Short curriculum vitae

Jean-Pierre Gattuso

(January 27, 2021)

CNRS Senior Research Scientist (*Directeur de recherche CNRS de classe exceptionnelle*)
Laboratoire d'Océanographie de Villefranche
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Born 14 December 1958 in Antibes, France. French citizen. Married, no children.

Educational background

- 1994: *Habilitation*, Biological Oceanography, University of Nice, France
- 1987: Ph. D., Biological Oceanography, University of Aix-Marseille II, France
- 1982: M. Sc. in Oceanography, University of Aix-Marseille II

Professional background

- 2015-present: Associate Scientist, Institute for Sustainable Development and International Relations, France
- 2005-present: Research Professor (*Directeur de recherche CNRS de classe exceptionnelle*), Laboratoire d'Océanographie de Villefranche, France
- 1998-2004: Group leader, Laboratoire d'Océanographie de Villefranche, France
- 1998-2004: Group leader, Monaco Scientific Center, Principality of Monaco
- 1990-1992: Research Scientist, CNRS and University of Perpignan, France
- 1988-1990: Postdoctoral Research Scientist, Australian Institute of Marine Science
- 1985-1987: Reader, University of Nice, France

Awards

- 2020: Ruth Patrick Award, Association for the Sciences of Limnology and Oceanography
- 2018: Elected member, Academia Europaea
- 2014: Member, European Academy of Sciences
- 2014: Blaise Pascal Medal in Earth and Environmental Sciences, European Academy of Sciences
- 2012: Vladimir Vernadsky Medal, European Geosciences Union
- 2005: Union Service Award, European Geosciences Union
- 2002: Outstanding reviewer, Limnology & Oceanography
- 2001: Oceanography medal of the *Société d'Océanographie de France*

Research interests

- Carbon and carbonate cycling in coastal ecosystems
- Response of marine organisms and ecosystems to global environmental changes, including ocean acidification
- Ocean solutions

Editorial activities

- 2011: Editor of *Ocean acidification*, a book published by Oxford University Press
- 2010-present: Editor, *Biogeosciences*
- 2006-present: Topic Editor, *The Encyclopedia of Earth*
- 2004-2009: Founding Editor-in-Chief, *Biogeosciences*
- 2002-2014: Biogeosciences Editor, *The Eggs*
- 2002-2004: Editor, *Surveys in Geophysics*
- 1997-2005: Editor, *Coral Reefs*

Recent professional activities

- 2021-present: Member, International Advisory Board of the Aqaba Marine Park, Jordan
- 2021-present: Member, Agence de sécurité sanitaire, environnementale et de gestion des risques, Métropole Nice Côte d'Azur

- 2018-present: Member, Scientific and Technical Advisory Committee, Copernicus Marine Environment Monitoring Service
- 2018-present: Chair, International SSC, The Oceans in a High CO_2 World 5, Lima, 2021
- 2017-2019: Coordinating Lead and Contributing Author, IPCC Special Report on the Ocean and Cryosphere in a Changing Climate
- 2017-2018: Contributing Author, IPCC Special Report on Global Warming of 1.5 °C
- 2016-2019: SCOR Working Group #149: Changing Ocean Biological Systems: how will biota respond to a changing ocean?
- 2016: Member, Scientific Committee, Earth and Environment of the European Academy of Sciences
- 2015-present: Chair, Ocean Acidification and Biodiversity Program, French Environment Ministry
- 2015-present: Regional expert group on climate in Provence Alpes-Côte d'Azur
- 2015-2018: Member, Scientific Council, Ocean-Climate Platform, Unesco
- 2015-2016: Member, Scientific Council, French Arctic Program
- 2015-2017: Scientific Council, Academy 3, Université Côte d'Azur
- 2014: Chair, International SSC, The Oceans in a High CO_2 World 4, Hobart, 2016
- 2014: Elected member, European Academy of Sciences
- 2013-2020: Member of the Scientific Council of the French Parliamentary Office for Scientific Research and Innovation
- 2013-present: President, Monegasque Association for Ocean Acidification.
- 2010-2014: Lead and Contributing Author, Working Group II of the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)
- 2008-2012: Scientific Coordinator of EPOCA, the European Project on Ocean Acidification
- 2001-2005: Founding President, Biogeosciences Division of the European Geosciences Union
- 2000-2004: Member, *Comité national de la recherche scientifique, section 30*

