Summary Finding for the Pacific Islands Integrated Ocean Observing System (PacIOOS) Regional Information Coordination Entity (RICE) Certification Audit Form

Summary: The U.S. Integrated Ocean Observing System (IOOS) Office conducted a virtual audit for the Pacific Islands Integrated Ocean Observing System (PacIOOS) Regional Information Coordination Entities (RICE) certification on July 8, 2019 (15 C.F.R. §§ 997 *et seq.*). The audit, which addresses the seven actions outlined in the Memorandum Of Agreement (MOA-2015-068/9189) between NOAA and PacIOOS, informs that the PacIOOS has met all requirements, yet is deficient for two out of the seven actions that were identified as requirements for PacIOOS to become RICE certified in 2015, including:

1. An implementation date of December, 2019 set for the National Centers for Environmental Information (NCEI) archival of all near-shore buoy and water quality sensor data; and
2. Sending all animal telemetry data to the U.S. IOOS Animal Telemetry Network Data Assembly Center (DAC) for archiving when it receives notification from the U.S. IOOS Office that the DAC is ready to accept archival data.

The U.S. IOOS Office has concluded that the findings in the audit that require actions for the RICE are minor and that corrective actions should be coordinated with the U.S. IOOS Office and will be checked in a future audit.

Audit Process: The audit conducted is a standard audit, and accounts for structured samplings of representations made in the certification application. Standard audits are part of the U.S. IOOS Office annual planning and focus on RICEs in their second, third, or fourth year of certification. Audits include a review of data management practices and a review of a sampling of the governance requirements. The scope of this audit includes:

> Findings Part 1: Confirming the status of commitments made during certification, and steps to address any deficiencies;
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> Findings Part 2: Confirming individuals who fill the three roles (overall RICE management, observations management, and data management) qualify as employees of the RICE;
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> Findings Part 3: Reviewing Quality Control of Real Time Oceanographic Data (QARTOD) for current data streams; and
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> Findings Part 4: Reviewing organizational structure and any applicable changes to governance or bylaws.

The audit was performed by two federal employees from the U.S. IOOS Office: Ms. Kathleen Bailey (Operational Division Oceanographer & Physical Scientist), and Mr. Dave Easter (Regions, Budget, and Policy Division Chief).

Conclusions:

Findings – Part 1 – Confirming the status of commitments made during certification, and steps to address any deficiencies (15 C.F.R. §§ 997).

On August 27, 2015, the PacIOOS submitted an application to become RICE certified, which was granted November 3, 2015. As part of the PacIOOS initial certification and for PacIOOS to maintain RICE certification, seven actions were included to be completed within the initial five year agreement as outlined in the Memorandum Of Agreement (MOA-2015-068/9189) between NOAA and PacIOOS. Seven commitments were addressed in the audit (a-g below), two were identified as deficient. These include:

a. Begin archiving the data collected from PacIOOS near-shore buoys and water quality sensors with NOAA's National Centers for Environmental Information (NCEI) by the end of March 2017. **This action has been completed.**

b. Are all near-shore buoy and water quality sensor data archived with NCEI? **This action has not been completed, and is an ongoing effort.**
    i. The U.S. IOOS Office has consulted with PacIOOS on this action and acknowledges that the NDBC process of pulling from PacIOOS' ERDDAP is not operational yet, yet is being addressed, and is an ongoing process.

c. Send all profiling glider data to the U.S. IOOS Glider Data Assembly Center (DAC) for archiving when it receives notification from the U.S. IOOS Office that the DAC is ready to accept archival data. **This action has been completed.**

d. Send all animal telemetry data to the U.S. IOOS Animal Telemetry Network Data Assembly Center (ATN DAC) for archiving when it receives notification from the U.S. IOOS Office that the DAC is ready to accept archival data. **This action has not been completed.**
    i. The U.S. IOOS Office has consulted with PacIOOS on this action and acknowledges that it is an ongoing process. PacIOOS is accelerating their efforts to work with the ATN and to prepare the necessary meta-data that must accompany animal-borne sensor oceanographic profile data before it can be ingested into the ATN DAC.

e. For variables with approved QARTOD manuals, QARTOD QC tests will be in place no later than December 2015. **This action has been completed.**

f. For variables with QARTOD manuals in development, QARTOD QC tests will be in place within 6 months of publication of the manual. **Not applicable, stream flow data are the United States Geological Survey/federal data and PacIOOS does not collect or publish passive acoustic data.**

g. Remove all Liquid Robotics wave glider data from PacIOOS data servers and

data portals until the data are quality-controlled by Liquid Robotics. **This action has been completed.**

Findings – Part 2 – Confirming individuals who fill the three roles (overall RICE management, observations management, and data management) qualify as employees of the RICE (15 C.F.R. §§ 997.26).

