

solas event report

Report 42 | March 2026

International GOOD-OARS Summer School 2025

4 - 11 November 2025
Penang, Malaysia



The 3rd International Summer School of the Intergovernmental Oceanographic Commission (IOC) expert group Global Ocean Oxygen Network (GO₂NE) took place from November 4 to 11, 2025 at the Centre for Marine and Coastal Studies (CEMACS) located at Teluk Aling, the northwest coast of Penang Island in the Penang National Park in Malaysia. The 1st one took place in Xiamen, China in September 2019 (see [SOLAS Event Report Issue 15](#)), and the 2nd one on the Campus Guayacan of the Universidad Católica del Norte in Coquimbo, Chile in November 2023 (see [SOLAS Event Report Issue 36](#)). It was organised by the IOC of the United Nations Educational, Scientific and Cultural Organization (IOC/UNESCO), and the CEMACS at Universiti Sains Malaysia. The school also benefited from support from many sponsors (see <https://penangsummerschool2025.usm.my/> and the logos banner).

Since 2023 the summer schools have been co-organised with the Global Ocean Acidification Network (GOA-ON). Both groups are committed to providing a global and multidisciplinary view of deoxygenation and ocean acidification, focusing on enhancing understanding of their multiple aspects and cumulative impacts. The networks offer scientific advice to policy makers to preserve marine resources in the presence of acidification

and deoxygenation. They teamed up with two affiliated UN Decade of Ocean Science for Sustainable Development programmes, the Global Ocean Oxygen Decade (GOOD) and the Ocean Acidification Research for Sustainability (OARS), to develop the summer school framework as a mean to engage early career ocean professionals.

The Malaysian summer school provided a great opportunity for 34 young researchers from 23 countries to meet with 20 world experts in their respective fields. The objective was to teach the skills and knowledge of many disciplines needed to understand the interplay of ocean physical, biogeochemical and biological processes involved in ocean deoxygenation and acidification with a focus on coastal tropical marine ecosystems that sustain biodiversity, fisheries, and local livelihoods. The School exposed graduate and doctoral students and early-career scientists to recent developments and methodologies in the study of biological, biogeochemical and physical feedbacks in the ocean and how local engagement strengthens global science. So the Summer School in Penang offered participants not only exposure to cutting-edge ocean research, but also the chance to see how science can be applied directly in community-driven, solution-oriented approaches.



Figure 1: Group picture of International GOOD-OARS Summer School, Pulau Gazumbo Island, Penang, November 8, 2025.

The school days were filled with presentations on different aspects of ocean acidification and deoxygenation as well as practical sessions on modelling, laboratory experiments, core sampling, shipboard measurements and data analysis, communication (scientific orals and posters) training and an introduction to ethics in science.

The programme included a stakeholder engagement day, where students and teachers visited an offshore fish artisanal platform in

Penang Bay close to CEMACS. Students, lecturers, and organisers move forward with new ideas and new friends to develop professional networks for successful careers. The next GOOD-OARS summer school is already provisionally planned for 2027.

Interested in more information about ocean oxygen, please sign up to the [GO₂NE/GOOD email list](#) and visit the [GOOD webpage](#). For more insights on ocean acidification, become a [GOA-ON member](#) and check out the [GOA-ON website](#).



Figure 2: Mosaic of photos at the fish farm, conference room, laboratory and field trip at Pulau Gazumbo Island.

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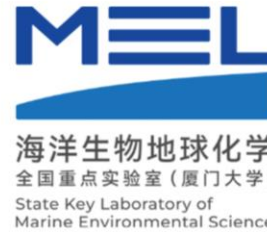
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