Recent grants (partial listing)

- The future of Arctic coastal ecosystems - Identifying transitions in fjord systems and adjacent coastal areas (FACE-IT), European Commission H2020 (2020-2024)
- *La conchyliculture dans un monde riche en CO_2*, European Maritime and Fisheries Fund France (2020-2022)
- Southern Ocean pH Monitoring, Prince Albert II of Monaco Foundation (2017-2018)
- The Ocean Solutions Initiative, Veolia Foundation, Prince Albert II of Monaco Foundation, Ocean Acidification International Coordination Centre and French Facility for Global Environment (2016-2020)
- Integrated Arctic Observation System (INTAROS), European Commission (2016-2020)
- HighCO_2Seas, Total Foundation (2016, led by Stazione Zoologica, Napoli)
- *Small islands addressing climate change: towards storylines of risk and adaptation* (STORISK), ANR (2016-2020)
- AWIPEV-CO_2, French Polar Institute (2014-2020)
- The Oceans 2015 Initiative, Prince Albert II of Monaco Foundation, Ocean Acidification International Coordination Centre, BNP Paribas Foundation (2014-2015)
- European Ocean Free Carbon Dioxide Enrichment Experiment, eFOCE, BNP Paribas Foundation (2011)
- Mediterranean Sea Acidification in a changing climate, MedSeA, European Commission (2011)
- Arctic CO_2 enrichment experiments, French Polar Institute (2009)
- European Project on Ocean Acidification, EPOCA, European Commission (2008). I coordinated this large-scale integrating project which comprised 32 partner institutions and more than 160 scientists

Some key and recent papers—Complete list: http://bit.ly/1LG0pvF

- Google Scholar: 26,963 citations; h-index: 81
- Web of Science: 189 items; 14,583 citations; h-index: 61
- 9 highly cited papers and one hot paper in the fields of Environment and Ecology[1]

[1]Highly cited papers received enough citations to place them in the top 1% of their academic field based on a highly cited threshold for the field and publication year (Clarivate Analytics, the company producing the Web of Science).

<**2014** Gattuso J.-P., Frankignoulle M. & Wollast R., 1998. Carbon and carbonate metabolism in coastal aquatic ecosystems. *Annual Review of Ecology and Systematics* 29:405-434.

Gattuso J.-P., Frankignoulle M. & Smith S. V., 1999. Measurement of community metabolism and significance of coral reefs in the CO_2 source-sink debate. *Proceedings of the National Academy of Science U.S.A.* 96:13017-13022.

Gattuso J.-P. & Buddemeier R. W., 2000. Ocean biogeochemistry: calcification and CO_2. *Nature* 407:311-312.

Martin S. & Gattuso J.-P., 2009. Response of Mediterranean coralline algae to ocean acidification and elevated temperature. *Global Change Biology* 15:2089-2100.

Gattuso J.-P. & Hansson L. (eds.), 2011. *Ocean acidification*, 326 p. Oxford: Oxford University Press.

Smith S. V. & Gattuso J.-P., 2011. Balancing the oceanic calcium carbonate cycle: consequences of variable water column Ψ. *Aquatic Geochemistry* 17:327-337.

Turley C. & Gattuso J.-P., 2012. Future biological and ecosystem impacts of ocean acidification and their socioeconomic-policy implications. *Current Opinion In Environmental Sustainability* 4:278-286.

de Carlo E. H., Mousseau L., Passafiume O., Drupp P. & Gattuso J.-P., 2013. Carbonate chemistry and air-sea CO_2 flux in a NW Mediterranean Bay over a four-year period: 2007-2011. *Aquatic Geochemistry* 19:399-442.

Gattuso J.-P., Mach K. J. & Morgan G. M., 2013. Ocean acidification and its impacts: an expert survey. *Climatic Change* 117:725-738.

