

Sixth Workshop of the Regional Marine Instrument Centre-Asia Pacific  
&10th Anniversary of RMIC/AP

**WMO-IOC Regional Marine Instrument Center  
for the Asia-Pacific Region(RMIC/AP)**

**Lingling YUAN**

**National Center of Ocean Standards and Metrology**



**[ncosmws@ncosm.org.cn](mailto:ncosmws@ncosm.org.cn)**

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# Outlines

- **Background**
- **Mainly Activities**
- **Outreach**

# Why we need RMIC

- Members/Member States **need for high quality** marine meteorology and oceanographic **measurements** from the world oceans to address the requirements of WMO and UNESCO/IOC ;
- The need **for facilities for the regular calibration and maintenance of marine instruments and the monitoring of instrument performance**, on a regional basis in order to address adherence of ocean observations and associated metadata to high level standards for instruments and methods of observation;
- The need **for documenting methods of measurements**, for understanding biases introduced by each type of instrumentation, and for developing methods to correct such biases, in order to achieve delivery and use of coherent datasets.

# Parallel Approval of the establishment of the **RMIC/AP** by WMO and IOC

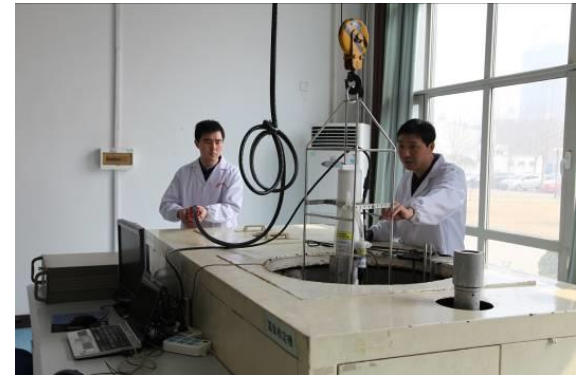
- In May and June 2011, **Executive Councils of WMO and IOC respectively approved the establishment** of the Regional Marine Instrument Center for the Asia-Pacific Region (RMIC for the Asia-Pacific Region) base on the **National Center of Ocean Standards and Metrology (NCOSM)** ;
- In May 2012, the 4<sup>th</sup> Session of JCOMM issued the Certificate of Regional Marine Instrument Center for the Asia-Pacific Region to China, and **authorized China to lead JCOMM international comparison activities**;
- In May 2012, the RMIC for the Asia-Pacific Region was officially inaugurated in Tianjin, China.



# Background

- NCOSM is a public service institution affiliated to the Ministry of Natural Resources (MNR), in charge of national marine standardization, metrology and quality supervision.
- NCOSM holds more than 100 sets of calibration and verification instruments and ,has established 34 marine measurement standards covering 13 parameters.

**NCOSM, as the National Marine Metrology Service, is the only one in marine field in China.**



# Background (*Count.*)

- **ISO/IEC 17025** *General requirements for the competence of testing and calibration laboratories* is the main ISO standard used by testing and calibration laboratories.
- NCOSM acquired the quality certification and laboratory accreditation :
  - 25 kinds of instruments for testing**
  - 12 kinds of instruments for calibration**
- It guarantees the test results are **mutually acceptable** between different national, regional, and international levels.



# Mainly Activities - *Instrument Calibration Services*

- Provide cost-effective calibration/test services to Region and International Project.
- ✓ *Australia(5sets), Japan(2), Korea(1),Pakistan (1) ;*
- ✓ *Sino-Thailand Jointly Cruise; Sino-Kenya Jointly Cruise;*
- ✓ *Bailong Buoy (DBCP);*
- ✓ *Deliver Chinese Standard Sea-water(Australia, Pakistan ).*





