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MEMORANDUM

TO: Attendees, 2019 SCOR Annual Meeting
FROM: Ed Urban, SCOR Executive Director
RE: Background Book for Meeting
DATE: 22 August 2019

I am pleased to enclose the background book for the upcoming SCOR Annual Meeting in Toyama, Japan. I hope that you have a chance to read it before the meeting, although I know that the time is limited and the background materials are extensive. Please be sure to review the annotated agenda following. I have tried to identify the actions that we need to consider at the meeting and have cross-referenced the agenda items to the pages where relevant background information can be found, so we can make the best use of our time together. Please skim the remainder of the book and focus on those sections that are most closely related to your interests and responsibilities. I hope that the book also will be a useful reference to you between SCOR meetings. The background book is also available on the Web, at <https://scor-int.org/events/scor-annual-meeting-2019/>.

We will not be able to bring extra background books to the meeting, so please bring your copy if you requested one. Please let me know if you think other items should be made available to participants at the meeting.

I look forward to seeing each of you in Toyama next month!

2019 SCOR ANNUAL MEETING

Toyama, Japan
23-25 September 2019

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NM = Nominated Member

Agenda for 2019 SCOR Annual Meeting in Toyama, Japan

	Sun., Sept. 22	Mon., Sept. 23	Tues., Sept. 24	Wed., Sept. 25		
9:00	SCOR Executive Committee Meetings in Closed Session	Welcome, Logistics, and Introductions	WG Proposals – Feedback to Proponents	IABO IAMAS IAPSO		
9:15		President's Report				
9:30		Executive Director's Report				
9:45		Preparations for 2020 SCOR Elections		BREAK		
10:00		BREAK	BREAK	InterRidge IOCCG GACS		
10:15		Current WGs	IMBeR	Finances Report of Ad Hoc Finance Committee		
10:30			SOLAS			
10:45			GEOTRACES GEOTRACES Review	IIOE-2	2020 and 2021 SCOR Meetings	
11:00				IOC	Close of Meeting	
11:15				LUNCH	LUNCH	LUNCH
11:30	Public Symposium in Toyama	Discussion of WG Proposals	IOCCP IOCCP Review	SCOR-JOS Joint Symposium		
11:45			SOOS			
12:00			BREAK		BREAK	
12:15			Discussion of WG Proposals		GlobalHAB	
12:30					JCS COBS	
12:45		IQOE				
13:00		Canal Cruise & Welcome Reception	<u>City Walking Tour & Dinner</u>	<u>Onsen (Hot Spring) & Conference Dinner</u>	SCOR-JOS Dinner	
13:15						PICES
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20:00				SCOR Executive Committee meets in closed session		

2019 SCOR ANNUAL MEETING

Toyama, Japan
23-23 September 2019

ANNOTATED AGENDA

1.0 OPENING

1.1 Opening Remarks and Administrative Arrangements, p 1-1

Zhang, Sicre, Urban

1.2 Approval of the Agenda, p. 1-14

Sicre

Additions or modifications to the agenda as distributed may be suggested prior to approval of the final version.

1.3 Report of the President of SCOR, p. 1-14

Sicre

The President will briefly review her activities for SCOR since the SCOR Annual Meeting in September 2018 in Plymouth, UK.

1.4 Report of SCOR Executive Director, p. 1-14

Urban

The Executive Director will report on his activities for SCOR since the 2018 SCOR Annual meeting, and on the current condition of SCOR.

1.5 Appointment of an *ad hoc* Finance Committee, p. 1-17

Sicre

The SCOR Constitution requires that a Finance Committee be appointed at every SCOR meeting. It must consist of at least three members of SCOR who are not members of the Executive Committee. The Finance Committee reviews the administration of SCOR finances during the previous fiscal year and the current year, and will propose a budget for 2020 activities and dues for 2021. Members of the 2019 Finance Committee approved by the Executive Committee are Riitta Autio (Finland), Peter Croot (Ireland), Ilka Peeken (Germany), and Song Sun (China-Beijing). The Committee will report to the meeting under agenda item **8.3**.

1.6 2020 Elections for SCOR Officers, p. 1-17

Burkill

The SCOR President and all three Vice-President positions are open for nominations for the 2020 elections.

Action: Request volunteers for Nominating Committee.

2.0 WORKING GROUPS

2.1 Current Working Groups

The Executive Committee Reporter for each working group (or a member of the group) will present an update on working group activities and progress, and will make recommendations on actions to be taken.

