PERSONAL INFORMATION

Tomas Lovato

Via B. Pichat, 6/2 I-40127 BOLOGNA (office)

+39.051.0301606

tomas.lovato@cmcc.it

http://www.cmcc.it/people/lovato-tomas-2

RESEARCH TOPICS

Biogeochemical cycles in marine environments
Open ocean and coastal hydrodynamic processes
Experimental data analysis and synthesis
High frequency processes in transitional marine environments
Uncertainty/sensitivity analysis of environmental models

WORK EXPERIENCE

November 2015-now

Junior Scientist

Fondazione CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici

- Development and application of marine biogeochemical models from regional to global scale

Scientific research

May 2015 – October 2015

Junior Research Associate

CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici

- Implementation of new marine biogeochemical processes in the CMCC Earth System Model (CMCC-ESM2)

Scientific research

June 2014 - April 2015

Post-Doctoral Student

CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici

- Coordination of research activities to investigate the current and future productive capacity of the marine ecosystems in the Southern European Seas under the EU project Perseus (www.perseus-fp7.eu)

Scientific research

January 2013- June 2014

Post-Doctoral Student

CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici

- Development of spatial analysis tools to evaluate the ecosystem dynamics reproduced by global ocean biogeochemical models in the framework of the EU project GreenSeas (www.greenseas.eu)

Scientific research

April 2011-July 2014

Post-Doctoral Student

CMCC - Centro Euro-Mediterraneo sui Cambiamenti Climatici

- Implementation of a coupled physical-biogeochemical marine model to assess the impacts of acidification and climate change in the Mediterranean Sea within the EU project MedSeA (medsea-project.eu)

Scientific research

Jun 2009-Mar 2011

Post-Doctoral Student

Dept. of Environmental Sciences, University Ca' Foscari Venice

- Development of mathematical models to investigate the climate changes effects in the ecosystem dynamics of the Lagoon of Venice. Research program CO.RI.LA.- MAV (Magistrato alle Acque di Venezia) 2009-2011

Scientific research

EDUCATION AND TRAINING

2005-2008

Ph.D. in Environmental Sciences (and Doctor Europaeus) 8

Ca' Foscari University of Venice

- Dissertation: Modelling the hydrodynamic circulation and the biogeochemical cycles in the Lagoon of Venice and along the North Adriatic coast.

Replace with dates (from - to)

Degree in Environmental Sciences (ante D.M. 509/99) 7

Ca' Foscari University of Venice

- Thesis: Application of a numerical model to a gulf of the Mediterranean Sea.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	B2	C1	B2	C1
French	C1	B2	B2	B2	B2

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Independent user	Proficient user	Proficient user	Independent user	Proficient user

- Advanced skills in parallel programming and scripting for scientific applications on supercomputing platforms.
- Extensive knowledge of computational languages Fortran, Visual Basic, Matlab, and Python under Linux/UNIX and Microsoft Windows operating systems
- Professional competence with office suite, SPSS, GIS software, Golden Software Suite
- Good command of photo editing and graphic design software (Adobe suite)

