet the needs of SDGs 13 and 14. Thus, the goal of this session is to continue to discuss, identify and define actions to address gaps of activities in the AP region that will evolve a comprehensive and integrated observation inventory system for the region. Ocean acidification, an issue related to both SDG 13 and 14, will serve as the main topic of discussion for this session.

GEOSS-AP Ocean Data Networking System developed since 2014

Data site of Asia Pacific countries:

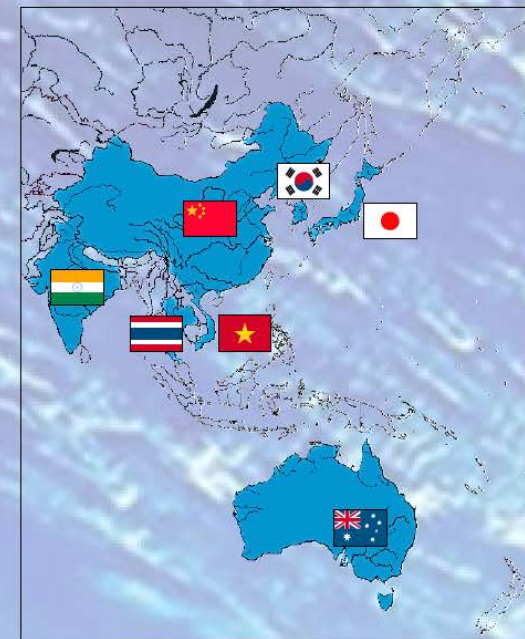
- | | | | |
|--|--|---|--|
|  Japan | <ul style="list-style-type: none">• NEAR-GOOS Regional Real Time Data Base• NEAR-GOOS Regional Delayed Mode Data Base |  India | <ul style="list-style-type: none">• Indian National Centre for Ocean Information Services |
|  Australia | <ul style="list-style-type: none">• Coastal Data Portal• Coastal Research |  Thailand | <ul style="list-style-type: none">• Central Database System and Data Standard for Marine and Coastal Resources |
|  China | <ul style="list-style-type: none">• NEAR-GOOS Real Time Data Base• China Delayed Mode Database for NEAR-GOOS |  Vietnam | <ul style="list-style-type: none">• Not yet have Data site. Inquire by E-mail.• Vietnam's META-data is published in this web portal |
|  Korea | <ul style="list-style-type: none">• Korea Real Time Database for NEAR-GOOS• NEAR-GOOS Korea National Delayed Mode Data Base | | |

GEOSS-AP Ocean Data Networking System Web Portal:

Web data portal build via core framework(GYRE-System).

To encourage ocean research activities by searching the oceanographic data easily and speedily.