2.1.1 WG 142 on Quality Control Procedures for Oxygen and Other Biogeochemical Sensors on Floats and Gliders, p. 2-1

The group produced four documents by WG members that directly related to the terms of reference of the group, and group members contributed to 9 other BGC-Argo cookbooks. The group had excellent interactions with Argo, although their work is also relevant to gliders.

Action: None, group has been disbanded

2.1.2 WG 143 on Dissolved N₂O and CH₄ measurements: Working towards a global network of ocean time series measurements of N₂O and CH₄, p. 2-5 *Urban*

Since the 2018 SCOR Annual Meeting, group members led a workshop on methane and nitrous oxide in October 2018 at Lake Arrowhead, California, USA, funded by the U.S. Ocean Carbon and Biogeochemistry (OCB) program. The group also participated in preparation of a white paper for OceanObs'19¹ and another reporting on their intercomparison activity.² The group's request to extend its term until the 2019 SCOR Annual Meeting to complete activities underway, was approved at the SCOR Annual Meeting in Plymouth. Finally, they are preparing standard operating procedures (SOPs), which they hope to complete by the end of 2019.

Action: Consider disbanding when SOPs are completed.

2.1.3 WG 145 on Chemical Speciation Modelling in Seawater to Meet 21st Century Needs (MARCHEMSPEC), p. 2-9 *Sicre*

Members of the group received a three-year grant from the U.S. National Science Foundation and the UK Natural Environment Research Council to conduct research related to the group's work. The group has also enlisted the help of several national laboratories in its work and is also cooperating with the Joint Committee on Seawater on pH issues (see **agenda item 4.3**). The group has two additional peer-reviewed papers in preparation. It will hold its final meeting on 16 February 2020 at the 2020 Ocean Sciences Meeting in San Diego, Calif, USA. The group has proposed a tutorial and a special session at Ocean Sciences, and will provide an opportunity at the SCOR booth to test software on which the group is working.

Action: Consider funding for 2020 meeting.

2.1.4 WG 147: Towards comparability of global oceanic nutrient data (COMPONUT), p. 2-13 *Aoyama, Sicre*

The group held an editorial meeting on 7-10 July 2019 to work on the nutrient analysis portion of the GO-SHIP manual and on international nutrient intercalibration exercises.

Action: Consider disbanding the group

2.1.5 WG 148 on International Quality Controlled Ocean Database: Subsurface temperature profiles (IQuOD), p. 2-18 *Myers*

The group produced a peer-reviewed paper this year, on an algorithm for estimating which XBT instruments were used in measurements, based on metadata available.³ The group will meet for

¹Bange, H.W., et al. 2019. A Harmonized Nitrous Oxide (N₂O) Ocean Observation Network for the 21st Century. *Frontiers in Marine Science*, 2 April 2019, <https://doi.org/10.3389/fmars.2019.00157>.

²Wilson, S.T., et al. 2018. An intercomparison of oceanic methane and nitrous oxide measurements. *Biogeosciences* 15:5891–5907. <https://doi.org/10.5194/bg-15-5891-2018>

³Palmer, M.D., et al. 2018. An Algorithm for Classifying Unknown Expendable Bathythermograph (XBT) Instruments Based on Existing Metadata. *Journal of Atmospheric and Oceanic Technology* 35:429-440.

the final time as a SCOR WG on 28 October-1 November 2019 in Brest, France.

Action: Consider disbanding the group.

2.1.6 WG 150 on Translation of Optical Measurements into particle Content, Aggregation & Transfer (TOMCAT), p. 2-24

Burkill

Members of TOMCAT (with members of WG 154)) were involved this year in shaping a Community White Paper on Observational Needs as part of OceanObs'19.⁴

Action: Consider funding for 2020 WG meeting, pending receipt of annual report

2.1.7 WG 151: Iron Model Intercomparison Project (FeMIP), p. 2-25 *Casacuberta-Arola*

The group did not meet in person this year, but made progress on each of its terms of reference virtually using email and Slack. An open-access article is being drafted related to practices for minimum complexity representations of the iron cycle in models (TOR #1). The group has submitted a proposal for a session at Ocean Sciences 2020 related to the goals of the group. They plan to meet on 16 February 2020, in conjunction with Ocean Sciences.

