Dr. Annalisa Bracco, Senior Scientist
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CURRICULUM VITAE

I. EARNED DEGREES

Ph.D.	Geoscience and Oceanography	2000	Univ. of Genoa, Italy
B.A.	Theoretical Physics	1995	University of Torino, Italy

II. EMPLOYMENT HISTORY

Senior Scientist, Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	2025-
Associate Chair for Research, EAS, Georgia Institute of Technology	2022-2025
Professor, EAS, Georgia Institute of Technology	2014-
Assistant/Associate Professor, Georgia Institute of Technology	2007-2014
Assistant Scientist, Woods Hole Oceanographic Institution	2005-2006
Junior UNESCO Tenure Track Scientist, ICTP, Trieste, ITALY	2002-2005
Postdoctoral Scholar, Woods Hole Oceanographic Institution	2000-2002

III. HONORS AND AWARDS

2011 American Meteorological Society, **Nicholas Fofonoff Award** for *"contributions to understanding mesoscale ocean dynamics, geostrophic turbulence, and tropical dynamics, and their coupling with marine ecosystems".*
2006 Mary Sears Award, Woods Hole Oceanographic Institution
2000 Postdoctoral Scholar Award at the Woods Hole Oceanographic Institution (WHOI), MA.
1997 Geophysical Fluid Dynamics Summer School Fellowship Award, WHOI, MA.

IV. RESEARCH, SCHOLARSHIP, AND CREATIVE ACTIVITIES

A1. Published and Accepted Journal Articles (bold indicate advisees)

1. **Zhou X.,** S. Xiao, **M. Ramirez**, A. Bracco (2025) Modeling River and Urban-Related Microplastic Pollution off the Southern United States. *NPJ Emerging Contaminants*. 1, 9 https://doi.org/10.1038/s44454-025-00011-3
2. **McKinley, M.; D. Sun,** B. O'Donnell; A. Bracco; K. G. Sabra (2024) Influence of lee waves on ocean acoustic simulations near Atlantis II seamount. *The Journal of the Acoustical Society of America (JASA).* In Press
3. **Novi, L., L. de Medeiros Vieira,** A. Bracco (2025) Physical connectivity in the Wider Caribbean Region. *GRL*, 52, e2024GL113597, https://doi.org/10.1029/2024GL113597
4. **McKinley, M.; G. Liu**, R. X. Touret, B. O'Donnell, A. Bracco; K. G Sabra (2025) Impact of vertical resolution in a regional ocean circulation model of the northern Gulf of Mexico for acoustic predictions in the upper ocean. *The Journal of the Acoustical Society of America (JASA),* **157** (3), 2191-2205 https://doi.org/10.1121/10.0036257
5. **Lopera, L.**, A. Bracco, S. Herrera (2025) Physical Connectivity Between Mesophotic Areas in the Northern Gulf of Mexico, *JGR – Oceans*, 130, e2024JC021753, https://doi.org/10.1029/2024JC021753
6. Bracco, A., J. Brajard, H. A. Dijkstra, P. Hassanzadeh, C. Lessing, C. Monteleoni (2024) Machine Learning for the Physics of Climate. *Nature Review Physics*, https://doi.org/10.1038/s42254-024-00776-3
7. **McKinley, M**., **D. Sun**, M. Kelly, K. G. Sabra, A. Bracco (2024) Deep mesoscale and submesoscale circulations around the Atlantis II seamount. *JGR – Oceans*, 129, e2024JC021233, https://doi.org/10.1029/2024JC021233
8. **Lama, S., L. Lopera,** A. Bracco (2024) The role of mesoscale-driven connectivity patterns in coral recovery around Moorea and Tahiti, French Polynesia. *Sci. Rep.,* 14, 22349 (2024). https://doi.org/10.1038/s41598-024-73185-2

9. **De Falco, C.,** A. Bracco, F. Desbiolles, C. Pasquero (2024) Kilometer-scale ocean processes behind the variability of the Island Mass Effect in the Maldives. *Scientific Reports*, 14, 17568, https://doi.org/10.1038/s41598-024-63836-9
10. **Novi, L.,** A. Bracco, T. Ito, Y. Takano Evolution of oxygen and stratification in the North Pacific Ocean in CMIP6 Earth System Models. *Biogeosciences*, 21(17), 3985–4005, https://doi.org/10.5194/bg-21-3985-2024
11. Fearon G., A. Bracco, D.A. Reich (2024) Submesoscale variability enhances shoreline oiling in deepwater blowout simulations in the Agulhas Current. *Marine Pollution Bulletin*, 205, 116526, https://doi.org/10.1016/j.marpolbul.2024.116526
12. **Zhou, X, L. Lopera**, A. Roa-Varón, A. Bracco (2024) Modeling the Larval Dispersal and Connectivity of Red Snapper (*Lutjanus campechanus*) in the northern Gulf of Mexico. *Progress in Oceanography*, 103265, https://doi.org/10.1016/j.pocean.2024.103265
13. **Zhang, Q.**, T. Ito, A. Bracco (2024) Modulation of Regional Carbon Uptake by AMOC and Alkalinity Changes in the Subpolar North Atlantic under a Warming Climate. *Frontiers Marine Sciences*. 11, https://doi.org/10.3389/fmars.2024.1304193
14. Olivier, E., R. Touret, **M. McKinley**, J. Jin, A. Bracco, K. G. Sabra (2024) Performance Study of Ray-Based Ocean Acoustic Tomography Methods for Estimating Submesocale Variability in the Upper-Ocean. *J. Acoust. Soc. Am.* 155, 1315–1335
15. Liu, G., F. Tagklis, T. Ito, A. Bracco (2024) Drivers of coupled climate model biases in representing Labrador Sea convection, *Climate Dynamics*, https://doi.org/10.1007/s00382-023-07068-z
16. **Liu, G.,** A. Bracco, J. Brajard (2023) Systematic bias correction in ocean mesoscale forecasting using machine learning. *J. Advances in Modeling Earth Systems (JAMES)*, 15, e2022MS003426. https://doi.org/10.1029/2022MS003426
17. Touret, R., **G. Liu,** A. Bracco, K. Sabra (2023) On the role of vertical resolution for resolving mesoscale eddy dynamics and the prediction of ocean sound speed variability. *JASA Express Letters,* 3(11), https://doi.org/10.1121/10.0022166
18. Hernandez-Carrasco, I., V. Rossi, G. Navarro, A. Turiel, A. Bracco, A. Orfila (2023) Highly coherent flow structures promote diatom blooms in oligotrophic waters. *Geoph. Res. Letters,* e2023GL103688 http://dx.doi.org/10.1029/2023GL103688
19. Ueno, H., A. Bracco, J. A. Barth; M. V. Budyansky; D. Hasegawa et al. (2022) Review: Oceanic mesoscale processes in the North Pacific: physical and biogeochemical impacts. *Progress in Oceanography*, 212, 102955, https://doi.org/10.1016/j.pocean.2022.102955
20. **Novi, L.**, A. Bracco (2022) Machine Learning prediction of connectivity, biodiversity and resilience in the Coral Triangle. *Nature Communications Biology*, 5, 1359, https://www.nature.com/articles/s42003-022-04330-8.
21. **Sun, D.,** T. Ito, A. Bracco, C. A. Deutsch (2022) Control of the oxygen to ocean heat content ratio during deep convection events *Global Biogeochemical Cycles*, 36, e2021GB007063, https://doi.org/10.1029/2021GB007063
22. **Miller, S., L. Lopera**, A. Bracco (2021) Eastern Boundary Upwelling Systems. *Frontiers for Young Minds*, Collection: The Ocean, Vol. 10, doi:10.3389/frym.2022.704120
23. Mura, A., P. Scarica, D. Grassi, A. Adriani, A. Bracco, G. Piccioni et al. (2022) Stability of the Circumpolar Cyclones of Jupiter. *J. Geoph. Res. – Planets.*, 127 e2022JE007241, https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022JE007241
24. **De Falco, C.,** F. Desbiolles, A. Bracco, C. Pasquero (2022) Island Mass Effect: physical processes and nutrient fluxes (A Review). *Frontiers in Marine Sciences*, 9:894860, https://doi.org/10.3389/fmars.2022.894860
25. **Falasca, F.,** A. Bracco (2022) Exploring the topology of the tropical Pacific manifold. *Physics Review X*, 12, 021054, https://journals.aps.org/prx/abstract/10.1103/PhysRevX.12.021054
26. **Sun, D.,** A. Bracco, **G. Liu** (2022) The role of freshwater forcing on surface predictability in the Gulf of Mexico *J. Geoph. Res. – Oceans*, https://doi.org/10.1029/2021JC018098
27. **Zeng, X.,** A. Bracco and **F. Tagklis** (2022) Dynamical impacts of the Mekong River plume in the South China Sea. *J. Geoph. Res. Oceans,* e2021JC017572.
28. **Liu, G.,** A. Bracco, **D. Sun** (2022) Resolution and river treatment impacts on freshwater pathways in the northern Gulf of Mexico *Frontiers in Marine Sciences*, doi:10.3389/fmars.2022.841900