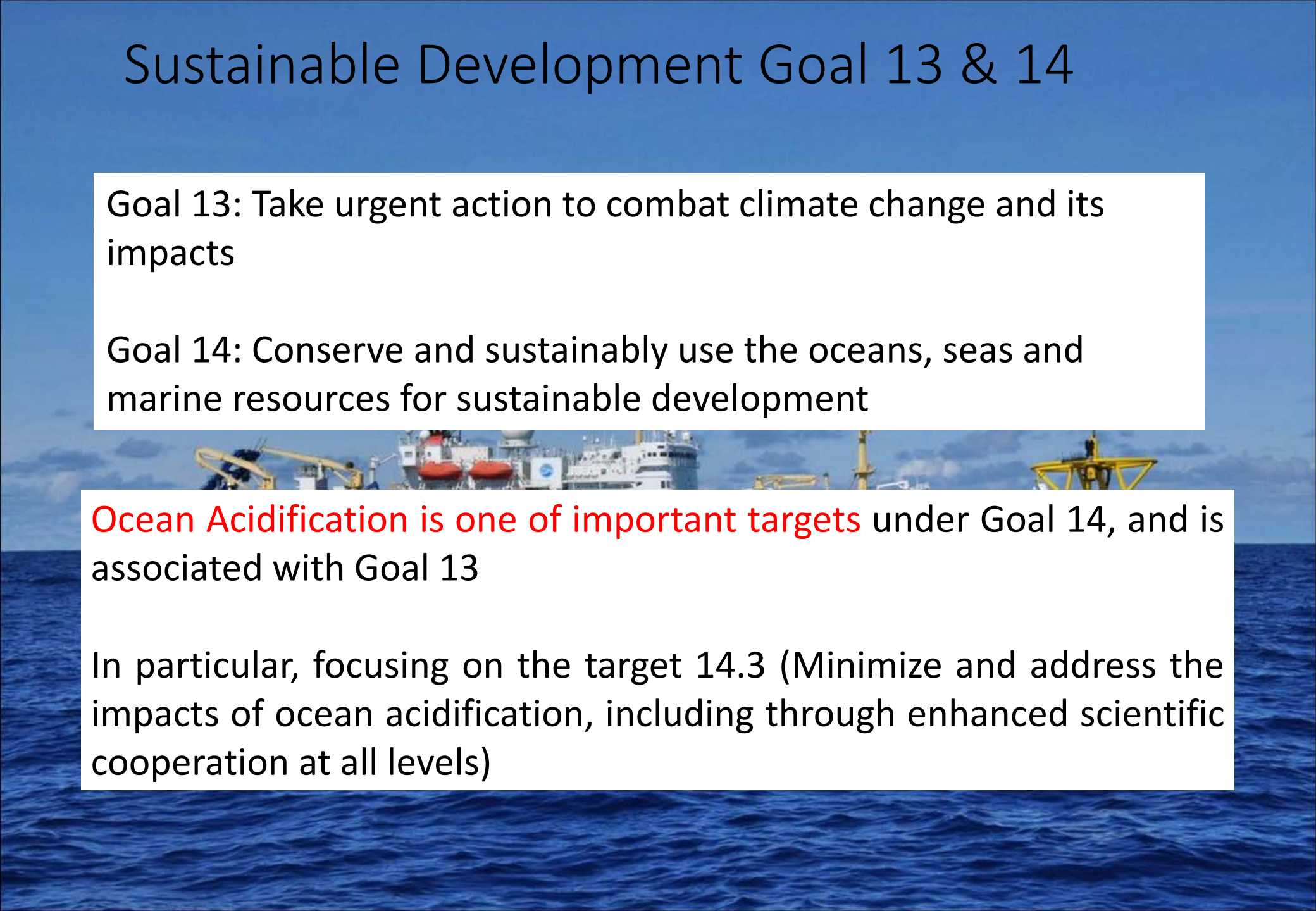
To give opportunities the countries which don't have the public data base site to disclose their meta information about their oceanographic data.



Sustainable Development Goal 13 & 14

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

The background of the slide is a photograph of an offshore oil rig in the middle of the ocean. The rig is a complex of white and yellow structures, including cranes and platforms, situated on a dark blue sea under a clear blue sky. The rig is positioned in the upper half of the image, with the horizon line visible below it.

Ocean Acidification is one of important targets under Goal 14, and is associated with Goal 13

In particular, focusing on the target 14.3 (Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels)

