



## **SCOR Virtual Annual Meeting 2021**

**26-28 October 2021**

### **Block and Annotated Agenda**

**Meeting times**

7:00-10:00 am EDT (11 am – 2 pm UTC)

**Background documents:**

<https://scor-int.org/events/scor-annual-meeting-2021/>

Reports for each working group, project and organization are hyperlinked in the agenda.

**Session 1. Tuesday, 26 October 2021. Chair: Sinjae Yoo / Note taker: Paul Myers**

**SCOR Executive Committee and National Committee nominated members only**

<b>Time (am)</b>	<b>Topic</b>	<b>Presenter</b>
7:00-7:05	Welcome and introduction to agenda – <a href="#">In Memoriam</a>	S. Yoo
7:05-7:10	<a href="#">Report</a> from SCOR President	S. Yoo
7:10-7:15	<a href="#">Report</a> from SCOR Executive Director	P. Miloslavich
7:15-7:45	Report from the SCOR ad hoc 2021 Finance Committee	P. Croot et al.
7:45-8:25	<p><b>Presentation of new Working Group proposals:</b> Each presentation will be 5 minutes, plus time for a short question/comment (1-2 minutes) at the end of each presentation</p> <ol style="list-style-type: none"> <li>Coupling of ocean-ice-atmosphere processes: from sea-ice biogeochemistry to aerosols and Clouds (<a href="#">Clce2Clouds</a>)</li> <li>Harnessing global pELagic FISH biochemical data to address Sustainability challenges under climate change scenarios (<a href="#">ELFISH</a>)</li> <li>Advancing standardisation of COastal and Nearshore demersal fish visual CENSUS techniques (<a href="#">CoNCENSUS</a>)</li> <li>Mixotrophy in the Oceans – Novel Experimental designs and Tools for a new trophic paradigm (<a href="#">MixONET</a>)</li> <li>From the Ocean to the Lab to the Ocean: best practices for ecologically sound inferences in fluctuating habitats (<a href="#">OLO</a>)</li> </ol>	<p>J. Zhang</p> <p>B. Moran</p> <p>E. Montes</p> <p>J. Uku</p> <p>S. Aliani</p>
8:25-8:30	<b>Break (5 minutes)</b>	
8:30-9:40	Discussion of new Working Group proposals	SCOR Executive and National Committee nominated members
9:40-10:00	<b>Final recommendations and wrap up</b>	S. Yoo

**Session 2. Wednesday, 27 October 2021. Chair: Marie Alexandrine Sicre / Note taker: Charlotte Laufkoetter**

Open to all registrants

Time (am)	Topic	Presenter / EC liaison
7:00-7:05	<b>Introduction to Day 2 session</b> Each presentation will be <b>5 minutes</b> , plus time for a short question/comment (~1-2 minutes) at the end of each presentation	M. A. Sicre
7:05-8:50	<b>Working Group reports</b>  WG 143. <a href="#">Dissolved N2O and CH4</a> measurements: a global network of ocean time series measurements WG 145. Chemical Speciation Modelling in Seawater to Meet 21st Century Needs ( <a href="#">MARCHESPEC</a> ) WG 148. International Quality Controlled Ocean Database: Subsurface temperature profiles ( <a href="#">IQuOD</a> ) WG 150. Translation of Optical Measurements into particle Content, Aggregation & Transfer ( <a href="#">TOMCAT</a> ) WG 151. Iron Model Intercomparison Project ( <a href="#">FeMIP</a> ) WG 152. Measuring Essential Climate Variables in Sea Ice ( <a href="#">ECV-Ice</a> ) WG 153. Floating Litter and its Oceanic Transport Analysis and Modelling ( <a href="#">FLOTSAM</a> ) WG 154. Integration of Plankton-Observing Sensor Systems to Existing Global Sampling Programs ( <a href="#">P-OBS</a> ) WG 155. Eastern boundary upwelling systems ( <a href="#">EBUS</a> ) WG 156. <a href="#">Active Chlorophyll fluorescence</a> for autonomous measurements of global marine primary productivity WG 157. Marine zooplankton biodiversity based on DNA ( <a href="#">MetaZooGene</a> ) WG 158. Coordinated Global Research Assessment of Seagrass System ( <a href="#">C-GRASS</a> ) WG 159. Deep-Sea Biology for the Decade of Ocean Science for Sustainable Development ( <a href="#">DeepSeaDecade</a> ) WG 160. Analysing ocean turbulence observations to quantify mixing ( <a href="#">ATOMIX</a> ) WG 161. Respiration in the Mesopelagic Ocean ( <a href="#">ReMO</a> ): Reconciling ecological, biogeochemical and model estimates WG 162. Developing an Observing Air-Sea Interactions Strategy ( <a href="#">OASIS</a> )	Jing Zhang (for the WG)  D. Turner / Sicre  C. Domingues / Myers  S. Giering / Laufkoetter  M. Vichi / Laufkoetter D. Nomura / McDougall  S. Aliani / Myers  E. Boss / Montes  I. Montes / Sicre N. Schubak / Uku  A. Bucklin / Montes  S. Pruckner / Aliani  K. Howell (rec)/ Montes  C. Bluteau / McDougall  Robinson / Laufkoetter  M. Cronin / Myers
8:50-8:55	<b>Break (5 minutes)</b>	
8:55-9:30	<b>Research project reports</b>  <a href="#">GEOTRACES</a> – Trace elements and isotopes <a href="#">SOLAS</a> – Ocean/atmosphere interactions <a href="#">IMBeR</a> – Marine biosphere research <a href="#">IQOE</a> – Quiet Ocean	K. Casciotti / Zhang M. Dai / Penner C. Robinson / Aliani P. Tyack / Uku

	<a href="#">IIOE-2</a> – Indian Ocean expedition II	M. Sicre / Sicre
9:30-10:00	<b>Recommendations and wrap up</b>	S. Yoo

### Session 3. Thursday, 28 October 2021. Chair: Sinjae Yoo/ Note taker: Enrique Montes

Open to all registrants

Time (am)	Topic	Presenter / EC liaison
7:00-7:05	<b>Introduction to Day 3 session</b> Each presentation will be <b>5 minutes</b> , plus time for a short question/comment (1-2 minute) at the end of each presentation	S. Yoo
7:05-7:35	<b>Infrastructural project reports</b>  <a href="#">SOOS</a> – Southern Ocean observing <a href="#">IOCCP</a> – Ocean carbon <a href="#">COBS</a> – Changing ocean on biota <a href="#">GlobalHAB</a> – Harmful Algal Blooms <a href="#">JCS</a> – Joint Committee on Seawater	A. Hancock / McDougall M. Telszewsky / Moran S. Collins / S. Yoo E. Berdalet / S. Yoo Pawlowicz / McDougall
7:35-7:55	<b>Affiliated projects reports</b>  <a href="#">IOCCG</a> – Ocean colour <a href="#">InterRidge</a> – Ridge studies GACS – Alliance of Plankton Recorders	R. Lovindeer / Yoo S.M. Lee / Zhang A. Richardson / Uku
7:55-8:15	<b>Affiliated organizations reports</b>  <a href="#">IABO</a> – Biological Oceanography <a href="#">IAMAS</a> – Meteorology and Atmosphere <a href="#">IAPSO</a> – Physical Oceanography	E. Montes J. Penner T. McDougall
8:15-8:20	<b>Break (5 minutes)</b>	
8:20-9:15	<b>Partner organization updates</b>  <a href="#">IOC</a> – Intergovernmental Oceanographic Commission <a href="#">PICES</a> - North Pacific Marine Science Organization <a href="#">GESAMP</a> – Group on marine environmental protection <a href="#">POGO</a> – Partnership for Observation of the Global Ocean <a href="#">ISC</a> – International Science Council <a href="#">SCAR</a> – Scientific Committee Antarctic Research <a href="#">Future Earth-Ocean/OceanKAN</a> <a href="#">WCRP / CLIVAR</a> – World Climate Research Program	S. Arico / Sicre S. Chiba / Moran B. Duce / Zhang L. Krug / Aliani  M. Denis / Sicre Y. Kim / Myers Brousse & Pendleton H. Kulaiappan / Penner
9:15-9:20	<a href="#">Report</a> on SCOR capacity development activities	P. Miloslavich
9:20-9:30	Future SCOR meetings / meeting mode Korea 2022, Ecuador 2023, China 2024, Colombia 2025	Open discussion
9:30-10:00	<b>Summary of actions and close of meeting</b>	S. Yoo