29. **Beaudin, E**., A. Bracco (2022) Marine Heat Waves *Frontiers for Young Minds*, 0:712528. doi: 10.3389/frym.2022.712528 (Endorsed live at the World Expo in Dubai, Jan 30, 2022)
30. **Falasca, F**., J. Cretat, A. Bracco, P. Braconnot, O. Marti (2022) Evolution of the Indo-Pacific dynamical system from mid- to late Holocene, *Climate Dyn.,* doi:10.1007/s00382-022-06153-z
31. Siegelman, L., P. Klein, A. Ingersoll, S. Ewald, W. Young, A. Bracco, A. Mura, A. Adriani, D. Grassi, C. Plainaki, G. Sindoni (2022) Moist convection drives an upscale energy transfer at Jovian high latitudes *Nature Physics* , https://doi.org/10.1038/s41567-021-01458-y
32. **Liu, G., F. Falasca**, A. Bracco (2021) Dynamical Characterization of the Loop Current Attractor *Geoph. Res. Letters*, 48, e2021GL096731, https://doi.org/10.1029/2021GL096731
33. **Liu, G**., A. Bracco, A. M Quattrini and S. Herrera (2021b) Kilometer-scale larval dispersal processes predict metapopulation connectivity pathways for Paramuricea biscaya in the northern Gulf of Mexico *Frontiers in Marine Science*, 8:790927. https://doi.org/10.3389/fmars.2021.790927
34. Galaska,M.P., **G. Liu**, D. West, K. Erickson, A. M Quattrini, A. Bracco, S. Herrera. Seascape genomics reveals metapopulation connectivity network of Paramuricea biscaya in the northern Gulf of Mexico. *Frontiers in Marine Science*, 8:790929. doi:10.3389/fmars.2021.790929
35. Justic, D., V. Kourafalou, G. Mariotti, S. He, R. Weisberg, Y. Androulidakis, C. Barker, A. Bracco et al. A review of transport processes in the Gulf of Mexico along the river-estuary-shelf-ocean continuum: a synthesis of research from the Gulf of Mexico Research Initiative *Estuaries and Coasts*, https://doi.org/10.1007/s12237-021-01005-1
36. Mura, A., A. Adriani, A. Bracco, M.L. Moriconi, D. Grassi, C. Plainaki et al. (2021) Oscillations and stability of the Jupiter polar cyclones, *Geoph. Res. Lett*. 48, e2021GL094235,
37. Boufadel, M., A. Bracco, E.P. Chassignet, S.S. Chen, E. D'Asaro, et al. (2021) Physical Transport Processes affecting the distribution of oil in the Gulf of Mexico: Observations and Modelling, *Oceanography*, 34(1):58–75, https://doi.org/10.5670/oceanog.2021.117
38. **Ikuyajolu, O.J., F. Falasca**, A. Bracco (2021) Information entropy as quantifier of potential predictability in the tropical Indo-Pacific basin. *Frontiers in Climate* doi:10.3389/fclim.2021.675840
39. **Novi, L.,** A. Bracco, **F. Falasca** (2021) Uncovering marine connectivity through sea surface temperature, *Scientific Reports*, 11:8839 https://doi.org/10.1038/s41598-021-87711-z
40. Rogener, KM.-K., K. S. Hunter, N.N. Rabalais, B. J. Roberts, A. Bracco, F. J. Stewart, and S. B. Joye (2021) Pelagic Denitrification and Methane Oxidation in Oxygen-Depleted Waters of the Louisiana Shelf. *Biogeochemistry*, doi: 10.1007/s10533-021-00778-8
41. **Liu, G.,** A. Bracco, **A. Sitar** (2021) Submesoscale mixing across the mixed layer in the Gulf of Mexico *Frontiers in Marine Sciences*, 8:615066, doi: 10.3389/fmars.2021.615066
42. **Falasca, F**. J. Crétat, P. Braconnot, A. Bracco (2020) Spatiotemporal complexity and time-dependent networks in sea surface temperature from mid- to late Holocene *The European Physical Journal Plus*, 135:392 https://doi.org/10.1140/epjp/s13360-020-00403-x
43. Bracco, A., C.B. Paris, A. J. Esbaugh, K. Frasier, S.B. Joye, **G. Liu,** K.L. Polzin, A.C. Vaz (2020) Transport, Fate and Impacts of the Deep Plume of Petroleum Hydrocarbons Formed during the Macondo Blowout *Frontiers in Marine Sciences*, doi:10.3389/fmars.2020.542147
44. **De Falco, C.,** A. Bracco, C. Pasquero (2020) Climatic and oceanographic controls on coral bleaching conditions in the Maldivian region. *Frontiers in Marine Sciences*, doi: 10.3389/fmars.2020.539869
45. **Tagklis,** F., A. Bracco, T. Ito and R.M. Castelao (2020) Submesoscale modulation of deep water formation in the Labrador Sea. *Scientific Reports*, 10, 17489, doi: 10.1038/s41598-020-74345-w.
46. **Sun, D**., A. Bracco, R. Barkan, M. Berta, D. Dauhajre, J. Molemaker, J. Choi, **G. Liu,** A. Griffa, J.C. McWilliams (2020) Diurnal Cycling of Submesoscale Dynamics: Lagrangian Implications in Drifter Observations and Model Simulations of the Northern Gulf of Mexico. *J. Phys. Ocean.*, 50 (6), 1605-1623, doi: 10.1175/JPO-D-19-0241.1
47. Adriani, A., A. Bracco, D. Grassi, M. Moriconi, A. Mura, G. Orton et al. (2020) Two-years observations of the Jupiter polar regions by Jiram on board of Juno *J. Geoph. Res. - Planets*, 125, e2019JE006098, https://doi.org/10.1029/2019JE006098
48. **Tagklis, F**., T. Ito, A. Bracco (2020) Modulation of the North Atlantic Deoxygenation by The Slowdown of the Nutrient Stream, *Biogeosciences*, 17, 231-244, doi: 10.519/bg-17-231-2020
49. Stammer, D., A. Bracco and co-authors (2019) Ocean climate observing requirements in support of Climate Research and Climate Information *In Oceanobs19: An Ocean of Opportunity. Frontiers in Marine Science*, 6, 444. doi: 10.3389/fmars.2019.00444