Kroeker K., Kordas R., Crim R., Hendriks I., Ramajo L., Singh G., Duarte C. & Gattuso J.-P., 2013. Impacts of ocean acidification on marine organisms: quantifying sensitivities and interaction with warming. *Global Change Biology* 19:1884-1896.

Riebesell U., Gattuso J.-P., Thingstad T. F. & Middelburg J. J., 2013. Arctic ocean acidification: pelagic ecosystem and biogeochemical responses during a mesocosm study. *Biogeosciences* 10:5619-5626.

Wong P. P., Losada I. J., Gattuso J.-P., Hinkel J., Khattabi A., McInnes K., Saito Y. & Sallenger A., 2014. Coastal systems and low-lying areas. In: Field C. B. et al. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, pp. 361-409. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

Gattuso J.-P., Hoegh-Guldberg O. & Pörtner H.-O., 2014. Coral reefs. In: Field C. B. et al. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, pp. 97-100. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

Gattuso J.-P., Brewer P., Hoegh-Guldberg O., Kleypas J. A., Pörtner H.-O. & Schmidt D., 2014. Ocean acidification. In: Field C. B. etal. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, pp. 129-131. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

Field C., Barros V., Mach K., Mastrandrea M., van Aalst M., Adger N., Aldunce P., Arent D., Barnett J., Betts R., Bilir E., Birkmann J., Carmin J., Chadee D., Challinor A., Chatterjee M., Cramer W., Davidson D. J., Estrada Y., Gattuso J.-P., Hijioka Y., Hoegh-Guldberg O., Huang H.-Q., Insarov G., Jones R., Kovats S., Romero Lankao P., Larsen J. N., Losada I., Marengo J., McLean R., Mearns L., Mechler R., Morton J., Niang I., Oki T., Olwoch J. M., Opondo M., Poloczanska E., Pörtner H.-O., Redsteer M. H., Reisinger A., Revi A., Schmidt D., Shaw R., Solecki W., Stone J., Strzepek K., Suarez A., Tschakert P., Valentini R., Vicuna S., Villamizar A., Vincent K., Warren R., White L. L., Wilbanks T., Wong P. P. & Yohe G., 2014. Technical summary. In: Field C. B. et al. (Eds.), Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, pp. 35-94. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

Gattuso J.-P., Kirkwood W., Barry J. P., Cox E., Gazeau F., Hansson L., Hendriks I. E., Kline D. I., Mahacek P., Marker M., Martin S., McElhany P., Peltzer E. T., Reeve J., Roberts D., Saderne V., Tait K., Widdicombe S. & Brewer P., 2014. Free-ocean CO_2 enrichment (FOCE) systems: present

status and future developments. *Biogeosciences* 11:4057-4075.

2015 Gattuso J.-P., Magnan A., Billé R., Cheung W. W. L., Howes E. L., Joos F., Allemand D., Bopp L., Cooley S., Eakin C. M., Hoegh-Guldberg O., Kelly R. P., Pörtner H., Rogers A. D., Baxter J. M., Laffoley D., Osborn D., Rankovic A., Rochette J., Sumaila U. R., Treyer S. & Turley C., 2015. Contrasting futures for ocean and society from different anthropogenic CO_2 emissions scenarios. *Science* 349:aac4722.

Orr J. C., Epitalon J.-M. & Gattuso J.-P., 2015. Comparison of ten packages that compute ocean carbonate chemistry. *Biogeosciences* 12:1483-1510.

Riebesell U. & Gattuso J.-P., 2015. Lessons learned from ocean acidification research. *Nature Climate Change* 5:12-14.

2016 Cox T. E., Gazeau F., Alliouane S., Hendriks I., Mahacek P., Le Fur A. & Gattuso J.-P., 2016. Effects of *in situ* CO_2 enrichment on structural characteristics, photosynthesis, and growth of the Mediterranean seagrass *Posidonia oceanica*. *Biogeosciences* 13:2179-2194.

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Maier C., Popp P., Sollfrank N., Weinbauer M. G., Wild C. & Gattuso J.-P., 2016. Effects of elevated pCO_2 and feeding on net calcification and energy budget of the Mediterranean cold-water coral *Madrepora oculata*. *The Journal of Experimental Biology* 219:3208-3217.