# SCOR Virtual Annual Meeting 2021

## ANNOTATED AGENDA

---

### SESSION 1. Tuesday, 26 October 2021

Chair: Sinjae Yoo / Note taker: Paul Myers

#### 1. OPENING TOPICS

##### 1.1 Opening Remarks: welcome, agenda, and virtual session logistics - Yoo

The agenda along with all written reports, documents and narrated presentations from WGs, projects and affiliated organizations are available at the SCOR website (<https://scor-int.org/events/scor-annual-meeting-2021/>) to be reviewed before the meeting. During the virtual sessions, each WG, project and organization representative will give a 5-minute synthesis with the main highlights and the required actions.

The new WG proposals are available on the SCOR website. Narrated presentations of the new WGs by the corresponding SCOR Executive member are available for SCOR Executive and Nominated members only. A 5-minute synthesis of each WG proposal will be provided at the virtual session in preparation for the group discussion. The synthesis includes the Terms of Reference, membership and a summary of the reviews/recommendations by the national SCOR committees and affiliated organizations.

##### *In Memoriam*

SCOR pays tribute to the life and contributions of eight members of the oceanographic community who passed away in the last year:

- **Thomas (Tom) Church** ( -2021) (USA) - A long-term faculty member at the University of Delaware where the SCOR office is based and a member of SCOR Working Group #80 aimed to study the role of Phase Transfer Processes in the Cycling of Trace Metals in Estuaries. Tom contributed to writing the atmospheric input section of the GEOTRACES Science Plan and developed and tested the methods used to collect trace element-clean aerosol and rainfall samples on cruises since 2002.
- **José (Pepe) Stuardo** (1929-2021) (Chile) - Emeritus Professor in oceanography at the University of Concepcion, Chile. José Stuardo was instrumental in establishing what are SCOR's Graduate Networks in Oceanography today and was involved for almost two decades in the Ecology and Diversity of marine Microorganism (ECODIM) courses. Pepe was a SCOR nominated member for Chile for many years and he established the basis for the development of oceanography in Chile and in Latin America through the development of regional capacity programs and of the PhD program in Oceanography at the University of Concepción.
- **Chibo Chikwililwa** (1980-2021) (South Africa/Namibia) - A researcher at the University of Namibia, and the GEOTRACES national representative for Namibia since 2019. She was the co-director and member of the SCOR's Regional Graduate Networks of Oceanography (RGNO) committee since 2016, organizing the annual RGNO Ocean discovery camps

providing her expertise on harmful algal blooms, seaweeds, and geochemical processes. Chibo was actively engaged in lecturing and in the organization of the 2021 online RGNO seminars at the University of Namibia focused on the Benguela Upwelling System with more than 50 invited speakers.

- **Satya Prakash** (1979-2021) (India) - The coordinator of the Joint Project Office (JPO) - India of the Second International Indian Ocean Expedition (IIOE-2), based at the National Institute of Oceanography (NIO) in Goa, India. Satya Prakash played a key role in planning various activities leading to the formal launching of the Second International Indian Ocean Expedition (IIOE-2) from Goa. Satya also participated in the first research cruise under IIOE-2 (Goa-Mauritius). Since then, Satya served as the JPO coordinator for the India node of IIOE-2 and had been actively involved in numerous activities related to the IIOE-2 including being a part of the Editorial Team of the IIOE-2 newsletter and the Indian Ocean Bubble, as well as facilitating the hosting of the fourth meeting of the Steering Committee of the IIOE-2 in virtual space in April 2021.

## **1.2 Report of the President of SCOR - Yoo**

The President will briefly inform of his activities for SCOR since the 2020 SCOR Annual Meeting held virtually in October 2020.

## **1.3 Report of SCOR Executive Director - Miloslavich**

The Executive Director will report on her activities for SCOR since the 2020 SCOR Annual Meeting held virtually in October 2020 and on the current condition of SCOR.

## **1.4 Report of the ad hoc Finance Committee – Croot/Peeken**

The Finance Committee reviews the administration of SCOR finances during the previous fiscal year and the current year and will propose a budget for 2022 activities and dues for 2023. Members of the 2021 Finance Committee (approved by the Executive Committee through email consultation on the 7th of September 2021) are Peter Croot (Ireland), Naomi Harada (Japan), Ilka Peeken (Germany), and Nuria Casacuberta (Switzerland). The documents reviewed by the committee were (1) the SCOR 2020 auditor's report, (2) the final vs actual 2020 budget, (3) financial reports and charts from the Secretariat, (4) the 2021 revised budget and draft of 2022 budget.

**Action: Approve the report of the ad hoc Finance Committee**

# **2. WORKING GROUPS**

## **2.1. New Working Group proposals**

2.1.1. Coupling of ocean-ice-atmosphere processes: from sea-ice biogeochemistry to aerosols and Clouds (Clce2Clouds) - *Zhang*

**Action: Consider as new SCOR working group.**

2.1.2. Harnessing global pELagic FISH biochemical data to address Sustainability challenges under climate change scenarios (ELFISH) - *Moran*

**Action: Consider as new SCOR working group.**

2.1.3. Advancing standardisation of COastal and Nearshore demersal fish visual CENSUS techniques (CoNCENSUS) - *Montes*

**Action: Consider as new SCOR working group.**

2.1.4. Mixotrophy in the Oceans – Novel Experimental designs and Tools for a new trophic paradigm (MixONET) – *Uku*

**Action: Consider as new SCOR working group.**

2.1.5. From the Ocean to the Lab to the Ocean: best practices for ecologically sound inferences in fluctuating habitats (OLO) - *Uku*

**Action: Consider as new SCOR working group.**

## **SESSION 2. Wednesday, 27 October 2021**

**Chair: Marie Alexandrine Sicre / Note taker: Charlotte Laufkoetter**

### **2.2. Current Working Groups**

The chairs or a member of each WG will present an update on working group activities and progress, and the WG reporter to the Executive Committee will make recommendations on actions to be taken.

#### **2.2.1. WG 143 on Dissolved N<sub>2</sub>O and CH<sub>4</sub> measurements: Working towards a global network of ocean time series measurements of N<sub>2</sub>O and CH<sub>4</sub> – *Sam Wilson / Zhang***

In the past 12 months the WG has been working on the Standard Operating Protocols (SOP) for dissolved methane and nitrous oxide measurements. Draft documents have been posted on a publicly available website (<https://web.whoi.edu/methane-workshop/sops/>) for the community to comment on. They are now working with the OCB program to convert the word documents into reader-friendly pdfs that have consistent formatting. This should be completed by December 2021.

Sam Wilson (co-chair) has also received funding from NSF to produce consensus material which was a task identified at the workshop and in the 2020 publication as being of high importance.

‘Production of consensus material for dissolved methane and nitrous oxide’ National Science Foundation, Chemical Oceanography, Principal Investigator: S. Wilson, \$82,560 (April 2021 – March 2022)

**Action: Consider disbanding when the SOP document is completed in 2022.**

### **2.2.2. WG 145 on Chemical Speciation Modelling in Seawater to Meet 21st Century Needs (MARCHEMSPEC) – David Turner / Sicre**

The Working Group held an online meeting on 21 June 2021 attended by 13 WG members and four guests. The meeting reviewed progress towards the WG's terms of reference and concluded that the WG is on track to complete its terms of reference in 2022. Reports from collaborative projects were also presented. The meeting discussed the need for further work on model development following completion of the SCOR terms of reference next year. It was agreed to hold the next online meeting in March 2022. The first prototype software for chemical speciation modelling derived from the WGs NSFGEONERC project (A Thermodynamic Chemical Speciation Model for the Oceans, Seas, and Estuaries) was completed. The WG is collaborating with several laboratories internationally and with IAPSO and the Joint Committee on the Properties of Seawater and has been asked to contribute to the newly established GESAMP Working Group 45 "Climate Change and Related Impacts on Contaminants in the Ocean". The WG We has identified four activities that will be required in order to fulfil the Terms of Reference which they plan to complete before the 2022 SCOR meeting.

