

Francesca Malfatti, Ph. D.

Education and Professional Preparation

2018-current

Visiting Researcher Oceanographer, Scripps Institution of Oceanography, CASPO, UCSD, USA

2016-current

Researcher (III level, tenured) **OGS** (National Institute of Oceanography and Experimental Geophysics), Trieste, Italy

2014-current

Research scientist, CAICE (Center for Aerosol Impact on Chemistry of the Environment) UCSD, USA

2014-2016

Marie Skłodowska-Curie Fellow Researcher CNR (Italian National Research Council) - OGS

2009-2014

Post Doctoral Fellow Scripps Institution of Oceanography, UCSD, USA

2009

Ph. D. Scripps Institution of Oceanography, UCSD, USA

2000-2002

Researcher Marine Biology Laboratory (now: OGS), Trieste, Italy

1999 **B. Sc. - M. Sc.**

in Biology- Marine Biology

University of Trieste, Italy

Career Breaks

Maternity leave I: 10 July - 1 October 2013

Maternity leave II: 13 February - 31 Aug 2017

Publications

Malfatti F., Lee C., Tinta T., Pendergraft M.A, Celussi M., Zhou Y.Y, Sultana C.M, Rotter A., Axson J.L, Collins DB, Santander M.V, Morales A.LA, Aluwihare LI, Riemer N., Grassian VH, Azam F, Prather KA 2019. Detection of active microbial enzymes in nascent sea spray aerosol: Implications for atmospheric chemistry and climate. *Environ. Sci. Technol. Lett.* 6:171-177.

Crise, A., d'Alcalà, M.R., Mariani, P., Petihakis, G., Robidart, J., Iudicone, D., Bachmayer, R., **Malfatti, F.** 2018. A conceptual framework for developing the next generation of Marine OBServatories (MOBs) for science and society. *Frontiers in Marine Science*, 5 (SEP), art. no. 318, 2-s2.0-85053145726

Michaud, J.M., Thompson, L.R., Kaul, D., Espinoza, J.L., Richter, R.A., Xu, Z.Z., Lee, C., Pham, K.M., Beall, C.M., **Malfatti, F.**, Azam, F., Knight, R., Burkart, M.D., Dupont, C.L., Prather, K.A. 2018. Taxon-specific aerosolization of bacteria and viruses in an experimental ocean-atmosphere mesocosm. *Nature Communications*, 9 (1), art. no. 2017

Celussi, M., **Malfatti, F.**, Ziveri, P, Giani, M., Del Negro, P. 2017. Uptake-release dynamics of the inorganic and organic carbon pool mediated by planktonic prokaryotes in the deep Mediterranean Sea. *Environmental Microbiology*, 19(3), 1163–1175

McCluskey, C.S., Hill, T.C.J., **Malfatti, F.**, Sultana, C.M., Lee, C., Santander, M.V., Beall, C.M., Moore, K.A., Cornwell, G.C., Collins, D.B., Prather, K.A., Jayarathne, T., Stone, E.A., Azam, F., Kreidenweiss, S.M., DeMott, P.J., 2017. A dynamic link between ice nucleating particles released in nascent sea spray aerosol and oceanic biological activity during two mesocosm experiments. *Journal of American Meteorological Society*. <https://doi.org/10.1175/JAS-D-16-0087.1>

Celussi, M., **Malfatti, F.**, Franzo, A., Gazeau, F., Giannakourou, A., Pitta, P., Tsiola, A., Del Negro, P., 2017. Ocean acidification effect on prokaryotic metabolism tested in two diverse trophic regimes in the Mediterranean Sea. *Estuarine, Coastal and Shelf Science*, 186, 125-138

McDonald K.S., Turk V., Mozetič P., Tinta T., **Malfatti, F.**, Hannah D.M., Krause S., 2017. Integrated network models for predicting ecological thresholds: Microbial-carbon interactions in coastal marine system mechanisms of particulate organic carbon accumulation in coastal marine systems. *Environmental Modelling and Software*, 91, 156-167

Weinbauer, M.G., Guinot, B., Migon, C., **Malfatti, F.**, Mari, X., 2017. Skyfall - Neglected roles of volcano ash and black carbon rich aerosols for microbial plankton in the ocean. *Journal of Plankton Research*, 39 (2), 187-198

Jayarathne, T., Sultana, C. M., Lee, C., **Malfatti, F.**, Cox, J.L., Pendergraft, A.M., Kathryn, A., Moore, K.A., Azam, F., Tivanski, A.V., Cappa, C.D., Bertram, T.H., Grassian, V.H., Prather, K.A., Stone, E.A., 2016. Enrichment of Saccharides and Salts in Sea Spray Aerosol During two Phytoplankton Blooms. *Environmental Science & Technology*, 50 (21), 11511-11520.

Lee, C., Sultana, C. M., Collins, D. B., Santander, M. V., Axson, J. L., **Malfatti, F.**, Cornwell, G. C., Grandquist, J. R., Deane, G. B., Stokes, M. D., Azam, F., Grassian, V. H. and Prather, K. A. 2015. Advancing Model Systems for Fundamental Laboratory Studies of Sea Spray Aerosol Using the Microbial Loop. *J. Phys. Chem. A*, 119 (33): 8860–8870

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Wang, X., Sultana, C. M., Trueblood, J., Hill, T. C. J., **Malfatti, F.**, Lee, C., Laskina, O., Moore, K. A., Beall, C. M., McCluskey, C. S., Cornwell, G. C., Zhou, Y., Cox, J. C., Pendergraft, M. A., Santander, M. V., Bertram, T. H., Cappa, C. D., Azam, F., DeMott, P. J., Grassian, V. H. and Prather, K. A. (2015) Microbial control of Sea Spray Aerosol composition: a tale of two blooms. *ACS Central Science* Publication Date (Web): May 18, 2015 (Research Article), DOI: 10.1021/acscentsci.5b00148

