

YASSIR EDDEBBAR

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EDUCATION

Ph.D. Oceanography, 2018. Scripps Institution of Oceanography, UC San Diego, La Jolla, CA

M.Sc. Oceanography, 2013. Scripps Institution of Oceanography, UC San Diego, La Jolla, CA

B.Sc. Environmental Science & Policy, 2008. Cal State University Long Beach, Long Beach, CA

A.A. Ecology, 2006. Orange Coast College, Costa Mesa, CA

PROFESSIONAL EXPERIENCE

Assistant Research Scientist November 2022 - Present
Climate, Atm. Sciences, and Phys. Oceanography, Scripps Institution of Oceanography, UCSD La Jolla, CA

Assistant Project Scientist July 2021 - October 2022
Integrative Oceanography Division, Scripps Institution of Oceanography, UC San Diego La Jolla, CA

Postdoctoral Scholar (Host: Mark Merrifield) April 2018 - June 2021
Center for Climate Change Impacts and Adaptation, UC San Diego La Jolla, CA

Lecturer January 2020 - April 2020
Scripps Institution of Oceanography, UC San Diego La Jolla, CA

Summer Graduate Teaching Scholar June 2016 - August 2016
Scripps Institution of Oceanography, UC San Diego La Jolla, CA

Graduate Research Assistant (Advisor: Ralph Keeling) September 2012 - March 2018
Scripps Institution of Oceanography, UC San Diego La Jolla, CA

Environmental Scientist November 2008 - September 2011
United Research Services (URS, now AECOM) Santa Ana, CA

GRANTS & FELLOWSHIPS

Eddebbar, Y., Whitt, D., Subramanian, A., Verdy, A. et al. 2020-2023: Collaborative Research: Mesoscale Drivers of Oceanic Oxygen in the Tropical Pacific. NSF Chemical & Physical Oceanography. Total Award \$672,000 (Scripps Award \$495,000). Role: Lead PI.

Eddebbar, Y., Long, M., Subramanian, A. 2022-2025: Large Allocation Towards High Resolution Simulations of Ocean Biogeochemistry in a Global Climate Model. NCAR High Performance Computing Award: 16M Core Hours, 60TB Storage. Role: Lead PI.

2013-2017 National Science Foundation (NSF) Graduate Research Fellowship (GRFP) \$135,000 awarded.

2011-2013 NSF Interdisciplinary Graduate Education and Research Training Fellowship \$95,000 awarded.

AWARDS & HONORS

2017 Outstanding Student Paper Award - American Geophysical Union (AGU OSPA)
2010 URS Outstanding Performance and Excellence Junior Staff Award
2008 California State University Long Beach (CSULB) Distinguished Undergraduate Medallion Award
2007 CSULB Provost Undergraduate Research Fellowship
2006-2008 President's List (CSULB), Phi Theta Kappa, Sigma Xi

PUBLICATIONS

Eddebbar, Y. A., Subramanian, A. C., Whitt, D. B., Long, M. C., Verdy, A., Mazloff, M. R., Merrifield, M. A. (2021). Seasonal Modulation of Dissolved Oxygen in the Equatorial Pacific by Tropical Instability Vortices. *Journal of Geophysical Research: Oceans*. doi: <https://doi.org/10.1029/2021JC017567>

Kessler, W.S., and co-authors (2021). Final Report of Tropical Pacific Observing System 2020. Global Ocean Observing System-268, 83 pp. doi: <https://doi.org/10.13140/RG.2.2.19282.68802>

Schlunegger, S, **Y. A. Eddebbar**, R.X. Brady, and F.A. Burger (2020). Applications of Large Ensembles for Marine Biogeochemistry. In New research on climate variability and change using initial-condition Large Ensembles. Deser, C. & Rodgers, K. (Eds.). *US CLIVAR Variations*, 18, 44 pp. doi: <https://doi.org/10.5065/0DSY-WH17>

McKinley, G. A., Fay, A. R., **Eddebbar, Y. A.**, Gloege, L., & Lovenduski, N. S. (2020). External forcing explains recent decadal variability of the ocean carbon sink. *AGU Advances*, 1(2), e2019AV000149. doi: <https://doi.org/10.1029/2019AV000149>

Eddebbar, Y. A., Rodgers, K. B., Long, M. C., Subramanian, A. C., Xie, S-P., & Keeling, R. F. (2019). El Niño-like physical and biogeochemical ocean response to tropical eruptions. *Journal of Climate*, 32(9):26272649. doi: <https://doi.org/10.1175/JCLI-D-18-0458.1>

