

Magdalena M Carranza

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MBARI Postdoctoral Fellow
Monterey Bay Aquarium Research Institute (MBARI)
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EDUCATION

- 2016 PhD in Physical Oceanography, Scripps Institution of Oceanography (SIO),
University of California San Diego (UCSD). GPA: 3.6/4. Advisor: Sarah Gille.
- 2009 BS in Physical Oceanography, Faculty of Hard and Natural Sciences (FCEyN), University of
Buenos Aires (UBA), Argentina. GPA: 9.1/10. Advisors: Alberto Piola and Silvia Romero

PROFESSIONAL APPOINTMENTS

- 2020 - present Monterey Bay Aquarium Research Institute (MBARI) Postdoctoral Fellow, MBARI.
Supervisor: Andrea Fassbender
- 2018 - 2019 Advanced Study Program (ASP) Postdoctoral Fellow, Climate and Global Dynamics
Laboratory, National Center for Atmospheric Research (NCAR). Supervisor: Matthew Long
- 2016 - 2017 Postdoctoral Researcher, SIO – UCSD. Supervisor: Sarah Gille.

RESEARCH INTERESTS

Upper-ocean dynamics: the response to atmospheric forcing, induced mixing and implications to biology and climate. In particular, the oceanic response to synoptic-scale weather forcing. Upwelling and circulation associated to oceanic fronts. Synergistic effects between the atmosphere and ocean mesoscales.

PUBLICATIONS

- + Carranza, MM, Frenger I, Di Luca A, Zarzycki C, Long M, Whitt DB, Brady R (2019), "Synoptic-scale weather imprints on upper ocean physics and phytoplankton blooms in the Southern Ocean", in preparation for *Geophysical Research Letters*.
- + Whitt, DB, SA Nicholson, and MM Carranza (2019), "Global impacts of subseasonal wind variability on ocean surface stress, buoyancy flux, and mixed layer depth." *JGR Oceans*, 124, doi:10.1029/2019JC015166
- + Carranza MM, Gille ST, Franks PJS, Johnson KS, Pinkel R and Girton JB (2018). "When mixed layers are not mixed. Storm-driven mixing and bio-optical vertical gradients in mixed layers of the Southern Ocean." *JGR Oceans*, 123, doi:10.1029/2018JC014416.
- + Carranza MM, Gille ST, Piola AR, Romero SI and Charo M (2017). "Wind modulation of upwelling at the shelf-break front off Patagonia: Observational evidence". *JGR Oceans*, 122, doi:10.1002/2016JC012059.
- + Carranza MM (2016). PhD Dissertation: "On the role of atmospheric forcing on upper ocean physics in the Southern Ocean and biological impacts" (<https://escholarship.org/uc/item/5qs1x85p>)
- + Carranza MM and Gille ST (2015). "Southern Ocean wind-driven entrainment enhances satellite chlorophyll-a through the summer". *JGR: Oceans*, 119, doi:10.1002/2014JC010203.
- + Gille ST, Carranza MM, Cambra R, and Morrow R (2014). "Wind-induced upwelling in the Kerguelen Plateau Region". *Biogeosciences Discussions*, 11(6), 8373–8397, doi:10.5194/bgd-11-8373-2014.
- + Abbriano RM, Carranza MM, Hogle SL, Levin RA, Netburn AN, Seto KL, Snyder SM, SIO280, and Franks PJS. (2011). "Deepwater Horizon oil spill: A review of the planktonic response". Review article in *Oceanography* 24(3):294–301
- + Carranza MM (2009). BS Thesis: "Indicators of the state of the marine environment in frontal regions of

the Patagonian Sea”, available at <http://hdl.handle.net/1834/3857>

- + Carranza MM, Romero SI and Piola AR (2008). Book article: “Indicators: Chlorophyll Concentration”. *Status of Conservation of the Patagonian Sea and Areas of Influence* - electronic version pp. 766-775, available at <http://www.marpatagonico.org/libro/articulo.php?id=indicadores&p=36>