Action: Consider funding for 2020 WG meeting.

2.1.8 WG 152 on Measuring Essential Climate Variables in Sea Ice (ECV-Ice), p. 2-28

Nomura, McDougall

The group held an intercalibration exercise in February 2019 and published several peer-reviewed articles.⁵ The group will meet next on 16-18 August 2019 in Winnipeg, Canada. This will be the group's last full meeting.

Action: Consider budgeting remaining WG funds left after 2019 WG meeting (expected to be about \$8000) to help developing country members or other scientists participate in intercalibration experiments in 2020.

2.1.9 WG 153 on Floating Litter and its Oceanic Transport Analysis and Modelling (FLOTSAM), p. 2-34

Martinez Vicente, Myers

This group participated in a white paper on marine litter for OceanObs'19, to be published in *Frontiers in Marine Science*.⁶ Several other articles are in review or in preparation. WG 153 met most recently in Utrecht, The Netherlands on 6-9 May 2019. The group has proposed a session at Ocean Sciences 2020.

Action: Consider funding for 2020 WG meeting.

⁴Lombard, F., et al. 2019. Globally consistent quantitative observations of planktonic ecosystems. *Front. Mar. Sci.* 6:196. <https://doi.org/10.3389/fmars.2019.00196>

⁵Butterworth, B.J. and Else, B.G.T. 2018. Dried, closed-path eddy covariance method for measuring carbon dioxide flux over sea ice. *Atmos. Meas. Tech.* 11:6075-6090, <https://doi.org/10.5194/amt-11-6075-2018>
Campbell, K., Mundy, C. J., Juhl, A. R., Dalman, L. A., Michel, C., Galley, R. J., Else, B. E., Geilfus, N. X., and Rysgaard, S. 2019. Melt Procedure Affects the Photosynthetic Response of Sea Ice Algae. *Front. Earth Sci.* 7:21. [doi:10.3389/feart.2019.00021](https://doi.org/10.3389/feart.2019.00021)

Meiners, K.M., et al. Chlorophyll-a in Antarctic land-fast sea ice: A first synthesis of historical ice-core data. *Geophysical Research: Oceans* 123:8444-8459, <https://doi.org/10.1029/2018JC014245>.

Roukaerts, A., D. Nomura, F. Deman, H. Hattori, F. Dehairs, and F. Fripiat. 2019. The effect of melting treatments on the assessment of biomass and nutrients in sea ice (Saroma-ko lagoon, Hokkaido, Japan). *Polar Biology* 42(2):347–356, <https://doi.org/10.1007/s00300-018-2426-y>

⁶Maximenko, N., et al. 2019. Towards the Integrated Marine Debris Observing System. *Front. Mar. Sci.* doi: [10.3389/fmars.2019.00447](https://doi.org/10.3389/fmars.2019.00447)

2.1.10 WG 154 on Integration of Plankton-Observing Sensor Systems to Existing Global Sampling Programs (P-OBS), p. 2-43 *Miloslavich*

A subgroup of the group met in Villefranche-sur-Mer, France, in November 2018 to finalize a draft section for the GO-SHIP Manual, summarizing existing technology that could be incorporated into GO-SHIP cruises to measure plankton-relevant parameters, the relevant best-practice documents, associated costs and effort, and to organize its 2nd in-person meeting, in conjunction with Ocean Obs'19. The group participated (with WG 150) in a community white paper for OceanObs'19 (see footnote 4).

Action: Consider funding for 2020 WG meeting.

2.1.11 WG 155 on Eastern boundary upwelling systems (EBUS): diversity, coupled dynamics and sensitivity to climate change, p. 2-46 *Halpern*

The group is working on a review paper about knowledge of EBUS systems, a second paper on EBUS models, a summer school (May 2020 in Dakar, Senegal) and open science meeting (2021 in Lima, Peru), a data portal, and a data and monitoring needs report. Their next meeting is planned to occur in conjunction with the summer school in Dakar.

Action: Consider funding for 2020 WG meeting.

2.1.12 WG 156 on Active Chlorophyll fluorescence for autonomous measurements of global marine primary productivity, p. 2-49 *Yoo*

The group met for the first time in June 2019 for five days and has made a good start on many of its terms of reference. In particular, the group's intercomparisons conducted in June will be used to produce a best-practices document related to active chlorophyll fluorescence measurements. Group members will verify some of the best practices in the next 6 months, before producing a manual in eBook format.