50. Bracco, A., **G. Liu**, M. Galaska, A. Quattrini, S. Herrera (2019) Integrating physical circulation models and genetic approaches to investigate population connectivity in deep-sea corals *J. Marine Systems*, 198, 103189, https://doi.org/10.1016/j.jmarsys.2019.103189
51. **Falasca, F.,** A. Bracco, A. Nenes, I. Fountalis (2019) Dimensionality reduction and network inference for climate data using class-MAPS: application to the CESM Large Ensemble sea surface temperature. *JAMES***,** 11, 1479-1515, DOI: 10.1029/2019MS001654
52. Castelao, R., H. **Luo**, H. Oliver, A. Rennermalm, M. Tedesco, A. Bracco, P. Yager, T. Mote, P. Medeiros (2019) Controls on the transport of meltwater from the southern Greenland ice sheet in the Labrador Sea *J. Geoph. Res. - Oceans*, 124, 3551–3560
53. Pearson, J., B. Fox-Kemper, R. Barkan, **J. Choi,** A. Bracco, J.C. McWilliams (2019) Impacts of convergence on Lagrangian statistics in the Gulf of Mexico *J. Phys. Ocean.*, 49(3):675-690
54. Bracco, A., **G. Liu, D. Sun** (2019) Mesoscale-submesoscale interactions in the Gulf of Mexico: From oil dispersion to climate, *Chaos, Solitons & Fractals*, 119, 63-72
55. Stammer, D., A. Bracco, P. Braconnot, G. Brasseur, S.M. Griffies, E. Hawkins (2018) Science in a world of transient climate change: enabling regional to local predictions in support of reliable climate information. *Earth's Future*, 6, 1498-1507
56. Rogener, M.K., A. Bracco, K.S. Hunter, M.A. Saxton, S.B. Joye, S.B. (2018) Impact of the Deepwater Horizon oil well blowout on methane oxidation dynamics in the Northern Gulf of Mexico. *Elementa: Science of the Anthropocene*, 6: 73. doi:10.1525/elementa.332
57. **Fountalis, I.,** C. Dovrolis, A. Bracco, B. Dilkina, S. Keilholz (2018) δ-MAPS: From spatio-temporal data to a weighted and lagged network between functional domains *Applied Network Science*, doi:10.1007/s41109-018-0078-z
58. **Liu, G**., Bracco, A., Passow, U. (2018) The influence of mesoscale and submesoscale circulation on sinking particles in the northern Gulf of Mexico *Elementa: Science of the Anthropocene*, 6(1):36, doi: http://doi.org/10.1525/elementa.292
59. Bracco A., **Falasca, F**., Nenes, A., **Fountalis, I**., Dovrolis, C. (2018) Advancing climate science with Knowledge-Discovery through Data mining. *NPJ Climate and Atmosph. Science*, 4, doi:10.1038/s41612-017-0006-4 (GaTech and COS news item highlighted by DOE web site, Phys.org, Science Newsline, EurekAlert!, R&D Magazine)
60. Bracco, A., **Choi, J.**, Kurian, J., Chang, P. (2018) Vertical and horizontal resolution dependency in the model representation of tracer dispersion in the northern Gulf of Mexico *Ocean Modell.*, 122, 13-25
61. Barkan, R., McWilliams, J.C., Shchepetkin, A.F., Molemaker, J., Renault, L., Bracco, A., **Choi**, **J.** (2017) Submesoscale dynamics in the northern Gulf of Mexico. Part I: Regional and seasonal characterization, and the role of river outflow. *J. Phys. Ocean.,* 47, 2325-2346
62. Barkan, R., McWilliams, J.C., Molemaker, J., **Choi, J**., Srinivasan, K., Shchepetkin, A.F., Bracco, A. (2017) Submesoscale dynamics in the northern Gulf of Mexico. Part II: Temperature-Salinity Relations and Cross Shelf Transport processes *J. Phys. Ocean.,* 47, 2347-2360
63. **Choi, J**., Bracco, A., et al. (2017) Submesoscale dynamics in the northern Gulf of Mexico. Part III: Lagrangian implications *J. Phys. Ocean.*, 47, 2361-2376
64. **Sun, D.,** Ito, T., Bracco, A., (2017) Oceanic uptake of oxygen during deep convection events through diffusive and bubble mediated gas exchange. *Global Biogeochem. Cycles*, 31, https://doi.org/10/1002/2017GB005716
65. **Tagklis, F**., Bracco, A., Ito, T. (2017) Physically driven patchy O2 changes in the North Atlantic Ocean simulated by the CMIP5 Earth System Models. *Global Biogeochem. Cycles*, doi:10.1002/2016GB005617
66. **Zhong, Y.**, Bracco A., et al. (2017) Observed and simulated vertical pump of an anticyclonic eddy in the South China Sea. *Scientific Reports* 7, Article #: 44011, doi:10.1038/srep44011
67. Stammer, D., Bracco A., Detemmerman (2017) Climate and ocean science builds for the future. *EOS*, 98, doi:10.1029/2017EO073225
68. Joye, S.B., Bracco, A., Ozgokmen, T., Chanton, J.P., Grosell M., MacDonald I., Cordes E.E., Montoya, J.P., Passow U. (2016) The Gulf of Mexico ecosystem, six years after the Macondo oil well blowout *Deep Sea Res. II***,** http://dx.doi.org/10.1016/j.dsr2.2016.04.018
69. **Cardona Y**., Ruiz-Ramos, D.V., Baums I.B., Bracco A. (2016) Potential connectivity of coldwater black coral communities in the northern Gulf of Mexico *PLOS One*, 11(5): e0156257. doi:10.1371/journal.pone.0156257

70. **Cardona, Y**., Bracco A., Villareal, T. A., Subramaniam, A., Weber, S., Montoya, J. P. (2016) Highly variable nutrient concentrations in the northern Gulf of Mexico, *Deep-Sea Research II*, doi:10.1016/j.dsr2.2016.04.010.
71. Luo, H., Castelao, R., Asa K. Rennermalm A. K., Marco Tedesco, M., Bracco A., Yager, P.L., Mote, T. L. (2016) Fate of Freshwater from Greenland Ice Sheet Melting in the Ocean, *Nature Geoscience*, doi:10.1038/NGEO2708
72. Bracco A., **Choi J., Joshi K.,** Luo H., McWilliams J. (2016) Submesoscale currents in the northern Gulf of Mexico: Deep phenomena and dispersion over the continental slope. *Ocean Modelling*, 01, 43-58, doi:10.1016/j.ocemod.2016.03.002
73. **Luo, H**., Bracco A., **Cardona Y**., McWilliams, J.C., (2016) The submesoscale circulation in the Northern Gulf of Mexico: Surface processes and the impact of the freshwater river input. *Ocean Modelling*, 101, 68-82, doi:10.1016/j.ocemod.2016.03.003
74. Kleindienst, S., Grim, S., Sogin, M., Bracco, A., Crespo-Medina, M., JoyeS.B. (2015) Diverse, rare microbial taxa responded to the Deepwater Horizon deep-sea hydrocarbon plume *The ISME Journal*, doi:10.1038/ismej.2015.121
75. Ito, T., Bracco, A., Deutsch, C., Frenzel, H., Long, M., Takano, Y. (2015) Sustained growth of the Southern Ocean carbon storage in a warming climate, *Geoph. Res. Letters*, 42, 4516-4522
76. Bracco A., Long M. Levine N., Thomas Q., Deutsch C., McKinley G., (2015) The NCAR Advanced Study Program Summer Colloquium on Carbon-climate connections in the Earth system: Capacity Building in cross-disciplinary research, *Bull. Amer. Meteor. Soc*., doi:http://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-13-00246.1.
77. **Fountalis, I**., Bracco, A., Dovrolis, C. (2015) ENSO in CMIP5 simulations: network connectivity from the recent past to the twenty-third century, *Climate Dynamics*, 45, 511-538, DOI 10.1007/s00382-014-2412-1
78. **Luo, H**., Bracco A., **Zhang, F**. (2014), The seasonality of convective events in the Labrador Sea, *J. Climate*, 27, 6456–6471. doi: http://dx.doi.org/10.1175/JCLI-D-14-00009.148)
79. Crespo-Medina M., Meile C., Hunter K., Diercks A., Asper V., Chanton J., Orphan V., Shiller A., Joung D., Battles J., Amon R., Bracco A., Montoya J., Villareal T., Vossmeyer A., Wood M., Joye S. (2014) The rise and fall of methanotrophy following a deepwater oil-well blowout. *Nature Geoscience*, 7, 423–427 (see also News and Views: Ocean biogeochemistry: Bacterial bloom and crash in *Nature Geoscience* 7, 394–395, 2014)
80. **Cardona, Y.,** Bracco A., (2014) Predictability and mesoscale circulation throughout the water column in the Gulf of Mexico**,** *Deep Sea Res. II* - Topical studies in Oceanography, Available on-line, Jan 2014, http://dx.doi.org/10.1016/j.dsr2.2014.01.008
81. **Foudalis I**., Bracco A. Dovrolis C. (2014) Spatio-temporal network analysis for studying climate patterns *Climate Dyn*., 42, 879-899, doi:10.1007/s00382-013-1729-5
82. Bracco A., Neelin J. D., **Luo, H.**, McWilliams, J., Meyerson, J. E. (2013) High dimensional decision dilemmas in climate models, *Geoscientific Model Development* (GMD) 6, 2731-2767, doi:10.5194/gmdd-6-2731-2013.
83. **Zhong, Y**., Bracco A., (2013), Submesoscale impacts on horizontal and vertical transport in the Gulf of Mexico, *J. Geoph. Res. – Oceans*, 118, 5651–5668, doi:10.1002/jgrc.20402.
84. Di Lorenzo, E., Combes V., Keister J. E., Strub T. P., Thomas A. C., Franks P. J. S., Ohman M. D., Furtado J., Bracco A., Bograd S. J., Peterson W. T., Schwing F. B., Chiba S., Taguchi B., Hormazabal S., and Parada C. Synthesis of Pacific Ocean climate and ecosystem dynamics. *Oceanography* 26(4), 68–81, http://dx.doi.org/10.5670/oceanog.2013.76
85. **Barimalala R**., Bracco A., Kucharski, F., McCreary J. P., Crise A. (2013) Arabian ecosystem response to the south tropical Atlantic teleconnection *J. Marine Systems*, 117-118, 14-30.
86. **Luo H**., Bracco A., Yashayaev I., Di Lorenzo E. (2012) The interannual variability of potential temperature in the central Labrador Sea *J. Geoph. Research - Oceans*, 117, C10, DOI: 10.1029/2012JC007988
87. **Zhong Y**., Bracco A., Villareal T. (2012) Pattern formation at the ocean surface: Sargassum distribution and the role of the eddy field *Limnology&Oceanography* Fluid and Environments, 2, 12-27, doi:10.1215/21573689-1573372
88. **Cardona Y**, Bracco A. (2012) Enhanced vertical mixing within mesoscale eddies due to high frequency winds in the South China Sea. *Ocean Modeling*, doi: 10.1016/j.ocemod.2011.11.004