Driving licence B

ADDITIONAL INFORMATION

Peer-reviewed Publications

- Jiang, L.-Q., Dunne, J., Carter, B. R., Tjiputra, J. F., Terhaar, J., Sharp, J. D., Olsen, A., Alin, S., Bakker, D. C. E., Feely, R. A., Gattuso, J.-P., Hogan, P., Ilyina, T., Lange, N., Lauvset, S. K., Lewis, E. R., Lovato, T., Palmieri, J., Santana-Falcón, Y., Schwinger, J., Séférian, R., Strand, G., Swart, N., Tanhua, T., Tsujino, H., Wanninkhof, R., Watanabe, M., Yamamoto, A., and Ziehn, T. (2023). Global surface ocean acidification indicators from 1750 to 2100. Journal of Advances in Modeling Earth Systems [Accepted]
- Planchat, A., Kwiatkwoski, L., Bopp, L., Torres, O., Christian, J. R., Butenschön, M., Lovato, T., Séférian, R., Chamberlain, M. A., Aumont, O., Watanabe, M., Yamamoto, A., Yool, A., Ilyina, T., Tsujino, H., Krumhardt, K. M., Schwinger, J., Tjiputra, J., Dunne, J. P., and Stock, C. (2023). The representation of alkalinity and the carbonate pump from CMIP5 to CMIP6 ESMs and implications for the ocean carbon cycle, EGUsphere [preprint].
- Kim, H. H., Laufkötter, C., Lovato, T., Doney, S. C., & Ducklow, H. W. (2023). Projected 21st-century changes in marine heterotrophic bacteria under climate change. Frontiers in Microbiology, 14.
- Reale, M., Cossarini, G., Lazzari, P., Lovato, T., Bolzon, G., Masina, S., Solidoro, C., Salon, S. (2022). Acidification, deoxygenation, and nutrient and biomass declines in a warming Mediterranean Sea. Biogeosciences, 19(17), 4035-4065.
- Scroccaro, I., Zavatarelli, M., Lovato, T., Lanucara, P., & Valentini, A. (2022). The Northern Adriatic Forecasting System for Circulation and Biogeochemistry: Implementation and Preliminary Results. Water, 14(17), 2729.
- Lovato, T., Peano, D., Butenschön, M., Materia, S., Iovino, D., Scoccimarro, E., Fogli, P.G., Cherchi, A., Bellucci, A., Gualdi, S. and Masina, S., CMIP6 simulations with the CMCC Earth System Model (CMCC-ESM2). Journal of Advances in Modeling Earth Systems, p.e2021MS002814.
- Scoccimarro, E., Peano, D., Gualdi, S., Bellucci, A., Lovato, T., Fogli, P.G. and Navarra, A., 2022. Extreme events representation in CMCC-CM2 standard and high-resolution general circulation models. Geoscientific Model Development, 15(4), pp.1841-1854.
- Butenschön, M., Lovato, T., Masina, S., Caserini, S., Grosso, M., 2021. Alkalinization scenarios in the Mediterranean Sea for efficient removal of atmospheric CO 2 and the mitigation of ocean acidification. Frontiers in Climate, 3. https://doi.org/10.3389/fclim.2021.614537.
- Eyring, V., Bock, L., Lauer, A., Righi, M., Schlund, M., Andela, B., ..., Lembo, V., Lovato, T., … & Zimmermann, K. (2020). ESMValTool v2. 0 Extended set of large-scale diagnostics for quasi-operational and comprehensive evaluation of Earth system models in CMIP. Geoscientific Model Development, 13.
- Furlan, E., Torresan, S., Critto, A., Lovato, T., Solidoro, C., Lazzari, P., Marcomini, A. (2019). Cumulative Impact Index for the Adriatic Sea: Accounting for interactions among climate and anthropogenic pressures. Science of the total environment, 670, 379-397.
- Cherchi, A., Fogli, P.G., Lovato, T., Peano, D., Iovino, D., Gualdi, S., Masina, S., Scoccimarro, E., Materia, S., Bellucci, A. and Navarra, A. (2019). Global mean climate and main patterns of variability in the CMCC-CM2 coupled model. Journal of Advances in Modeling Earth Systems, 11(1), 185-209.
- Galli, G., Solidoro, C., Lovato, T., 2017. Marine heat waves hazard 3D maps, and the risk for low motility organisms in a warming Mediterranean Sea. Frontiers in Marine Science, 4, 136.
- Epicoco, I., Mocavero, S., Macchia, F., Vichi, M., Lovato, T., Masina, S., Aloisio, G., 2016. Performance and results of the high-resolution biogeochemical model PELAGOS025 v1. 0 within NEMO v3. 4. Geoscientific Model Development, 9(6), 2115-2128.
- Visinelli, L., Masina, S., Vichi, M., Storto, A. and Lovato, T., 2016. Impacts of data assimilation on the global ocean carbonate system. Journal of Marine Systems, 158, pp.106-119.
- Lovato, T., and Vichi, M., 2015. An objective reconstruction of the Mediterranean Sea carbonate system. Deep Sea Research Part I: Oceanographic Research Papers 98, 21-30.
- McKiver, W. J., Vichi, M., Lovato, T., Storto, A., and Masina, S., 2015. Impact of increased grid resolution on global marine biogeochemistry. Journal of Marine Systems 147, 153-168.
- Lovato, T., Ciavatta, S., Brigolin, D., Rubino, A., Pastres, R., 2013. Modelling dissolved oxygen and benthic algae dynamics in a coastal ecosystem by exploiting real-time monitoring data. Estuarine, Coastal and Shelf Science, 119, 17-30.
- Soldatini, C., Albores-Barajas, Y.V., Lovato, T., Andreon, A., Torricelli, P., Montemaggiori, A., Corsa, C., Georgalas, V., 2011. Wildlife Strike Risk Assessment in Several Italian Airports: Lessons from BRI and a New Methodology Implementation. PLoS ONE 6(12), e28920.
- Brigolin D., Lovato T., Rubino A., Pastres R., 2011. Coupling early-diagenesis and pelagic biogeochemical models for estimating the seasonal variability of N and P fluxes at the sediment-water interface: Application to the northwestern Adriatic coastal zone. Journal of Marine Systems 87(3-4), 239-255.
- Lovato, T., Androsov, A., Romanenkov, D., Rubino, A., 2010. The tidal and wind induced