Action: Consider funding for 2020 WG meeting.

2.1.13 WG 157: Toward a new global view of marine zooplankton biodiversity based on DNA metabarcoding and reference DNA sequence databases (MetaZooGene), p. 2-54 *Miloslavich*

WG 157 will hold a symposium (see <https://metazoogene.org/symposia>) and its first meeting on 13-14 September 2019 in Gothenburg, Sweden. Work has begun on an open-access data portal for barcode data and metadata, and a review paper on which this information will be based. The second WG meeting will be held in conjunction with Ocean Sciences 2020 in San Diego, Calif., USA.

Action: Consider funding for 2020 WG meeting.

2.2 Working Group Proposals

2.2.1 Roadmap for a Standardised Global Approach to Deep-Sea Biology for the Decade of Ocean Science for Sustainable Development (DeepSeaDecade), p. 2-58 *Miloslavich*

Action: Consider as new SCOR working group.

- 2.2.2 Marine Species Distribution Modelling in the global ocean (MSDM-GO), p. 2-77**
Penner
Action: Consider as new SCOR working group.
- 2.2.3 DIagnoSis of Carbon in the Ocean: Variability, unceRtainty and the Coasts (DISCOVER-C), p. 2-95**
McDougall
Action: Consider as new SCOR working group.
- 2.2.4 Changing Biotic-Sediment Interactions in the Ocean Seabed (CBIOS), p. 2-114** *Yoo*
Action: Consider as new SCOR working group.
- 2.2.5 Coordinated Global Research Assessment of Seagrass System (C-GRASS), p. 2-132**
Burkill
Action: Consider as new SCOR working group.
- 2.2.6 Integration of international ocean acidification research at CO₂ seeps (InterSEEP), p. 2-149**
Myers
Action: Consider as new SCOR working group.

3.0 LARGE-SCALE SCIENTIFIC PROGRAMS

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, p. 3-1** *Lam, Duce*
GEOTRACES convened a [joint workshop with PAGES](#) in December 2018 on the implications of GEOTRACES observations for paleoceanography, one of GEOTRACES's three main themes. GEOTRACES has also been working on a new data portal to make data input and processing more efficient for the next Intermediate Data Produce, which is scheduled for 2021. The GEOTRACES Data Management Committee and SSC will meet in Hobart, Tasmania on 7-11 September 2019. The SCOR review of GEOTRACES is nearing its completion and results will be presented at the SCOR Annual Meeting by a co-chair of the GEOTRACES Review Panel.
Action: Discuss recommendations of the GEOTRACES Review Panel

3.2 Surface Ocean – Lower Atmosphere Study (SOLAS), p. 3-33 *Miller, Penner*
SOLAS activities since the 2018 SCOR meeting have included the SOLAS SSC Meeting, held in April 2019 near Sapporo, Japan and the SOLAS Open Science Conference, held immediately in Sapporo immediately before the SSC meeting.

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

3.3 SCOR/POGO International Quiet Ocean Experiment (IQOE), p. 3-48 *Urban, Halpern*

IQOE is still ramping up its activities, through its working groups. IQOE submitted an abstract on passive acoustics for OceanObs'19, which was combined with abstracts on active acoustics to create a community white paper.⁷ Much of the IQOE implementation work is being done by IQOE working groups. Advertisements have just closed for two IQOE-related data staff at the Alfred Wegener Institute.

Action: Consider 2020 support from SCOR to IQOE.

3.4 SCOR/Future Earth Integrated Marine Biosphere Research, p. 3-58 *Claydon, Burkill*

The IMBeR Scientific Steering Committee met most recently in Brest, France in June 2019, immediately following the 2nd IMBeR Open Science Conference on 23-27 June 2019. IMBeR is considering responses to its request for bids for moving its International Project Office, which will happen in 2020.

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

3.5 SCOR/IOC/IOGOOS Second International Indian Ocean Expedition (IIOE-2), p. 3-92 *D'Adamo, Burkill*

SCOR has helped support the first three annual meetings of the IIOE-2 Steering Committee. IIOE-2 will contribute to the International Indian Ocean Science Conference 2020 on 16-20 March 2020 in Goa, India

Action: Consider 2020 support from SCOR to IIOE-2.