89. **Barimalala R**, Bracco A, Kucharski F. The representation of the South Tropical Atlantic teleconnection to the Indian Ocean in the AR4 coupled models. *Climate Dynamics*, 38, Numbers 5-6, 1147-1166, DOI: 10.1007/s00382-011-1082-5
90. **Luo H**., Bracco A., Di Lorenzo E., (2011) The interannual variability of the surface eddy kinetic energy in the Labrador Sea. *Progress in Oceanography*, doi:10.1016/j.pocean.2011.01.006.
91. Neelin, J. D. Bracco A., **Luo H.**, McWilliams J.C., Meyerson J. E. (2010) Consideration for parameter optimization and sensitivity in climate models, *PNAS*, 107, 21349-21354.
92. Di Lorenzo E., Cobb K. M. Furtado J. C., Schneider N., Anderson B. T., Bracco A., Alexander M. A., Vimont D. J. (2010) Central Pacific El Nino and decadal climatic change in the North Pacific Ocean, *Nature Geoscience*, 3 (11), 762-765, doi: 10.1038/NGEO984
93. Kuckarski F., Bracco A., **Barimalala R**., Yoo J.-H. (2010) Contribution of the east-west thermal heating contrast to the South Asian Monsoon and consequences for its variability. *Climate Dynamics*, doi: 10.1007/s00382-010-0858-3
94. Bracco A., McWilliams, J.C (2010) Reynolds number dependency in equilibrium two-dimensional turbulence. *J. Fluid Mechanics*, 646, 517-526.
95. **Koszalka, I., Ceballos, L.,** Bracco A. Vertical mixing and coherent anticyclones in the ocean: The role of stratification. *Nonlinear Processes in Geophysics*, 17, 37-47.
96. **Koszalka I**., Bracco A., McWilliams, J.C., Provenzale A. (2009) Dynamics of wind-forced coherent anticyclones in the open ocean. *J. Geophysical Research – Oceans*, doi:10.1029/2009JC005388, 114, C08011, doi:10.1029/2009JC005388.
97. Di Lorenzo, E., Fiechter J., Schneider N., Bracco A., Miller A. J., Franks P. J. S., Bograd S. J., Moore A. M., Thomas A., Crawford W., Pena A., Herman A., (2009) Nutrient and Salinity Decadal Variations in the central and eastern North Pacific. *Geophysical Research Letters*, doi:10.1029/2009GL038261.
98. Kucharski F., Bracco A., Yoo J.H., Tompkins A., Feudale L., Ruti P., dell'Aquila A. (2009) A Gill-Mastuno-type mechanism explains the Tropical Atlantic influence on African and Indian Monsoon rainfall*. Quart. J. Royal Meteor. Soc.*, 135, 569-579, doi:10.1002/qj.406.
99. Wang C., Kucharski F., **Barimalala R.**, Bracco A. (2009) Teleconnections of the Tropical Atlantic to the Tropical Indian and Pacific Oceans:A Review of Recent Findings. Special Issue of *Meteorologische Zeitschrift*, 18, 445-454, doi 10.1127/0941.
100. Bracco A, **Clayton S.,** Pasquero C. (2009) Horizontal advection, diffusion and plankton spectra at the sea surface. *Journal of Geophysical Research – Ocean*, 114, C02001, doi:10.1029/2007JC004671
101. Furtado J. C., Di Lorenzo E., Cobb K., Bracco A. (2009) Paleoclimate reconstructions of tropical seas surface temperatures from precipitation proxies: Methods, uncertainties and nonstationarity. *J. Climate* 22(5),1104-1123, doi: 10.1175/2008JCLI2415.1
102. Bracco, A., Pedlosky J., Pickart R. S. (2008) Eddy formation near the West coast of Greenland *J. Physical Oceanography*, 38(9), 1992-2002
103. Kucharski F., Bracco A., Yoo J.H., Molteni F. (2008) The Atlantic forced component of the Indian Monsoon interannual variability *Geophysical Research Letters*, vol. 35 L04706, DOI:10129/2007GL033037. Also American Geophysical Union Editor Highlights, March 19 2008, EOS Highlights (89(16), April 15 2008, pg. 154 and Global Change collection Highlights)
104. **Koszalka I**., Bracco A., Pasquero C., Provenzale A. (2007) Plankton cycles disguised by turbulent advection. *Theoretical Population Biology*. doi:10.1016/j.tpb.2007.03.007
105. Kucharski F., Bracco A., Yoo J. H. and Molteni F. (2007) Low frequency variability of the Indian Monsoon – ENSO relation and the Tropical Atlantic. The 'weakening' of the '80s and '90s. *J. Climate*, 20(16), 4255-4266
106. Bracco A., Kucharski F., Molteni F., Hazeleger W., Severijns C., (2007) A recipe for simulating the interannual variability of the Asian summer monsoon and its relation with ENSO. *Climate dynamics*, doi: 10.1007/s000382-006-0190-0.
107. Kucharski F., Molteni F., Bracco A. (2006) Decadal interactions between the Western tropical Pacific and the North Atlantic Oscillation *Climate Dynamics*, 26(1), 79-91, doi:10.1007/s000382-005-0085-5
108. Bracco A., Kucharski F., Molteni F., Hazeleger W., Severijns C., (2005) Internal and forced modes of variability in the Indian Ocean. *Geophysical Research Letters*, 32, L12707, doi: 10.1029/2005GL023154.

