

HGF-MPG Group for Deep Sea Ecology and Technology
Alfred Wegener Institute Helmholtz Center for Polar and Marine Research and
Max Planck Institute for Marine Microbiology

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Date of birth: February 25, 1981

Education and Positions

Since Nov 2012	Scientist at the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research, Bremerhaven
Jul 2018 – May 2019	Maternity leave
Since 2017	Faculty IMPRS Marmic
Sep 2015 – May 2016	Maternity leave
Sep 2011 – Oct 2012	Postdoctoral researcher at the Max Planck Institute for Marine Microbiology, Bremen
Oct – Nov 2008	Guest scientist at the Marine Biological Laboratory, Woods Hole (Host: Prof. M. Sogin)
Dec 2007 – Jul 2011	Member of GLOMAR – Bremen International Graduate School for Marine Sciences (Global Change in the Marine Realm)
Sep 2007 – Jul 2011	Ph.D. Thesis at the Max Planck Institute for Marine Microbiology (Microbial Habitat Group).
Mar 2006 - Dec 2006	Diploma thesis at the Max Planck Institute Marine Microbiology, Bremen.
2003 – 2006	Studies in Marine Biology, University of Bremen
2000 – 2003	Studies in Biology, University of Hamburg
1999 – 2007	Various internships and temporary positions as student assistant at the University of Hamburg, University of Bremen, Center for Tropical Marine Ecology, Max Planck Institute for Marine Microbiology, Alfred Wegener Institute for Polar and Marine Research.

Science management and coordination

Co-lead and coordination of bacterial ecology work as part of the implementation of a microbial observatory in the framework of the Helmholtz Infrastructure Project FRAM – Frontiers in Arctic Marine Monitoring (Dr. K. Metfies, 2014 – present)

Co-management of the ERC Advanced Grant ABYSS (Prof. A. Boetius, 2012-2018): coordination of personnel, supervision of PhD students and student assistants, scientific reporting and participation in financial reporting

Preparation of and participation in several ship-based expeditions: organization of packing, customs and dangerous goods in collaboration with logistics, planning of work on board, coordination and guidance of students and technicians. Participation in the preparation of the interdisciplinary RV Polarstern expedition PS80 and organization of the participation of a larger group of international scientists as part of this expedition

Support of the group lead in coordination and management tasks

Participation in preparation of job advertisements and selection procedures for scientific and technical personnel

Mediation and communication between students, co-workers, administration and group lead

Coordination and supervision of laboratory technicians, student assistants and interns

Science communication

Interviews on publication about wood falls to the deep sea (WDR5 Leonardo, Internet)

Blogs about work on marine research vessels (e.g. www.planeterde.de, www.geo.de)

Popular science articles (BIOspektrum, Book chapter)

Teaching experience

Lectures and Courses

Marmic IMPRS: Co-supervision of practical course in Microbial Oceanography and Geomicrobiology (Prof. A. Boetius, 2011-2020)

ISATEC Master program: Introduction to Marine Microbiology - Microbial habitats, ecology and biogeochemistry. Lecture (2 hours) (2012-2018).

ACCESS Summerschool 2013. Lecture (45 Min): Arctic Ocean Biology – from the surface to the deep sea. Bremen, Germany.

PhD theses and thesis committees

Magda Cardozo Mino (University of Bremen): Temporal and spatial dynamics of marine microorganisms in ice-covered sea (Nov 2018 – present). First Reviewer: Prof. Dr. A. Boetius

Taylor Priest (University of Bremen): Molecular ecological characterization of high-latitude heterotrophic bacterioplankton (2019-present). First Reviewer: Prof. Dr. R. Amann.

Eddie Fadeev (University of Bremen): Composition and diversity of bacterial and archaeal communities in the Atlantic-Arctic boundary zone (Jun 2016 – Dec 2018) First Reviewer: Prof. Dr. A. Boetius.

Josephine Rapp (University of Bremen): Functional investigations of the active microbial population in deep-sea sediments (Apr 2014 – Sep 2018). First Reviewer: Prof. Dr. A. Boetius.