This action has been completed, no further action is required. Of the eight individuals listed, six are currently employed, and two are no longer employed. As part of the ongoing coordination effort regarding personnel change between the RICE and the IOOS Office, PacIOOS provided the information for Chip Young as a new Operations Coordinator and confirmed the following list of individuals that fulfill the three roles according to RICE certification.

1) Christopher Ostrander: overall RICE management
    a) No longer employed, replacement listed: None
2) Melissa Iwamoto: overall RICE management
    a) Currently employed
3) Pierre Flament: observations management
    a) Currently employed
4) Kim Holland: observations management
    a) Currently employed
5) Margaret McManus: observations management
    a) Currently employed
6) Mark Merrifield: observations management
    a) No longer employed, replacement listed: Chip Young
7) Jim Potemra: data management
    a) Currently employed
8) John Mauer: data management
    a) Currently employed

Findings – Part 3 – Reviewing Quality Control of Real Time Oceanographic Data (QARTOD) for current data streams (15 C.F.R. §§ 997).

This action has been completed, no further action is required. Of the three data streams selected for audit, all three have quality control (QC) procedures in place. The three data streams selected for audit include: 1) Currents; 2) Salinity; and 3) Temperature.

a. Are there quality control procedures in place for these data streams, either by the RICE or by the data provider (Required no later than December 2015)?
    Currents: **Yes, QC procedures are in place.**
    Salinity: **Yes, QC procedures are in place.**
    Temperature: **Yes, QC procedures are in place.**

b. Are the datasets identified in the certification application publicly available in real-time or near real-time? **Yes, the datasets are available within PacIOOS Data Services.**

c. Are the data access services described in the application fully functional? **Yes, data access services are fully functional at the time of this audit.**

Findings – Part 4 – Reviewing organizational structure and any applicable changes to governance or bylaws (15 C.F.R. §§ 997).

The findings are in good standing, no further action is required. Findings from the audit indicate that by-laws and governance structure have not changed. Elections to add members to the governing body occurred in 2017 and 2018.

a. What is the composition of the Governing Board or governing body selected, and how is it representative of regional ocean observing interests?

- ❑ For an up-to-date list of PacIOOS Governing Council (GC) Members, please see: http://www.pacioos.hawaii.edu/about/#gc

- ❑ While the elections are based on geography within the region (six seats for Hawaii, five for regional partners, one seat for each of the three territories, and one seat for each of the three Freely Associated States, plus one ex-officio seat for the School of Ocean and Earth Science and Technology, PacIOOS seeks partners that are representative of regional ocean observing interests. Depending on elections among the partners, these interests may shift over the years. The current Governing Council consists of members from local governments, federal agencies, industry/private sector, academia, and non-profits.

b. Has the composition of the Governing Board or governing body changed since the RICE received certification? **No, the composition of the Governing Board has not been amended, removed, or added during certification.**

- ❑ Since PacIOOS received RICE certification, elections have been held annually to fill seats within the Governing Board. The additions and their respective roles have included:

  - ❑ <u>2017:</u> Dr. Brian Taylor (Chair of the Governing Council); Dr. Carlos Villacis (Regional Representative), along with four Hawaii seats on the PacIOOS Governing Council: Tom Smith, Mark Fox, Doug Harper, Justine Nihipali, and Davis Yogi.

- ❑ 2018: Eli Cabrera (Representative for the Commonwealth of the Northern Mariana Islands); Scott Burch (Representative for American Samoa); Jennifer Conklin (Representative for Hawaii); Captain Mike Roth (Regional Representative).

c. Have any of the by-laws been amended, removed, or added since certification? If so, provide an explanation. **No, the by-laws have not been amended, removed, or added during certification.**