Resplandy, L., Keeling, R. F., **Eddebbar, Y.A.**, Brooks, M. K., Wang, R., Bopp, L., Long M. C., Dunne J. P., Koeve W., & Oschlies, A. (2019). Quantification of ocean heat uptake from changes in atmospheric O₂ and CO₂ composition. *Scientific Reports*, 9(1), 1-10. doi: <https://doi.org/10.1038/s41598-019-56490-z>

Eddebbar, Y. A., (2018): Climate Modulations of Air-Sea Oxygen, Carbon, and Heat Exchange. Ph.D. thesis, University of California. Permalink: <https://escholarship.org/uc/item/14c7f22w>

Eddebbar, Y. A., Long, M. C., Resplandy, L., Rodenbeck, C., Rodgers, K. B., Manizza, M., & Keeling, R. F. (2017). Impacts of ENSO on air-sea oxygen exchange: Observations and mechanisms. *Global Biogeochemical Cycles*, 31(5), 901-921. doi: <https://doi.org/10.1002/2017GB005630>.

Delorme, B. and **Eddebbar Y. A.** (2016). Ocean circulation and climate: An overview. *Ocean and Climate, Scientific Notes*, 2nd Edition: 12-19.

Eddebbar, Y. A., Gallo, N. D., and Linsmayer, L. B. (2015). The oceans and the United Nations framework convention on climate change. *Limnology and Oceanography Bulletin*, 24(3), 69-72. doi: <https://doi.org/10.1002/lob.10059>.

TEACHING

Lecturer for SIOC 293: "Ocean and Atmosphere Processes and Climate Variability" (Winter 2020), a graduate-level course on ocean and atmosphere processes governing natural climate variability and anthropogenic climate change.

Lecturer for SIO25: "Climate Change and Society" (Summer 2016), an introductory undergraduate course on the scientific basis and social dimensions of climate change.

Substitute lecturer for select classes for SIO117: "Physical Basis of Global Warming" (Fall 2017), an upper division undergraduate course on the scientific basis of climate change.

Guest lecturer for several research seminar courses and specialized topics courses (SIO 139, SIO 209, SIOC 290S, SIOC 296, CCS 102), 2016-2019.

COMMUNITY LEADERSHIP & OUTREACH

Journal Peer Review: *Geophysical Research Letters*, *Journal of Geophysical Research: Oceans*, *Global Biogeochemical Cycles*, *Nature Communications*, *Ocean Sciences*, *Atmospheric Chemistry and Physics*, *Earth System Dynamics*

Technical & Proposal Review: IPCC Special Report on Oceans and Cryosphere, IPCC 6th Assessment Report, Tropical Pacific Observing System 2020, NSF Chemical Oceanography Program, NSF Physical Oceanography Program

Ocean Sciences Meeting 2022 Session Co-Chair, Physical-Biogeochemical Interactions in the Tropical Oceans

Contributor: Tropical Pacific Observing System 2020 3rd Report on Ocean Biogeochemistry

Guest Editor: *Frontiers in Marine Research*: Special Issue on Constraining Uncertainties in Hindcasts and Future Projections of Marine Deoxygenation

Societies: AGU, American Society for Limnology & Oceanography, Oceanography Society

American Society for Limnology and Oceanography (ASLO) **Science Policy Committee** [2015-2018]

Scripps Institution of Oceanography **Editorial and Publications Committee** [2014-2017]

Scripps Center for Marine Biodiversity and Conservation **Steering Committee** [2013-2017]

UC Revelle Delegate to the 18th, 19th, 21st, 22nd, 24th & 26th UN Conference of Parties (COP) on Climate Change

Media outreach on oceans & climate: KPBS TV, NPR, San Diego Union Tribune, UN TV, Explorations Now, Climate Curiosities podcast

Science Curriculum Development: Science Reviewer and Lesson Plans Collaborator for UCSD Center for Research on Educational Equity, Assessment Teaching Excellence (CREATE), California Science Teachers Association (CSTA), and San Diego Unified School District (SDUSD) under the implementation of Next Generation Science Standards [2018-2022]

Science Education National Ocean Science Bowl science judge, Univ. of San Diego [2020]; Skype-a-Scientist guest speaker [2019-2021];

Mentorship & Outreach: Scripps Peer Program mentor [2016-2018]; ASLO Multicultural Program mentor [2020]; Bill Kuni Scholars mentor [2014]; Future Faces of STEM Conference mentor [2019]; First Gen San Diego Scholars panelist [2020]

RESEARCH MENTORSHIP

Jose Chapa: Research Advisor for Summer REU, 2020, Joint project at Scripps Institution of Oceanography, University of Colorado Boulder, and University of Texas Rio Grande Valley.

Lalitha Asirvadam: Master's Committee Member & Mentor, Master's Program, 2015-2016, Scripps Institution of Oceanography, UC San Diego.

TRAININGS & WORKSHOPS

Practitioner Certificate, UCSD Center for the Integration of Research, Teaching and Learning, 2016.