4.0 INFRASTRUCTURAL ACTIVITIES

4.1 IOC/SCOR International Ocean Carbon Coordination Project, p. 4-1 *Ishii, Halpern*

The review of IOCCP by SCOR and IOC will be completed and reported on at the time SCOR Annual Meeting. One of the IOCCP co-chairs will attend the SCOR meeting to present the annual update about IOCCP.

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

⁷<https://www.frontiersin.org/articles/10.3389/fmars.2019.00426/full>

4.2 GlobalHAB, p. 4-39

Berdalet, Yoo

Since the last meeting of the GlobalHAB SSC at the Laboratoire d'Océanographie de Villefranche (LOV) in Villefranche-sur-mer (France) on 10-11 April 2018, SSC members have worked on implementation of the GlobalHAB by communication through email and virtual meetings of small groups. GlobalHAB has several activities planned for the coming year, including a workshop at the 2019 PICES Annual Meeting in Canada on the economics of HABs, a workshop in Chile on fish-killing HABs, and production of a manual for water managers on mitigation of cyanobacterial HABs.

Action: Suggest new sources of funding for GlobalHAB.

4.3 IAPWS/SCOR/IAPSO Joint Committee on Seawater (JCS), p. 4-56

McDougall

This group was formed to continue the work of SCOR/IAPSO WG 127 on Thermodynamics and Equation of State of Seawater. 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. The JCS has been responsible for continued implementation of TEOS-10, as well as conducting experimentation and modeling for proper description of seawater properties in models. The JCS has been working with SCOR WG 145 in terms of pH and its effects on trace metals and other components of seawater.

Action: Consider funding for 2020.

4.4 SCAR/SCOR Southern Ocean Observing System (SOOS), p. 4-61

Newman, Miloslavich

The SOOS SSC met most recently in Korea on 16-18 May 2019. SOOS will represent SCOR at the annual meeting of the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) meeting on 21 Oct.-1 Nov. 2019. Use of SOOSMap, which is a portal of Southern Ocean data, has been substantial since last year's SCOR Annual Meeting. All 10 SOOS working groups have been active, and the circum-Antarctic system of working groups was completed with formation of the Weddell Sea/Dronning Maud Land and the Amundsen/Bellingshausen Sea groups.

Action: None. SCOR has already committed funding for SOOS for 2020.

4.5 Changing Ocean Biological Systems (COBS), p. 4-91

Miloslavich

The major achievement in 2018/2019 was the development and launch of a www-based multi-driver Best-Practice Guide (BPG) – (ToR #4). This BPG is available at <https://meddle-scor149.org/> and comprises three components – decision support for design, MEDDLE (Multiple Environmental Driver Design Lab for Experiments) experimental simulator, and a library of video tutorials. A handbook is available to step the reader through the BPG (<https://doi.org/10.25959/5c92fdf0d3c7a>). The group is still working on its transition from a working group to an infrastructural project, and is considering changes to its terms of reference and membership.

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

5.0 CAPACITY-BUILDING ACTIVITIES

5.1 SCOR Committee on Capacity Building, p. 5-1

Urban

The Committee worked by email this year, evaluating two sets of requests for travel support for ocean science meetings and applications for the 2019 SCOR Visiting Scholars Program. An article about SCOR's capacity-building activities was published in *Scientia* magazine (see <https://www.scientia.global/from-coast-to-coast-building-capacity-in-ocean-science/>).

Action: Consider funding for 2020 activities of the committee.

5.2 SCOR Visiting Scholars, p. 5-1

Urban

Six SCOR Visiting Scholars were approved this year, to work in Angola, Argentina, Brazil, Ecuador, and Mauritius. Ed Urban and Sophie Seeyave (POGO Executive Director) submitted a publication to *Oceanography* magazine describing the SCOR Visiting Scholars program and POGO Visiting Professors program; the publication is being revised for resubmission.

Action: Funding for this activity is provided from a variety of sources. Identify sources of funding for the program from other countries to expand the program.

5.3 POGO-SCOR Visiting Fellowships for Oceanographic Observations, p. 5-5

Urban

Four Fellows were funded in 2019, selected by reviewers from SCOR and POGO. SCOR and POGO have been cooperatively funding this program since 2001.

Actions: None. Funding for this activity is provided by an NSF grant to SCOR.

5.4 NSF Travel Support for Developing Country Scientists, p. 5-14

Urban

Funding from the U.S. National Science Foundation made it possible to provide support in the amount of \$63,500 since the 2018 SCOR meeting for participation of students and early-career scientists in ocean science meetings. The third year of funding in the current grant was awarded by NSF in 2019. A renewal proposal will be submitted in early 2020.

