

## Number and Name of SCOR Working Group

1. Brief summary with the main highlights (200-300 words)

WG156 is in its final reporting phase, with a major outcome being submission of the “Best-Practice” document (Application of Single Turnover Active Chlorophyll Fluorescence for Phytoplankton Productivity Measurements), which captures many elements of the original scope of work proposed. WG members are continuing data collection and dissemination activities that will contribute to a longer legacy of the terms of reference.

2. Activities since previous report to SCOR (e.g., virtual or in-person meetings, email discussions, special sessions). Limit 1000 words

Since the last SCOR report (July 2021), our major focus has been on working towards completion of the “Best Practice” document. This has been a major feat, requiring unanticipated amounts of work through numerous iterations. The good news is that Prof Tortell has now officially submitted the first full version of the User Guide to the Ocean Best Practices site (and currently undergoing the internal QC process). The intent is for the WG members to distribute the document widely across their various networks as soon as it becomes accessible online. In addition, our WG members have continued to advance activities in support of the terms of reference:

#### Presentations:

- Oral presentation on applicability of active fluorescence data for remote sensing approaches at Ocean Optics XXV (Schuback), Quy Nhon, Vietnam, October 2-7, 2022

#### New research activities from WG networking:

- Participation in cruise M187 RV Meteor, Walvis Bay, Namibia to Walvis Bay Namibia, for testing of LabSTAF instruments, January-March 2023 (Schuback)
- Visit to Ciotti laboratory (Brazil), September-October 2023 (Schuback, Berman-Frank)
- Participation in cruise DY172 RV Discovery for testing of LabSTAF and MicroSTAF and e:C ratio measurements, December 2023-January 2024 (Schuback)

3. Documents published since previous report to SCOR (e.g., peer-reviewed journal articles, reports, Web pages) and should be limited to publications that resulted directly from WG activities and which acknowledge SCOR support

None published

4. Progress toward achieving group’s terms of reference. List each term of reference separately and describe progress on each one. Limit 1000 words

**i. To inter-compare active Chla induction measurements across instruments and approaches, identifying key aspects of instrument configuration, deployment and parameter acquisition that may introduce variability in retrieved data.**

Largely completed (some additional work through forthcoming campaigns). Much of the work has been captured in the “Best Practices document” through subsequent meetings and writing assignments across the WG.

**ii. To develop, implement and document internationally-agreed best practice for data acquisition, standardised output formats and archiving approaches.**

Completed and submitted (as above, undergoing QC).

**iii. To develop, implement and document internationally-agreed best practice for processing raw fluorescence data to retrieve photosynthetic parameters and primary productivity estimates, taking into account taxonomic and environment factors driving diversity in chlorophyll fluorescence signals in the oceans. From this work we will develop freely available software and documentation to allow non-specialist users to process fluorescence data according to these best practices.**

Completed and submitted (as above, undergoing QC).

**iv. To produce a new synthesis of parallel 14C and active Chla induction measurements that can be used to examine the relationship between these two productivity metrics under a range of field conditions. We will also consider other metrics of Net Primary Production alongside 14C.**

This work remains ongoing with new field campaigns scheduled.

**v. To develop a global database structure for hosting quality-controlled active Chla induction measurements, creating standards for data and meta-data collection, submission and archiving.**

No further progress since last reporting period. However, details are provided in the Best Practice document for recommended database structure.

**vi. To build a framework through which in situ active Chla induction data can be used to validate and refine relevant remote sensing measurements (e.g., sun-induced fluorescence yields).**

No further progress since last reporting period.

**vii. To share knowledge and transfer skills in instrumentation, best practice, quality control and data stewardship with the rapidly expanding user community in developing nations.**

Our dissemination activities for 2023 have been limited to presentations at the Ocean Optics meeting.

5. WG activities planned for the coming year. Limit 500 words

We will attempt to wrap up as many activities as possible as this WG is now in its final year

6. Is the group having difficulties expected in achieving terms of reference or meeting original time schedule? If so, why, and what is being done to address the difficulties Limit 200 words

Several major factors have continued to limit progress since the previous reporting period. Notably, WG members (Moore and Berman-Frank) are Department Head and thus forced to take on continually higher administrative loads. Also, WG member (Suggett) has transitioned into a private

sector role in a new field, and therefore has no time and resources (staff, instrumentation etc.) to support WG activities. Fortunately, much of our terms of reference delivery has been captured through the Best Practice document, with some aspects as legacy goals beyond the WG as activities continue by WG members.

7. Any special comments or requests to SCOR. Limit 100 words.

None

Additional information can be submitted and may be posted at the SCOR Annual Meeting webpage at the discretion of the SCOR Executive Committee Reporter for the WG and the SCOR Secretariat.