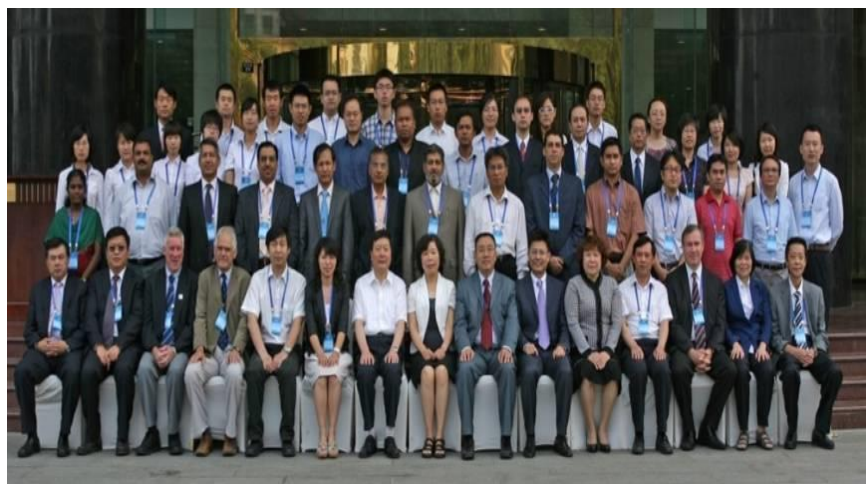
# Mainly Activities – *Capacity Building*

## Workshops

- **Five** JCOMM Marine Instrumentation Workshops for the Asia Pacific Region were held , during 2011-2018, which widely expanded the cooperation area of ocean metrology and quality in the Asia-Pacific region, **and build a platform for exchanging experiences and share the information of marine observation and quality control**, also it boost the capacity building in the region.
- Over **350** scientists, participated in the workshops.
- More than **50 recommendations** were collected , parts of them had put into practices.







The First RMIC/AP Workshop ,Jul 21-23 ,2011,Tianjin



The Second RMIC/AP Workshop, Dec 3-5 ,2012,Tianjin



The Third RMIC/AP Workshop ,Jul 21-23 ,2013,Tianjin



The Fourth RMIC/AP Workshop held in China , Oct. 21-23,2014.

# Mainly Activities – *Capacity Building*

## Jointly Measurement Promoting

- Salinity measurement cooperation. RMIC/AP provide Salinometer and Chinese Standard Seawater to assist the members to establish in-situ QA of salinity measurement since 2016
- Pilot Joint Deployment . Cooperate with DBCP , RMIC/AP involved in the Pilot Joint Deployment and plan to jointly deploying the emerging observation sensors including gliders , wave buoy and Argos since 2021.



# Mainly Activities – *Intercomparison*

## Establish the guideline for JCOMM inter-comparison.


RMIC/AP submitted the Proposal for JCOMM Global and Regional Inter-comparisons of Marine Meteorological and Oceanographic Instrument had been adopted by OCG-5 in 2013, which highlighted the procedures and mechanisms of instrument intercomparison.

### Proposed Procedures (2/2)

- The project leader will be nominated by the host, and should be an ex officio member of the OC, who will be responsible for the proper conduct of the intercomparison, the data analysis and preparation of the final report.
- The responsibilities of the site managers and the overall project management should be specified by the OC when the activity has been decided to be carried out at sites in different host countries.
- The SG of WMO and/or ES of IOC are/is invited to announce the planned comparison after the OC established. The invitation should include information on the organization and rules of the intercomparison agreed by OC. Participants should observe these rules.
- The project leader will handle the communication between host(s) and the participants.
- OC meetings could be arranged during the intercomparison.
- OC should discuss and approve the main result of the data analysis and make proposals for the utilization of the results.
- The final report should be published in the JCOMM Technical Reports and/or WMO Instruments and Observing Methods Report series.

### Proposed Procedures (1/2)

- The OCG member (may extent to a sub-group in the future) of lead activities) should collect, summarize all of the relative information, proposal drafting and coordination activities.
- The Co-Ps should review the proposal and consult with OCG and
- The Co-Ps should, if they approve the proposal, seek financial re the JCOMM work programme.
- The Co-Ps, CIMO president, TCs, RAs, GRAs, HPs, should make willingness of one or more Members/Member States to act as a h in.
- An international Organizing Committee is established by Co-Ps
- The OC should agree on its organization. At least on the main ob durations and conditions for participants, data acquisition, proces methodology, plans for publication results, Intercomparison rules and the responsibilities of the host and the participants.