Moya A., Howes E. L., Lacoue-Labarthe T., Forêt S., Hanna B., Medina M., Munday P. L., Ong J.-S., Teyssié J.-L., Torda G., Watson S.-A., Miller D. J., Bijma J. & Gattuso J.-P., 2016. Near-future pH conditions severely impact calcification, metabolism and the nervous system in the pteropod *Heliconoides inflatus*. *Global Change Biology* 22:3888-3900.

Kapsenberg L., Alliouane S., Gazeau F., Mousseau L. & Gattuso J.-P., 2017. Coastal ocean acidification and increasing total alkalinity in the northwestern Mediterranean Sea. *Ocean Science* 13:411-426.

Maugendre L., Gattuso J.-P., de Kluijver A., Soetaert K., van Oevelen D., Middelburg J. J. & Gazeau F., 2017. Carbon-13 labelling shows no effect of ocean acidification on carbon transfer in Mediterranean plankton communities. *Estuarine, Coastal and Shelf Science* 186A:100-111.

Maugendre L., Gattuso J.-P., Poulton A. J., Dellisanti W., Gaubert M., Guieu C. & Gazeau F., 2017. No detectable effect of ocean acidification on plankton metabolism in the NW oligotrophic Mediterranean Sea: results from two mesocosm studies. *Estuarine, Coastal and Shelf Science* 186A:89-99.

Sauzède R., Claustre H., Pasqueron de Fommervault O., Bittig H., Gattuso J.-P., Legendre L. & Johnson K., 2017. Estimates of water-column nutrients concentration and carbonate system parameters in the global ocean: A novel approach based on neural networks. *Frontiers in Marine Science* 4:128.

2018 Bittig H. C., Steinhoff T., Claustre H., Fiedler B., Williams N. L., Sauzède R., Körtzinger A. & Gattuso J.-P., 2018. An alternative to static climatologies: robust estimation of open ocean CO2 variables and nutrient concentrations from T, S, and O_2 data using Bayesian neural networks. *Frontiers in Marine Science* 5:328.

Boyd P. W., Collins S., Dupont S., Fabricius K., Gattuso J. P., Havenhand J., Hutchins D. A., Riebesell U., Rintoul M. S., Vichi M., Biswas H., Ciotti A., Gao K., Gehlen M., Hurd C. L., Kurihara H., McGraw C. M., Navarro J. M., Nilsson G. E., Passow U. & Pörtner H.-O., 2018. Experimental strategies to assess the biological ramifications of multiple drivers of global ocean change - a review. *Global Change Biology* 24:2239-2261.

Cramer W., Guiot J., Fader M., Garrabou J., Gattuso J.-P., Iglesias A., Lange M. A., Lionello P., Llasat M. C., Paz S., Peñuelas J., Snoussi M., Toreti A., Tsimplis M. N. & Xoplaki E., 2018. Climate change and interconnected risks to sustainable development in the Mediterranean. *Nature Climate Change* 8:972-980.

Gattuso J.-P., Magnan A. K., Bopp L., Cheung W. W. L., Duarte C. M., Hinkel J., Mcleod E., Micheli F., Oschlies A., Williamson P., Billé R., Chalastani V. I., Gates R. D., Irisson J.-O., Middelburg J. J., Pörtner H.-O. & Rau G. H., 2018. Ocean solutions to address climate change and its effects on marine ecosystems. *Frontiers in Marine Science* 5:337.

Hoegh-Guldberg O., Jacob D., Taylor M., Bindi M., Brown S., Camilloni I., Diedhiou A., Djalante R., Ebi K., Engelbrecht F., Guiot J., Hijioka Y., Mehrotra S., Payne A., Seneviratne S. I., Thomas A., Warren R. & Zhou G. [J.-P. Gattuso contributing author], 2018. Impacts of 1.5°C global warming on natural and human systems. In: Masson-Delmotte V., Zhai P., Pörtner H.-O., Roberts D.,

Skea J., Shukla P. R., Pirani A., Moufouma-Okia W., Péan C., Pidcock R., Connors S., Matthews J. B. R., Chen Y., Zhou X., Gomis M. I., Lonnoy E., Maycock T., Tignor M. & Waterfield T. (Eds.), *Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*, pp. 175-311. Geneva: Intergovernmental Panel on Climate Change.