Katy Hoffmann (University of Bremen): Diversity and function of microbial communities in Arctic deep-sea sediments. (Jun 2013 – Jun 2017). First Reviewer: Prof. Dr. A. Boetius.

Master theses

Petra Pop Ristova (MarMic, Max Planck Institute for Marine Microbiology): Biogeochemical activity and associated biodiversity at reduced deep sea hotspot ecosystems (Sep 2008 – Mar 2009). Main supervisor: Prof. Dr. A. Boetius.

Josephine Rapp (MarMic, Max Planck Institute for Marine Microbiology): Bacterial diversity in sea ice, melt ponds, water column, ice algal aggregates and deep-sea sediments of the Central Arctic Ocean (Sep 2013 - Ma 2014). Main supervisor: Prof. Dr. A. Boetius.

Stefan Becker (Hochschule Bremerhaven): Effects of organic carbon enrichment on benthic bacterial communities from the Arctic deep sea (HAUSGARTEN, Fram Strait (Nov 2013 – Apr 2014). Second Reviewer (temporary lectureship at Hochschule Bremerhaven). First Reviewer: Prof. Dr. Stephan Frickenhaus.

Bachelor thesis

Josephine Rapp (University of Berlin): Bacterial diversity patterns in deep-sea sediments at the Arctic long-term observatory HAUSGARTEN (Jan - Mar 2012).

Lab rotations, internships and student assistants

> 15 students

Honors and Awards

Gordon Research Conference – Marine Microbes, 24-29 June 2012, Lucca, Italy.

Outstanding Young Researcher Poster Award

Gordon Research Seminar – Marine Microbes, 23-24 June 2012, Lucca, Italy. **Invited speaker**

Bremen PhD Days in Marine Science 2011, Bremen, 13-14 April 2011. **Best Poster Award.**

ESF Eurocores EuroDEEP dissemination grant for short-term visit to Marine Biological Labs, Woods Hole, USA (01.10. – 17.11.2008)

Expeditions

2014	RV Polarstern, ARK-XXVIII/2 (PS85), Fram Strait, Arctic Ocean
2013	RV Maria S. Merian, MSM-29, Fram Strait, Arctic Ocean
2012	RV Polarstern, ARK-XXVII/3 (PS80), Central Arctic
2009	RV Maria S. Merian, MSM 13-3, Eastern Mediterranean
2008	RV Meteor, M 76/3B, Congo fan
2007	RV Pourquoi Pas?, MEDECO-2, Eastern Mediterranean
2007	RV Polarstern, ANT XXIII/9, Prydz Bay, Antarctic
2004	RV Heincke, North Sea, student course, University of Bremen
2003	RV Heincke, North Sea, University of Hamburg

Professional services

Reviewer for: The ISME Journal, Biogeosciences Discussion, Polar Research, SpringerPlus, Environmental Microbiology and Environmental Microbiology Reports, PLOS ONE, Polar Biology, Frontiers in Microbiology, National Science Foundation

Courses and further training

Lateral guidance. Dr. B. Fiedler, C. Neuhaus. 2020 (2-day workshop)

Project management. Dipl.-Ing. S. Geuer. 2020 (2-day workshop)

Introduction to mediation. A. Giese-Hanuschke. 2020 (2-day workshop)

Leadership course for women. Dr. K. Ludewig. 2019 (2-day workshop)

Introduction to databases and database management systems. Dipl. Ing. N. Hertel. 2019 (2-day workshop)

Research Funding and Career Development. Dr. B. Scholz. 2011 (2-day workshop)

Scientific Writing for Natural Scientists. Prof. R. Rendle-Bühning. 2010 (3-day workshop)

An Introduction to PANGAEA for PhD students. M. Diepenbroek. 2009 (1-day workshop)

Presentation Skills. S. Hatzl. 2009 (2-day workshop)

Microbial diversity in time and space – the metacommunity concept applied in microbial ecology and evolution. 2009 (5-day Ph.D. course and workshop)

Leadership skills S. Hatzl. 2009 (2-day workshop)

Presenting Science. W. Große. 2008 (2-day workshop)