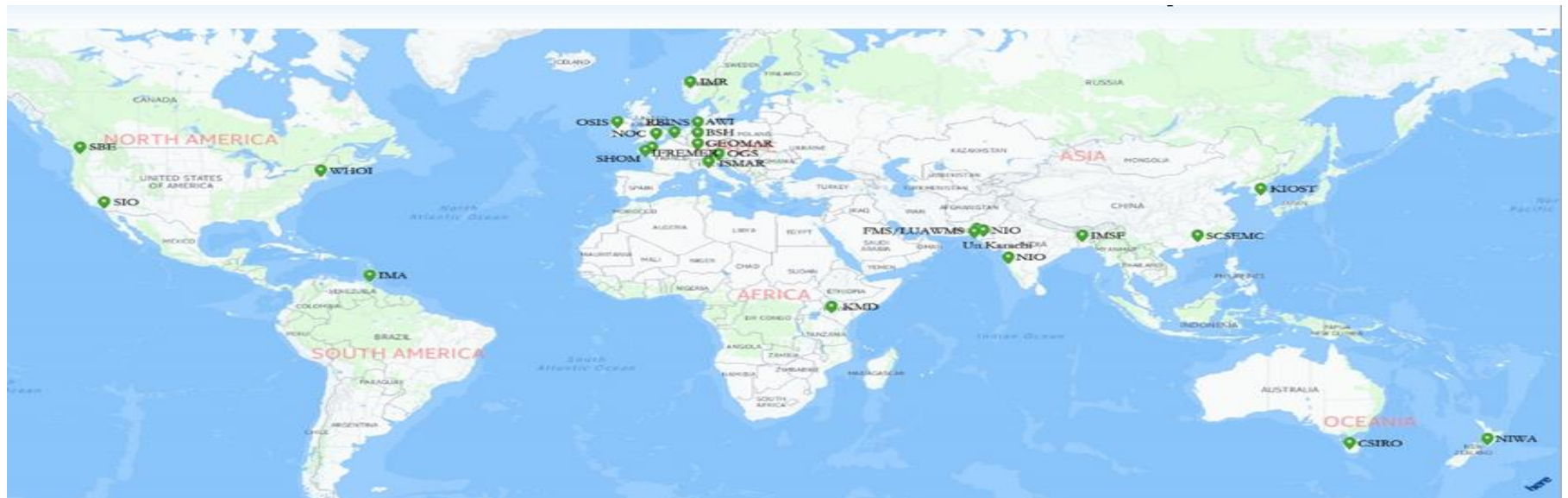
| INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (OF UNESCO)   | WORLD METEOROLOGICAL ORGANIZATION |
|--|-----------------------------------|
| JCOMM OBSERVATIONS COORDINATION GROUP (OCG)  | OCG-5/Doc. 6.1(2) (19-Aug-2013)   |
| FIFTH SESSION<br>SILVER SPRING, USA<br>5-7 SEPTEMBER 2013  | ITEM: 6.1<br>ENGLISH ONLY         |
| <b>PROPOSAL FOR JCOMM INTERCOMPARISON OF SEAWATER SALINITY MEASUREMENTS</b><br><i>(Submitted by Jingli Sun)</i>        |                                   |
| <b>Summary and purpose of the document</b>   |                                   |
| This document has a proposal from the JCOMM Regional Marine Instrumentation Centre for Asia and the Pacific (RMIC/AP). |                                   |
| <b>ACTION PROPOSED</b>   |                                   |
| The Group will review the information contained in this report and comment and make recommendations as appropriate.    |                                   |