Fior, R., Kwok, J., **Malfatti, F.** Sbaizero, O., Lal, R (2014) Biocompatible optically transparent MEMS for micromechanical stimulation, AFM and fluorescence imaging of living cells. *Annals of Biomedical Engineering*. doi: 10.1007/s10439-014-1229-8

Samo, T.J., Smriga, S.P., **Malfatti, F.**, Pedler, B.E., Azam, F. (2014) Broad distribution and high proportion of protein synthesis active marine bacteria revealed by click chemistry enabled at the single cell level. *Frontiers in Aquatic Microbiology*, Front. Mar. Sci. doi: 10.3389/fmars.2014.00048

Tinta, T., Vojvoda J., Mozetič P., Talaber I., Vodopivec M., **Malfatti F.**, Turk, V. (2014) Bacterial community shift (ecological trajectories) is induced by dynamic environmental parameters in a changing coastal ecosystem (northern Adriatic, NE Mediterranean Sea) in a 2 year time-series study. *Environ. Microbiol.* doi:10.1111/1462-2920.12519

Thompson, A., Carter, B., Turk-Kubo, K., **Malfatti, F.**, Azam, F., Zehr, J. (2014) Genetic diversity of the unicellular nitrogen-fixing cyanobacteria UCYN-A and its prymnesiophyte host. *Environ Microbiol.* 2014 Apr 25. doi: 10.1111/1462-2920.12490

Smriga S., Samo T., Villareal J., **Malfatti, F.** and Azam F. (2014) DNA synthesis within natural marine bacterial assemblages as detected by "click" chemistry. *Aquatic Microbial Ecology* 72:269-280

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Fonda Umani S., **F. Malfatti** and P. Del Negro 2012. Carbon fluxes in the pelagic ecosystem of the Gulf of Trieste (Northern Adriatic Sea). *Estuarine, Coastal and Shelf Science*, Volume 115: <http://dx.doi.org/10.1016/j.ecss.2012.04.006>

Eloe E., **F. Malfatti**, J. Gutierrez, K. Hardy, W. Schmidt, K. Pogliano, J. Pogliano, F. Azam, and Bartlett, D. 2011. Isolation and characterization of the first psychropiezophilic Alphaproteobacterium. *Applied and Environmental Microbiology* 77(22): 8145-81-53

Beardsley C., S.H. Moss, **F. Malfatti** and F. Azam 2011. Quantitative role of shrimp fecal bacteria in organic matter turnover in a recirculating shrimp aquaculture system. *FEMS Microbiology Ecology* 77:134-145

Malfatti, F., T. J. Samo and F. Azam 2010. High resolution imaging of pelagic bacteria by Atomic Force Microscopy and implications for carbon cycling. *ISME J.* 4:427-439

Bong CW, **Malfatti F**, Azam F, Obayashi Y and Suzuki S 2010. The Effect of Zinc Exposure on the Bacteria Abundance and Proteolytic Activity in Seawater. In: Hamamura N, Suzuki S, Mendo S, Barroso CM, Iwata H and Tanabe S (ed.) *Interdisciplinary Studies on Environmental Chemistry Biological Responses to Contaminants*. TERRAPUB, Japan, p 57-63

Malfatti, F. and F. Azam 2009. Atomic Force Microscopy reveals microscale networks and possible symbioses among pelagic marine bacteria. *Aquatic Microbial Ecology* 58:1-14

Manganelli, M. and **F. Malfatti (equal contributors)**, T. J. Samo, G. B. Mitchell, H. Wang and F. Azam 2009. Major Role of Microbes in Carbon Fluxes During Austral Winter in the Southern Drake Passage. *PLoS ONE* 4(9): e6941. doi:10.1371/journal.pone.0006941

Samo, T.J., **F. Malfatti** and F. Azam 2008. A new class of transparent organic particles in seawater visualized by a novel fluorescence approach. *Aquatic Microbial Ecology* 53: 307-321

Azam, F. and **F. Malfatti** 2007. Microbial structuring of marine ecosystems. *Nature Reviews Microbiology* 5: 782-791

Worden, A.Z., M. Seidel, S. Smriga, A. Wick, **F. Malfatti**, D. Bartlett and F. Azam 2006. Trophic regulation of *Vibrio cholerae* in coastal marine waters. *Environ. Microbiol.* 8: 21-29

Zutic, Z., V. Svetlicic, T. Radic, **F. Malfatti**, D. Degobbis and F. Azam 2004. Controlled ecosystem carbon flow experiment in the northern Adriatic Sea. *Periodicum Biologorum* 106:1-6

Malfatti, F. 1999. *Bionomia Bentonica dei Fondali dell'Alto Adriatico*. Thesis at the University of Trieste, Italy in the field of benthic bionomy, marine biology (Prof Giuliano Orel)