**Action: Consider providing an extension to the WG until October 2022 when the products planned for 2022 are completed.**

### **2.2.3. WG 148 on International Quality Controlled Ocean Database: Subsurface temperature profiles (IQuOD) – Guilherme Castelão / Myers**

Due to the pandemic, there were no in person meetings during the last year. Instead, virtual meetings were held covering topics including funding and interpolation of ocean profiles. Work has progressed on a range of activities. A paper was published on assignment of uncertainties to ocean temperature profiles, and work is ongoing on extending a draft paper on benchmarking of automatic quality control checks with publication anticipated during the coming year. In addition, a community for IQuOD has been set up in the Ocean Best Practices Repository (<https://repository.oceanbestpractices.org/handle/11329/1590>). A primary focus of IQuOD in the next year is the publication of a paper describing benchmarking of automatic quality control checks for temperature data. The paper will also include recommendations for optimum sets of quality control checks that will be applied to the World Ocean Database (WOD) to generate a new version of the IQuOD dataset. A draft of the paper has already been completed but will be updated to use more data and include more quality control checks before submission. A second focus will be on developing training data and techniques for machine learning to improve quality control of data further. Funding has been obtained for cloud computing to support this activity.

**Action: Consider a one-year extension of the WG until the products planned for 2020 have been completed.**

### **2.2.4. WG 150 on Translation of Optical Measurements into particle Content, Aggregation & Transfer (TOMCAT) – Sara Giering / Laufkoetter**

Members of TOMCAT are planning to host a 1-week summer school in Cape Town, South Africa. The summer school was originally planned for October 2020 but was postponed to 2022 due to COVID-19. The focus of the school is capacity building, so the teaching material will be accessible and hands-on with a focus on optical instruments that are affordable (< US\$ 2,000). The anticipated number of students is 20. SCOR has already kindly approved US\$ 5,000 for travel support of developing country scientist to attend the summer school. The WG hopes to finish the group's official activities next year with the summer school.



**Action: Consider disbanding after the Summer School.**

**2.2.5. WG 151: Iron Model Intercomparison Project (FeMIP) – *Stephanie Dutkiewicz / Laufkoetter***

The WG had no in person meetings, but a well-attended virtual meeting was held in Dec 2020. Before the pandemic the group had already discovered that progress outside of in person meetings was very slow. People are busy and are now understandably tired of zoom. They hope that the resumption of in person meetings will stimulate the group further as it remains very enthusiastic and engaging. They plan a final meeting at OSM 2022 to finalize ToR 4 for which they request one more year of continuation.

**Action: Consider a one-year extension of the WG until the ToRs have been completed.**

**2.2.6. WG 152 on Measuring Essential Climate Variables in Sea Ice (ECV-Ice) – *D. Nomura / McDougall***

This working group gathers international experts on chemical and biological measurements in sea ice to design and coordinate required inter-comparison experiments. The group is synthesizing the results of past experiments, identifying what types of new experiments are needed, and supporting the community in executing those experiments. The group will attempt to do the long planned intercalibration experiment in 2022 (late April-middle of May) at The Canadian High Arctic Research Station (CHARS), Cambridge Bay, Canada to target the sea-ice algal bloom in an ascending phase.

**Action: Consider supporting the 2022 meeting and disbanding after the intercalibration products are completed.**

**2.2.7. WG 153 on Floating Litter and its Oceanic Transport Analysis and Modelling (FLOTSAM) – *Stefano Aliani / Myers***

The last meeting of the project was planned for summer 2020 in Japan thanks to the hospitality of Japan Agency for Marine-Earth Science and Technology, however the meeting was cancelled. Alternatives are under discussion, including to meeting virtually or elsewhere. FLOTSAM has submitted a proposal for an Innovative Session at OSM 2022 where many partners will likely attend the meeting. A hybrid in-person/remote session was proposed. The WG meeting could potentially take place at OSM 2022. The WG requests for an extension until 2022 to allow for: i) the workplan of WG153 to be fully developed with a 3rd physical meeting and the new gaps in knowledge can be addressed, also within the perspective of the UN Decade that was not under implementation at the time of the proposal; ii) the innovative work they plan for OSM session will fall under SCOR.

**Action: Consider funding for 2021 meeting.**

**2.2.8. WG 154 on Integration of Plankton-Observing Sensor Systems to Existing Global Sampling Programs (P-OBS) – *Anya Waite / Montes***

Most of the ToRs have been finalized. The GO-SHIP manual for plankton measurements was uploaded at the Ocean Best Practice platform. The meeting planned in Halifax in fall 2020 and postponed to 2021 could not take place. Since their last report they have been working through the pandemic to write and finalize an Ocean-SITES report like the one published on GO-SHIP. They hope to finalize it by the end of 2021 after a period of public comments. The group tentatively plans to meet in person in conjunction with OSM 2022. COVID, zoom fatigue, other activities of the chairs

and declined interest of WG members are all causing their current report to drag out beyond the time they thought it should.

**Action: Consider funding for 2022 WG meeting.**

#### **2.2.9. WG 155 on Eastern boundary upwelling systems (EBUS): diversity, coupled dynamics and sensitivity to climate change – Rubén Escribano / Sicre**

The group is actively working on a scientific review paper on the value of ocean observation and modelling in relation to ecosystem services and climate in EBUS and a summary for policy makers. Planned activities include: 1) completing and submitting the review article; 2) continue the organization of the Open Science Conference (September 2022); 3) complete the analysis of the IPCC models and prepare a report/publication; 4) Write up a recommendation for the framework for EBUS observing and modelling systems. They will be participating in the first forum for South America organized by WCRP Climate Research Forum. Unfortunately, the current situation due to the COVID-19 pandemic has influenced the time dedicated to the work and actions in this WG. They have relied on virtual meetings and e-mail interactions to maintain activities of the WG, however, sometimes the daily days are overfilled without having dedicated time for this activity. The chairs have sent a letter to the SCOR Executive in which they expose their situation:

*Over the last 2 years, starting in early 2020, the entire world has been impacted by the COVID-19 pandemic. The impact has been particularly severe in South America, Peru and Chile in particular, basically bringing activities to a standstill. Two key activities of the working group, the 2020 Summer School along with the workshop and meeting of the WG at Dakar, Senegal, and the EBUS Open Science Conference in 2021, were cancelled. While some activities were carried on through video or phone conferences, they could not replace the progress that would have been possible with several weeks of face-to-face meetings. The EBUS Open Science Conference (OSC) has now been rescheduled for September 2022 in Lima Peru with the WG being active in its organization. The EBUS OSC will be an important opportunity for the WG to meet in person and make progress. Therefore, we would like the SCOR leadership to consider extending the WG through June of 2023.*

**Action: Consider continue funding.**

#### **2.2.10. WG 156 on Active Chlorophyll fluorescence for autonomous measurements of global marine primary productivity – Nina Schubak / Yoo**

Since the last SCOR report (July 2020), their major focus for year 2 has been on working towards completion of the “Best Practice” document and a related manuscript in Frontiers of Marine Science. These activities specifically address terms of reference i-iii and v-vii. They have been successful in publishing our group’s first peer reviewed article and have made significant progress on the Best Practice Guide, with a working framework document uploaded to the Ocean Best Practices site (<https://repository.oceanbestpractices.org/handle/11329/1585>). They have also continued to make progress (though perhaps slower than would be desired) in the development of open-source Jupyter notebooks for processing FRRF data. They had three virtual teleconferences of the whole group (sometimes grouped into 2 sessions to accommodate all time-zones), as well as several additional smaller meetings of various working-groups. Most meetings have focused on the development of their documents. Like many, the group has been significantly burdened by the COVID-19 pandemic, which has curtailed laboratory and field work. In addition, three WG members (Tortell, Moore and Berman-Frank) are department Head’s and were thus forced to take on even higher administrative loads associated with COVID-19 safety planning. They would like to request to use SCOR funds to

support a part-time student to help with the development of open-source software for the processing and analysis of FRRf data. They plan to meet at OSM 2022.