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| <b>PROPOSAL FOR JCOMM GLOBAL AND REGIONAL INTERCOMPARISONS OF MARINE METEOROLOGICAL AND OCEANOGRAPHIC INSTRUMENTS</b><br><i>(Submitted by Jingli Sun)</i> |                                   |
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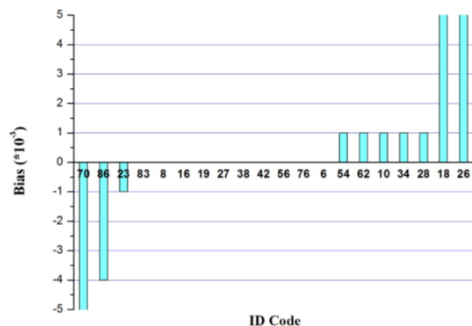
## Pilot Inter-comparison Project for Seawater Salinity Measurements

- In 2014, RMIC/AP had organized pilot project for seawater salinity measurements. As the first inter-comparison project under JCOMM framework in history, the purpose is of understanding the overall quality level of salinity measurements GOOS Members/Member States and observation programmes, identifying the differences and promoting the expertise of salinity measurements.
- There are 25 labs from 17 countries had participated in.



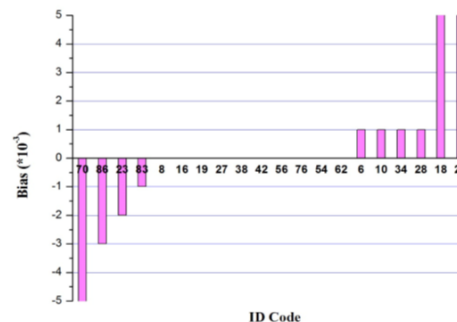
- Comparing the salinity data of natural seawater measured in the laboratory with the corresponding data in situ measurements is deemed as a quality control method, the accuracy of which is essential to the data quality of GOOS.
- Group  $\alpha$ , 16 pairs of results were relatively consistent ( $<0.002$ ), while 4 pairs significantly outlying; Group  $\beta$ , 3 out of 5 pairs exceeded the corresponding instrument MPE.
- The final report had been published on the JCOMM website.

### Results of group $\alpha$

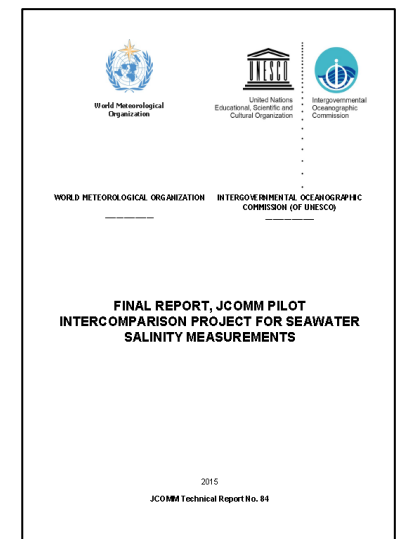


Biases of Group  $\alpha$  for Sample A  
(ID 18, 26, and 70 exceed the bias window)