C O N F E R E N C E S / I N V I T E D T A L K S

- + *Ocean Sciences (2020)*. Talk: “Synoptic-scale Weather Imprints on Upper Ocean Physics and Phytoplankton Blooms in the Southern Ocean of the Community Earth System Model (CESM)”. Authors: Carranza MM, Frenger I, Long M, Whitt D, Di Luca A, Zarzycki, C, and Brady R. San Diego, CA. Feb 16-21, 2020
- + *Pattullo Conference (2019)*: Mentoring Physical Oceanography women to Increase Retention (MPOWIR). To be held at the Airlie Center in Warrenton, Virginia. Sep 22-25, 2019
- + *IAPSO Symposium: The Southern Ocean: Where Ocean, Ice and Atmosphere Meet, IUGG (2019)*. Talk: “Weather Imprints on Upper Ocean Bio-physical Properties in the Southern Ocean”. Authors: Carranza MM, Frenger I, Long M, Whitt D, Di Luca A. Montreal, Canada. Jul 10-14, 2019
- + *Ocean Carbon and Biogeochemistry Summer Workshop (2018)*. Invited Talk: “Subseasonal variability driving physical and biogeochemical dynamics in the Southern Ocean.” Woods Hole, MA. Jun 25-28, 2018
- + *Ocean Sciences Meeting (2018)*. Poster: “When Mixed Layers are Not Mixed. Storm-driven Mixing and Bio-optical Vertical Gradients in Mixed Layers of the Southern Ocean.” Authors: Carranza MM, Gille ST, Franks PJS, Johnson KS, Pinkel R and Girton JB. Portland, Oregon. Feb 11-16, 2018
- + *Ocean Sciences Meeting (2018)*. Poster: “Identification of High Productivity areas within the Patagonia Large Marine Ecosystem, Southwestern Atlantic”. Authors: Romero SI, Charo M and Carranza MM. Portland, Oregon. Feb 11-16, 2018
- + *Distinguished Speakers Series*, Department of Earth & Climate Sciences-San Francisco State University. Invited Talk: “Wind-modulation of upwelling at the shelf-break front off Patagonia”. San Francisco, California. Oct 17, 2017
- + *Southern Ocean Workshop: “The Southern Ocean, its dynamics, biogeochemistry and role in the climate system”*. (By invitation only). Talk: “Gradients of bio-optical properties within the Southern Ocean mixed layer”. Workshop held at NCAR, Boulder, CO. Apr 10-13, 2017
- + *Ocean Sciences Meeting (2016)*. Poster: “High Winds and the Vertical Structure of Chl-a in the Southern Ocean: Insights from Remote Sensing and Novel in situ Sensors”. Authors: Carranza MM, Gille ST, Franks PJS, Johnson KS and Girton JB. New Orleans, Louisiana. Feb 21-26, 2016
- + *American Geophysical Union (AGU, 2015)*. Talk: “Chlorophyll-a Variability in the Southern Ocean Mixed Layer and Euphotic Zone From Elephant Seals and Profiling Floats”. Authors: Carranza MM, Gille ST, Franks PJS, Johnson KS and Girton JB. San Francisco, California. Dec 14-18, 2015
- + *11th International Conference on Southern Ocean Meteorology and Oceanography (ICSHMO, 2015)*. Talk: “Wind modulation of upwelling at the shelf-break front off Patagonia”. Authors: Carranza MM and Gille ST, Piola AR and Romero SI. Santiago de Chile, Chile. Oct 5-9, 2015
- + *2nd International Ocean Colour Science Meeting (2015)*. Poster: “Mixed-layer depth, euphotic depth and Chl-a variability in the Southern Ocean”. Authors: Carranza MM, Gille ST, Franks PJS, Johnson KS and Girton JB. San Francisco, California. Jun 15-18, 2015
- + *American Geophysical Union (AGU, 2014)*. Poster: “Wind, mixed-layer depth and Chlorophyll-a variability in the Southern Ocean”. Authors: Carranza MM, Gille ST, Franks PJS, Johnson KS and Girton JB. San Francisco, California. Dec 15-19, 2014
- + *Scoping for Interdisciplinary Coordinated Experiment of the Southern Ocean Carbon Cycle (ICESOCC)*. Invited Talk: Wind forcing and Chl-a response in the Southern Ocean. Held at SIO, La Jolla, CA. Sep 22-25, 2014
- + *Ocean Sciences Meeting (2014)*. Poster: “Subseasonal Chl-a variability in the Patagonian shelf and shelf-break front associated to physical processes”. Authors: Carranza MM and Gille ST, Piola AR and Romero SI. Honolulu, Hawaii. Feb 23-28, 2014