**Action: Consider funding for 2022 WG meeting.**

### **2.2.11. WG 157: Toward a new global view of marine zooplankton biodiversity based on DNA metabarcoding and reference DNA sequence databases (MetaZooGene) – *Ann Bucklin / Montes***

Planning and cooperation among WG157 members were carried out through email, virtual meetings, and shared website workspaces to allow completion of the MetaZooGene Barcode Atlas & Database (MZGdb, <https://metazoogene.org/database>). The effort was led by WG157 member Todd O'Brien (NOAA, USA). Email and virtual meetings also resulted in a multi-authored review paper linked to the MZGdb were led by Ann Bucklin (University of Connecticut, USA). MetaZooGene members chaired SS32 – “Name that species: Toward a new global view of species diversity of marine zooplankton” at ASLO 2021 on June 23, 2021. The WG has three new publications in 2021. Work toward WG157 deliverables has continued despite the challenges of COVID-19 pandemic, except for activities (e.g., Term of Reference #3) requiring molecular benchwork, due to restrictions by most universities and institutes. Private online work-areas were created for WG157 members, including one for all members and another for specific activities. These areas are linked to the website for the group, <https://metazoogene.org/>, and are valuable tools for collaboration by allowing uploading and sharing of files, which is not possible for all WG157 using other web platforms. The WG plans to meet at OSM 2022

**Action: Consider funding for 2022 WG meeting.**

### **2.2.12. WG 158: Coordinated Global Research Assessment of Seagrass System (C-GRASS) – *Emmett Duffy / Aliani***

The group is making progress in all the ToRs. Throughout 2021 they had separate, smaller meetings of sub-working groups. The C-GRASS leads also had meetings with National Coordinated Alliance for SAV Enhancement (NCA-SAVE), organized by Pew Charitable Trust, to build connections and complementarity. The C-GRASS Data synthesis group co-lead Jonathan Lefcheck (Smithsonian) had a proposal accepted for special session on coordinated research on seagrass at International Seagrass Biology Workshop (re-scheduled for September 2022). Plans are in place for the public release of the seagrassNet database in late 2021 cross listed with OBIS and a manuscript summarizing the main status and trends from the global SeagrassNet data set will be submitted by December 2021/ January 2022. The group is finalizing the Seagrass Essential Ocean Variable spec sheet, uniting both remote sensing and in situ approaches, for approval by GOOS; developing and implementing a hierarchical structure to guide and establish preferred and recommended data capture approaches; and planning to register the remote sensing and in situ protocols with the IOC Ocean Best Practices system. Their meeting will be rescheduled for 2022 possibly with the ISBW conference adopting a hybrid approach to allow virtual participation. Inability to meet in person as a result of COVID-19 has significantly impacted progress on their outcomes and partnerships. For instance, they were in advanced stages of planning their May 2020 inaugural workshop at INVEMAR in Santa Marta, Colombia, leveraging collaboration with the MBON Pole-to-Pole group and co-funding by NASA. This co-located workshop would have helped facilitate diversity of partnerships and engagement in the Global South, and they hope to reschedule something similar during the grant period. More generally, it has been challenging to maintain momentum and the progress that would usually be achieved through intensive in-person meetings.

On the bright side, adaptation to the COVID-19 world has forced them to build strong capacity to continue work virtually and allowed to engage a much broader audience into the community than would have been able to achieve in person. This will be key to the long-term sustainability of the C-GRASS outcomes.

**Action: Consider funding for 2022 WG meeting.**

### **2.2.13. WG 159: Roadmap for a Standardised Global Approach to Deep-Sea Biology for the Decade of Ocean Science for Sustainable Development (DeepSeaDecade) – Kerry Howell / Montes**

The group held an online meeting (07 Oct 2020) to prepare the submission, in collaboration with DOSI of a global programme of deep-sea biology research - Challenger 150 - to the IOC-UNESCO. After the submission another online meeting was held (02 Feb 2021) to discuss aspects of the implementation of this programme, in particular the management structure, of which the WG159 forms the Steering Committee and the development of standards to ensure data comparability.

An online townhall meeting (09 Feb 2021, >300 participants, ~30% ECs) was held to present Challenger 150 to the wider community; and the Challenger 150 was officially endorsed by the IOC-UNESCO as an Ocean Decade programme. Two online meetings were held on data acquisition, processing and archiving standardization: a general workshop on how to build on the CoML work to further develop standards (14 April 2021, 34 participants) and a meeting on megafauna image data (14 Jul 2021, 30 participants). Plans for the next year include an online meeting to further address ToR2 and ToR3 and to have the full draft paper for TOR 5 by end of year.

**Action: Consider funding for 2022 WG meeting.**

### **2.2.14. WG# 16: Analysing ocean turbulence observations to quantify mixing (ATOMIX) – Cynthia Bluteau / McDougall**

The current WG meets as a full committee virtually every two months for ~1.5h to discuss the dissemination of the group's activities via a newsletter, organization and lay-out of the wiki (e.g., how to capture peer-review comments), and more recently the benchmark datasets format. These meetings have focused on organizing the overall activities across the three subgroups: 'Shear probes' led by co-chair Fer, the 'Velocity profilers' led by co-chair Lenn, and the 'Point-velocity measurements' led by co-chair Bluteau. A rolling roster of three different set times is used to ensure that two thirds of the WG can attend owing to time zone differences. One of the three chairs leads each meeting, while detailed minutes are collected for members in incompatible time zones to comment/address after the meeting. In addition to these full committee meetings, the three subgroups meet every 2 months as well for 1-2h to debate the processing steps for analyzing these unique data streams. A Wiki, <https://wiki.uib.no/atomix> which is still work in progress. A conference abstract was submitted and accepted for the AOGS. This poster will advertise the WG's activities in the Asian-Oceania region where they intend to do capacity building and training for the last planned WG meeting in 2023 (Singapore). The ATOMIX mailing list is now open for new subscribers: <https://www.subscribepage.com/r7g7r6>. In the next months, the group's main goal is to have the systems and datasets in place to begin testing of algorithms before the 1st WG meeting planned for December 2021 in Germany. This meeting will focus on discussing discrepancies amongst how key processing steps are carried out by different groups, and approve a work plan for testing key processing steps and quality control measures. The group would like to request access to a small budget for virtual meeting resources given some full members from Australia and New Zealand are restricted from traveling in person until mid-2022 (e.g., <https://remo.co/conference-pricing/>).

**Action: Consider funding for 2022 WG meeting.**

**2.2.15. WG# 161: Respiration in the Mesopelagic Ocean (ReMO): Reconciling ecological, biogeochemical and model estimates – Carol Robinson / Laufkoetter**

The group recruited an early career scientist from South Africa as suggested by the SCOR Executive. They created a Google site for use within the group and started to organize meetings, holding virtual co-chairs meetings on 18 December 2020 and 12 January 2021 and then the first virtual group meeting on 19 January 2021. Since then, they have met in February, March, April, May, and June 2021. To advertise the work of the group, they gave a presentation to the Jetzon network of scientists who work in the mesopelagic zone, in November 2020, and wrote articles for the UK Challenger Society for Marine Science and the Canadian Ocean Sciences Newsletter. ReMO is one of several projects contributing to Jetzon, which in June 2021 became a UN Decade programme. They would like to have a face to face meeting during 2022, potentially for 2 days immediately before a relevant conference (e.g. OSM 2022, EGU in Vienna or the Gordon Research Conference on Marine Biogeochemistry in Spain). This will also aid in the planning and preparation required for the training course.