Research Projects

Funding Agency	Grant Name	Period	PI	Area	Collaboration	Activity carried out by Malfatti	Group leader
NSF (USA)	CREICO	2001, 5 years	F. Azam	North Adriatic Sea: Trieste, Piran, Rovinj	OGS BIO (ITA) RB Rovinj Zagreb (HR)- NIB Piran (Slo)	Mesocosm incubation experiment set-up, bacteria and viral abundance, DOC sampling and analysis, 33P incubation and data analysis	In Piran exp.
NSF (USA)	BWZ	2004 & 2006	G.B. Mitchell, F. Azam	Drake Passage, Antarctica	WHOI, USA	Field-work on board, bacteria and viral abundance, DOC sampling and analysis, DIC incubation and data analysis	X
NSF (USA)	Nanosensor	2003, 5 years	G.B. Mitchell, F. Azam, D. Stramski	UCSD-SIO	Engineering and Optical Department at UCSD	Lab-bench: bacteria culture and development of in vivo staining protocol for seawater culture and data analysis	X
Hitachi-UCSD discovery (USA)	Silicon chip	2007	M. Sailor, F. Azam	UCSD-SIO	Material Science Department at UCSD	Lab-bench: bacteria culture and enzymatic assay	X
Oceanic Institute (USA)	Shrimp Aquaculture	2002, 5 years	S. Moss, F. Azam	Honolulu, Hawaii	NA	Field-work set-up, small volume incubation and measurement of degradative activities of organic matter	X
NIH (USA)	Vibrio cholerae I	2000, 5 years	D. Bartlett, J. Fierer, F. Azam	UCSD-SIO	NA	Field-work set-up, 10 L volume incubation and protist abundance measurements	X
NIH (USA)	Vibrio cholerae II	2000, 5 years	D. Bartlett, J. Fierer, F. Azam	UCSD-SIO	NA	Field-work set-up, 20 L volume incubation and culturing pathogenic bacteria	X
Thetis (ITA)/ CVN/CORILA	SIOSED	2005, 2years	F. Azam	Venice, Adriatic Sea, ISMAR CNR	Thetis-Venice (ITA), OGS BIO (ITA)	Field-work set-up, bacteria abundance, community structure, data analysis	YES

Funding Agency	Grant Name	Period	PI	Area	Collaboration	Activity carried out by Malfatti	Group leader
Gordon and Betty Moore Foundation (USA)	AFM-LSCM: microscale study	2007, 3 years	F. Azam	UCSD-SIO	NA	Bench-work, AFM and LSCM on living bacteria and organic matter from the seawater and from coral samples	YES
Gordon and Betty Moore Foundation (USA)	Synechococcus-Heterotrophic bacteria interactions	2010, 2 years	F. Azam	UCSD-SIO	V. Orphan, Caltech-USA (NanoSIMS) R. Stocker, MIT-ETHZ USA-Switzerland (Modelling interactions)	Bench-work: microscale incubation experiments with Synechococcus and heterotrophic bacteria (AFM LSCM, NanoSIMS)	YES
NSF (USA)	CAICE	2013, 5 years	K. Prather	UCSD-SIO	P. DeMott, Colorado State University (ice-nucleation) (USA)	Microbial activities in marine aerosols, mesocosms experiments (abundance, enzymatic assay, chlorophyll a DOC measurements) data analysis	Of the BIO-team
CNR-RITMARE (ITA)	MSC-COFUND	2014, 2 years	F. Malfatti	C1, Adriatic Sea, OGS	M. Celussi (OGS, ITA)	Organic matter hydrolysis rate on a monthly bases for 2 years in the presence of competitors and enhancers	NA
Italy-Slovenia 2007-2013	TRECORALA	2 years	P. Del Negro	North Adriatic Sea	T. Cibic (OGS, ITA), F. Fazi (IRSA, ITA), P. Parisse (Elettra, ITA)	Experiment to study microbial colonization on hard substrate	X
Not a dedicated grant	Black Carbon	2015	F. Malfatti	Villefranche-sur-Mer and North Adriatic Sea	M. Celussi (OGS, ITA), P. Del Negro (OGS, ITA), M. Weinbauer (OBS, FR), X. Mari (IRD, FR)	Small volume incubation experiments: enzyme assay, bacteria, viral, protist abundance, bacterial growth and bacterial community analysis	YES
PRNA (ITA)	PRIAMO	2017, 2 years	M. Celussi	Ross Sea Antarctica	A. Vezzi (Univ Padova, ITA)	Deep sea ecosystem functioning: algal detritus degradation by marine bacteria	X

Funding Agency	Grant Name	Period	PI	Area	Collaboration	Activity carried out by Malfatti	Group leader
NSF (USA)	CAICE	2018, 5 years active	K. Prather	UCSD-SIO	CAICE- TEAM	Bacteria activities in marine aerosols, mesocosms experiments, microscale activities in aerosol, data analysis	Of BIO-team
POR-FESR	MADCROW	2017, 2 years active	F. Malfatti	OGS	P. Diviacco (IRI- OGS)	Marine data crowdsourcing with citizen science approach	YES
POR-FESR	CORMA	2019, 2 years active	F. Malfatti	OGS	P. Diviacco (IRI- OGS)	Studying underwater noise in Gulf of Trieste and providing dashboard visualization of noise pollution	YES
CORILA	VENEZIA 2021	2018, 3 years active	F. Malfatti	OGS	Venezia 2021 team	Bacterial diversity in the sediment and carbon and nutrient fluxes	YES

Awards

IRPE Prize (International Recognition of Professional Excellence) winner 2010 in marine ecology; Oldendorf Germany (<http://www.int-res.com/ecology-institute/irpe-prize/>)

Quotation of the Jury (Chairman: Victor Smetacek, Bremerhaven, Germany):
Francesca Malfatti has made innovative and important contributions to the emerging field of microscale biogeochemistry of the surface ocean. As a beginning graduate student Francesca became convinced that to understand how microbes regulate the global ocean carbon cycle we must know their activities and interactions at nanometer to micrometer scales. Painstakingly applying Atomic Force Microscopy to marine pelagic systems she discovered novel and abundant associations of bacteria with other bacteria and with Synechococcus and Prochlorococcus as well as microbial networks that had gone undetected despite decades of research in marine microbiology. These findings should significantly advance our understanding of the ecophysiology, adaptive biology and biogeochemical function of pelagic marine microbes. The jury found her most worthy of the IRPE Prize in marine ecology 2010.

