

September 2024 | Number 13

Reminder: The International Quiet Ocean Experiment (IQOE) is currently scheduled to sunset at the end of 2025. The IQOE Science Committee and others are discussing how to continue IQOE work beyond 2025, incorporating some IQOE activities in ongoing initiatives of the Partnership for Observation of the Global Ocean (POGO) and/or the Scientific Committee on Oceanic Research (SCOR).

MEETINGS OF THE IQOE SCIENCE COMMITTEE

The IQOE Science Committee (SC) held a Zoom call on 10 June 2024 to review the progress of IQOE activities. The SC decided to update the front page of the IQOE Website to focus on major ongoing activities. The site will still provide access to all content related to IQOE, but will highlight a few specific activities. Work continues on the IQOE Ocean Sound Observation Metadatabase, including entry of metadata for observations that occurred in 2023. The SC was updated about WOPAM Day 2024 and reviewed progress of GLUBS (see below). Updates about other ongoing IQOE activities that were discussed during the call are included below.

The IQOE SC will meet in person on 20–22 November 2024 in Reykjavik, Iceland to review progress of all IQOE activities and to plan activities for the final year of the project.

WORLD OCEAN PASSIVE ACOUSTIC MONITORING (WOPAM) DAY

Alejandro Bernal created a [song](#) from sounds from WOPAM Day 2023. The second World Ocean Passive Acoustic Monitoring (WOPAM) Day took place on 8 June 2024 (see <https://www.wo-pam.com/wopam-2024>). It is estimated that more than 190 collaborators from more than 80 institutes across 33 countries collected PAM data at more than 400 sites. WOPAM Day 2024 was advertised by social media posts by AIMS, Cornell University, IQOE, SCOR, POGO, and the University of Bristol, as well as Channel 7 News in Australia. ABC radio in Australia released the *Noi-SEA by Nature*

series of podcasts on [underwater biological sounds around Australia](#), with an acknowledgement of GLUBS. There is an aim for WOPAM Day 2025 to engage more citizen scientists.

GLOBAL LIBRARY OF UNDERWATER BIOLOGICAL SOUND (GLUBS)

GLUBS work is being advanced through the actions of three working groups on (1) Infrastructure, (2) AI, and (3) Labelling. The groups have met remotely and each has a paper in preparation:

1. 'Compilation of existing underwater PAM repositories, libraries, and applications for sound processing' ([Jarriel et al. 2024](#))
2. 'A perspective paper on AI needs in exploring underwater biological sounds' (Lin, van Zeeland et al., in prep)
3. 'How to and best practices in annotating PAM recordings for AI' (Kemp et al., in prep)



A GLUBS [working group](#) of the Scientific Committee on Oceanic Research (SCOR) met virtually for the first time on 2 July 2024 to organize its work and to determine how its work will contribute to GLUBS. The activity has been presented at

meetings in Australia (ASA/Australian Acoustical Society), Spain (UN Decade of Ocean Science meeting), Canada (Ottawa ASA meeting), the United States (2024 Ocean Sciences meeting), and France (University of Perpignan Marine Sciences departmental meeting).

GLUBS is leading a Research Focus in the journal *Frontiers in Remote Sensing* called “[Detection and characterization of unidentified underwater biological sounds, their spatiotemporal patterns and possible sources](#)”. Seven papers have been accepted for this Research Focus so far, with several others in review or expected to be submitted.

IMPLEMENTATION PLAN FOR OCEAN SOUND ESSENTIAL OCEAN VARIABLE (EOV) IMPLEMENTATION ACTIVITIES

The following is a list of recommendations from the Ocean Sound EOV Implementation Plan, with notes on how the items are being addressed:



1. Set up international coordination for observations from hydrophones and particle motion detectors—The IQOE WG on the Global Hydrophone Network was set up to address this recommendation. The WG is currently discussing the development of national and regional groups to help the work of the WG and sustain it beyond 2025.

2. Maintain the existing global set of hydrophones and particle motion detectors and historic ocean sound datasets. —IQOE is working on this for hydrophones, but not yet for particle motion detectors. The metadatabase on hydrophone observations is being updated constantly and ocean sound observers have been requested to submit metadata for 2023.

3. Foster inclusion of particle motion sensors and their deployment systems where needed—IQOE is investigating the formation of a global network of ocean particle motion observers.

4. Review existing deployments of ocean acoustic sensors, identify gaps in coverage and propose how to mature them into a GOOS observation network—This recommendation will be carried out by the IQOE WG on the Global Hydrophone Network based on the metadatabase of ocean sound observations.