109. Pasquero C., Bracco A., Provenzale A. (2005) Impact of the spatio-temporal variability of the nutrient flux on primary productivity in the ocean. *Journal of Geophysical Research - Oceans*, 110, C07005, doi:10.129/2004JC002738.
110. Kucharski, F. Molteni F., Bracco A. (2005). A western tropical Pacific relation to the NAO. *Bulletin of the American Meteorological Society*, 86(10), 1418-1419
111. Bracco A., Kucharski F., Kallummal R., Molteni F. (2004) Internal variability, external forcing and climate trends in multi-decadal AGCM ensembles *Climate Dynamics*, 23(6), 659-678, doi: 10.1007/s00382-004-0465-2
112. Bracco A., von Hardenberg J., Provenzale A., Weiss J., McWilliams J.C. (2004) Dispersion and mixing in quasigeostrophic turbulence. *Physical Review Letters*, 92 (8), 084501-1-4
113. Bracco A., Chassignet E. P., Garraffo Z., Provenzale A. (2003) Lagrangian velocity distributions in a high resolution numerical simulation of the North Atlantic*. J. Atmospheric and Oceanic Technology*, 8, 1212-1220
114. Bracco A., Pedlosky J. (2003) Local baroclinic instabilities over variable topography in channel flows. *J. Physical Oceanography*, 33, 207-219
115. Martin A., Richards J. K., Bracco A., Provenzale A. (2002) Patchy productivity in the open ocean. *Global Biogeochemical Cycles*, 16(2) 10.1029/2001GB001449 Also in Editor's Choice: Biogeosciences, July 2002.
116. Berloff P., McWilliams J. C., Bracco A. (2002) Material Transport in Oceanic Gyres. Part I: Phenomenology. *J. Physical Oceanography*, 32, 764-796.
117. Bracco A., McWilliams J. C., Murante G., Provenzale A., Weiss J. B. (2000) Revisiting 2D turbulence at millennial resolution. *Physics of Fluids*, 12(11), 2931-2941
118. Bracco A., LaCasce J., Pasquero C., Provenzale A. (2000) Velocity PDFs in barotropic turbulence, *Physics of Fluids*, 12, 2478-2488.
119. Bracco A., LaCasce J., Provenzale A. (2000) Velocity probability density functions for oceanic floats. *J. Physical Oceanography*, 30, 461-474.
120. Bracco A., Provenzale, I. Scheuring, (2000) Mesoscale vortices and the paradox of the plankton. *Proceedings of the Royal Society of London B*, 267 (1454), 1795-1800.
121. Bracco A. (2000) Boundary layer separation in the Surface Quasi-Geostrophic equations. *Nuovo Cimento C*, 23 (5), 487-506.
122. Bracco A. (2000) Transport of passive tracers by monopoles on the beta-plane. *Nuovo Cimento C*, 23 (6), 597-609.
123. Bracco A., Chavanis P., Provenzale A, Spiegel E. A (1999) Particle aggregation in a turbulent keplerian flow. *Physics of Fluids*, 11, 2280-2291.

A2. Other refereed material

1. CLIVAR Science Plan and Implementation Strategy, Bracco, A., and Stammer, D. (Lead Authors) (2018)
2. US-CLIVAR Science Plan, Goddard, L., et al. (2013), http://www.usclivar.org/science-plan
3. IOC-R. 2021. Integrated Ocean Carbon Research: A Summary of Ocean Carbon Research, and Vision of Coordinated Ocean Carbon Research and Observations for the Next Decade. R. Wanninkhof, C. Sabine and S. Aricò (eds.). Paris, UNESCO. 46 pp. (IOC Technical Series, 158 Rev.) doi:10.25607/h0gj-pq41

A3. Submitted Journal Articles (with date of submission)

1. Reinhard, C., M. Fakhraee; N. Planavsky, T. Ito, M. Realff, A. Bracco (2025) Carbon dioxide removal through ocean alkalinity modification: Fundamentals, opportunities, and challenges. *Cell Reports Sustainability,* Submitted, Feb 2025
2. **Aghor, P., M. McKinley,** A. Bracco (2025) Interaction of Ocean Currents and Seamounts: Role of Bottom Topography Around Atlantis II. *JGR – Oceans*, Submitted, Jan 2025
3. **Zhang, Q.**, T. Ito, A. Bracco (2025) A Physics Informed Emulator Markedly Improves Simulations of Atlantic Oxygen Minimum Zones. Submitted, June 2025

B1. Referred Book Chapters

1. Bracco A., Archibald, R.K., Dovrolis, C., **Foundalis, I**., Luo H., Neelin, J.D. (2015) The parameter optimization problem in state-of-the-art climate models and network analysis for systematic data mining in model intercomparison projects in “The Fluid Dynamics of Climate”, CISM Courses and Lectures Vol. 564, Edited by A. Provenzale, E. Palazzi and K. Fraedrich pp 121-141, Springer, doi 10.1007/978-3-7091-1893-1
2. Bracco A., Kucharski F., Rosenheim B. (2009) Commentary: Challenges in the Tropical Atlantic: Understanding its interannual to decadal variability. In "The Atlantic Ocean: New Oceanographic Research", Nova Science Publishers, Hauppauge, NY.
3. Provenzale A., Babiano A., Bracco A., Pasquero C. and Weiss J.B. (2008) Coherent vortices and tracer transport, in “Transport and Mixing in Geophysical Flows”, Series: Lecture Notes in Physics, Vol. 744, edited by J.B. Weiss and A. Provenzale, Springer, ISBN: 978-3-540-75214-1.
4. Pasquero C., Bracco A., Provenzale A., Weiss J. (2007) Particle motion in a sea of eddies, in Lagrangian Analysis and Prediction of Coastal and Ocean Dynamics, pg. 89-118, edited by A. Griffa, A. D. Kirwan, A. J. Mariano, T. Ozgokmen, and T. Rossby, Cambridge University Press, ISBN-13: 9780521870184.
5. Pasquero C., Bracco A., Provenzale A. (2004) Coherent vortices, Lagrangian particles and the marine ecosystem. In Shallow Flows, pag. 399-412, edited by G.H. Jirka and W.S.J. Uijttewaal, Balkema Publishers,Leiden, NL.
6. Hazeleger W., Molteni F., Severijns C., Haarsma R., Bracco A., Kucharski F. (2003) SPEEDO: A flexible coupled model for climate studies. Clivar Exchanges N. 28 - Coupled Modelling.
7. Bracco A., von Hardenberg J., Provenzale A., Weiss J. B. (2003) Modeling planetary turbulence at very high Reynolds number. In Science and Supercomputing at CINECA, 2003.
8. Bracco A., Provenzale A., Spiegel E. A, Jecko P. A. (1999) Spotted disks. In "Theory of Black Hole Accretion Disks", ed. M. Abramowicz, G. Bjornson, J. Pringle. Cambridge: Cambridge Univ. Press.

B2. Edited Volumes

1. Understanding and predicting ocean carbon uptake using coupled climate models: Recent achievements and open challenges, U.S. CLIVAR Variations, Spring 2015, Vol. 13(2). Edited by A. Bracco, T. Ito and C. Deutsch.

C. Datasets and Software

δ-MAPS, network inference method, modified version by graduate student Fabrizio Falasca (https://github.com/FabriFalasca/delta-MAPS)

Repository for software on dynamical systems/manifold learning: https://github.com/FabriFalasca/climate-and-dynamicalsystems

Software for 2D SQG simulations https://github.com/abracco12/SQG_Code/tree/v1.0.0

GRIIDC dataset for Modeling study of particle trajectories in the Northern Gulf of Mexico at 500 m resolution DATASET (UDI): R4.x265.000:0025; DOI: 10.7266/N7CN720V

GRIIDC dataset for Modeling study of the impact of resolution on representation of tracer dispersion along the continental slope in the northern Gulf of Mexico; DOI: 10.7266/N75D8Q9V

GRIIDC dataset for Modeling study of sinking of DOC particles in the Gulf of Mexico; DOI: 10.7266/N7NP22XW

GRIIDC dataset for Modeling study of the submesoscale transport properties of mesoscale anticyclones DATASET (UDI): R4.x268.000:0046; DOI: 10.7266/N7NV9G78

GRIIDC dataset for modeling study of deep coral connectivity in the northern Gulf of Mexico over three years DATASET (UDI): R1.x132.141:0006; DOI: 10.7266/N7V9860S

GRIIDC dataset for modeling study of submesoscale dynamics in the northern Gulf of Mexico and role of freshwater forcing, Jan 2010-Dec 2012, DATASET (UDI): R1.x132.141:0005, DOI:10.7266/N7028PF7