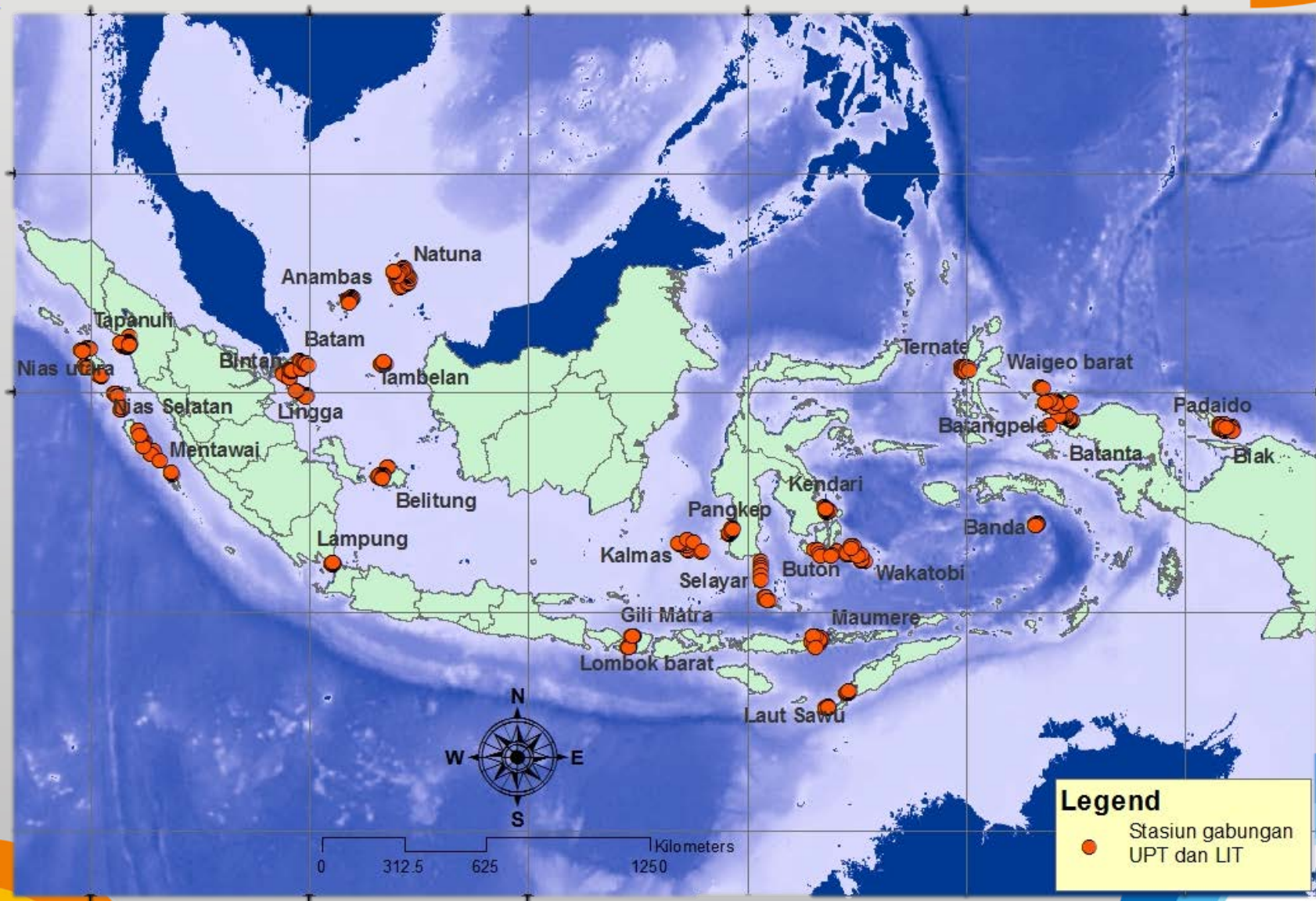
Agenda (1/2) morning sessions

1. Introduction of the past activities and current situation (9:15-9:45)
 - 1-1. Overview of GEO Oceans activities: Blue Planet Initiative, AOGEOSS, MBON (Andy Steven)
 - 1-2. Results from the 7th meeting in Tokyo & Aims and goals of this WG (Ken Ando)
2. Expand ocean data inventory system in GEO (10:00-11:50)
 - 2-1. Current observation inventory system (Ken Ando)
 - 2-2. SEA-GOOS (Somkiat Khokiattiwong)
 - 2-3. Ocean data management in Malaysia (Aidy Ohamed Shawal Bin M Muslim)
 - 2-4. Ocean data management in Indonesia (Bayu Prayudha)
 - 2-5. Ocean data management in Philippine (Cesar Villanoy)
 - 2-6. Future Cooperation with IOC/WESTPAC (Somkiat Khokiattiwong)
 - 2-7. Discussion: Evolution of the current inventory system



Malaysian Oceanographic Data Aggregation & Archiving System (MyDAS)