Socio-Economic and Institutional Dimensions of Global Change in the Marine Realm. Prof. M. Flitner, Prof. I. Heidbrink, Prof. H. Lange, Dr. C. Ohl, T. Markus 2008 (4-day workshop)

Tourism's impacts and strategies in coastal destinations. C. Bartels 2008 (2-day workshop)

Computer skills

Very good skills in MS Office Word, Excel, Powerpoint

Basic skills in Adobe Acrobat, Photoshop, Illustrator

Good skills in Endnote

Good skills in R/R Studio

Basic skills in MS Access

Languages

German (mother tongue)

English (fluent)

Bremen, 10.08.2021

Appendix

Publications

Articles

- Wietz M, **Bienhold C**, Metfies K, Torres-Valdés S, von Appen, W-J, Salter I, et al. (2021). The Polar Night Shift: Annual Dynamics and Drivers of Microbial Community Structure in the Arctic Ocean. *bioRxiv*, 2021.2004.2008.436999. doi: 10.1101/2021.04.08.436999.
- Fadeev E, Rogge A, Ramondenc S, Nöthig E-M, Wekerle C, **Bienhold C**, et al. (2021). Sea-ice retreat may decrease carbon export and vertical microbial connectivity in the Eurasian Arctic basins. *Nature Portfolio*. doi: 10.21203/rs.3.rs-101878/v1.
- Fadeev E, Cardozo-Mino MG, Rapp JZ, **Bienhold C**, Salter I, Salman-Carvalho V, et al. (2021). Comparison of Two 16S rRNA Primers (V3–V4 and V4–V5) for Studies of Arctic Microbial Communities. *Frontiers in Microbiology* 12(283). doi: 10.3389/fmicb.2021.637526
- Kiesel J, **Bienhold C**, Wenzhöfer F, Link H (2020). Variability in Benthic Ecosystem Functioning in Arctic Shelf and Deep-Sea Sediments: Assessments by Benthic Oxygen Uptake Rates and Environmental Drivers. *Frontiers in Marine Science* 7 (426).
- Rossel PE, **Bienhold C**, Hehemann L, Dittmar T, Boetius A (2020) Molecular Composition of Dissolved Organic Matter in Sediment Porewater of the Arctic Deep-Sea Observatory HAUSGARTEN (Fram Strait). *Frontiers in Marine Science* 7 (428).
- #*Hoffmann K, ***Bienhold C**, Buttigieg PL, Knittel K, Laso-Pérez R, Rapp JZ, Boetius A, Offre P (2020). Diversity and metabolism of *Woeseiales* bacteria, global members of marine sediment communities. *ISME J* 14, 1042–1056. <https://doi.org/10.1038/s41396-020-0588-4>.
- *authors contributed equally
- Varliero G, **Bienhold C**, Schmid F, Boetius A, Molari M (2019). Microbial Diversity and Connectivity in Deep-Sea Sediments of the South Atlantic Polar Front. *Frontiers in Microbiology* 10 (665).
- Fadeev E, Salter I, Schourup-Kristensen V, Nöthig E-M, Metfies K, Engel A, Piontek J, Boetius A, **Bienhold C** (2018). Microbial Communities in the East and West Fram Strait During Sea Ice Melting Season. *Frontiers in Marine Science* 5 (429).
- Braeckman U, Janssen F, Lavik G, Elvert M, Marchant H, Buckner C, **Bienhold C**, Wenzhöfer F. (2018). Carbon and Nitrogen Turnover in the Arctic Deep Sea: In Situ Benthic Community Response to Diatom and Coccolithophorid Phytodetritus. *Biogeosciences* 15 (21): 6537-6557.
- Rapp JZ, Fernández-Méndez M, **Bienhold C**, Boetius A (2018). Effects of Ice-Algal Aggregate Export on the Connectivity of Bacterial Communities in the Central Arctic Ocean. *Frontiers in Microbiology* 9 (1035).
- Buttigieg PL, Fadeev E, **Bienhold C**, Hehemann L, Offre P, et al. (2018) Marine microbes in 4D—using time series observation to assess the dynamics of the ocean microbiome and its links to ocean health. *Current Opinion in Microbiology* 43: 169-185.
- Hoffmann K, Hassenrück C, Salman-Carvalho V, Holtappels M, **Bienhold C** (2017) Response of bacterial communities to different detritus compositions in Arctic deep-sea sediments. *Frontiers in Microbiology* 8.