**Action: Consider funding for 2022 WG meeting.**

**2.2.16. WG# 162: Developing an Observing Air-Sea Interactions Strategy (OASIS) – Meghan Cronin / Myers**

OASIS has had regular online meetings in 3 main categories since its start on 1 November 2020. These have been telecons in the form of (1) regular bi-weekly SCOR WG #162 co-chair + COL (Consortium for Ocean Leadership) staff meetings; (2) monthly SCOR WG #162 meetings, several of which have been open to the full OASIS community (approximately 50 attendees); and (3) a webinar series open to the full community. OASIS has a website ([www.airseaobs.org](http://www.airseaobs.org)) and a newsletter with 165 email recipients. The group also developed a prospectus. Currently the group is preparing a manuscript on best practice towards radiation measurements and another describing 5 main OASIS themes which were distilled from >40 Ocean Obs 19 community white papers, >350 recommendations, >400 authors. During year 2, beginning November 2021, OASIS expects to have a follow up work associated with the “OASIS for a Predicted Ocean” event and the Ocean Best Practice Workshops to be held in September 2021. OASIS will also be hosting more UN Ocean Decade satellite events, including the “OASIS for a Clean Ocean”, and the Ocean Science Meeting 2022 “OASIS Ocean Shots for 2030” and OASIS Townhall. In the second year, they also hope to begin initiating capacity building efforts, including the SOLAS virtual summer school, with an OASIS curriculum. OASIS was endorsed as UN Ocean Decade programme.

**Action: Consider funding for 2022 WG meeting.**

### **3. LARGE-SCALE OCEAN RESEARCH PROJECTS**

SCOR currently sponsors five large-scale research projects; four of them are co-sponsored by other organizations. Each project has its own scientific steering committee (SSC) to manage the project. SCOR and other co-sponsors are responsible to oversee the projects, which they do primarily through responsibility for the project SSC memberships and terms of reference, although sponsors also oversee the results of the projects’ activities. Any proposed changes in membership or terms of reference are considered by the SCOR Executive Committee, in partnership with other co-sponsors, throughout the year. The SCOR Secretariat oversees the use of grant funds provided to the projects through SCOR. SCOR uses solely grant funds for IMBER, SOLAS, and GEOTRACES, but is providing SCOR support for IQOE and IIOE-2 until they are self-supporting.

### **3.1. GEOTRACES – Karen Casciotti / Zhang**

GEOTRACES is under the intensive period of preparing its third Intermediate Data Product, and this is being done on schedule despite the COVID-19 pandemic. The current reporting period is marked by the pandemic; while several GEOTRACES activities had to be cancelled or postponed as described in their report, however, GEOTRACES has proved resilience and it will release the data product in 2021 as planned. The SSC and all the technical subgroups met virtually in this time period.

**Action: None. GEOTRACES funding is provided by specific funding from an NSF grant**

### **3.2. Surface Ocean – Lower Atmosphere Study (SOLAS) (SCOR/Future Earth) – Minhan Dai / Penner**

The SOLAS IPO will be moving to Ireland and will be linked to an international MSc program on Ocean-Atmosphere-Climate interactions. Cliff Law stepped down as co-chair and Cecile Guieu was nominated as the new co-chair. SOLAS is a partner of the UN Ocean Decade endorsed project Coastal-SOS, the co-organiser of the Satellite Activity Air-Sea Observations for a Clean Ocean, Nov 2021, and co-sponsor of the 53rd International Liège colloquium on Ocean Dynamics, May 2022. SOLAS is organizing their Open Science Conference in hybrid mode in September 2022 in Cape Town, the 2022 Summer Scholl (online) and the 2023 Summer School at Cape Verde. SOLAS prepared a mid-term report with their progress of the last five years and vision for the next five to comply with a review of the project by SCOR and the other sponsors. The SSC met virtually.

**Action: None. SOLAS funding is provided by specific funding from NSF and NASA grants**

### **3.3. Integrated Marine Biosphere Research (IMBeR) (SCOR/Future Earth) – Carol Robinson / Aliani**

Although COVID-19 made in-person meetings, research cruises, and field work difficult over the period of this report, IMBeR was able to make progress towards achieving the objectives of the Grand and Innovation Challenges. IMBeR prepared a mid-term report with their progress of the last five years and vision for the next five to comply with a review of the project by SCOR and the other sponsors. IMBeR is actively looking for new SSC members and for a new co-chair to replace Carol Robinson. The SSC met virtually. The ClimEco7 Summer School was held virtually in August 2021 and was attended by 60 early career researchers from 38 countries. The IMBIZO 6 will take place in October 2021 virtually.

**Action: None. IMBeR support is provided by specific funding from NSF and NASA grants to SCOR.**

### **3.4. International Quiet Ocean Experiment (IQOE) (SCOR/POGO)– Peter Tyack / Uku**

Although the COVID-19 pandemic made it impossible to hold in-person meetings to advance goals of the International Quiet Ocean Experiment (IQOE) from early 2020 until now and hindered acoustic observations related to the project, IQOE continued making progress. The IQOE Experiment Science Plan was released in 2015 and a project Science Committee (SC) was formed that year by the two organizational sponsors, the Scientific Committee on Oceanic Research and Partnership for Observation of the Global Ocean. Ed Urban is the project manager. IQOE is at its mid-term, with a planned completion in 2025. The project has been able to accomplish a variety of useful tasks and produce some notable products. In addition, IQOE has (1) enhanced the visibility of endorsed national and regional projects at an international level, through the IQOE Newsletter and Website, (2) encouraged networking among IQOE-endorsed projects, and (3) increased the visibility of the

importance of ocean acoustics in many nations. Plans for 2022 include the creation of MANTA-based data product and synthesis publication of COVID impacts and to finalize the drafting of the Ocean Sound EOY Implementation Plan.

**Action: Consider supporting the 2022 activities (workshop) with unused 2020 approved funds.**

### **3.5 Second International Indian Ocean Expedition (IIOE-2) (SCOR/IOC) – Marie A. Sicre**

Marie Alexandrine Sicre replaced Peter Burkill as one of the co-chairs of the IIOE-2 Core Group. The International Indian Ocean Science Conference 2020 (IIOESC-2020) that was scheduled to take place on the from 16th to 20th March 2020 in Goa, India, had to be postponed and is currently rescheduled from the 14 to 18th March 2022 on hybrid mode. Several cruises and projects were cancelled and there are no clear plans to do them at a later date (e.g., Germany), though some were just postponed (e.g., USA). Our inability to have in person meetings has also had a significant negative impact on IIOE-2 activities. Satya Prakash who has been in charge of the IIOE-2 Joint Project Office and Co-Secretary of IOGOOS located at the Indian National Centre for Ocean Information Services (INCOIS) in Hyderabad sadly passed away in July 2021. The Joint Program Office (Perth) will no longer operate as the funding from the West Australia government was terminated in September 2021.

**Action: Consider 2022 support from SCOR to IIOE-2.**

## **SESSION 3. Thursday, 28 October 2021**

**Chair: Sinjae Yoo / Note taker: Enrique Montes**

### **4. INFRASTRUCTURAL PROJECTS**

#### **4.1. The Southern Ocean Observing System (SOOS) (SCOR/SCAR)– Alyce Hancock / McDougall**

SOOS developed the new 5-year (2021-2025) Science and Implementation Plan (SIP). The SIP was reviewed by four independent reviewers coordinated by SCAR and SCOR, and the revisions by SOOS are underway. Louise Newman, the SOOS Executive Officer resigned and was replaced by Alyce Hancock. The SOOS international project office (IPO) is based at the University of Tasmania. It is currently half-way through a funding Partnership between the University of Tasmania's Institute for Marine and Antarctic Studies (UTAS-IMAS), the Tasmanian State Government Department of State Growth (DoSG), and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The funding includes salary for the data officer and Executive Officer, some operational funds for SOOS, and in-kind hosting of the office at UTAS. The Partnership runs from Jan 2020 – Dec 2022. SCOR and SCAR provide \$10k per year each to SOOS to support their SSC meetings.