5. Develop standards for GOOS-compatible underwater acoustic recording systems and explore adding acoustic sensors to existing GOOS networks—IQOE is in discussion with the OceanSiTES network about adding hydrophones to its installations.

6. Working group(s) on calibration, standardizing data analysis, and data management—Calibration and standardization work is being conducted beyond IQOE, by ISO, MANTA, and OPUS.

7. Develop standardized open-access databases of ocean sound produced by known human, biotic, and abiotic sources—GLUBS is working on the biotic components. OPUS is providing an open-access tool for accessing acoustic data from various sources.

8. Develop low-cost underwater acoustic measurement systems for educational and citizen science applications — IQOE set up a Task Team on Low-Cost Hydrophones for Research, Education, and Citizen Science (see below).

9. Engage with industry and regulators along with ocean acoustic modelers to develop hindcast, nowcast and forecast ocean soundscape scenarios.

10. Outreach to policy makers, industry representatives, the media, and other stakeholders. COP 16 of the Convention on Biodiversity (Cali, Colombia, 21 Oct.–1 Nov. 2025) and other major meetings may offer valuable opportunities for outreach.

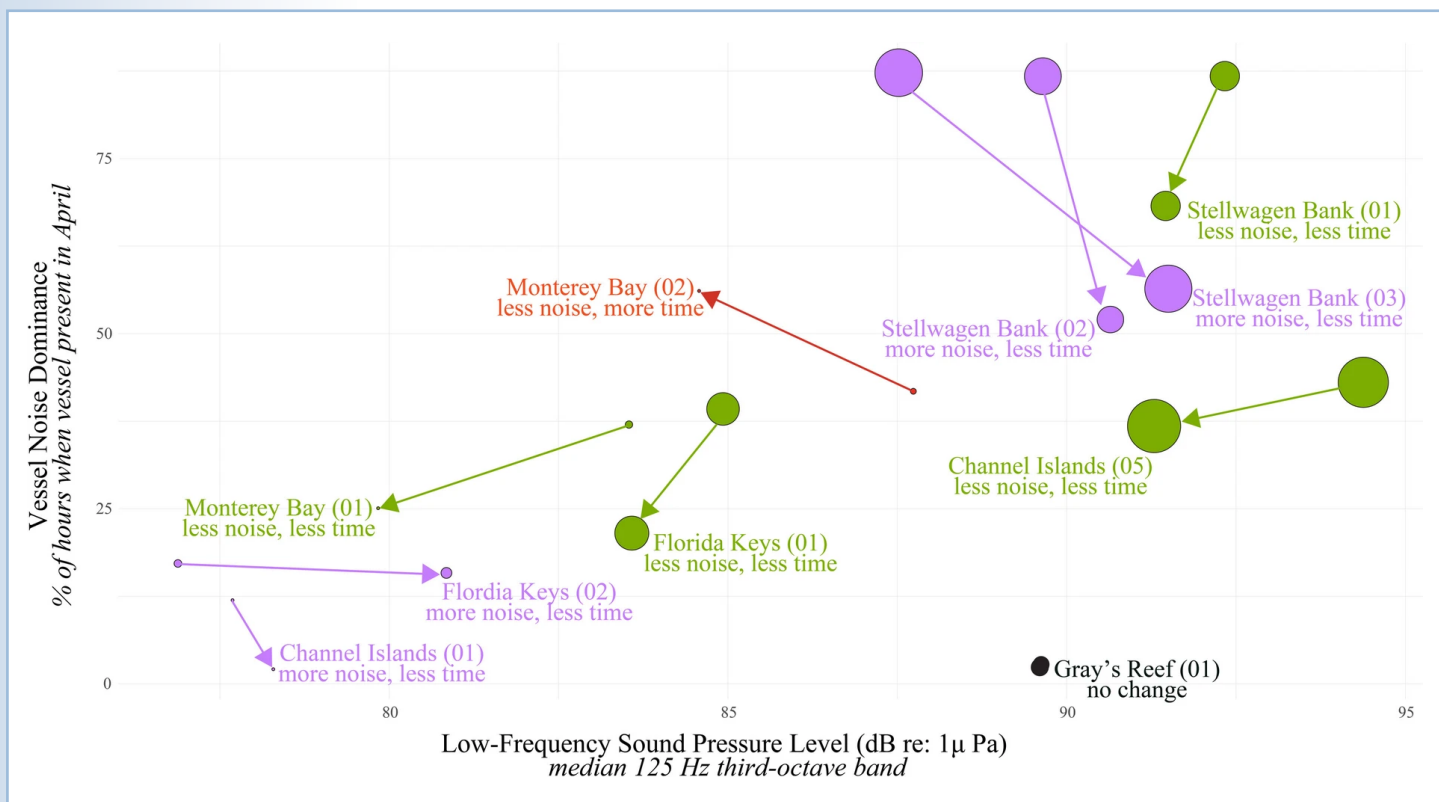
11. Develop a self-sustaining observation network for the Ocean Sound EOV. This work has started with the IQOE WG on the Global Hydrophone Network.