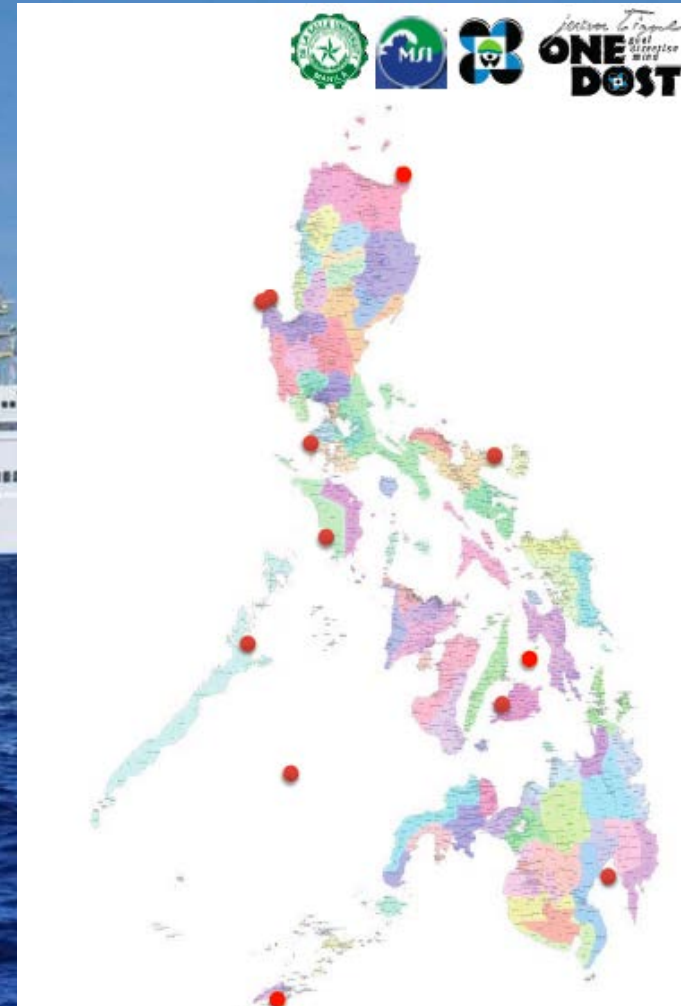
Need for access to observations, data, information, analysis, predictions to manage disaster risk and resource utilization



<http://www.geoportal.gov.ph/>



<http://meteopilipinas.gov.ph/>



<http://noah.dost.gov.ph/#/>

After Cesar's PPT file

Agenda (2/2) Afternoon session

3. SDGs and ocean (afternoon)

3-1. Scene setting: Ocean Acidification in relation to SDG 13 and 14 (Andy Steven)

3-2. The Global Ocean Acidification Observing Network (GOA-ON) aims, coverage, and development (Bronte Tilbrook)

3-3. Sub-arctic observation and measurement of frustule (Katsunori Kimoto)

3-4. Trend of ocean acidification for the past three decades in the western North Pacific subtropical zone in the western equatorial Pacific warm pool (Masao Ishii)

3-5. Ocean acidification modeling in OCMIP (Akio Ishida)

3-6. SEA-GOOS Ocean Acidification program (Somkiat)

3-7. Why do we need to care for Ocean Acidification in coast water? (Haruko Kurihara)

3-8. Coastal acidification and fishery (Tsuneo Ono)

3-9. Modeling of acidification in marginal seas (Yasumasa Miyazawa)

3-10. Discussion: Current status, gaps, Inventory, and future observation of AO in relations with SDGs