- + *American Geophysical Union (AGU, 2012)*. Poster: “Physical processes governing summer Chlorophyll-a in the Southern Ocean”. Authors: Carranza MM and Gille ST. San Francisco, California. Dec 3-7, 2012
- + *VIII Jornadas Nacionales de Ciencias del Mar (2012)*. Poster: “Physical processes associated to Chlorophyll-a variability over the Patagonian shelf and shelf-break front”. Authors: Carranza MM, Gille ST, Romero SI, Piola AR. Comodoro Rivadavia, Argentina. Dec 3-7, 2012
- + *10th International Conference on Southern Ocean Meteorology and Oceanography (ICSHMO, 2012)*. Talk: “Effect of winds and SST on summer phytoplankton blooms in the Southern Ocean”. Authors: Carranza MM and Gille ST. Nouméa, New Caledonia. Apr 23-27, 2012
- + *Ocean Sciences Meeting (2012)*. Talk: “The influence of winds and SST on summer Chlorophyll-a through mixed-layer depth dynamics in the Southern Ocean”. Authors: Carranza MM and Gille ST. Salt Lake City, Utah. Feb 20-24, 2012
- + *VII Jornadas Nacionales de Ciencias del Mar (2009)*. Poster: “Vertical fluxes at the Shelf-break Front off Patagonia inferred from satellite and in-situ hydrographic data”. Authors: Charo M, Romero SI, Piola AR, Carranza MM, Ferrari R, Garcia CE, Pollery R, Garcia VM and Mata M. Bahia Blanca, Argentina. Nov 30-Dec 4, 2009

WORKSHOPS / MEETINGS / SUMMER SCHOOLS

- + *Tutorial on Machine Learning and Deep Learning for the Environmental and Geosciences, AGU (2019)*. San Francisco, Dec 8 2019.
- + *Geo For Good Google Summit (2019)*. Google Headquarters, Sunnyvale, CA. Sep 16-19, 2019
- + *#Great Antarctic Climate Hack*. On relevant Antarctic and Southern Ocean observations and metrics to evaluate climate and Earth system models. Held at SIO, La Jolla, CA. Oct 9-12, 2017
- + *Ocean Carbon Hot Spot Workshop: “Wind Modulation of upwelling at the shelf-break front off Patagonia: observational evidence”* (poster). Held at Monterey Bay Aquarium Research Institute (MBARI), Moss Landing, CA. Sep 25-26, 2017
- + *International Ocean Vector Winds Science Meeting: “Temporal scales characterization of Southern Ocean's CCMP vector winds”* (poster). Held at SIO, La Jolla, CA. May 2-4, 2017
- + *Chem School Workshop on chemical sensors*, organized by Ken Johnson and held at MBARI, Moss Landing, CA. Dec 6-7, 2016
- + *Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Annual meeting*. Held at SIO, La Jolla, CA. May 9-11, 2016
- + *Ocean Carbon and Biogeochemistry (OCB) Workshop* held at Woods Hole Oceanographic Institution (WHOI). Woods Hole, Massachusetts. Jul 21-23, 2015
- + *Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) Kick-off meeting*. Princeton University, New Jersey. Sep 8-9, 2014
- + *World Climate Research Programme (WCRP) Special Workshop on “Climatic Effects of Ozone Depletion in the Southern Hemisphere”*. Poster. Buenos Aires, Argentina. Feb 23-Mar 1, 2013
- + *Southern Ocean Biogeochemical Observations and Modeling (SOBOM)*. NSF Evaluation Site Visit. Poster. Princeton University, New Jersey. Oct 15-16, 2012
- + *NASA’s Center for Climate Sciences Summer School 2012: “Using Satellite Observations to Advance Climate Models”*. California Institute of Technology, Keck Institute for Space Studies. Pasadena, California. Aug 6-10, 2012
- + *Surface Ocean and Lower Atmosphere Studies (SOLAS) Summer School 2011*. Institut d’Etudes Scientifiques de Cargèse. Corsica, France. Aug 29-Sep 10, 2011
- + *“Modeling and Synthesis of Southern Ocean Natural Iron Fertilization”* Workshop held at WHOI. Woods Hole, Massachusetts. June 27-29, 2011
- + *Austral Summer Institute VIII: “Oceanography and climate change: Past, present and future scenarios”*.

University of Concepción, Chile. Jan 14-25, 2008

- + *"Acquisition and Processing of Oceanographic Data"* Grade: 10/10. Natl. Univ. of Mar del Plata and the Natl. Inst. for Research and Development of Fisheries (INIDEP), Mar del Plata, Argentina. Jun 2007
- + *"ICTP Workshop on the Interdisciplinary Science of Climate Changes: Basic Elements"*. UBA, Arg. Mar 2007
- + *"MATLAB & Practical Applications on Climate Variability Studies"*. CLARIS Project, UBA. Feb 20-24, 2006