IQOE WIKIPEDIA PAGE

Artash Nath (Canada) developed a Wikipedia page for IQOE:

https://en.wikipedia.org/wiki/International_Quiet_Ocean_Experiment

Anyone is welcome to edit the page, but please remember that any changes should present information objectively and in a neutral tone. Many thanks to Artash, who will be entering Stanford University as a freshman in September.



Vessel noise changes related to early COVID-19 pandemic shutdowns. A comparison of conditions in April 2019 compared to April 2020—arrow direction points from 2019 to 2020. The x-axis shows sound pressure level (not vessel noise exceedance) because a change in noise exceedance is not expected assuming vessels did not change routes in relation to the site. Further, we were interested in how the likely reduction in vessel traffic reduced median low-frequency sound levels at each site. Colors represent categories of how vessel noise presence changed: green=reduction in both, purple=reduction in noise dominance and increase in sound level, red=increase in noise dominance and reduction in sound level, black=no change. Bubble size is the proportion of vessel traffic in the month that were large vessels and size change for a given site indicates a shift in traffic composition. From McKenna, M.F. et al Understanding vessel noise across a network of marine protected areas. 2024. Environmental Monitoring and Assessment 196: article 369. DOI: 10.1007/s10661-024-12497-2. Creative Commons CC BY license.

UPDATE ON COVID-19 PANDEMIC NOISE OBSERVATIONS AND PUBLICATIONS

Since the previous IQOE Newsletter, two 2023 papers and two 2024 papers were added to the list of papers on the effects of the COVID-19 pandemic on ocean sound at <https://iqoe.org/covid-pause-papers>. The IQOE SC is seeking funding to hire a post-doctoral fellow to analyze ocean sound observations to determine if, when, and where the pandemic affected ocean sound. Approximately 150 records in the IQOE Hydrophone Metadatabase span an appropriate time period to conduct such an analysis. The metadata providers and authors of papers related to COVID effects on ocean sound will be involved in this activity. An IQOE working group may be set up to work with the post-doc.

An interesting recent paper is from McKenna et al. (2024).

Figure 6 from this paper (see above) illustrates changes in vessel noise changes related to changes in shipping activity in or near U.S. National Marine Sanctuaries early in the COVID-19 pandemic.

GLOBAL HYDROPHONE NETWORK AND WG

The IQOE Working Group on the Global Hydrophone Network held a Zoom call on 22 January 2024 to launch its work. The group discussed (1) the terms of reference of the group to determine if any changes need to be recommended to the IQOE Science Committee and (2) the membership to identify what expertise is missing and potential people to fill any gaps. Three additional members were added to the group to increase the expertise and geographic balance and the terms of reference were revised to focus less on hydrophones and more on general observations of ocean sound (see <https://www.iqoe.org/index.php/groups/global-hydrophone-network>).

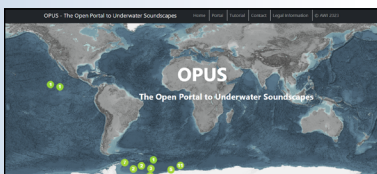
The WG discussed the ongoing compilation of metadata related to ocean sound observations and how this metadata database can be documented in a peer-reviewed article. Finally, the WG discussed how the recently released Ocean Sound EOVI Implementation Plan relates to the WG.

It is hoped that the WG can continue beyond the end of IQOE to support the GOOS Ocean Sound Essential Ocean Variable (EOV) and to coordinate the global community of ocean sound observers.

LOW-COST HYDROPHONES

The IQOE Task Team on Low-cost hydrophones for research, education and citizen science has been active, holding several Zoom calls to advance its work. The group has been awarded funds from POGO to create a prototype that can be tested in at least 25 locations worldwide. Additional funding is being sought to create a greater number of prototypes to send to additional locations. Feedback obtained from the beta testers will be used to create a final, market-ready device. The group has submitted abstracts to various conferences, such as Oceans 2024 in Halifax and the African Bioacoustics Community Conference. Respond to this online survey to help us cater for your observation needs. You could also win a device or register your interest to be a beta tester! Respond at <https://forms.gle/VivuLGPkSrkyqCEHA>. The Task Team is chaired by Lucille Chapuis (University of Bristol, UK).