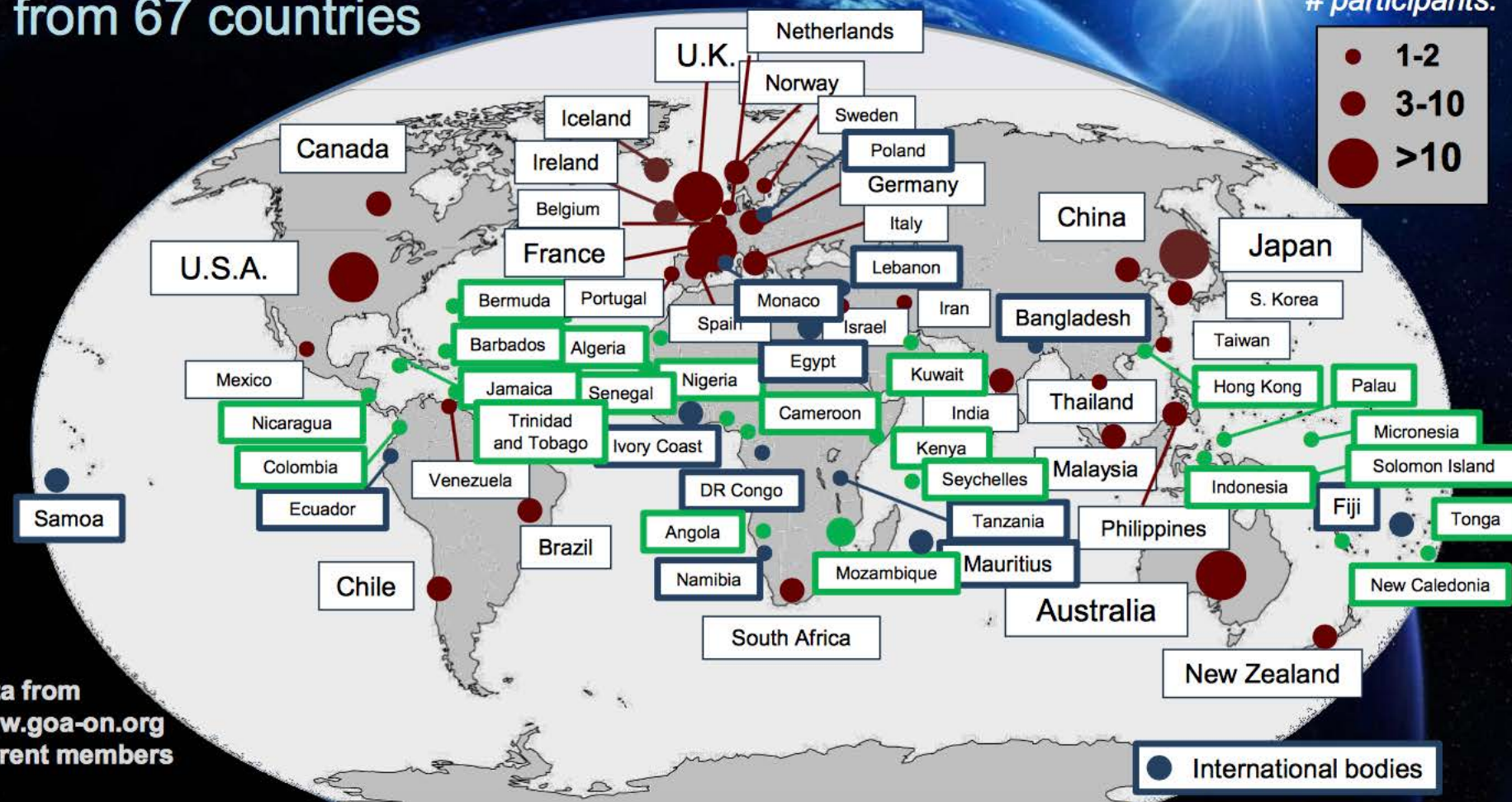
GOA-ON Membership Expansion

After Bronte's PPT file

GOA-ON now (Sep 2016)