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

5.5 Research Discovery Camps at the University of Namibia, p. 5-16

Urban

The 6th Research Discovery Camp was held at the University of Namibia and National Marine Information and Research Centre (NatMIRC). Some of the funding this year was devoted to training activities for local teachers in Swakopmund, Namibia. Funding is available for at least three additional annual Research Discovery Camps.

Action: None. Funding for this activity is provided by grants from the Agouron Institute and Simons Foundation to SCOR.

6.0 RELATIONS WITH INTERGOVERNMENTAL ORGANIZATIONS

6.1 Intergovernmental Oceanographic Commission (IOC), p. 6-1 *Sicre, Arico*

Marie-Alexandrine Sicre and Ed Urban attended the IOC Executive Council meeting in June 2019 to represent SCOR. At that meeting, SCOR expressing support for considering the second International Indian Ocean Expedition (IIOE-2) as a component of the UN Decade of Ocean Science for Sustainable Development. SCOR and IOC co-fund several activities: IIOE-2 (see item 3.5), IOCCP (see item 4.1), and GlobalHAB (see item 4.2).

Actions: None

6.2 Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), p. 6-10 *Duce*

GESAMP WG 38 convened two workshops at the University of East Anglia (UEA) in Norwich, United Kingdom from 27 February 27 through 2 March 2017. The topics of the two workshops were (1) Impact of Ocean Acidification on Fluxes of Atmospheric non-CO₂ Climate-Active Species and (2) Changing Atmospheric Nutrient Oceanic Solubility. So far, these workshops have resulted in four published peer-reviewed papers, with five additional papers in preparation.

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

6.3 North Pacific Marine Science Organization (PICES), p. 6-15 *Batchelder, Yoo*

PICES and SCOR have been cooperating since PICES was created. PICES has been helpful in regionalizing several international SCOR projects. SCOR and PICES have provided capacity building support for each other's activities, and have cooperated more broadly in capacity building. Hal Batchelder serves as a liaison to the SCOR Committee on Capacity Building.

Actions: To be determined as a result of the presentation and discussion at the SCOR Annual Meeting.

7.0 RELATIONS WITH NON-GOVERNMENTAL ORGANIZATIONS

7.1 International Science Council *Sicre*

The International Science Council (ISC) was launched in June 2018 and has since been focused on establishing a new governing structure. The SCOR Executive Committee and Executive Director continue to work on actions to respond to the ICSU review of SCOR.

Actions: Discuss SCOR actions to respond to ICSU review.

7.1.2 Scientific Committee on Antarctic Research (SCAR), p. 7-1 *Myers*

SCOR and SCAR currently co-sponsor the Southern Ocean Observing System (SOOS).

Action: Discuss whether SCOR should offer to help with other SCAR activities.

7.2 Affiliated Organizations

7.2.1 International Association for Biological Oceanography (IABO), p. 7-4 *Miloslavich*

IABO held its General Assembly at the 4th World Conference on Marine Biodiversity in Montreal, Canada on 13-16 May 2018. A new IABO Executive Committee was elected, including Patricia Miloslavich as the new IABO President and Suchana Chavanich (Thailand) as the new IABO Secretary. The World Conference on Marine Biodiversity is the major focal assembly for sharing research outcomes, management and policy issues, and for discussions of the role of biodiversity and biodiversity conservation in sustaining ocean ecosystems. The 1st Carlo Heip Award Recipient was Prof. Carlos M. Duarte, Director of the Red Sea Research Center and Tarek Ahmed Juffalli Chair in Red Sea Ecology of King Abdullah University of Science Technology of the Kingdom of Saudi Arabia. The 5th WCMB will be held on the 13-16 December 2020 and will be hosted by the University of Auckland under the auspices of IABO.

Action: Identify areas of future cooperation with IABO.

7.2.2 International Association for Meteorology and Atmospheric Sciences (IAMAS), p. 7-10 *Penner*

The IUGG General Assembly was held in Montreal, Canada on 8-18 July 2019, at which IUGG celebrated its 100th anniversary. Much of the annual activity of IAMAS focused on this event and a new IAMAS President, Prof. Joyce Penner (USA) became IAMAS President at the IUGG General Assembly.