ERASMUS Award (European Region Action Scheme for the Mobility of University Students) at the Observatoire Océanologique de Villefranche-sur-Mer (l'Université Pierre et Marie Curie, CNRS France) under the guidance of M.L Pedrotti and F. Rassoulzadegan (9/2000 –2/2001)

Exchange Program Award sponsored by the Italian Embassy in Washington, USA (10/2001- 3/2002) Program Officer Dr. Maria Livia Tosatto, at Scripps Institution of Oceanography (UCDS) under the guidance of Dr. F. Azam

University Activities

Teaching

Current Instructor within the **Advanced Master (level II) in Sustainable Blue Growth**, OGS-University of Trieste (Italy, <http://bluegrowth.inogs.it/>) and II Session Chair. Lecture on 1. Microbial ecosystem functioning to maintain ecosystem health for a sustainable Blue Growth and 2. Monitoring the environment

Invited lecturer

- 2018, within the Sustainable Blue Growth Summer Course, OGS: Lecture on Microbial ecosystem functioning to maintain ecosystem health for a sustainable Blue Growth
- 2017, 2016, 2015: within PhD program EARTH SCIENCE AND FLUID MECHANICS University of Trieste-ICTP-OGS on: Microbial structuring of marine ecosystem in the course of Dr. Stefano Salon, Introduction to Geophysical Fluid Dynamics
- 2016, 2015, 2014: within the M.Sc. level course in Marine Ecology of Prof. Serena Fonda Umani (University of Trieste)
- 2008: within the joint B.Sc. program of University of Trieste (Italy) - University of Koper (Slovenia) at the Marine Biology Station in Piran (Slovenia) led by Prof. Serena Fonda Umani and Dr. Valentina Turk
- 2015, 2016: within the Short Course in Marine Biology B. Sc. level at the University of Padova (Italy) in OGS; 23 January 2016 and 14 January 2015
- 2014: within the Short Course in Marine Biology M. Sc. level at the University of Trieste (Italy) in OGS; 15-19 September 2014
- 2014: within COSMOS summer program in the UCSD campus led by Dr. Robert Pomeroy and Dr. Kimberly Prather at the UCSD, San Diego; 31 July 2014
- 1999: Fishery and Fish Biology at the Istituto Superiore Enrico Fermi (high school level) in Trieste (Italy) under the supervision of Prof. Giuliano Orel (University of Trieste) spring quarter
- 1997, 1998, 1999: Summer field course on benthic bionomy of the University of Trieste in Savudrija (Croatia) led by Prof. Giuliano Orel

Teaching Assistant (TA) in USA educational system

- Master in Communication IGERT program - Diversity Section at SIO, UCSD, Summer Quarter 2012 for led by Dr. Greg Rouse, Dr. Nancy Knowlton and Dr. Kathryn Mengerink
- ESYS 101, Environmental Biology at UCSD in the Fall Quarter 2011 taught by Dr. R Burton and Dr. E. Allen
- Marine microbiology laboratory section within 278A Marine microbial ecology class taught by Dr. F. Azam at SIO, UCSD in the academic year 2003-04, 2005-06, 2007-08, 2009-10, 2011-12

Mentoring

- **Mentor within Master students of Advanced Master (level II) in Sustainable Blue Growth, OGS-University of Trieste** (2018-current) of following students: Dr. Alessia Rossi, Dr. Nicoletta Pastore, Dr. Giulia Massolino, Ing. Amira (Emira) Saidi
- **PhD Advisor/Co-advisor** Ca' Foscari Venice: Ing. Amira (Emira) Saidi (September 2019)
- **Co-Advisor** University of Trieste: Federica Cavion (Prof. Aurelia Tubaro, November 2018)
- **PhD Committee Member** of SIO, UCSD (USA) Mr. Matthew Pendergraft (July 2014)
- **Mentor in OGS of the post-doctoral fellow** Dr. Elisa Banchi (May 2019)

Trained undergraduate students

- SIO, UCSD (2002-2011): T.J. Samo (UCSD), L. Mikkilinini (UCSD), J. Nguyen (UCSD), P. Nguyen (UCSD), J. Yuzon (UCSD), Jesse Anaya (UC Merced, USTAR program), Luca Zoccarato (University of Trieste, Italy), Ryan Guillemette (Research Associate in the Pruneda-Paz Laboratory at UCSD), Jonathan L Cheng (UCSD)
- OGS, Trieste (from 2014 to current): Gilda Savonitto (University of Udine, Trieste, Italy), Laura Baldassarre (Regione Lazio "Torno subito" Fellowship, Italy), Kara A. Zhang (MIT, USA, MIT-Italy Fellowship)

Outreach and Dissemination activities (note ascending order):

- Invited speaker, *San Diego Science Month* at the Birch Aquarium, La Jolla CA, 21 May 2009
- Laboratory activities: "Introduction to the cell" and "Winogradski column, a microbial world" at the Middle School "Fulvio Tomizza" (Domio, Trieste Italy) to the 1E and 1H classes (age 11-12) with Professor Andrea Sbisà; May 2010
- Short Course in Oceanography in OGS (Trieste, Italy) for the students of Gavle High School (Sweden); 8-9 April 2014
- Marine bacteria at the microscope activity for the senior students visiting OGS Marine Station from the Università' della Terza Eta' "Danilo Dobrina"; 6 May 2014
- Laboratory activities: "Introduction to the bacteria in the environment" and "The Winogradski column, a microbial world" at the Middle School "Istituto Compr. Giovanni Lucio" (Muggia, Trieste Italy) to two primary classes (age 11-12) with Professor Andrea Sbisà, 30 May 2014
- Short summer course in Oceanography in OGS Trieste, Italy for the student of Istituto Malignani di Udine (Italy); 2-5 September 2014
- Oral presentation at the Informative Day on Marie Curie Sklodowska-Curie Fellowship in OGS Trieste, Italy; 10 October 2014
- Invited lecture for the visiting students of United World College of Mostar (Bosnia and Herzegovina) in OGS (Trieste, Italy); 16 October 2014
- Invited speaker at the 50-year Anniversary of the First Regional Friuli-Venezia-Giulia Counsel in Trieste, Italy; 7 November 2014
- Invited speaker at the ASLO Meeting Early Career Meeting, Granada 2015 February
- Short Course in Oceanography in OGS (Trieste, Italy) for the students of Gavle High School (Sweden); 14-15 April 2015
- "Settimana senza libri" at the Istituto Nautico Tomaso di Savoia Duca di Genova, Trieste (Italy) January 2015 Lecture and laboratory on Ocean and climate, Ocean Acidification and DNA-based technologies
- Senior University of Trieste (Università' della Terza eta'): invited talk on Marine microbial ecology ("Un tuffo tra i microbi marini"), 16 December 2015
- Caffè' delle Scienze open lecture series organized by University of Trieste (Italy): I microorganismi marini: ingegneri ambientali; 14 April 2016
- Caffè' delle Scienze open lecture series organized by University of Trieste (Italy): Il nuovo Mare! Acidificazione, plastica e black carbon; sfide agli organismi marini; 13 April 2017
- Short Course in Oceanography in OGS (Trieste, Italy) for the students of Gavle High School (Sweden); 9-10 October 2018
- "Nautici in blu" 29 January-1 February 2019 at the Istituto Nautico Tomaso di Savoia Duca di Genova, Trieste (Italy). Organizer of the OGS program. Leading activity on beach clean-up and plastic escape game on Jan. 30th and leading 3-Horizon educational tool on 31st-Jan