**Action: Renew funding for SOOS – suggest another 3-year period.**

#### **4.2. International Ocean Carbon Coordination Project (IOCCP) (SCOR/IOC)– Maciej Telszewsky / Moran**

The IOCCP efforts this year have been focused on 3 activities: (1) Publishing a commentary in Nature alerting a variety of stakeholders to the problem, (2) Organizing a technical workshop focused on building a blueprint of the technical, financial and organizational solutions allowing for sustainable

ocean carbon flux monitoring required to deliver an annual traceable, robust estimate of ocean carbon uptake, and (3) Continuous liaison with stakeholders: at COP 26, UNFCCC SBSTA, UN Oceans Conference. The SSG met virtually in November 2020 and will meet in Sopot in November 2021.

**Actions: None. IOCCP funding is provided by specific funding from an NSF grant to SCOR.**

#### **4.3. Changing Ocean Biological Systems (COBS) – Philip Boyd / Yoo**

The group has successfully transitioned from WG149 to the COBS SCOR infrastructural project. The new ToRs were revised and approved by the SCOR Executive Committee. COBS has developed 5 new task teams, each of which are working on working documents. A further fledgling task team that links our COBS activities in natural sciences with those in human systems (socio-ecology, see <https://imber.info/>) in the IMBER programme is being developed. Details can be found on the recently updated www site <https://scor149-ocean.com/new-page-1>. COVID has hindered the progress of the COBS in several ways, including restricting our 3 day annual meeting (a key opportunity for discussion and development of new ideas and tools) to a series of 1.5 h Zooms using time zone clusters, over a 2 day window, and by limiting the ‘band-width’ of our members such that they had much less time for inter-sessional activities due to having to develop online resources for example lectures at their home institutions.

**Action: None. Funding is provided from NSF specifically for the group through SCOR.**

#### **4.4. GlobalHAB (SCOR/IOC) – Elisa Berdalet / Yoo**

All meetings in 2021 were held virtually. Elisa Berdalet is contributing to a working group of ANCA IOCARIBE with specific focus on the scientific questions concerning HABs in Latin America and to address the main HAB challenges (e.g. Sargassum beachings, and ciguatera food poisoning). GlobalHAB is contributing to the IOCCG (2021) report on Observation of Harmful Blooms with Ocean Colour Radiometry, to the 19<sup>th</sup> International Conference on Harmful Algae (ICHA 2021) and to Best Practice Guidelines for the Study of HABs and Climate Change. Po Teen Lim has been proposed as the next GlobalHAB vice-chair.

**Action: None. SCOR still holds past funds from GlobalHAB to support the activities in 2022.**

#### **4.5. Joint Committee on Seawater (JCS) (IAPWS/SCOR/IAPSO) – Rick Pawlowicz / McDougall**

COVID-19 has disrupted global collaboration in JCS. A planned “virtual” meeting was to have happened summer 2021, will now be in fall 2021. The pH subgroup continues its work (under the aegis of SCOR WG 145). JCS maintains a web site at [www.teos-10.org](http://www.teos-10.org). This site gets 750-1300 visitors per month (9,007 in the past year, with 73311 “unique views” since Oct 2010). Annual downloads are stable. The hosting of TEOS-10 continues to be with webcentral in Australia (formerly called Netregistry) but the hosting plan was changed to one that is about 50 % cheaper; costs are now being covered by IAPSO. Users should not experience any changes to the site or download speeds. SCOR provides a small amount of funding each year to enable the JCS chair and others to attend annual meetings of the International Association for the Properties of Water and Steam (IAPWS).

**Action: Consider funding for 2022.**



## 5. AFFILIATED PROJECTS AND NON-GOVERNMENTAL ORGANIZATIONS

### 5.1. International Ocean Colour Coordinating Group (IOCCG) – *Raisha Lovindeer / Yoo*

IOCCG has a system of working groups that produce scientific monographs to advance the field of ocean color observations from satellites. IOCCG and the SCOR/IOC GlobalHAB project co-sponsor a working group on Harmful Algal Blooms. The IOCCG Executive met on 25 Feb and 2 March 2021, and the Committee met virtually over 2 weeks in May 2021. The next meeting is scheduled for April 26-29, 2022, in Italy (hosted by ESA). With regards to capacity development initiatives, 24 students were selected for the 2020 Summer Lecture Series but it was cancelled due to the pandemic. Lecturers agreed to an online Q&A for selected students. Applications for the 2022 Summer Lecture Series will open in Jan 2022. The application for the Trevor Platt Memorial Scholarship was delayed due to the pandemic and scheduled to open in 2022. There is a possible collaboration with EUMETSAT for a dedicated online course. The next Int'l Ocean Colour Science meeting is scheduled for May 2023 in USA. SCOR manages NASA grants for IOCCG.

**Action: None.**

### 5.2. InterRidge - International, Interdisciplinary Ridge Studies – *Sang-Mook Lee / Zhang*

The InterRidge Office transferred from IGP (Institut de physique du globe de Paris) in France to Seoul National University in Korea in May 2020. The online newsletter is resuming after a year of interruption. The InterRidge website ([www.interridge.org](http://www.interridge.org)) has a new look and new information and data are being added and updated. The newsletter will be sent out monthly and as before will include recent information on mid-ocean ridge studies occurring around the world as well as meetings, student fellowships, and travel bursaries for joining the seagoing cruises. A new important activity of InterRidge is the launch of scientific webinar series on mid-ocean ridge research and deep-sea studies. This will be conducted monthly and will be important for scientific debate and discussion in this age of restricted travel.

**Action: None**

### 5.3. Global Alliance of CPR Surveys (GACS) – *Anthony Richardson / Uku*

Update pending

**Action: None**

### 5.4. International Association for Biological Oceanography (IABO) – *Enrique Montes*

IABO supports the organization of the World Conference on Marine Biodiversity (WCMB) conferences by reviewing proposals from bidding organizations and providing advise in the planning and scoping of these events. During the past WCMB conference held in December 2020 (online), IABO held a reporting session in which the current Executive Committee and Task Group members were ratified for through 2023. Profs. Edgar and Hawkins were recognized with the Carlo Heip Excellence Award for their outstanding contributions in the field of marine biodiversity during an online ceremony. IABO also evaluated and selected bid proposals for upcoming WCMB conferences.

IABO reviewed bid proposals and selected submissions by the Centre for Marine and Coastal Studies at Universiti Sains Malaysian and the Flanders Institute at Ghent for the 6th and 7th WCMB meetings respectively. IABO received \$5,000 USD originally intended to cover travel costs for 3-5 participants to attend the 5th WCBM to be held in Auckland, New Zealand, but due to travel restrictions from the Covid-19 pandemic these funds were used instead to cover registration costs for attending the 5th WCMB in its virtual format. IABO received a formal invitation to help develop or solicit projects for the Ocean Decade as part of the endorsed Marine Life 2030 Ocean Decade Programme, and the association will soon announce this partnership to IABO's membership to collate expressions of interest to contribute ideas to ML2030.