Actions: Identify future areas of cooperation with IAMAS.

7.2.3 International Association for the Physical Sciences of the Oceans (IAPSO), p. 7-10 *McDougall*

The IUGG General Assembly was held in Montreal, Canada on 8-18 July 2019, at which IUGG celebrated its 100th anniversary. Much of the annual activity of IAPSO focused on this event and a new IAPSO President, Prof. Trevor McDougall (Australia) became IAPSO President at the IUGG General Assembly.

Action: Identify future areas for SCOR cooperation with IAPSO.

7.3 Affiliated Program

7.3.1 InterRidge - International, Interdisciplinary Ridge Studies, p. 7-13 *Dymant, Zhang*

SCOR and InterRidge co-sponsored a meeting on "Mid-Ocean Ridges and Other Geological Features of the Indian Ocean" on 14-16 November 2018, in Goa, India. This meeting aimed to encourage involvement of the scientists involved in marine geology and geophysics the second International Indian Ocean Expedition (IIOE-2).

Action: None

7.3.2 International Ocean Colour Coordinating Group (IOCCG), p. 7-23 *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 WG on Harmful Algal Blooms. Another important IOCCG activity in recent years have been the biennial International Ocean Colour Science meetings, which are

open meetings designed to bring together the international ocean color community to discuss important issues related to their science. The fourth International Ocean Colour Science meeting took place in Busan, South Korea in April 2019. SCOR manages NASA grants for IOCCG.

Action: None.

7.3.3 Global Alliance of CPR Surveys (GACS), p. 7-30

Burkill

The most recent GACS meeting was held in November 2018 at the Marine Biological Association of the UK (Plymouth, UK). Sonia Batten led a GACS paper on “A global plankton diversity monitoring program” published in *Frontiers in Marine Science*. The next annual GACS meeting will be in November 2019 in Hobart, Tasmania. This will include a one-week training program on the CPR for technicians from South Africa and Brazil.

Action: None

7.4 Other Organizations

7.4.1 Partnership for Observation of the Global Oceans (POGO), p. 7-31

Halpern

SCOR and POGO co-sponsor the POGO-SCOR Operational Oceanography Fellowships, as well as the International Quiet Ocean Experiment (IQOE).

Action: None

8.0 ORGANIZATION AND FINANCE

8.1 Membership

Urban

8.1.1 National Committees, p. 8-1

Report on Membership Changes since 2017 SCOR Annual Meeting, p. 8-1

Member Nations and Nominated Members, p. 8-2

The SCOR Executive discusses on a regular basis how to recruit new nations to participate in SCOR.

Actions: Suggest nations that could be recruited to SCOR.

8.2 Publications Arising from SCOR Activities, p. 8-2

Urban

SCOR projects and working groups have produced many publications in the past year. Several SCOR working groups have special issues or significant papers under development, which will appear in the next year.

Action: None

8.3 Finances, p. 8-3

Finance Committee, Urban

The SCOR Executive Committee approved a Finance Committee consisting of Riitta Autio (Finland), Peter Croot (Ireland), Ilka Peeken (Germany), and Song Sun (China-Beijing). This committee will conduct its work during the SCOR meeting and will report on (1) the 2018 Audit

report, (2) recommendations related for revisions to the 2019 SCOR budget, (3) recommendations for the 2020 SCOR budget, and (4) recommendations for dues levels in 2021.
Actions: Present (1) the final 2018 SCOR financial statement, (2) recommendations related to revisions to the 2019 SCOR budget, (3) recommendations for the 2020 SCOR budget, and (4) recommendations for dues levels in 2021.

9.0 SCOR-RELATED MEETINGS

9.1 SCOR Annual Meetings

9.1.1 2019 SCOR Annual Meeting: Toyama, Japan, p. 9-1 *Zhang*

9.1.2 2020 SCOR Annual Meeting: Guayaquil, Ecuador, p. 9-1
Hidalgo-Vargas, Miloslavich

9.1.3 2021 SCOR Annual Meeting: Busan, Korea, p. 9-1 *Yoo*

9.1.4 Future SCOR Annual Meetings *Urban*
Invitations are open for locations for SCOR Annual Meetings after 2021.

9.2 Locations of Past SCOR Annual Meetings, p. 9-1

9.3 SCOR-Related Meetings Since the 2018 SCOR Annual Meeting and Planned for the Future, p. 9-2