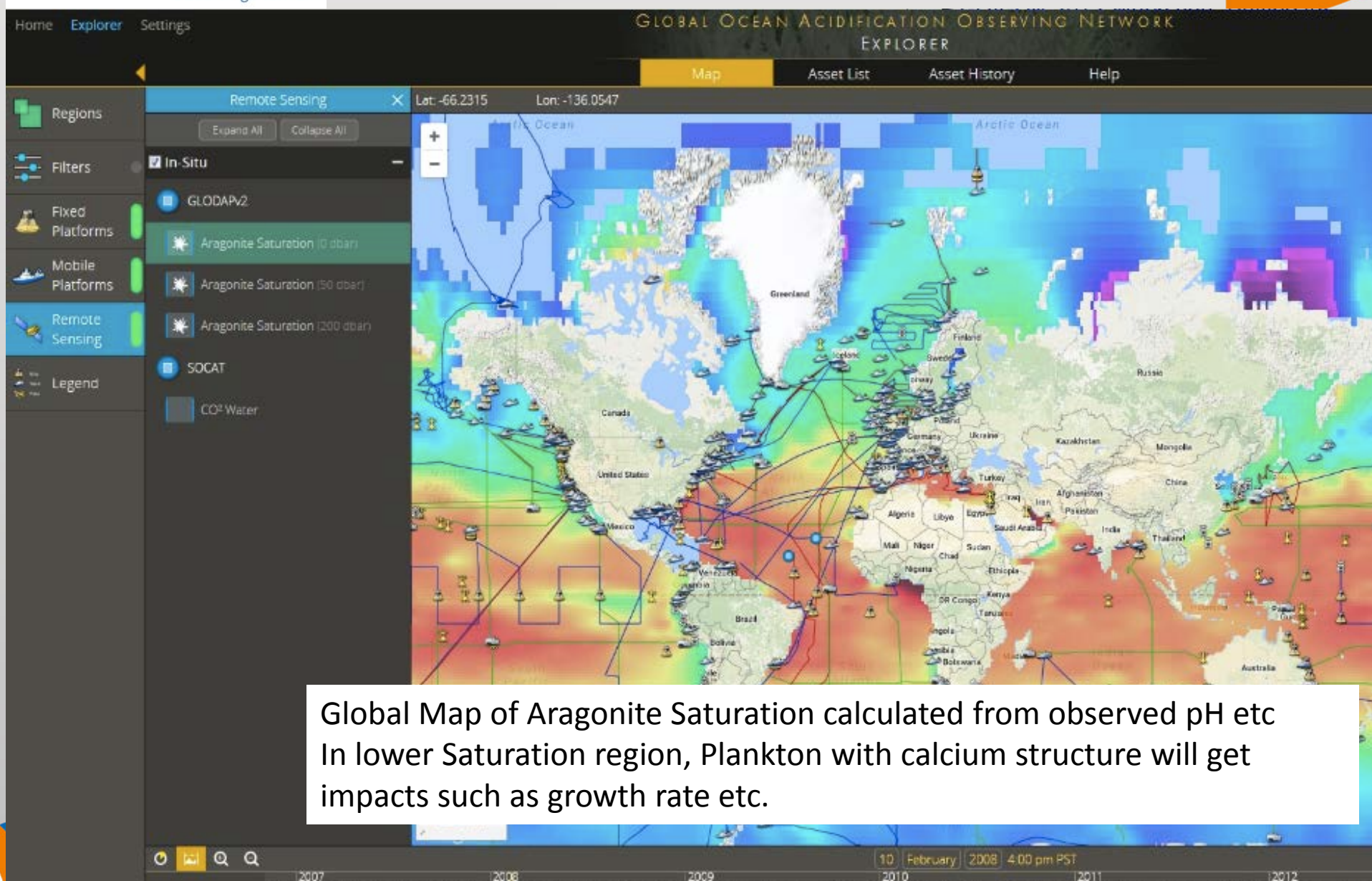
➤ Several regional trainings (2016)

Network of 330 scientists
from 67 countries



Data products

After Bronte's PPT file





Development of Ocean Acidification Monitoring and Network In the WESTPAC Region

When carbon dioxide (CO₂) is absorbed by seawater, chemical reactions occur that reduce seawater pH, carbonate ion concentration, and saturation states of biologically important calcium carbonate minerals.