**Action: Identify areas of future cooperation with IABO.**

#### **5.5. International Association for the Physical Sciences of the Oceans (IAPSO) – Trevor McDougall**

IAPSO works mainly through biennial scientific assemblies, working groups, committees, commissions and services, and website information. Since 2019 IAPSO is sponsoring two IAPSO Best Practice Study Groups every two years. These Study Groups are designed to assess technical and computational choices that are available, and to recommend best practices in the field. IAPSO has an Early Career Scientist Working Group which met for the first time in 2019. The ECS medal winners were Dr. Thomas Wahl (USA) and Dr. Jessica Fitzsimmons (USA). Prof. Carl Wunsch won the 2021 Prince Albert I Medal. In conjunction with IACS, IAPSO is establishing a new Joint Commission: Joint IAPSO/IACS Commission on Ice-Ocean Interaction. Organization for oceanographic standards and services. IAPSO plans to continue to continue its work as new systems need calibration and inter-comparison, to continue with the biannual assemblies and work to encourage scientists from less developed countries, help early career scientists and continue to improve gender balance.

**Action: Identify future areas for SCOR cooperation with IAPSO.**

#### **5.6. International Association for Meteorology and Atmospheric Sciences (IAMAS) – Joyce Penner**

IAMAS had a Virtual Atmosphere-Cryosphere-Oceanography seminar series (VACO 2021) from July 19-23, 2021. The meeting was organized as 5 general topics, with one invited talk from each association. IAMAS established an Early Career Scientist Committee and chose Jing Li (Peking University) as Chair, Sarah Perkins-Kirkpatrick as Vice-Chair who will participate in the monthly Bureau meetings. IAMAS established a Facebook page and Twitter feeds and WeChat. The Early Career Committee has established monthly virtual seminars to help build the community, and IAMAS is planning to have a special Early Career Workshop prior to the next meeting in Berlin in 2023.

**Actions: Identify future areas of cooperation with IAMAS.**

## **6. INTERGOVERNMENTAL AND PARTNER ORGANIZATIONS**

### **6.1. Intergovernmental Oceanographic Commission (IOC) – Salvatore Arico / Sicre**

The IOC and SCOR have long successfully cooperated and thereby strengthened research and scientific programmes. The IOC Secretariat looks forward to sharing with SCOR its views on those proposals for new and to-be-renewed SCOR Working Groups that more closely reflect the current priorities of IOC in ocean science and support the UN Decade for Ocean Science and Sustainability. IOC co-supports with SCOR GlobalHAB, the IOCCP, and the IIOE-2.

**Actions: None**

### **6.2. North Pacific Marine Science Organization (PICES) – *Sanae Chiba / Yoo***

SCOR and PICES have developed cooperative methods that have made it possible for an international non-governmental organization and a regional intergovernmental organization to share their strengths. Continuing and expanding collaboration between PICES and SCOR is based on the recognition that PICES can play an important role in bringing a North Pacific perspective to the global activities of SCOR, and that by participating in and implementing these activities in the region, PICES can advance its own scientific agenda. The three main areas of SCOR and PICES collaboration are: (1) reciprocal representation of executive members at annual meetings and other activities, (2) contribution of scientific expertise to the relevant international scientific projects (through participation to SCOR WGs and co-sponsoring scientific projects and workshop/conference) and (3) capacity development (e.g. Sponsoring Summer School, Promotion of Early Careers, Supporting travel for scientists from developing countries). Sanae Chiba is the new PICES Deputy Executive Secretary and will serve in the SCOR Capacity Development Committee. Opportunities for further collaboration include: expanding activity network beyond NA/NP, science communication, uptake of Indigenous knowledge, involvement of SIDs, empowerment of Women, and a greener ocean science.

**Actions: As determined from presentation and discussions at the SCOR Annual Meeting.**

### **6.3. Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) – *Bob Duce /***

During the past year GESAMP WG 38 has focused its attention on the following four areas: 1) Carrying out a virtual workshop on the atmospheric transport of microplastics to and from the ocean in collaboration with WG 40; 2) Continuing development of a workshop on the ocean management and policy implications of the air/sea exchange of chemicals; 3) Expansion of interactions with the Future Earth research program Surface Ocean - Lower Atmosphere Study (SOLAS); and 4) Carrying out other WG activities. They present information on peer-reviewed publications of WG 38 in 2020 and 2021 and plans for WG 38 for 2021-2022. The GESAMP WG38 organized the “Workshop on the atmospheric transport of microplastics to and from the ocean” on November 17-19, 2020. For the eighth year in a row WG 38 organized a session on atmospheric input of chemicals to the ocean for the 2021 European Geosciences Union meeting, held in Vienna, Austria in April – “Air-sea Exchanges: Impacts on Biogeochemistry and Climate”. A number of oral and poster papers at this session were presented by a combination of WG 38 members and other scientists.

Tim Jickells, Robert Duce, Melanie Bergmann, and Peter Liss (all members of WG 38) have organized a session at the American Geophysical Union Fall Meeting in December 2021 in New Orleans, LA entitled “Microplastics in the Atmosphere and Ocean”. WG38 continues to maintain contact with the International Nitrogen Initiative, and Tim Jickells has contributed to their developing nitrogen flux methods publication.

**Action: None. Funding for this activity is provided by an NSF grant to SCOR has been completed.**

### **6.4. Partnership for Observation of the Global Oceans (POGO) – *Lilian Krug / Yoo***

SCOR and POGO co-sponsor the POGO-SCOR Visiting Fellowship programme, as well as the International Quiet Ocean Experiment (IQOE). POGO is organized in three pillars: (1) innovation in ocean observing, (2) capacity development targeted primarily at scientists from developing countries

and economies in transition, and (3) outreach and advocacy aims to articulate the societal benefits of ocean observing to people at all levels – from the general public to policy makers. The POGO website was recently updated to reflect more accurately these three pillars. POGO invited the community to get involved which may be through becoming a member, becoming an ocean training partner and/or contributing to Oceanscape (Oceanscape.org).

**Action: None**

#### **6.5. International Science Council (ISC) – Mathieu Denis / Sicre**

The International Science Council (ISC), launched in June 2018 has established a new full governing board; developed and implemented forward-looking strategies, policies and work plans focused on operationalizing the ISC vision and mission; invested in connecting and working much more closely with their members; and built an ambitious, relevant, and responsive portfolio of scientific activities that address major contemporary global challenges for both science and society. ISC has expanded their science and policy networks and improved their communication and outreach capacity. In October 2021 the ISC had the 2<sup>nd</sup> General Assembly in which the 2022-2024 action plan was adopted along with two resolutions: to have coordinated action in favour of necessary reform of the scientific publishing industry, and to welcome the UN SG's intention to re-establish the Scientific Advisory Board and to develop a strategy that mobilizes the expertise of members, scientific networks, and partners. The SCOR Executive Committee and Executive Director responded to the ICSC review of SCOR. The 'International Initiatives Leadership' (IIL) that was planned for March 2020 in Paris was rescheduled as an online meeting in March 2021. The meeting was aimed to discuss the science needed for sustainability and how the science community can strengthen its collective impact on global decision-making. The IIL and the 2<sup>nd</sup> General Assembly were attended by Sinjae Yoo, Marie Alexandrine Sicre and Patricia Miloslavich on behalf of SCOR. Under the new ISC structure, SCOR is a "Thematic Organization" under "Affiliated Bodies" (<https://council.science/what-we-do/affiliated-bodies/>). Within ocean science, the ISC is also a co-sponsor of GOOS, the WCRP and GCOS and has an MoU with the IOC for cooperation in support of the development and implementation of the UN Ocean Decade.

**Actions: Identify topics for further collaboration.**

#### **6.6. Scientific Committee on Antarctic Research (SCAR) – Yeadong Kim / Myers**

SCOR and SCAR currently co-sponsor the Southern Ocean Observing System (SOOS). The Covid-19 pandemic has continued to severely impact SCAR activities. Although SCAR's biennial Open Science Conference in Hobart in August 2020 had to be cancelled, SCAR hosted SCAR 2020 Online, which attracted 2712 participants from 60 countries. In March 2021, the first virtual meeting of the SCAR Delegates took place, welcoming a new member country as well as a new SCAR President and Vice President. Three new Scientific Research Programmes were approved in late 2020, representing the Antarctic research community response to the key current science questions of global relevance.