hydrodynamics of the composite system Adriatic Sea/Lagoon of Venice. Continental Shelf Research 30(6), 692-706.

- Ciavatta, S., Lovato, T., Ratto, M., Pastres, R., 2009. Global Uncertainty and Sensitivity Analysis of a food web bioaccumulation model. Environmental Toxicology and Chemistry 28 (4), 718–732.
- Micheletti, C., Lovato, T., Critto, A., Pastres, R., Marcomini, A., 2008. Spatially distributed ecological risk for fish of a coastal food web exposed to dioxins. Environmental Toxicology and Chemistry 27(5), 1217-1225.

Other Publications

- Lovato, T., Pecenik, G., 2012. Three-Dimensional Modeling of Pollutant Dispersion in Lake Garda (North Italy). In: Eds. Ferenc J. and Jorgensen S.E., Models of the Ecological Hierarchy, Developments in Environmental Modelling, 319-330.
- Brigolin, D., Lovato, T., Ciavatta, S. and Pastres, R., 2008. The impact of mussel farming on the biogeochemistry of the Northern Adriatic coastal ecosystem: preliminary results from a modelling study. ICES CM paper 2008/L:12, 17 pp.
- Lovato, T., Micheletti, C., Pastres, R., Marcomini, A., 2006. Verification of a POPs bioaccumulation model for the Venice lagoon. CORILA Research Program 2004-2006, Volume IV, 259-272.

