

WG 155 Eastern Boundary Upwelling Systems (EBUS): Diversity, Coupled Dynamics and Sensitivity to Climate Change

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

The Eastern Boundary Upwelling systems (EBUS) SCOR WG 155 has been slowly making progress towards TOR's achievements. From the second half of 2021 and until September 2022 much time and effort were devoted to planning and organizing the EBUS Open Science Conference held in Lima, Peru which took place in September 2022. Five members of the WG 155 integrated the organizing committee of the Conference, Along with the Conference several members of the WG also met in person during half of a day. The meeting was mostly dedicated for discussion on the review paper. Recently published works and new information recommended updating the focus of the review with additional analyses to be included. Some progress has been made until present and the paper is at its final stage and expected to be ready for submission this year. The WG has also made progress in updating the website data source. The EBUS Conference was successful and one Special Issues is being prepared for the Journal Deep Sea Research Part II. Intended submissions were proposed by mid December 2022 and there is a list of about 80 potential manuscripts. The reviewing process is ongoing and expected to be completed by May 2024. Further information related to WG can be found in <http://www.igp.gob.pe/programas-de-investigacion/ciencias-de-la-atmosfera-e-hidrosfera/proyectos/SCOR>.

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

1. Between November 2022 and August 2023, online meetings with participation of several members of the WG took place every month mainly focused on organizing the EBUS Conference for Lima, Peru 2022.
2. Planning, organization, and realization of the EBUS Conference in Lima Peru on 19-23 September 2022 (<https://www.ebus-lima2022.com/>)
3. In person meeting of more than half of the WG members during the EBUS Conference in Lima, Peru. The meeting took place half of a day on 22 September.
4. A small group of members of the WG have had virtual meetings during October 2022 and August 2023 to discuss progress on the review paper.
5. In December 2022 the Organizing Committee of the EBUS Conference with several member of the WG involved initiated the process for publishing a Special Issue in the Journal Deep Sea Research II from works presented at the EBUS Conference
6. Organizing and supporting the GOOD-OARS-CLAP-COPAS Summer School 2023, where EBUS dynamics is included and members from SCOR WG EBUS are part of it (as a lecturer or organizers)
7. Preparation of SEPICAF project phase 2 (including elaborate the project <during 2022>, submit it (in September 2022) and started since March 2023), which is dedicated to increase the density of Argo floats along the Eastern Pacific (in front of Ecuador, Peru and Chile) as well as developing the bases for developing a regional Earth System Model for monitoring and studying proposes.

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

Montes, I., Arístegui, J., Chavez, F., Colas, F., Deniz-Gonzales, I., Escribano, R., Guevara, R., Gutierrez, D. (2023). SOLAS event report. Issue 29: EBUS/Humboldt Current System Conference 2022 https://www.solas-int.org/files/solas-int-2019/3%20Publications/Event%20Reports/SOLAS%20Event%20Report_Issue%2029.pdf

Montes, I., Ledgard, C., Bellido, J., & Escribano, R. (2023). <https://ebus.science>: acercando la ciencia a las personas. Boletín científico El Niño, Instituto Geofísico del Perú, vol. 10 n.o 03, págs. XX-XX.

González, C.E., Bode, A., Fernández-Urruzola, I., Hidalgo, P., Oerder, V., Escribano, R. (2023). The lateral transport of zooplankton explains trophic and taxonomic similarities over the zonal gradient of central Chile. Journal of Marine Systems. <https://doi.org/10.1016/j.jmarsys.2022.103840>

Venegas, Ana, Amael-Auger, P., Escribano, R., Parada, C. (2023). Understanding Seasonal Variability of Mesozooplankton Biomass in the Upwelling System of Central-Southern Chile: A Modelling Approach. Progress in Oceanography (under review).

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

- 1) a synthesis of current information on EBUS physical and biogeochemical processes and their time and space scales affecting EBUS dynamics.

A Review paper is being prepared co-authored by members of the WG and led by co-chair Ivonne Montes. Several online meetings and at least one presential meeting have take place to complete this review paper. The work is in its final stage and expected to be submitted during 2023.

- 2) the development of a web-based portal for EBUS to graphically query integrated information on published data, model output as well as protocols for measuring key properties and indicators in EBU.

The web-based portal containing published works on EBUS dynamics is currently being populated by papers.

- 3) the determination of the strengths and weaknesses of existing EBUS coupled physical-biological models.

This aspect is expected to be covered in the review paper.

- 4) a recommendation framework for regional interdisciplinary (physics to biology) EBUS observing and modelling systems.

No significant progress has been made for this TOR.

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

-Participation of WG members in the editing and reviewing process of submitted works for the Special Issue of Deep-Sea Research II on EBUS

-Completing the revision of the review paper of EBUS preliminary titled “Sensitive dependence of Ecosystem Services to climate change in EBUS: knowledge gaps and challenges”

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

The planned activities of the WG were greatly affected by the Covid-19 pandemic. Key actions were planned for 2020-2021, such as the Summer School and presential meetings. All of them were initially postponed and finally cancelled. We put much effort in attempting to make progress by having online meetings, but so far, we recognize that such meetings were unable to provide enough participation and engagement of WG members to make effective progress. To overcome such difficulties, we invested much time and efforts as a WG to organize and held the EBUS Conference in Lima, Peru in September 2022. We think that such event was very successful by having nearly 400 attendees from the four major EBUS with a very enthusiastic and massive participation of students and young scientists from all the world.

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

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.