"Teaching in the College Classroom" Course, Center for Engaged Teaching, UC San Diego, Fall 2015.

MicroMBA, Rady School of Management, UC San Diego, Summer 2015. Summer-intensive training in business, strategy, communication, and leadership. La Jolla, CA.

Visiting Scientist, Climate and Global Division, National Center for Atmospheric Research (NCAR), Boulder, CO, 08/2014 & 05/2015

Data Assimilation in Biogeochemistry Fall School, International Center for Theoretical Physics, Trieste, Italy, 09/2014

NCAR Community Earth System Model (CESM) Tutorial, NCAR, Boulder, CO, 08/2014

NCAR Advanced Study Program Colloquium on Climate-Carbon Cycle Interactions, NCAR 08/2013

SKILLS

Computer	Python, Jupyter, NCL, MATLAB, NCO, Shell, Paraview, Illustrator, L ^A T _E X
Ocean Cruises	R/V Sproul (2012), R/V New Horizon (2014)
Languages	Arabic, French, English

PRESENTATIONS

Invited Talks & Seminars:

University of Washington Oceanography Department, June, 2022. Oral Presentation (**Invited**): Dissolved Oxygen in a Changing Climate: Insights from an Earth System Model. Seattle, Washington.

Los Alamos National Laboratory, April, 2022. Oral Presentation (**Invited**): Oxygen ventilation in the equatorial Pacific thermocline: a role for tropical instability vortices and turbulent mixing. Virtual.

Scripps Institution of Oceanography, UC San Diego, April, 2022. Oral Presentation (**Invited**): Physical Drivers of Ocean Biogeochemical Dynamics: Insights From Earth System Models. Virtual.

University of Colorado, Boulder, April, 2022. Oral Presentation (**Invited**): Ocean Oxygen Dynamics and Variability Across Scales: Insights from an Earth System Model. Boulder, CO.

San Jose State University, Climate Science and Meteorology Department, February, 2022. Oral Presentation (**Invited**): Climate and Mesoscale Controls on Oxygen Ventilation. Virtual.

AGU Meeting 2021, December, 2021. Oral Presentation (**Invited**): Mechanisms, Pathways, and Variability of Oxygen Ventilation in the upper tropical Pacific. Session OS033: Improving Earth System Predictability: New Mechanisms, Feedbacks, and Approaches for Predicting Global Biogeochemical Cycles in Earth System Models. AGU, Virtual.

US CLIVAR Meeting on Tropical Pacific Observing Needs to Advance Process Understanding and Representation in Models (TPON 2021). Oral Presentation (**Invited Keynote**): Tropical Pacific BGC and ocean physics observing needs. Virtual.

University of Hawaii, Department of Oceanography, April 2021. Oral Presentation (**Invited**): Mesoscale Controls on the Equatorial Pacific Oxygen Balance. Virtual.

AGU Meeting 2020, December, 2020. Oral Presentation (**Invited**): Mesoscale Controls on the Equatorial Pacific Oxygen Balance: A Model Study. Session OS033: Toward Improvement in Process Understanding and Modeling of the Tropical Pacific I. AGU Virtual Sessions.

Jeffrey B. Graham Perspectives on Ocean Science Lecture Series, Scripps Institution of Oceanography, July, 2020. Oral Presentation (**Invited Public Talk**): Oceans Out of Breath: Oxygen Minimum Zones in a Warming Climate. Birch Aquarium at Scripps, Virtual on Youtube Live and Facebook Live.

IPS/ICCP, May, 2019. Oral Presentation (**Invited**): Forced, unforced, and mesoscale variability of oceanic oxygen. Busan. South Korea.

Max Planck Institute for Meteorology, December, 2018. Oral Presentation (**Invited**): Forced and unforced climate modulations of air-sea O₂ and CO₂ exchanges. Hamburg, Germany.

Lawrence Berkeley National Laboratory, September, 2017. Oral Presentation (**Invited**): Climate impacts on air-sea oxygen exchange. Climate and Ecosystem Division, Berkeley, CA.

Scientific Conferences:

Liege Conference on Ocean Oxygen, May, 2022. Oral Presentation. Slowdown of Ocean Deoxygenation by Anthropogenic Aerosols. Virtual.

Ocean Sciences Meeting 2022, February, 2022. Oral Presentation: Seasonal-to-Interannual Variability in Oxygen Supply in the Equatorial Pacific. Session OB05: Drivers and consequences of marine dissolved oxygen depletion. Virtual.

Ocean Sciences Meeting 2020, February, 2020. Oral Presentation: Modulation of Equatorial Pacific Oxygen Minima by Tropical Instability Vortices. Session PI43A: (Sub)mesoscale Physical/Biogeochemical Interactions I. San Diego, CA.