D. Internet Publications

1. Bracco. A. 2024's extreme ocean heat breaks records again, leaving 2 mysteries to solve, The Conversation USA and The Conversation Indonesia (translated). Jan 2025 Over 12,000 reads
2. Bracco, A., Z. Handlos. What is an Atlantic Niña? How La Niña's smaller cousin could affect hurricane season. The Conversation USA, August 2024, https://theconversation.com/what-is-an-atlantic-nina-how-la-ninas-smaller-cousin-could-affect-hurricane-season-237425 Over 80,000 reads
3. Bracco, A. The world's fourth mass coral bleaching is underway, but well-connected reefs may have a better chance to recover. The Conversation USA, June 2024, https://theconversation.com/the-worlds-fourth-mass-coral-bleaching-is-underway-but-well-connected-reefs-may-have-a-better-chance-to-recover-230755 Over 12,000 reads
4. Bracco, A. Ocean heat is off the charts – here's what that means for humans and ecosystems around the world. The Conversations USA, June 2023, https://theconversation.com/ocean-heat-is-off-the-charts-heres-what-that-means-for-humans-and-ecosystems-around-the-world-207902, also available in French. Over 130,000 reads
5. **Barimalala, R.,** Bracco A., Zhuo, L., (2017) Indian Ocean sea surface partial pressure CO2 and air-sea CO2 flux interannual variability in the CMIP5-ESM models; CLIVAR EXCHANGES 2017
6. Ito, T, Bracco A., Deutsch, C. (2015) The future of the Southern Ocean carbon storage in CMIP5 models, U.S. CLIVAR Variations, Spring 2015, vol. 13(2), 24-28
7. Bracco, A., Ito T. and Deutsch C., (2013) An Update from the Ocean Carbon Uptake Working Group, Ocean Carbon and Biogeochemistry Newsletter (OCB News), Winter 2013, Vol. 6(1)
8. Bracco A. and Johnson K., Ocean carbon biogeochemistry and U.S. CLIVAR joint meeting summary, U.S. CLIVAR Variations, Summer 2011, vol. 10
9. Bracco A., **Koszalka I.,** Pasquero C., Provenzale A. (2008) Produttività primaria dell'ecosistema marino, turbolenza oceanica e cicli biogeochimici globali. In "Modellistica del clima" , Clima e cambiamenti climatici: le attivita' di ricerca del CNR. CNR Editore (in Italian). Also on-line at http://www.dta.cnr.it/content/view/712/109/lang,en/
10. Bracco A. Studiare e prevedere i cambiamenti climatici. (2004) Atti del II Convegno dell'Unione Meteorologica del Friuli-Venezia-Giulia (in Italian). Also on line at http://ulisse.sissa.it/biblioteca/saggio/2003/Ubib031201s001

E. Presentations

Keynote addresses, Conferences and Symposia, Invited Seminars (2018-onward):

1. Model biases and the role of resolution in representing AMOC. Invited. 2025 Xiamen Symposium on Marine Environmental Sciences, Xiamen, China, January 2025
2. On the role of model resolution for the prediction of ocean sound speed variability in submesoscale-rich flows. Keynote. Invited. Acoustical Society of America conference. Virtual, November 21st, 2024
3. A multiscale overview of marine ecosystem connectivity using satellite data, machine learning and Lagrangian models. Invited. 4DMED-CCN European Space Agency (ESA) Workshop, Frascati, IT, October 30, 2024
4. Lionfish, corals, sea surface temperatures and machine learning: a dynamics view of marine ecosystems. Invited seminar, Environmental Fluid Mechanics and Water Resources (EFMWR) seminar series, GT, October 4th, 2024
5. A toy model for Sargassum growth in the Great Atlantic Sargassum Belt, Invited, Remote, Google's monthly talk series on Carbon Removal Research September 18, 2024
6. Manifold learning and the climate system. Invited Seminar, Dalian Maritime University, China, Remote, September 17, 2024
7. Ocean Mixing and Negative Emission Technologies. Open challenges. Invited Talk, CPT annual meeting, Ocean Transport and Eddy Energy, Brown University, August 14-17 2024
8. The climate-carbon challenge from the lens of the Ocean, Simons Foundation Presidential Lecture, NY, Simons Foundation, March 20, 2024
9. Corals, connectivity, mesoscale transport and machine learning, Workshop on Reimagining Ocean Ecology (Invited), Venice, IT, March 2024
10. My career journey between astrophysics and climate, science and engineering. Plenary Talk (Invited) APS Conferences for Undergraduate Women in Physics (CUWiP) at Georgia Tech, Atlanta, Jan 20, 2024

11. Lionfish, corals, sea surface temperatures and machine learning. A Dynamic view of marine ecosystems. Dynamics Days Europe, 43rd edition, Plenary speaker (Invited), Naples, Sept 2023
12. Multi-Time Scale Impacts of Ocean Mesoscale / Submesoscale Dynamics. Why should we care beyond the ocean circulation. Simons Foundation, Workshop on Multiscale Physics – 2023 (by invitation only). Elmau, Germany, August 2023
13. Multiscale impacts of submesoscale circulations in regions with large density gradients. NORCE, Bergen, Norway. Invited, June 2023
14. Using Manifold Learning To Understand the Climate System. Earth System Science Interdisciplinary Center (ESSIC) Seminar, NOAA-UMD. Invited (Virtual), March 2023
15. Machine Learning, climate knowledge and SST observations for ecosystem management, Second GCOS Climate Observation Conference, Paris Oct 2022 (Invited, On-line)
16. Machine learning and the grand challenge of marine ecosystem sustainability. Symposium on Advances in Ocean Observation, Azores, Portugal, July 2022 (Invited)
17. Analyzing changes in the tropical Indo-Pacific in the last 6,000 years. One World Mathematics of Climate Series, May 2022 (Invited)
18. Exploring the Manifold of the Tropical Pacific in Observations and Models. Weather and Climate: From Fundamentals to Applications An ICTP/UniTN/UniAQ Joint International Seminar Series. May 2022 (Invited)
19. Exploring the climate attractor via manifold learning. MIT, Sack Lunch Seminar, March 2022 (invited)
20. Lionfish, corals, connectivity, SSTs and d-MAPS. UCSB, Kavli Institute for Theoretical Physics, Program in Machine Learning and the Physics of Climate, December 2021, available at https://online.kitp.ucsb.edu/online/climate21/bracco/
21. Manifold learning as a tool to link AI/ML and climate dynamics. UCSB, Kavli Institute for Theoretical Physics, Conference: Machine Learning for Climate, November 2021, available at https://online.kitp.ucsb.edu/online/climate-c21/bracco/
22. The Jupiter polar cyclones as seen by almost 4 years of Juno observations. Planetary Science and Astrobiology Seminar Series, March 2021 and UCSB, Kavli Institute for Theoretical Physics, November 2021 (Program: Probes of Transport in Stars).
23. Multiscale interactions in the Labrador Sea: submesoscale modulation of deep water formation. AOSC Seminar, Un. Maryland, Invited (Virtual), Feb 2021
24. Multiscale interactions in the ocean and large scale impacts, Oceanographic Society of Japan (OSJ), Invited, November 2020
25. Spatio-temporal complexity and time-dependent networks in mid- to late-Holocene simulations. Machine Learning Seminar Series, Invited, ECMWF, Reading, UK, July 2020
26. Deep-water formation in the Labrador Sea: Drivers and Impacts. Invited, CNR-Lerici Seminar Series, Italy, June 2020
27. Network analysis and climate science. Global and regional opportunities. 1st Artificial Intelligence for Copernicus Workshop, Invited, ECMWF, Reading, UK, November 2019 (delivered remotely)
28. Ocean carbon science within CLIVAR, a WCRP core project. 1st Integrated Ocean Carbon Research meeting, Invited, UNESCO, Paris, October 2019
29. Oil dispersion, carbon drawdown and Lagrangian transport in the Gulf of Mexico. Procesos Hidrodinamicos a Diversas Escalas, Universitad National De Colombia, Invited, Medellin (Colombia), August 2019
30. Coral Connectivity in the Gulf of Mexico. The CYCLE and RESTORE projects. Procesos Hidrodinamicos a Diversas Escalas, Universitad National De Colombia, Invited, Medellin (Colombia), August 2019
31. CYCLE: (ConnectivitY of CoraL Ecosystems) in the northern Gulf of Mexico. Integrating field studies, modeling and state-of-the-art genetic approaches for informed decisions in marine protected areas. LifeWatch ERIC Scientific Community Meeting, Invited, Rome (Italy), May 2019.
32. ECOGIG: ECosystem impacts of Oil and Gas Inputs to the Gulf. A nearly 10 year old enterprise to understand the Gulf of Mexico ecosystem and its relationship with hydrocarbons. ECOPOTENTIAL IV General Meeting, Invited, Tenuta di Castelporziano (Italy), May 2019
33. Eddies, turbulence and ocean transport in the Gulf of Mexico and South China Sea. State Key Laboratory of Marine Environmental Science (MEL) of Xiamen University, Invited, Xiamen (China), April 2019