### Results of group $\alpha$

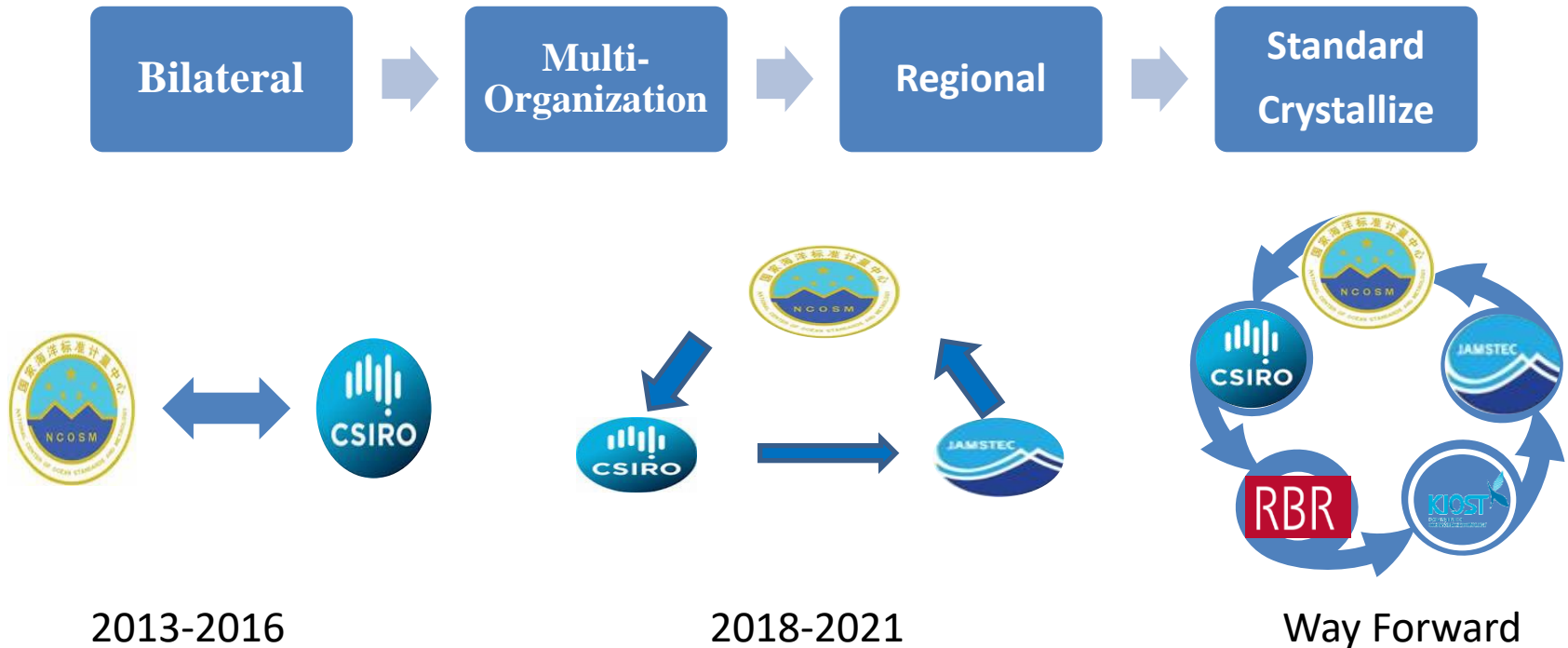


Biases of Group  $\alpha$  for Sample B  
(ID 18, 26, and 70 exceed the bias window)



## Regional Instrument Inter-comparison

- Goal of instrument inter-comparison
  - ✓ *Establishing effectiveness and comparability of test or measurement methods ;*
  - ✓ *Provision of additional confidence to laboratory customers;*
  - ✓ *Potential cooperation on fostering international standards and best practices.*
- Roadmap



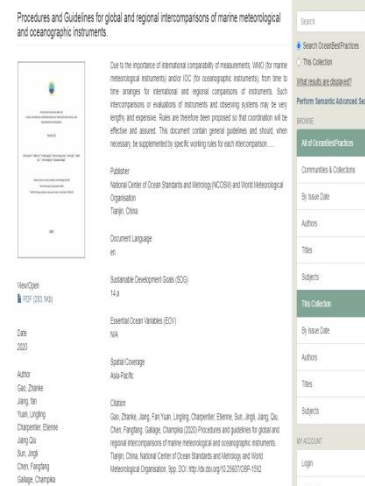
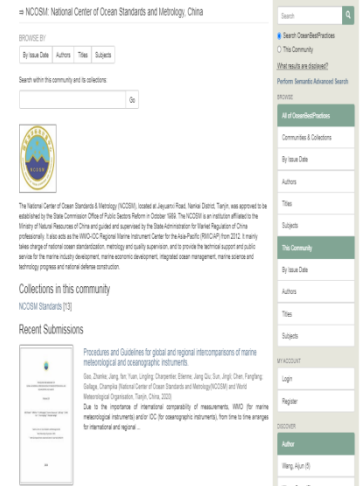
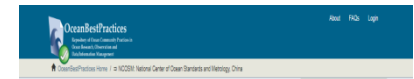
# Mainly Activities – *Standards and Best Practices*

## Ocean Best Practices(OBP)

- IOC had established the inclusive link for NCOSM.