AGU Chapman Conference on Climate-Carbon Cycle Feedbacks, August, 2019. Poster Presentation: Volcanic forcing of air-sea carbon flux variability. La Jolla, CA.

SOLAS 2019, April, 2019. Oral Presentation: Volcanic modulation modulations of ocean ventilation: Implications for air-sea O₂ and CO₂ exchanges. Sapporo, Japan.

NCAR CESM Meeting 2018, June, 2018. Oral Presentation: The oceanic response to tropical eruptions: Insights from the Large Ensemble experiment. CESM Climate Variability and Change Working Group, NCAR, Boulder, CO.

Ocean Deoxygenation Conference 2018, September, 2018. Oral Presentation: Volcanic impacts on air-sea oxygen exchange: Insights from the Large Ensemble experiment. Session: Monitoring and Predictions. Kiel, Germany.

Ocean Sciences Meeting 2018, February, 2018. Oral Presentation: The oceanic response to tropical volcanic eruptions. Session OM42A: Ensemble Modeling Approaches in Physical and Biogeochemical Oceanography. Portland, OR.

International Carbon Dioxide Conference 2017, August, 2017. Oral Presentation (**Plenary**): Constraints on ocean heat uptake during the hiatus from atmospheric measurements of O₂ and CO₂. Biogeochemical Processes Session, Interlaken, Switzerland.

NCAR CESM Meeting 2017, June, 2017. Oral Presentation: Climate coupling of air-sea oxygen and heat exchange. Biogeochemistry Working Group, NCAR, Boulder, CO.

AGU Meeting 2016, December, 2016. Poster Presentation: Impacts of ENSO on air-sea O₂ exchange: observations and mechanisms. Session OS51A: Biogeochemistry and Ecosystems of Tropical Pacific and Upwelling Systems, San Francisco, CA.

Ocean Sciences Meeting 2016, February, 2016. Oral Presentation: On the coupling of air-sea heat and oxygen exchange: Insights for the hiatus in global warming from oxygen and carbon measurements. Session PC010: Ocean heat and carbon uptake and storage: observations, mechanisms & feedbacks. New Orleans, LA.

World Meteorological Organization (WMO) GGMT Meeting 2015, September, 2015. Oral Presentation: ENSO modulation of air-sea O₂ fluxes. Atmospheric Potential Oxygen Workshop, Scripps Institution of Oceanography, La Jolla, CA.

Ocean Sciences Meeting 2014, February, 2014. Poster Presentation: Impacts of natural variability on air-sea heat and O₂ exchange. Ocean Atmosphere Variability, Predictability & Change. Honolulu, HI.

Public and Science-Policy Talks

California Science Teachers Association Conference, October, 2019. Oral Presentation: Oxygen Minimum Zones and Climate: Lesson Plans for K-12 Classrooms. San Jose, CA.

California Science Teachers Association Conference, December, 2018. Oral Presentation: Oxygen Minimum Zones as an Integrator of Biological, Physical, and Chemical Science Topics in 6th-to-8th Grades Curriculum. Los Angeles, CA.

UN 25th Conference of the Parties (COP 25), December, 2019. Oral Presentation: Observing Climate Change from Global to Local Scales: Informing Mitigation, Impacts, and Adaptation. Virtual Blue COP, Virtual on Youtube Live.

UN 24th Conference of the Parties (COP 24 Katowice), December, 2018. Oral Presentation: The challenges of a changing Pacific Ocean: Understanding impacts, observing networks and building capacity to inform policy. Pacific Pavillion, Katowice, Poland.

UN 24th Conference of the Parties (COP 24 Katowice), December, 2018. Oral Presentation with Lisa Levin: Ocean deoxygenation: An update. Press Conference, Katowice, Poland.

National Geographic/Linblad Expedition (SeaBird cruise ship), July, 2018. Oral Presentation: Oceanic oxygen in a warming climate. Southeast Alaska, USA.

UN 22nd Conference of the Parties (COP 22 Marrakesh), November, 2016. Oral Presentation with Todd Martz: Monitoring the global carbon cycle and heat budget: An overview of current ocean and atmospheric observing systems. Press Conference, Marrakesh, Morocco.

UN 22nd Conference of the Parties (COP 22 Marrakesh), November, 2016. Oral Presentation: Ocean circulation and climate: An overview. US Science Pavilion, Marrakesh, Morocco.

UN 21st Conference of the Parties (COP 21 Paris), December, 2015. Oral Presentation: Observing the oceans role in climate change. Ocean and Climate Forum Session, Paris, France.

Ocean Sciences Meeting 2014, February, 2014. Oral Presentation: The ocean in the international climate policy forum. Session 070: Policy Impacts of Ocean Research. Honolulu, Hawaii.