34. Ocean eddies, submesoscale turbulence and vertical transport. Mathematical Models and Methods in Earth and Space Sciences, Tor Vergata, Roma, Italy, Invited, March, 2019
35. Multiscale impacts of submesoscale flows. Biogeochemical implications in the coastal ocean. OMIX symposium, Kashiwanoha, Japan, Invited, November, 2018
36. Multiscale flows in the Gulf of Mexico: from oil dispersion to coldwater coral evolution and carbon drawdown. ACOMO 2018, Australian National Academy of Sciences, Keynote, Canberra, AU, October 2018
37. Biogeochemical impacts at the meso- and submeso-scales in the Gulf of Mexico. Purdue University, invited, August 2018
38. New network tools for a closer look at tropical teleconnections and model biases in the Community Earth System Model. 15th edition of the Experimental Chaos and Complexity Conference (ECC15), Madrid (Spain), June 2018
39. Multi-Scale Flows and Pathways in the Gulf of Mexico and South China Sea: implications of ocean submesoscale turbulence for oil dispersion, coral evolution and carbon uptake. Invited. American Physical Society (APS) Annual Meeting, Los Angeles, CA, March 2018

F. Other Scholarly and Creative Accomplishments

1. Scientific Advisor for *Around the Blue*, docufilm between science, adventure, ecology following sailor Giovanni Soldini around the world presented at the 2024 Venice Film Festival (to be released on Prime Video. UN Ocean Decade endorsed)
2. TEDx AlexanderPark (GA), https://tedxalexanderpark.com/2024-speakers/ 'Using intuition and AI to save coral reefs' (https://www.youtube.com/watch?v=q7u1kVVIwrg), June 22nd, 2024
3. NOAA StoryMap (children stories from the Deep Ocean Minimester) https://restoreactscienceprogram.noaa.gov/miscellaneous/storymap-students-translate-deep-ocean-science-into-kids-books
4. Wreck radio, Inside the black box, 'Our Dynamic Ocean', November 1st 2017
5. Completed three week–long modules for 6 and 7 grade class activities on oil spill in the ocean with teachers' training in summer 2016 and 2017 as part of the AMP-IT-UP CEISMC project
6. AGU Blog profile and interview (http://blogs.agu.org/geospace/2016/06/23/the-thrill-of-predictability/)
7. AGU Blog on World Oceans Day (http://blogs.agu.org/geospace/2016/06/15/5-reflections-beyond-world-oceans-day/)
8. Contributed to entries for the page https://schmidtocean.org/cruise/changing-river-measuring-nutrient-fluxes-south-china-sea/
9. Developed two quantitative intensive courses (Ocean Dynamics and Mathematical Methods for GFD) and two service courses (Preparing Future Faculties, with about 50% enrolment from other schools, and Introduction to Research and Responsible Conduct to cover the Ethics Training mandate for EAS students).
10. Contributed to the development and submission of the prospectus for a new graduate program in Ocean Science and Technology
11. Co-Editor, Spring Issue of CLIVAR Variations 2015

G. Societal And Policy Impacts

1. Podcast for 'Carbon Conversations' https://lnkd.in/gZ6ntxQ7
2. Podcast for 'How to protect the Ocean', https://www.speakupforblue.com/show/speak-up-for-the-ocean-blue/climate-change-actions-using-sargassum-and-black-fly-larvae/ (https://www.youtube.com/watch?v=-sUfvyXQmSA)
3. Expert in the news for multiple outlets in 2023 and 2024 including The Wired, KCBS Radio in San Francisco, Reuters Singapore, Bloomberg City Lab, Newsweek
4. Podcast for 'Grass Roots Health', https://1795group.com/ (March 2024)
5. "The Earth Unlocked", Weather Channel Documentary, "Space Weather" Episode aired August 2023, contributor for Jupiter's climate

6. Contributor to the ABC Australia news piece “The Ocean’s Fever” https://www.abc.net.au/news/2023-08-21/ocean-tempertature-records-2023/102701172
7. Broader audience publication “Ocean heat is off the charts – here’s what that means for humans and ecosystems around the world (also translated in French)”, The Conversation, published June 2023 (~120k readers, shared by 34 publishers, 5 post publication engagements with The Wired, KCBS Radio in San Francisco, Reuters Singapore, Bloomberg City Lab)
8. Integrated Ocean Carbon Research (IOC-R) US representative for climate-carbon interactions; currently the group is developing an updated vision for ocean carbon research during the UN Ocean Decade
9. Role of the ocean in climate, also through US CLIVAR and CLIVAR leadership and contribution to national and international science plans

H. Other Professional Activities

1. Research cruise on R/V Falkor (Schmidt Ocean Institute Foundation) in the South China Sea, May 30th-June 25th, 2016.
2. Research cruise on R/V Endeavor July 20th – August 3rd 2016; June 4th-23rd 2012.
3. Temporary consultant for STRATUS Inc. for environmental consulting services to the National Ocean Service, Office of Response and Restoration, Damage assessment, remediation and restoration program (NOAA-DARRP), Natural Resource Damage Assessment (NRDA) effort, Feb. 2014-April 2015.

V. Advising & Teaching

A1. Ph.D. Students

1. Alessandro Raganato, 01/2024 – (sole adviser)
2. Matthew McKinley, 08/2022-12/2024 (co-adviser since 2023, main adviser Dr. Karim Sabra)
3. Skylar Lama, 08/2022 – ongoing (sole adviser)
4. Yonglin (Anna) Wong, 08/2022 – ongoing (sole Adviser)
5. Luisa Lopera, 01/2021-ongoing (sole adviser)
6. Qi Zhang, 08/2021-ongoing (co-Advisor, main adviser: Dr Taka Ito)
7. Fabrizio Falasca, 01/16-05/21 (sole adviser, now postdoc at Courant, NYU)
8. Guangpeng Liu, 08/15-05/21, (sole adviser, now Assistant Professor)
9. Chiara De Falco, 01/18-04/21 (co-Advisor, University of Milano Bicocca, now Junior research scientist at NORCE, Norwegian Research Centre, Bergen, Norway)
10. Filippos Tagklis, 08/14-12/2020 (main adviser, co-adviser Dr. Taka Ito), now at the International Monetary Fund
11. Daoxun Sun, 08/14-02/2020 (co- adviser, main adviser Dr. Taka Ito), currently Assistant Professor at QNML, China
12. Ilias Foudalis, 08/2010 – 05/2016, College of Computing (co- adviser, main adviser Dr. C. Dovrolis); Currently Data Scientist at Relational-AI in Atlanta
13. Yuley Cardona, 01/2008 – 06/2013, (sole adviser). Currently Associate Professor at Un. Of Colombia, Medellin.
14. Yisen Zhong, 08/2008 – 11/2013, (sole adviser). Currently Associate Professor at Shanghai Jiao Tong University
15. Rondrotiana Barimalala, 01/2008 – 05/2011, graduated May 2011, ICTP/Unesco and EAS-Georgia Tech (main adviser, co-advised with Dr. F. Kucharski at ICTP). Currently Tenured Scientist at NORCE in Norway.
16. Inga Koszalka, 2004-2008 Program in Environmental Engineering, Politecnico di Torino, Italy. Currently Associate Professor at Stockholm University, Sweden

A2. M.S. Students (Indicate thesis option for each student)

1. Leah Hornsey, EAS, Spring and Fall 2023 (research semester)
2. Xiyuan Zeng, Master Student, EAS, 08/17-04/21, Thesis option
3. Keshav Joshi, Master Student, School of Physics, Thesis option
4. Fan Zhang, Master student, 08/12 – 06/14, Thesis option
5. Virgilio Maisonet, Master student, 08/10-06/12, Non-Thesis options
6. Yuley Cardona, Master student, 01/08-09/10, Thesis Option