Citizen Science

- Organizer for the OSD sampling day project on 21 June 2015 with Istituto Nautico Tomaso di Savoia Duca di Genova, Trieste (Italy) in Muggia, Molo Fratelli Bandiera, Filtri di Aurisina

Press and Media coverage and Books

- 2007 Explorations Magazine. Scripps Institution of Oceanography March: "Saving Venice"
- 2008 Explorations Magazine. Scripps Institution of Oceanography September: "The origin of slimes"
- 2008 ANSA. Italy: Press release on "The origin of slimes": translated in Italian
- 2010 Nature magazine. Interview by Virginia Gewin, Turning point: Francesca Malfatti
- 2011 Textbook by Colin Munn: Microbiology: Ecology & Applications 2. Edition. Cover page of the textbook and color figures of AFM pictures
- 2011 September on: <http://www.issnaf.org/>, Italian Scientist and Scholars of North America Foundation
- 2014 June interview on local Tv broadcast, Telequattro on "Trieste in diretta" on OSD project, Director Mr. Umberto Bosazzi
- 2017 February interview on: Il Piccolo (local newspaper): In the column of Ms. Mary Barbara Tolusso "Being a researcher"
- 2017 April interview on local Tv broadcast, Telequattro on "Trieste in diretta" Il nuovo Mare! Acidificazione, plastica e black carbon; sfide agli organismi marini", Director Mr. Umberto Bosazzi
- 2017 May on Radio Rai (Italian National Broadcast station) on RADAR: "Mare Nordest Trieste": The jobs at sea", Director Ms. Daniela Picoi
- 2017 December on Radio Rai (Italian National Broadcast station) on RADAR: "Nel mare dell'intimità. L'archeologia subacquea racconta l'Adriatico", Director Daniela Picoi
- 2018 June on Radio Rai (Italian National Broadcast station) on RADAR: "Aerosol marino e batteri marini", Director Daniela Picoi
- 2018 October on Radio Punto Zero during Barcolana, international sailing regatta on Litter and microplastics in the sea
- 2019 March on Radio Rai (Broadcast station) on RADAR: "Marine bacteria and their function in keeping the ocean ecosystem functioning", Director Daniela Picoi and reporter Catia Baldassarri
- 2019 May Giornale on-line protezione civile on High CO2 in the atmosphere (NUOVO RECORD PER LA CO2 IN ATMOSFERA. L'ESPERTA: "IMPATTO UMANO: DEVASTANTE", <http://www.cngeologi.it/2019/05/17/nuovo-record-per-la-co2-in-atmosfera-lesperta-impatto-umano-devastante/>)
- 2019 May: Il giardino di Albert, Suisse Broadcast (<https://www.rsi.ch/la1/programmi/cultura/il-giardino-di-albert/tutti-i-servizi/Il-mare-sconosciuto-126281.html>) on Marine microbes environmental engineers. Director Clara Caverzasio
- 2019 May: "AAAAAhhh... la scienza!" Giornalino scientifico per ragazze e ragazzi fatto dai giovani reporter. Laboratori di giornalismo scientifico tenuto da Sissa Medialab nello spazio Trieste Città della Conoscenza nell'ambito delle attività promosse dal Consiglio Comunale delle Ragazze e dei Ragazzi
- 2019 June: RAI Italian Broadcast, Nautilus on Marine microbes environmental engineers

European Marine Board Position Paper:

- Board, European M., Ferdinando Boero, Valerie Cummins, Jeremy Gault, Geir Huse, Catharina Philippart, Ralph Schneider, ..., Francesca Malfatti, ... et al. 2019. Navigating the Future V: Marine Science for a Sustainable Future. MarXiv. June 27. doi: 10.5281/zenodo.2809392.
- Board, European M Position Paper 23, Advancing Citizen Science for Seas and Ocean Research (May 2017)

Cruise Experience

2018-2019: 2 seasonal samplings (per season) in the **Venice Lagoon** in collaboration with University of Padova (Prof. Alessandro Vezzi) and ISMAR-Venezia (Dr. Roberto Zonta)

2002: **R/V Sproul (SIO)**, Santa Barbara basin, Pacific Ocean, benthos sampling (C. Smith, Chief Scientist, SIO)

2003: **R/V Pelagia (NIOZ-Holland)**, Southern Mediterranean, BADE project: Planktonic food-web in the oligotrophic water of an anticyclonic gyre (G. Herndl, Chief Scientist, NIOZ)

2004: **R/V Gould (USAP)**, Drake Passage, Antarctica, BWZ project: Plankton Community Structure and Iron Distribution in the Southern Drake Passage (G. Mitchell, Chief Scientist, SIO)