F E L L O W S H I P S / T R A V E L G R A N T S

- + *MBARI Postdoctoral Fellowship*, Mar 2020-2022
- + *ASP Postdoctoral Fellowship*, Sep 2018-2020
- + *UCAR – University Center for Atmospheric Research* Travel Grant to attend the Ocean Carbon Hot Spots Workshop, Sep 2017
- + *NCAR Advanced Study Program* Travel Grant to attend the Southern Ocean Workshop, Apr 2017
- + *Oceanids Memorial Fellowship* for academic excellence and financial need, Sep 2015-2016
- + *SIO Graduate Office* Travel Grant awarded to attend the 11th ICSHMO in Santiago de Chile, Chile
- + *NSF* Travel Grant awarded to attend the WCRP workshop held in Buenos Aires, Argentina
- + *NASA Earth and Space Science Fellowship (NESSF)* 2012. PhD financial support for 3 years, Sep 2012-2015
- + *SIO Graduate Office* Travel Grant awarded to attend the 10th ICSHMO in Nouméa, New Caledonia
- + Travel Grant awarded by PICES to attend the SOLAS Summer School 2011 in Cargèse, France
- + Fellowship granted by the *Inter-American Institute (IAI) for Global Change Research*: Training Fellowship (CRN2076). Project: "The role of currents of the Patagonian shelf break front on nutrient enrichment and phytoplankton abundance processes". PI: AR Piola | Co-PI: A Bianchi. Jul 2008-Aug 2009
- + Fellowship granted by the *'Forum for the Conservation of the Patagonian Sea and Areas of Influence'* to develop "Indicators of the status of the marine environment in the Patagonian Sea". Advisor: AR Piola. Jul 2007-Jul 2008

U N D E R G R A D U A T E S T U D E N T S

- + Mary Konopliv. UCSD undergraduate student (2017). Project: *"Assessing directional wind biases in satellite-derived winds"*, currently co-advising with Sarah Gille.
- + Alex Dominguez. Princeton Environmental Institute (PEI) Summer Internship Project (2015): *"Triggering of phytoplankton bloom onset in the Southern Ocean"*, co-adviser with Ivy Frenger and Rebecca Asch.

U N I V E R S I T Y S E R V I C E / M E N T O R I N G

- + *Thompson Lecture Series* Organizing Committee. NCAR, Oct 2018 – Feb 2020
- + *2019 GLOBE International Virtual Science Symposium*. Mentor and support for undergrad student's projects.
- + *Mentoring Physical Oceanography Women to Increase Retention (MPOWIR)*. Actively participated as a mentee on a monthly basis, Dec 2015-2018.
- + Member of *Scripps Peers*. A graduate peer mentorship program at Scripps designed to set up incoming students with more experienced PhD student. Sep 2013-2014
- + Member of the *Orientation Group* at the DCAO, FCEyN, UBA. This group was created with the purpose of mentoring students through their program in physical oceanography and meteorology during their first years of study. Mar 2007-2009
- + Student representative to the *Curricular Committee* for the Atmospheric and Ocean Sciences Department.

The board is responsible for analyzing and recommending improvements to the Physical Oceanography degree program. Mar 2005-2009.

OTHER PROFESSIONAL ACTIVITIES / AFFILIATIONS

- + Reviewer for Nature Communications, *Geophysical Research Letters* (GRL), *Journal of Geophysical Research (JGR): Oceans*, *JGR Biogeosciences*, *International Journal of Remote Sensing*, *Remote Sensing Letters*, *Ocean Modelling*, *Progress in Oceanography*, *Oceanography*.
- + NASA's Physical Oceanography Panel reviewer. NSF Proposal reviewer
- + Student's abstract reviewer for SACNAS 2017, *The National Diversity in STEM Conference*, held in Salt Lake City, Utah. Oct 19-21, 2017
- + Organizer of the *International Meeting of Student's in Physical Oceanography* (IMSPO) 2012. A meeting organized by students for students to forge future relationships in a friendly and supportive environment. Held at Scripps, La Jolla, CA. Sep 26-28, 2012
- + *American Geophysical Union* (AGU), since Sep 2012
- + *Society for Advancement of Chicanos/Hispanics and Native Americans in Science* (SACNAS), since Jul 2014

SEA - GOING EXPERIENCE

- + "*EddyMix*" cruise on internal wave and eddy interactions (12 days). Chief Scientist: Caitlin Whalen, R/V Revelle. Jun 10-22, 2013
- + "*EquatorMix*" cruise on upper-ocean mixing (14 days). Chief Scientist: Jerome Smith, R/V Revelle. Oct 22-Nov 5, 2012
- + "*Diapycnal and Isopycnal Mixing Experiment in the Southern Ocean (DIMES) I*". US/UK field program (45 days). Chief Scientist: Jim Ledwell, R/V Revelle. Jan 9-Feb 25, 2009
- + "*Oceano Sul II*" Oceanographic Cruise Training on board the research vessel R/V Antares (13 days). Invited by Dr. Edmo Campos, University of Sao Paulo, Brazil. March 2003

TEACHING EXPERIENCE

Online tutoring in math and science for high school students in the US and Spain. Employer: Tutor Amigos LLC. Buenos Aires, Argentina. Jan 2006 - Jun 2009.