Research and Technical reports

- Vichi M., Lovato T., Butenschön M., Tedesco L., Lazzari P., Cossarini G., Masina S., Pinardi N., Solidoro C., Zavatarelli M. (2020). The Biogeochemical Flux Model (BFM): Equation Description and User Manual. BFM version 5.2. BFM Report series N. 1, Release 1.2, June 2020, Bologna, Italy, http://bfm-community.eu, pp. 104
- Lovato T., Vichi M., Butenschön M. (2020). Coupling BFM with Ocean models: the NEMO model V3.6 (Nucleus for the European Modelling of the Ocean). BFM Report series N. 2, Release 1.1, June 2020, Bologna, Italy, http://bfm-community.eu, pp. 31
- Zavatarelli M., Pinardi N., Mussap G., Lovato T., Amadio C., Butenschön M., Vichi M. (2020). Coupling BFM with Ocean models: the 1D Princeton Ocean Model. BFM Report series N. 3, Release 1.0, June 2020, Bologna, Italy, http://bfm-community.eu, pp. 58
- Madec, G., Bourdallé-Badie, R., Chanut, J., Clementi, E., Coward, A., Ethé, C., Iovino, D., Lea, D., Lévy, C., Lovato, T., Martin, N., Masson, S., Mocavero, S., Rousset, C., Storkey, D., Müeller, S., Nurser, G., Bell., M., Samson, G., Mathiot, P., Mele, F., Moulin, A. (2022). NEMO ocean engine. Scientific Notes of Climate Modelling Center, 27 - ISSN 1288-1619, Institut Pierre-Simon Laplace (IPSL), https://doi.org/10.5281/zenodo.6334656.
- Lovato, T., Storto, A., Masina, S., (2015). Global ocean biogeochemistry non assimilative hindcast (PELAGOS025) (1998-2013), MyOcean product user manual, http://marine.copernicus.eu, pp. 17.
- Vichi, M., Lovato, T., Lazzari, P., Le-Vu, B., Orr, J., Solidoro, C., 2014. Report on projected impacts of increasing acidification and climate change in the Mediterranean Sea, http://medsea-project.eu, pp. 34.
- Lovato, T., Vichi, M., Oddo, P., (2013). High-resolution simulations of Mediterranean Sea physical oceanography under current and scenario climate conditions: model description, assessment and scenario analysis. CMCC Research Paper, RP0207.

Recent international congress

- Butenschön, M., Tjiputra, J., Lovato, T., and Negrel, J.: Regional scale evaluation of marine properties as simulated by CMIP6 Earth System models for contemporary climate conditions, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-11491, https://doi.org/10.5194/egusphere-egu22-11491, 2022.
- Reale, M., Cossarini, G., Lazzari, P., Lovato, T., Bolzon, G., Masina, S., Solidoro, C., and Salon, S.: Mediterranean Sea warming, nutrient decline, primary production increase, deoxygenation and acidification during the 21st century from high resolution physical and biogeochemical projections under emission scenarios RCP4.5 and RCP8.5, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-12013, https://doi.org/10.5194/egusphere-egu22-12013, 2022.
- Zavatarelli, M., Scroccaro, I., and Lovato, T.: Modeling the Environmental Dynamics of the Northern Adriatic Sea with an explicit benthic-pelagic coupling., EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-10691, https://doi.org/10.5194/egusphere-egu21-10691, 2021.
- Materia, S., Peano, D., Benassi, M., Lovato, T., Gualdi, S., Cherchi, A., Alessandri, A. and Navarra, A., 2020 (May). An enhanced river routing scheme for the closure of global water budget. In EGU General Assembly Conference Abstracts (p. 19869).
- Scroccaro, I., Zavatarelli, M. and Lovato, T., 2020 (May). Modeling the biogeochemical dynamics of the Northern Adriatic Sea with an explicit benthic-pelagic coupling. In EGU General Assembly Conference Abstracts (p. 13458).
- Caserini, S., Pagano, D., Campo, F., Barreto, B., Lovato, T., Butenschon, M., Masina, S. and Grosso, M., 2019 (December). Removing CO 2 and Contrasting Seawater Acidification: Scenarios of Ocean Liming in the Mediterranean Sea. In AGU Fall Meeting Abstracts (Vol. 2019, pp. GC31I-1331).

- Palazov, A., Coppini, G., Ciliberti, S.A., Gregoire, M., Staneva, J., Peneva, E., Özsoy, E., Vandenbulcke, L., Storto, A., Lemieux-Dudon, B. and Lovato, T., 2017 (April). The Black Sea monitoring and forecasting center (bs-mfc) in the framework of the copernicus marine service. In EGU General Assembly Conference Abstracts (p. 15637).

Community models development

- since 2011: System Team member and developer of the Biogeochemical Flux Model (www.bfm-community.eu/)
- since 2014: System Team member and developer of the Nucleus for European Modelling of the Ocean (NEMO, www.nemo-ocean.eu/)

Bologna, 25th June 2023 Tomas Lovato