RESULTS OF SURVEY ON TRAINING TO USE MANTA AND OPUS



IQOE distributed a survey through the IQOE email list about the interest of the global ocean sound community about training for the Open Portal to Underwater Sound (OPUS) and the

Ocean Sound Software for Making Ambient Noise Trends Accessible

(MANTA). IQOE encouraged the development of both of these systems. The survey showed that there is considerable interest in the community in receiving such training, particularly for early-career scientists, and IQOE will encourage the development of training resources. MANTA training was offered at the African Bioacoustics Community Conference, which was held in Cape

Town, South Africa on 1–6 September 2024. The training was offered in hybrid format.

MEETINGS

Several meetings and seminars recently occurred or will occur in the near future related to ocean sound.

2024 African Bioacoustics Community Conference: 1–6 September 2024 in Cape Town, South Africa. This conference brought together the African bioacoustics community—both aquatic and terrestrial—to share the latest research findings and to network with other scientists from their region. From the conference Web site: “The African Bioacoustics Community hosts a biennial conference that brings together individuals from around the world interested in bioacoustics. These conferences provide opportunities for underrepresented scientists based in Africa to present their research, learn from some of the best in the field, and network with other researchers working on bioacoustic projects in Africa.”

SATURN webinar on ‘International Standardization in Underwater Acoustics’: 25 September 2024. This third SATURN webinar will focus on the topic of “International standards for underwater acoustics”. The webinar will discuss the development of international standardization in underwater acoustics including those on vessel underwater radiated noise (URN) measurement, pile driving, and underwater acoustical terminology. SATURN is contributing to the development of two new standards, one for measurement of URN in shallow water, and one on bioacoustical terminology, which will be included in the seminar. Speakers will include Gerry Sutton (MaREI, UCC), Christ de Jong (TNO), Michael Ainslie (JASCO, Applied Sciences), Michele Halvorsen (JASCO, Applied Sciences), and Stephen Robinson (UK National Physical Laboratory). A detailed agenda will be released closer to the time and this information will be distributed through the IQOE email list. [Register here.](#)

NEWS FROM ENDORSED PROJECTS

Development and Evaluation of noise Management Strategies to Keep the North Sea healthy (DEMASK)—

DEMASK, a follow-on project to the IQOE-endorsed JOMOPANS project, held its kick-off meeting on 3–4 April 2024 in Zandvoort, Netherlands. The project is focused on helping policymakers, NGOs, and the maritime industry work together to manage the underwater soundscape of the North Sea. The meeting included presentations of the three work packages of the project, including their goals and planned activities. Discussion followed about how stakeholders can contribute to project activities and how the three work packages intersect. The results of these discussions can be found [here](#).

Solutions At Underwater Radiated Noise (SATURN)—

SATURN was well represented at the ‘International Conference on Underwater Acoustics’ (17–20 June 2024, in Bath, UK), with several scientists presenting research results from the project. On 24 April 2024, SATURN scientists Christ de Jong and Johan Bosschers presented a Webinar on Underwater Radiated Noise from Vessels in cooperation with Discovery of Sound in the Sea (DOSITS).

Get Your Project Endorsed

IQOE would like to endorse any research project or observation activities that are relevant to IQOE. Information about the endorsement process and endorsed projects can be found at <http://www.iqoe.org/projects>. The benefits of endorsement include increased international visibility of endorsed projects, which are usually national or regional, and the potential for joint activities with other endorsed projects and with other IQOE-involved scientists.

NATIONAL/REGIONAL ACTIVITIES

Several national and regional efforts beyond endorsed activities are directly relevant to IQOE. If you have news of national scientific projects or meetings related to IQOE, please email them to [Ed Urban](#).

Africa

The latest African Bioacoustics Community [newsletter](#) has just been issued. It highlights bioacoustics research on the continent, publications from this research, and information about events and opportunities in the region. As mentioned above, ABC held its biennial conference in Cape Town this month.

IQOE EMAIL LIST

IQOE maintains an email list containing your first name, surname, and email address. We do not collect or store any

additional information or share our email list with other organizations. If you wish to unsubscribe from the IQOE email list at any time, please click the “Unsubscribe” link at the bottom of any email from IQOE.

PUBLICATIONS

Volume 1 of *Exploring Animal Behavior through Sound* has more than 233,000 views so far. The Lounsbery Foundation provided support to make this volume open access, to further IQOE goals. Volume 2 is in production and should appear in 2025.

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Endorsed projects (4): DEMASK, NRS, PHYSIC, SATURN

Publications in [Aquatic Acoustic Archive](#): 7,115

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