2014: **R/V OGS-Explora (OGS, Italy)**, North Adriatic Sea, Po.P.O.-RITMARE project: Po Prodeltà Observation (M. Celussi, Chief Scientist, OGS)

2014: **R/V Folaga (ARPA, Italy)**, North Adriatic Sea: one day sampling at LTER sampling one day cruise

Conference Presentations, Invited talks and Chairing Session

(note ascending order)

Malfatti, F. 2001. *Vibrio harveyi* and quorum sensing in the ocean. Invited talk at the University of Trieste, Italy at the Biology Department, May 20, Italy

Malfatti, F., Fonda-Umani, S., B. Cataletto and F. Azam 2002. Phylogenetic structure of mucus-associated culturable bacterial community in the Northern Adriatic Sea. Poster at the SAME 8 Symposium on Aquatic Microbial Ecology, Taormina, Italy

Malfatti, F. and F. Azam 2004. Constraining the pelagic niches for *Vibrio harveyi* expression of bioluminescence. Poster at the 10th International Symposium on Microbial Ecology (ISME-10), Cancun, Mexico

Malfatti, F., M. Manganelli and F. Azam 2005. Bacterial response to iron and carbon enrichment and temperature shift in the Drake Passage, Antarctica and possible significance of microscale processes. Oral presentation, *ASLO Summer Meeting*, Santiago de Compostela, Spain

Azam, F., **F. Malfatti**, J. Nguyen, C. Del Negro and C. Larato 2006. Microbial consequences of sediment transport. *AAAS meeting*, San Diego, CA, June 21, USA

Samo, T.J., **F. Malfatti**, F. Azam 2007. A class of transparent particles visualized with a novel staining technique. Poster at *ASLO Meeting* Santa Fe, New Mexico, USA

Uitz J., A.-C. Baudoux, V. M. Wright, **F. Malfatti**, J. Dubranna, D. Stramski and F. Azam 2008. Dynamics of colloidal particles associated with viral infection of marine bacteria. Poster at *Ocean Optics Meeting XIX*, Barga, Italy

Malfatti, F., and F. Azam 2009. Cell surface architecture of pelagic marine bacteria is significant in bacteria-organic-matter interactions: an atomic force microscopy study. Oral presentation at *ASLO Meeting*, Nice, France

Malfatti, F., V. Turk, T. Tinta, and 9 others 2009. Microbial regulation of carbon and phosphorus cycling during a mesocosm phytoplankton bloom in North Adriatic Sea. Oral presentation at *Symposium on Aquatic Microbial Ecology (SAME 11)*, Piran, Slovenia

Malfatti, F., Azam, F. 2010. Heterotrophic bacteria and *Synechococcus* interactions with organic matter continuum: an AFM study of microscale microbial ecology. Oral presentation, *AFM BioMed Conference*, Crveni Otok, Croatia

Azam, F., **Malfatti, F.** 2010. The significance of refractory organic matter for bacterial microniche architecture and behavior in the ocean. Invited talk, Ocean Sciences Meeting, ASLO, Portland, Oregon, USA

Malfatti, F. 2010. Significance of microscale interactions in bacterial ecology and carbon biogeochemistry in the ocean. Invited seminar, Geology Department at Southern Methodist University, TX, 15 October 15, USA

Malfatti, F., Azam, F. 2011. *Synechococcus*-heterotrophic bacteria association in the ocean and implications for carbon biogeochemical cycle. Oral presentation, *ASLO Meeting* Puerto Rico, USA

Malfatti, F. 2011. Significance of microscale *Synechococcus*-heterotrophic bacteria association in the ocean and implications for carbon biogeochemical cycle. Invited talk at the University of Trieste, April 14, Italy

Malfatti, F. 2011. Significance of microscale *Synechococcus*-heterotrophic bacteria association in the ocean and implications for carbon biogeochemical cycle. Invited talk at UABC, Ensenada, 6 May, Mexico

Azam, F. and **Malfatti, F.** 2012. Major role of microbes in ecosystem connectivity in oceans and lakes. Invited talk at *ASLO Meeting* Lake Biwa, Japan

Malfatti, F., Dekas, A., Orphan, V. Samo, T.J., and F. Azam 2012. Atomic Force Microscopy, high-speed confocal laser microscopy and NanoSIMS study of marine *Synechococcus*-heterotrophic bacteria interactions study reveals species specificity and potential biogeochemical consequences. Oral presentation, ISME conference, Copenhagen, Denmark

Samo, T.J., Smriga, S.P., **Malfatti, F.** and F. Azam 2012. Individual-cell protein production and growth rates of natural marine bacterial populations measured with the methionine analog homopropargylglycine. Poster presentation, ISME conference, Copenhagen, Denmark

Invited Chair for Novel High-Resolution Technologies at ISME conference, Copenhagen, Denmark, 2012

Malfatti, F. 2013. Atomic Force Microscopy, high-speed confocal laser microscopy and NanoSIMS study of marine *Synechococcus*-heterotrophic bacteria interactions reveals species specificity and potential biogeochemical consequences. Invited talk at USC, California, 29 January, USA

Farooq Azam, **Malfatti, F.** 2013. Aggregation continuum: a context for bacterial structuring of pelagic marine ecosystems. *ASLO Meeting*, New Orleans USA

Malfatti, F. 2013. **Invited workshop speaker:** "The Fine Art of Juggling" at AWIS-SD Women in Science and Technology (WIST) Conference. May 18, 2013 at UCSD, USA

Malfatti, F. 2013. **Invited speaker** to San Diego Microbiology Group Annual Meeting, USA. Malfatti, F., Dekas, A., Orphan, V. Samo, T.J., and F. Azam. Atomic Force Microscopy, high-speed confocal laser microscopy and NanoSIMS study of marine *Synechococcus*-heterotrophic bacteria interactions study reveals species specificity and potential biogeochemical consequences.