Kapsenberg L., Miglioli A., Bitter M. C., Tambutté E., Dumollard R. & Gattuso J.-P., 2018. Ocean pH fluctuations affect mussel larvae at key developmental transitions. *Proceedings of the Royal Society of London. Series B: Biological Sciences* 285:20182381.

Magnan A. K., Billé R., Bopp L., Chalastani V. I., Cheung W. W. L., Duarte C. M., Gates R. D., Hinkel J., Irisson J.-O., Mcleod E., Micheli F., Middelburg J. J., Oschlies A., Pörtner H.-O., Rau G. H., Williamson P. & Gattuso J.-P., 2018. Ocean-based measures for climate action. *IDRRI Policy Brief* 6:1-4.

Orr J. C., Epitalon J.-M., Dickson A. G. & Gattuso J.-P., 2018. Routine uncertainty propagation for the marine carbon dioxide system. *Marine Chemistry* 207:84-107.

2019 Abd-Elgawad S., Abram N., Adler C., Alegría A., Arístegui J., Bindoff N. L., Bouwer L., Cáceres B., Cai R., Cassotta S., Cheng L., Cheong S.-M., Cheung W. M. L., Chidichimo M. P., Cifuentes-Jara M., Collins M., Crate S., Deconto R., Derksen C., Ekaykin A., Enomoto H., Frölicher T., Garschagen M., Gattuso J.-P., Ghosh T., Glavovic B., Gruber N., Gruber S., Guinder V. A., Hallberg R., Harper S., Hay J., Hilmi N., Hinkel J., Hirabayashi Y., Hock R., Holland E., Hollowed A., Isla F., Jackson M., Jacot Des Combes H., Jiao N., Kääb A., Kairo J. G., Kang S., Karim M. S., Kofinas G., Koll R. M., Kudela R. M., Kutuzov S., Levin L., Iñigo Losada I., Mackintosh A., Magnan A. K., Marzeion B., Masson-Delmotte V., Matthews R., McInnes K., MelbourneThomas J., Meredith M., Meyssignac B., Milner A., Mintenbeck K., Molau U., Morin S., Muelbert M. M. C., Nicolai M., O'Donoghue S., Okem A., Oppenheimer M., Orlove B., Ottersen G., Petzold J., Pirani A., Hans-Otto Pörtner H.-O., Poloczanska E., Prakash A., Pritchard H., Cuicapusa S. R. P., Rasul G., Ratter B., Rice J., Rinkevich B., Rivera-Arriaga E., Roberts D., von Schuckmann K., Schuur T., Sebesvari Z., Sommerkorn M., Steffen K., Steltzer H., Suga T., Susanto R. D., Sutherland M., Swingedouw D., Tagliabue A., Tibig L., van de Wal R., Williamson P., Yu R. & Zhai P., 2019. Technical summary. In: Pörtner H.-O., Roberts D., Masson-Delmotte V., Zhai P., Poloczanska E., Mintenbeck K., Tignor M., Petzold J., Weyer N., Okem A., Craig M., Nicolai M., Alegría A., Langsdorf S., Rama B. & Freund A. (Eds.), *Special Report on the Ocean and Cryosphere in a Changing Climate*, pp. 39-69. Geneva: Intergovernmental Panel on Climate Change.

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Asnaghi V., Collard M., Mangialajo L., Gattuso J.-P. & Dubois P., 2019. Bottom-up effects on biomechanical properties of the skeletal plates of the sea urchin *Paracentrotus lividus* (Lamarck, 1816) in an acidified ocean scenario. *Marine Environmental Research* 144:56-61.

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Bitter M. C., Kapsenberg L., Gattuso J.-P. & Pfister C. A., 2019. Standing genetic variation fuels rapid adaptation to ocean acidification. *Nature Communications* 10:5821.

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2021 Gattuso J.-P., Williamson P., Duarte C. & Magnan A. K., 2021. The potential for ocean-based climate action: negative emissions technologies and beyond. *Frontiers in Climate* 2:575716