<https://repository.oceanbestpractices.org/handle/11329/979>

- **13 OBPs** been adopted by IOC from NCOSM.
- Initiate a concept to establish a repository of instrument calibration , quality assurance and inter-comparisons in near future.

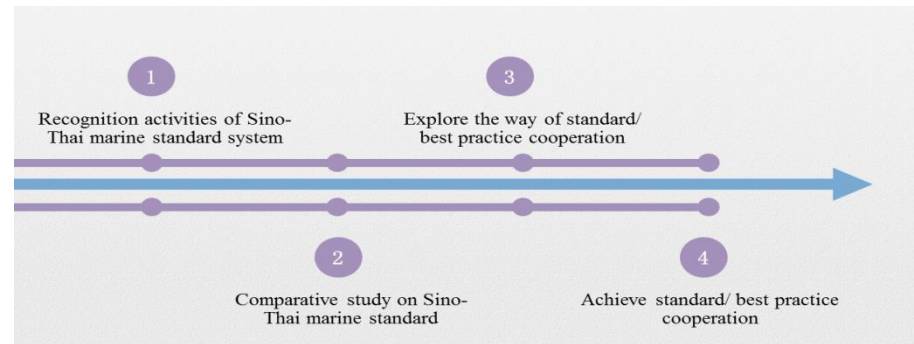




# Mainly Activities – *Standards and Best Practices*

## Standard Cooperation.

Case Study--China and Thailand standards cooperation.



### Joint development of international standards or regional standards

The research results obtained in the Sino-Thai marine cooperation process should be jointly formulated as international standards or regional standards.

### de facto standard

In the way of technology choice, de facto standard that has been widely accepted and used in cooperation is formed.

### reference to standard

National standards are set by reference to other countries' standard.

### adoption standard

National standards should be formulated by adopting other countries' standard.

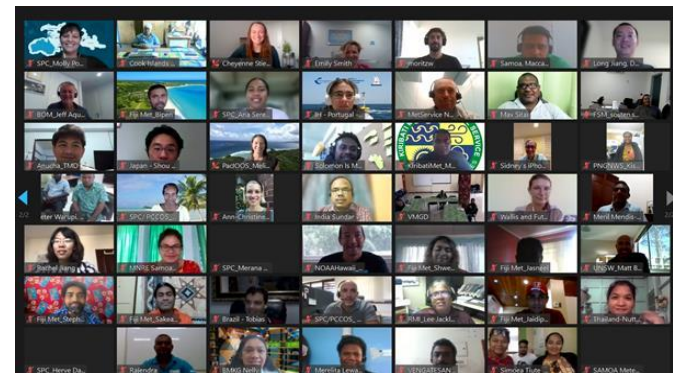
### mutual recognition

The bilateral Marine standard cooperation will be carried out through mutual recognition between the two countries and the catalogue was published.

*The Specifications for oceanographic survey* has been used in Sino-Thai joint investigation and formed as the fact standard.

# Outreach – *DBCPC/OCG*

- Host the 30<sup>th</sup> DBCP session
- Share the QA experiences of BaiLong moored buoy
- Core-member of Capacity Development of OCG
- Lead the DBCP Capacity Building Task Team
- ✓ *Establish the trust fund between MNR and DBCP;*
- ✓ *As the co-sponsors to organize the two workshops for Pacific Islands ,which are the flagship activities of DBCP.*



# Outreach – *IODE*

- As the candidate of OTGA RTC-Tianjin.
- Identify synergies between RMIC/AP and OTGA RTC-Tianjin.
- Host OTGA training course in 2019

Hosted a training course based on ocean observation system, principle and technology of thermohaline depth measurement instrument, quality control of CTD measurement data, best practices and standards. 20 participants from Western Pacific and Coastal countries attended the course





# Outreach – *Bilateral Cooperation*



*Thanks for your attention!*

***“Ensure high quality procedure we take, deliver the ocean data we need”***