Malfatti, F. 2013. **Invited speaker** to Biology Seminar in California State University, Fullerton, USA. Marine *Synechococcus*-heterotrophic bacteria interactions reveal species specificity and potential biogeochemical consequences: a microscale study

Malfatti, F. 2014. **Invited speaker** at the Gordon and Betty Moore Foundation Workshop 1. with in the MMI (Marine Microbial Initiative) in Puerto Rico, USA

Lee, C., **Malfatti, F.**, Tinta, T., Collins, D., DeMott, P., Guasco, T., Stokes, D., Azam, A., Prather, K. 2014. Biological Complexity of the Ocean and Transfer to Sea Spray Aerosols. Poster presentation at the Ocean and Human Health Grantee Conference at Scripps Institution of Oceanography, 27-28 March

DeMott, P.J., Hill, T.C., Tobo, Y., McCluskey, C.S., Levin, E.J.T., Suski, K., Collins, D.B., Cornwell, G., Lee, C., Sultana, C., Axson, J., **Malfatti, F.** and Prather, K.A. 2014. Hunting sources of biogenic ice nucleating particles in soils, sea spray and air. *American Association for Aerosol Research AAAR 33rd Annual Conference*, Orlando, Florida, USA

Malfatti, F.: **Invited speaker** at the Caffè Scientifico in OGS main campus (Trieste, Italy) 2014. "The marine *Synechococcus* - heterotrophic bacteria association at individual cell level studied by Atomic Force Microscopy, High speed laser scanning confocal microscopy and NanoSIMS: implications for oceanic carbon biogeochemical cycle", 16 May

Malfatti, F.: **Invited speaker** at the Marine Biology Station (NIB) (Piran, Slovenia) 2014. "The marine *Synechococcus* - heterotrophic bacteria association at individual cell level studied by Atomic Force Microscopy, High speed laser scanning confocal microscopy and NanoSIMS: implications for oceanic carbon biogeochemical cycle", 25 May

Malfatti, F.: **Invited speaker** at the Goldschmidt Conference (Sacramento, USA) 2014. "Atomic Force Microscopy Reveals Marine *Synechococcus*-Heterotrophic Bacteria Interactions at Individual Cell Level: Implications for Oceanic Carbon Biogeochemical Cycle", 11 June

Malfatti, F.: **Invited speaker** at the OGS Steering Scientific Committee meeting (Trieste, Italy) 2014. Microscale study to cast some light on the phosphorus cycle regulated by bacteria and phytoplankton at LTER site in the Northern Adriatic Sea, Gulf of Trieste...why bother?, 1 October

Malfatti, F.: **Invited speaker** at the Quantitative Life Sciences Workshop: Movement Ecology Day" 2015. organized by The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste Italy: "Atomic Force Microscopy, High speed laser scanning confocal microscopy and NanoSIMS study of marine *Synechococcus*-heterotrophic bacteria interaction reveals species specificity and potential biogeochemical consequences", on January 29

Celussi, M., Ingrosso, G.; **Malfatti, F.**; Tsiola, A.; Pitta, P.; Ziveri, P.; Giani, M.; Del Negro, P. MEDITERRANEAN PECULIARITIES: WHAT ARE THE MAIN METABOLIC PATHWAYS DRIVING THE C CYCLE IN ITS MESO- AND BATHYPELAGIC WATERS?, Oral presentation: ASLO Meeting Granada, Spain 23-28 February 2015

Tinta, T.; **Malfatti, F.**; Klun, K.; Kogovsek, T.; Turk, V.; Malej, A.; MARINE HETEROTROPHIC BACTERIA ISOLATES DISPLAY DIVERSE STRATEGY TO UTILIZE JELLYFISH-DERIVED ORGANIC MATTER - INVESTIGATIONS AT THE INDIVIDUAL CELL LEVEL, Oral presentation: ASLO Meeting Granada, Spain, 23-28 February 2015

Malfatti, F., Celussi, M., Del Negro, P.: HIGH-RESOLUTION IMAGING (AFM LSCM) COUPLED WITH IN SITU DETECTION OF ALKALINE PHOSPHATASE REVEALS MICROSCALE ORGANIC MATTER PROCESSING BY ALGAE AND BACTERIA, Oral presentation: ASLO Meeting Granada, Spain, 23-28 February 2015

Malfatti, F., Celussi, M., Del Negro, P. 2015. Friends or foe? Phytoplankton-bacteria microscale competition for phosphorus: by Atomic Force Microscope, Poster presentation: *Jacques Monod Conference* 21-26 June, Roscoff, France

Malfatti, F.: **Invited speaker** at the final meeting of MICROBE3; OSD metagenome data to analyse small-scale processes with large-scale implications: the carbon-phosphorus cycle. Brussels, Belgium 2-5 November 2015 (<https://microb3.eu/events/meetings/final-conference/programme>)

McCluskey et al. (including **F. Malfatti**) Emissions and characteristics of ice nucleating particles associated with laboratory generated nascent sea spray aerosol *AGU Fall Meeting 2015*, 15-18 December San Francisco, USA

McDonald et al. (including **F. Malfatti**): Integrated network modelling for identifying microbial mechanisms of particulate organic carbon accumulation in coastal marine systems. Submitted to HS10.11, *EGU 2016 General Assembly*, Vienna, Austria

Schnetzer et al. (including **F. Malfatti**) 2016. The ocean sampling day. ISME meeting Canada 2016

Fernandez-Guerra et al (including **F. Malfatti**) 2016. EXPLORING THE FUNCTIONAL SIDE OF THE OCEAN SAMPLING DAY METAGENOMES. CIESM Meeting, Germany

Bicak, M., **Malfatti, F.**, et al. 2016. The Ocean Sampling Day Analysis Consortium. CIESM Meeting, Germany 2

Duarte D. et al. (including **F. Malfatti**) 2016. Towards the development of a Marine Health Index: a first approach provided by the Ocean Sampling Day (OSD) campaigns. Poster presentation. European Citizen Science Association- ECSA, Germany