A3. Undergraduate Students

1. S. Priya Sharma, EAS, Spring 2024
2. Sean Jordan, EAS, Spring 2024
3. Mireya Ramirez, EAS, Spring & Fall 2024
4. Aya Kanawati, EAS, Spring 2024
5. Madeline Laesser, EAS, Spring 2023
6. Alexandra Sitar, Civil and Environmental Engineering, Summer-Fall 2018
7. Riannon Colton, EAS, Summer 2016
8. Harikumar Venkatesan, College of Computing, Spring 2015, Fall 2015
9. Catherine Achukwu, CEE, Spring 2013

A4. Mentorship of postdoctoral fellows or visiting scholars

1. Pratik Aghor, Postdoctoral Fellow, Oct 2023-ongoing
2. Xing Zhou, Postdoctoral Fellow, May 2023-ongoing
3. Ljuba Novi, Visiting Scholar, August-October 2019, Postdoctoral Fellow Jan 2022-June 2024
4. Jun Choi, Postdoctoral Fellow, 06/2015-05/2017
5. Hao Luo, Postdoctoral Fellow, 05/2008 – 2010, Research Scientist II, 2010-03/2014
6. Rondrotiana Barimalala, Postdoctoral Fellow, Faculty for the Future and IPCC fellowships, 03/2012 – 08/2013 – Georgia Tech (now tenured scientist at NORCE in Norway)
7. Yuley Cardona, Postdoctoral Fellow, 08/2013-07/2014

B. Other Teaching Activities (while at GaTech)

1. Invited lecturer, summer school on Eastern Boundary Upwelling Systems, ICTP, Trieste, IT, July 2019
2. Invited Lecturer, training course on climate change, UNESCO/IOC Regional Training and Research Center on Ocean Dynamics and Climate, Qingdao, China, September 7-18, 2015
3. Invited Lecturer, School on Ocean Climate Modelling, Ankara, Turkey. 28 September - 1 October, 2015
4. Invited Lecturer, Advanced School on “The Fluid Dynamics of Climate”, International Center for Mechanical Sciences, Udine, IT, August 26-30, 2013
5. Lecturer, ASP Summer Colloquium on Carbon – Climate connections in the Earth System, NCAR, Boulder, CO, July 29-August 16, 2013
6. Lecturer, GFD Summer School on "Swirling and Swimming in Turbulence”, Woods Hole, MA, July 2010
7. Lecturer, Honor Program in Environmental Engineering, University of Savona, Italy, 06/07 Course taught: Ocean biophysical interactions

VI. Service

A. Professional Contributions

Membership in professional organizations and advisory committees

1. Scientific Advisory Board Member, CIMA (International Center for Environmental Monitoring) Research Foundation, Italy, July 2023-ongoing
2. UCAR Representative for Georgia Tech, Jan 2021-ongoing
3. PICES (North Pacific Marine Science) Working Group 50 Submesoscale processes and the marine ecosystem, March 2022 – ongoing, Member, US representative
4. NEMO Scientific Advisory Committee, https://forge.ipsl.jussieu.fr/nemo/wiki/ScientificAdvisoryCommittee, June 2021-ongoing
5. CESM Advisory Board (CAB), https://www.cesm.ucar.edu/management/CAB/, 2020 - ongoing
6. CLIVAR (International) Chair of the Scientific Steering Group, Jan 2016 – Dec 2020
7. PICES (North Pacific Marine Science) Working Group 38 on Mesoscale and submesoscale processes, Nov 2016 – 2021, Co-Chair
8. CLIVAR (International) Member, Scientific Steering Group, Jan 2013 - Dec 2015
9. PPAI (Predictability, Prediction & Applications Interface) Panel of the U.S. Climate Variability and Predictability Research Program (US-CLIVAR) 02/2009 – 01/2014.

10. Co-Chair of the PPAI panel and member of the Scientific Steering Committee, 2010 – 2013
11. Co-Chair, US CLIVAR Working Group on 'Ocean Carbon Uptake', 2012 –2015

Editorial work

Associate Editor, AGU Journal of Advances in Modeling Earth Systems, 2017 – ongoing

Conference Organizer and Director (last 5 years):

1. Discussion Leader, Mixing and Ocean Solutions, Gordon Research Conference, Understanding the Role of Ocean Mixing Across Scales on Climate, Ecosystems and Ocean Solutions to Societal Problems, June 2024
2. Coordinator of the graduate workshop on "Climate Sustainability: Challenges and Opportunities", organized by GT grad students for graduates and undergraduates at GT, Spelman, Morehouse and Clark. Spelman College, Sept 10-14, 2023
3. Scientific Committee member, Liège Colloquium 2023 on "Machine learning and data analysis in oceanography"
4. Co-chair and convener, session on "Ecological connectivity-past, present and future", XMAS Conference Xiamen, China, Jan 9-12, 2023.
5. Coordinator and Main Organizer, KITP Program and conference, Machine Learning and the Physics of Climate, Santa Barbara, CA, November-December 2021.

Journal Reviewer

Atmosphere-Ocean, Atmospheric Chemistry and Physics, Chaos, Climate Dynamics, Climate Change, Climate and Atmospheric Science (NPJ), Continental Shelf Research, Deep-Sea Research I and II, Dynamics of Atmosphere and Oceans, Ecological Complexity, Environmental Science and Technology, Environmental Science Letters, Frontiers in Marine Sciences, Geophysical Research Letters, J. Climate, J. Fluid Mechanics, J. Geophysical Research-Atmosphere, J. Geophysical Research-Oceans, J. Physical Oceanography, J. Plankton Res., J. Marine Research, J. Marine Systems, Limnology and Oceanography, Nature, Nature Communications, Nature Computational Sciences, Nature Geosciences, Nature Physics, Ocean Modelling, Ocean Dynamics, Physics of Fluid, Nonlinear Processes in Geophysics, Physica D, PLOS One, Physics Letters A, PNAS, Science Advances, Scientific Reports

Panelist for Federal Organizations:

CISL' HPC allocation panel, NCAR, (spring 2015-2018)

National Science Foundation:

1. Division of Ocean Sciences, Physical Oceanography Program, Reviewer and Panelist (2008, 2019)
2. Division of Atmospheric Science, Climate and Large Scale Dynamics Program, Reviewer
3. Collaboration in Mathematical Geosciences, Reviewer and Panelist
4. NSF Graduate Fellowship, Geosciences Program, Panelist (2009, 2010, 2014)
5. Division of Marine Geology and Geophysics Program
6. The Coastlines and People (CoPe) program, Panelist (2022)

National Oceanic and Atmospheric Administration:

1. Climate Prediction Program for the Americas, Reviewer
2. MAPP Program, Panelist, 2012, 2018

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1. 2018 HiLAT-RASM Panel, Panelist
2. 2018 Regional and Global Model Analysis Panel, Panelist
3. 2014 Climate Variability and Change, Panelist.
4. 2012 Early Career, Panelist

FORD FOUNDATION FELLOWSHIP PROGRAM, Panelist (2022)

SMASH, EU Marie Curie postdoctoral program, reviewer and panelist, 2023/24; 2024/25.

Evaluator, GEV-04, Italian National Agency for the Evaluation of Universities and Research Institutes (ANVUR), 2024-ongoing

European Science Foundation, Reviewer

Peer Reviewer for the Italian National Agency for the Evaluation of Universities and Research Institutes to assess the quality of research performed in the time frame 2004-2010 by researchers of all Italian universities and research institutes

Scientific Advisor for the Italian Project NextData (A national system for the retrieval, storage, access and diffusion of environmental and climate data from mountain and marine areas).

Reviewer for PRACE (Partnership for advance computing in Europe)

Reviewer for the South Africa National Research Foundation (NRF), Antarctic Programme (SANAP)

B. Public and Community Service (last five years)

1. Paideia Highschool, Atlanta, presentation on the use of AI and machine learning for ecosystem sustainability, Jan 7, 2025
2. Atlanta Contemporary, Contemporary Kids Exploring the Ocean Depths, Jan 26, 2025, with children books presented by students from the Deep Ocean Minimester (Fall 2024)
3. The Grand Challenge of Coral Reef Sustainability. National Science Teaching Association, March 2024, https://my.nsta.org/resource/129096
4. ASF EXPLORE and Earth Day presentations, various elementary school classes, Atlanta area 2022 Atlanta Science Festival Exploration Expo
5. 2019 Atlanta Science Festival Exploration Expo: Ocean Discovery Zone (1,200 people)