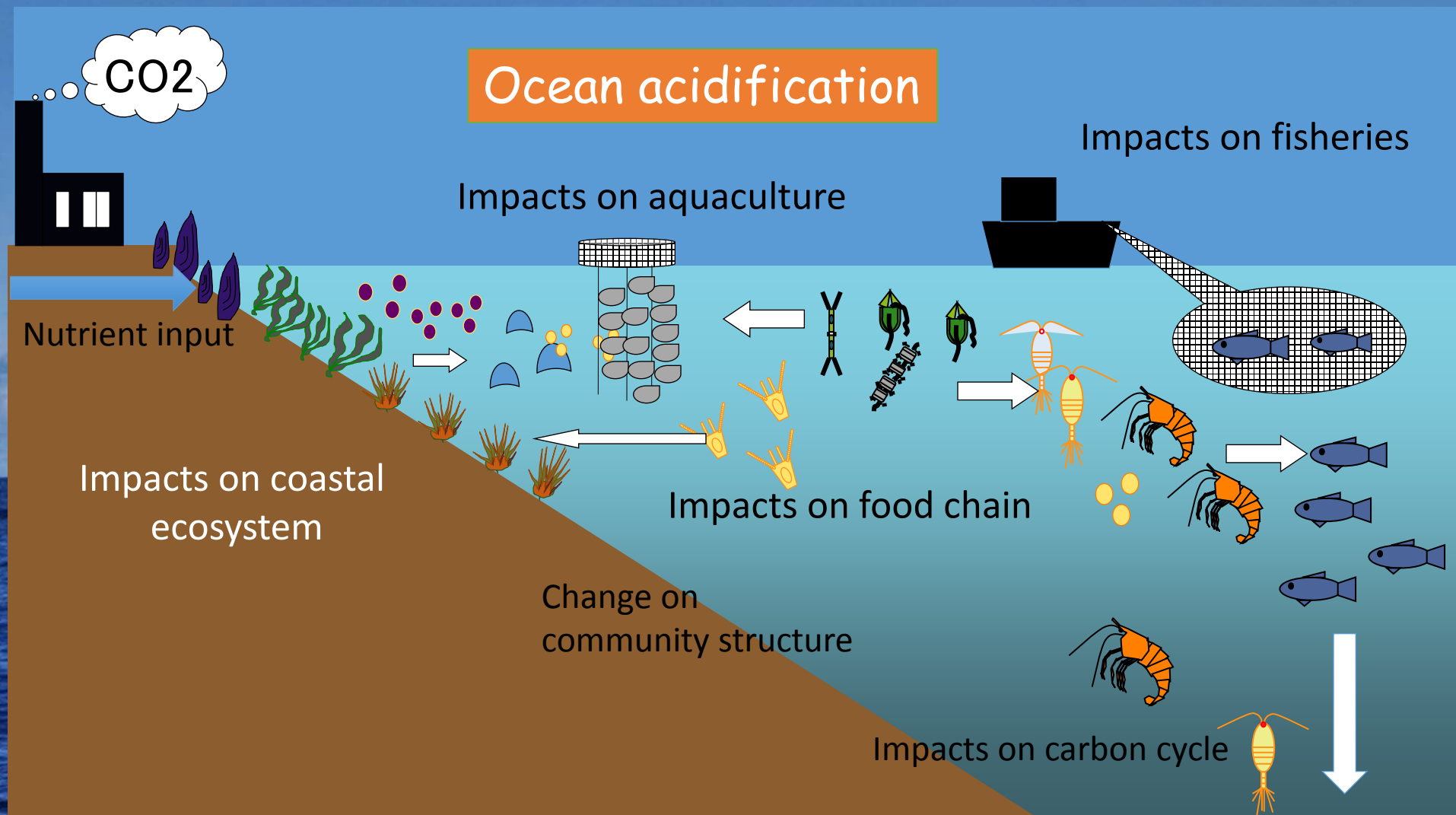
Since the beginning of the Industrial Revolution, the pH of surface ocean waters has fallen by 0.1 pH units. Since the pH scale, like the Richter scale, is logarithmic, this change represents approximately a 30 percent increase in acidity. Future predictions indicate that the oceans will continue to absorb carbon dioxide and become even more acidic. Estimates of future carbon dioxide levels, based on business as usual emission scenarios, indicate that by the end of this century the surface waters of the ocean could be nearly **150 percent more acidic, resulting in a pH that the oceans haven't experienced for more than 20 million years**



The photos below show what happens to a **pteropod's shell** when placed in sea water with pH and carbonate levels projected for the year 2100. The shell slowly dissolves after 45 days. Photo credit: David Liittschwager/National Geographic Stock

IOC/WESTPAC started CD workshop for setting up standard measurements of pH and TA

Impacts to coastal areas by Ocean Acidification



Inputs from the WG4 for the Tokyo Statement 2017

The Ocean and Society Working Group under BPI recognizes that GEOSS is useful for sharing *in-situ* and remotely sensed Earth observation data to support SDG 14. The Group will enhance coastal and regional ocean data inventories through the inputs from institutes/agencies/universities in the AP region. In relation to ocean acidification (SDG 14.3), the Group will work closely with GOA-ON/PICES/WESTPAC to extend regional data inventories and observing capabilities. The Group also recommends GEO Members sustain and/or develop as necessary long-term monitoring of ocean acidification (pH and CO₂ system parameters), and organism's responses from coast to open ocean, and assessment of acidification impacts on fisheries/aquaculture/ecosystems in the AP Region.