DeMott et al. (including **F. Malfatti**) 2016. Probing the Source of Ice Nucleating Particles in Sea Spray Aerosol. American Association Aerosol Research-AAAR 2016, Portland, Oregon, USA

Malfatti F., Celussi, M., et al. 2016. Black carbon from bulk to small scale effect on marine bacteria. Poster presentation. Gordon Research Conference: Marine Microbes, Girona, Spain

Celussi M., **Malfatti F.**, Del Negro P., Luna GM., Fonda Umani S., Bergamasco A., Fornasaro, D., Cerino F., Zoccarato L. 2016. OCEAN VENTILATION EFFECT ON MICROBIAL METABOLISM IN THE SOUTHERN OCEAN DEEP ROSS SEA. Gordon Research Conference: Marine Microbes, Girona, Spain

Celussi M., **Malfatti F.**, Franzo A., Cerino F, Baričević A., Smoldaka Tanković M., Relitti F., Bazzaro M., Del Negro P. ANTARCTIC PHYTOPLANKTON COMMUNITIES' COMPOSITION DETERMINES THE CARBON METABOLISM OF FREE-LIVING PROKARYOTES WHILE SINKING TO THE OCEAN INTERIOR. SAME Conference, Zagreb 2017

Malfatti F., Santander M.V., Pendergraft M. and Prather K.A: Redox landscape in seawater and in sea spray aerosols: electrifying news! SOLAS-IGAC workshop in Rome (Italy), 27-28 Nov 2018

Hill T.C.J., **Malfatti F.**, Schill G.P., McCluskey C.S., Santander M.V.et others: Marine Ice Nucleating Particles: Creation, Characteristics and Controls over Emissions. AGU Fall Meeting San Francisco (USA) 2018

Morales A.A., Pendergraft M., Lee C., **Malfatti F.**, Axelrod K. and Prather K.A.: Detecting enzyme activity in coastal aerosol. ACS meeting 18-23 August 2018 Boston (USA)

Malfatti F., invited public plenary talk MARINE PARTICLES AND PHYCOSPHERES Meeting: Marine microbes, the ocean's environmental engineers. 19 - 23 May 2019, Ascona, Switzerland (organized by ETH)

Malfatti F., invited talk: From the sea to the clouds: the role of marine microorganisms on the life. Meeting MANS, Napoli, 19-20 June 2019

Malfatti F., Invited talk: Microbial structuring of the organic matter ocean-atmosphere continuum. In Stazione Zoologica Napoli 18 June 2019

Lee C., Ryder O.S., **Malfatti F.**, et others: PHYS 515: Active marine enzymes in the ocean and the air control heterogeneous reactivity of atmospheric aerosols. ACS Fall Meeting 25-29 August 2019 San Diego (USA)

Celussi M., **Malfatti F.**, Cerino F., Franzo A., Banchi E. et others: Carbohydrate-active enzyme fingerprints in surface and deep-sea bacterial communities in the Ross Sea (Southern Ocean). SAME meeting 1-6 September 2019, Postdam (Germany)

Sauer J.S., Kathryn J Mayer K.J., **Malfatti F.** et others: Factors Controlling the Release of Methylated Sulfur Species from Laboratory Mesocosm Experiments in Coastal Seawater. AGU, Fall Meeting San Francisco, USA, 2019

Mitts B., Mitchell Santander M.V., Pendergraft M., **Malfatti F.** and Prather K.A.: Sea Spray Aerosol Fluorescence: Intercomparison of Excitation Emission Matrix Spectroscopy and Single Particle Integrated Fluorescence Measurements. AGU, Fall Meeting San Francisco, USA, 2019

Malfatti F., Massolino G., Rossi A., Affatati A. and others: 5 days activities on natural and anthropogenic risk at sea for nautical high school students. At the meeting LIFE FRANCA – *Flood Risk ANTicipation and Communication in the Alps*: Anticipation and communication of natural risks 21-22 October 2019, Trento (Italy)

Massolino G., **Malfatti F.**, Colleoni F.: Escape game as an edutainment tool to communicate natural risks related to future sea level changes. At the meeting LIFE FRANCA – *Flood Risk ANTicipation and Communication in the Alps*: Anticipation and communication of natural risks 21-22 October 2019, Trento (Italy)

Other professional activities and appointments

Journal Reviewer: Aquatic Microbial Ecology, ISME Journal, Journal of Molecular Recognition, PNAS, Environmental Microbiology, Applied and Environmental Microbiology and Botanica Marina, Biogeochemical cycles, Marine Chemistry, Critical Reviews in Microbiology

Science Foundation Reviewer National Science Foundation (NSF, USA), National Oceanic Atmospheric Administration (NOAA, USA), Czech Science Foundation (Czech Republic), Belgian Science Foundation (Belgium).

Member of European Marine Board (since Nov 2015)

Member of UNESCO task force on Ocean Literacy – Italia (since Oct 2016)

Advanced Master (level II) in Sustainable Blue Growth: Scientific Board and Instructor OGS-University of Trieste (Italy, <http://bluegrowth.inogs.it/>)

OGS representative in **EuroGOOS Ocean Literacy Expert Group** (since January 2019)

OGS member of the **Communication Group** led by Dr. Francesca Petrera

International meeting and course organizer

Local organizer of IMBER-IMBIZO IV (October 2015, Trieste, Italy;
www.imber.info/News/News/IMBER-IMBIZO-IV-26-30-October-2015-Trieste-Italy)

International Course in Microbial Ecology 6 (ICME6 6, November 2015, Trieste, Italy;
http://microbeco.org/Trieste_6ICME.html)

EuroMarine Open Science Exploration (EMOSE) 2017 Edition: Inter-comparison of Marine
Microbiome Analysis Methods (October 2017, Portugal)