**Action: Confirm co-support for SOOS in 2022.**

#### **6.7. Future Earth Ocean / Ocean Knowledge Action Network (Ocean KAN) – Clément Brousse & Linwood Pendleton**

Future Earth Secretariat is carrying activities related to ocean science on a regular basis. In addition of liaising with the research projects SOLAS and IMBeR (through funding, sharing of opportunities

etc.), Future Earth Secretariat worked this year with the Ocean KAN (Knowledge Action Network) to have it become independent, through the installation of an international project office IPO).

Since autumn 2020, Future Earth, with the Ocean KAN development team, and a group of individuals from SCOR, WCRP and the IOC-UNESCO (in their individual capacity) released a call for application to find a host for the Ocean KAN International Project Office. After receiving 4 applications, the Selection Committee chose a French Consortium (led by CNRS) to host the Ocean KAN IPO for the coming 3 years. The IPO was officially launched in July 2021. Linwood Pendleton has been hired to lead the IPO.

**Actions: As determined from presentation and discussions at the SCOR Annual Meeting.**

### **6.8. World Climate Research Program (WCRP) – Hindumathi Kulaiappan / Penner**

WCRP is in the process of implementing its new research strategy (WCRP Strategic Plan 2019-2028). Major elements of the implementation plan are to strengthen support for core research, ensure engagement of the next generation of scientists and improve the diversity of WCRP leaders—across nations, regions, and disciplines, deepen their interaction with partners at the national and international levels, and ensure that society has the climate knowledge that it needs for decision-making. The new WCRP structure was fully approved at the 42nd Session of the Joint Scientific Committee (JSC-42) held in June/July 2021, and will be fully operational by late 2022, with the first step being the development of the Implementation Plan.

WCRP carries most of its activities through four core projects: CLIVAR (oceans and climate - [www.clivar.org](http://www.clivar.org)), CliC (cryosphere and climate - [www.climate-cryosphere.org](http://www.climate-cryosphere.org)), GEWEX (water and climate [www.gewex.org](http://www.gewex.org)) and SPARC (upper atmosphere and climate - <http://www.sparc-climate.org>). Both CLIVAR and CliC are endorsers of the SCAR/SCOR Southern Ocean Observing System (SOOS). Of these core projects the work of CLIVAR is of relevance to SCOR. All CLIVAR meetings in the past 12 months have been organised virtually, including the SSG-26 and the WCRP-CLIVAR Workshop on Climate Interactions among the Tropical Basins. To increase the presence of ECS in the CLIVAR community, the CLIVAR SSG suggested each panel to recruit at least one ECS as panel members and build strong link with ECS organizations, such as the Young Earth System Scientists (YESS) community. The CLIVAR-FIO Summer School on Ocean Macroturbulence and Its Role in Earth's Climate is now rescheduled for 19-25 June 2022, in Qingdao, China. The 3rd Summer School on Theory, Mechanisms and Hierarchical Modelling of Climate Dynamics: Tropical Oceans, ENSO and their Teleconnections and the CLIVAR-GOOS Workshop titled 'From global to coastal: Cultivating new solutions and partnerships for an enhanced Ocean Observing System in a decade of accelerating change' are also being rescheduled for August 2022 at ICTP, Trieste, Italy.

**Actions: As determined from presentation and discussions at the SCOR Annual Meeting.**

## **7. CAPACITY BUILDING ACTIVITIES - Miloslavich**

### ***SCOR Committee on Capacity Development***

The SCOR Committee on Capacity Development (CCD) was renewed in 2021 with Missy Feeley (USA/UK), Venu Ittekot (Germany), Prasanna Kumar (India), Margareth Kyewalyanga (Tanzania), and Sun Song (China) stepping down. An additional ToR was added to the above list related to time of service: "Members of the SCOR Committee on Capacity Development will be appointed for three years, with one additional renewal for a total period of service of 6 years." New appointed members

to the Committee are Ntahondi Nyandwi (Tanzania), Paula Sierra (Colombia), Sun Xiaoxia (China-Beijing), and Rebecca Zitoun (The Netherlands, and an early career scientist). The renovated committee members would like to be more engaged, providing ideas and feedback as stated in the terms of reference, and contributing to SCOR's capacity development activities within their capabilities. They are also discussing the possibility of having regular virtual meetings to discuss new ideas and initiatives. In the past year, the committee reviewed one set of requests for travel support to scientific meetings and reviewed the 2021 SCOR Visiting Scholar applications.

### ***SCOR Visiting Scholars***

The six SCOR Visiting Scholars approved for 2020 to work in Fiji, Angola, India, Philippines, and India along with the four visiting scholars approved for 2021 to work in Brazil, Malaysia, South Africa, and Vietnam were not able to travel due to COVID-19. SCOR will support their travel when they reprogram for 2022. The call for 2022 Visiting Scholars will be issued in late October 2021 to close in December 2021. The article by Ed Urban and Sophie Seeyave (POGO Executive Director) on the SCOR Visiting Scholar Program and POGO Visiting Professor Program submitted to Oceanography magazine was published (doi:10.5670/oceanog.2021.306).

### ***POGO-SCOR Fellowships for Oceanographic Observations***

In 2020 and 2021, 45 and 42 applications for this programme were received. Applicants represented 25 and 27 countries respectively for 2020 and 2021. For both years, most of the candidates proposed host institutions majorly located in Europe and North America. With the combined available budget from POGO and SCOR, a total of 5 candidates were selected in 2020 and 6 in 2021. SCOR contributed in 2021 an additional amount to support the sixth candidate. Some of the fellows have been able to complete their training, others are underway, and others are in standby.

### ***NSF Travel Support for Developing Country Scientists***

SCOR currently has two ongoing grants with NSF to support capacity development activities. Grant # 1724881 has a No-cost-extension until July 2022 because of the delays in meetings due to COVID-19, with a balance of ~\$17,000. Grant # 2027831 which was approved in 2020 is on its second year, however the full amount of US\$ 225,000 is available due to the lack of travel. For 2020 and 2021 a total of 11 request for funding events was received. Of the requests approved between the 2020 and 2021 SCOR Annual Meetings, only two were completed: the 5th World Conference on Marine Biodiversity used some of the funding to support registrations for 21 participants from developing countries, and the GEOTRACES SWINGS cruise. The rest of the meetings were either cancelled or postponed. SCOR has had the policy of extending the approved amount to a postponed date.

### ***Research Discovery Camps at the University of Namibia***

The 2020 Research Camp was initially postponed from April to December 2020, and then to 2021 because of the pandemic. However, since the conditions for travel in 2021 had not improved, the online series "Discovery Seminars" was organized by the Namibian Research Graduate Network in Oceanography (RGNO). The Namibian RGNO is an international capacity-development and collaboration-promoting project promoted by SCOR. It is executed in partnership between Namibian and international research and training institutions. RGNO's research-based postgraduate programs offer hands-on experience at sea as well as study sections and lab work on land. This program is supported through grants from the Agouron Institute and the Simons Foundation.

**Actions: Funding for these activities are provided by an NSF grant to SCOR, by POGO and by the Agouron Institute and Simons Foundation.**

## 8. SCOR RELATED MEETINGS

The SCOR 2020 and 2021 meetings were originally planned to be in Guayaquil, Ecuador and in Busan, Korea but due to COVID-19, these were held online. The meetings were going to be hosted by hosted by the Instituto Nacional de la Armada (INOCAR) and by the Korea Institute of Ocean Science and Technology (KIOST) respectively. Both INOCAR and KIOST remain enthusiastic about having a SCOR meeting in Ecuador and in Korea and can host the annual meeting in 2022 and 2023. During the 2020 annual meeting, Colombia and China offered to host the SCOR meetings in the near future (2024 and 2025). See locations of past SCOR meetings at the SCOR website (<https://scor-int.org/events/category/annual/>).

**Actions: Confirm 2022 and 2023 venues for SCOR Annual Meeting and confirm expression of interest from Colombia and China for 2024 and 2025 or others. Set tentative date for 2021 meeting.**