Pop Ristova P, **Bienhold C**, Wenzhöfer F, Rossel PE, Boetius A (2017) Temporal and Spatial Variations of Bacterial and Faunal Communities Associated with Deep-Sea Wood Falls. PLoS ONE 12: e0169906.

Jousset A, **Bienhold C**, Chatzinotas A, Gallien L, Gobet A, et al. (2017) Where less may be more: how the rare biosphere pulls ecosystems strings. ISME J.

Bienhold C, Zinger L, Boetius A, Ramette A (2016) Diversity and Biogeography of Bathyal and Abyssal Seafloor Bacteria. PLoS ONE 11(1):e0148016.

Rossel PE, **Bienhold C**, Boetius A, Dittmar T (2016) Dissolved organic matter in pore water of Arctic Ocean sediments: Environmental influence on molecular composition. Organic Geochemistry 97: 41-52.

Boetius A, Albrecht S, Bakker K, **Bienhold C**, Felden J, et al. (2013) Export of Algal Biomass from the Melting Arctic Sea Ice. Science 339: 1430-1432.

Bienhold C, Pop Ristova P, Wenzhöfer F, Dittmar T, Boetius A (2013) How deep-sea wood falls sustain chemosynthetic life. PLoS ONE 8(1): e53590.

Borda E, Kudenov JD, **Bienhold C**, Rouse G (2012) Towards a revised Amphinomidae (Annelida, Amphinomida): description and affinities of a new genus and species from the Nile Deep-sea Fan, Mediterranean Sea. Zoologica Scripta 41 (3): 307–325.

Bienhold C, Boetius A, Ramette A (2012) The energy-diversity relationship of complex bacterial communities in Arctic deep-sea sediments. The ISME Journal 6:724-732.

Böggemann M, **Bienhold C**, Gaudron SM (2012) A new species of Glyceridae (Annelida: "Polychaeta") recovered from organic substrate experiments at cold seeps in the eastern Mediterranean Sea. Marine Biodiversity 42 (1): 47-54.

Schauer R, **Bienhold C**, Ramette A and Harder J (2009) Bacterial diversity and biogeography in deep-sea sediments of the South Atlantic Ocean. The ISME Journal 4 (2): 159-170.

Book chapters and popular literature

Bienhold C, Boëtius A (2017) Mikroorganismen des Tiefseebodens: Vielfalt, Verteilung, Funktion. In: Hempel G, Bischof K, Hagen W, editors. Faszination Meeresforschung: Ein ökologisches Lesebuch. Berlin, Heidelberg: Springer Berlin Heidelberg. pp. 211-222.

Boetius A, **Bienhold C**, Schöttner S, Ufkes J, Ramette A (2009) Fingerabdrücke mikrobieller Gemeinschaften im Meer. BIOSpektrum 07/2009: 726-729. (popular literature, not peer-reviewed)

Selected presentations on Conferences and Workshops since 2012

Oral presentations

Bienhold C, Wenzhöfer F, Schourup-Kristensen V, Nöthig E-M, Krumpen T, Boetius A (2017). Pelagic-benthic coupling on the Laptev Sea continental slope between two contrasting years (1993 and 2012). Arctic Change Conference 2017. 11-15 December 2017. Quebec City, Canada.

Session convener.

Bienhold C, Wenzhöfer F, Boetius A (2015) Benthic bacterial communities in a changing Arctic Ocean – a case study on the Laptev Sea continental margin. Gordon Research Seminar – Polar Marine Sciences, 14-15 March 2015, Lucca, Italy.

Bienhold C, Rapp J Z, Fernández-Méndez M, Boetius A (2014) Arctic Change: from the surface to the bottom during the record summer sea-ice minimum in 2012. Arctic Change Conference, 8-12 December 2014, Ottawa, Canada.

Bienhold C, Wenzhöfer F, Boetius A (2013) Benthic bacterial communities in a changing Arctic Ocean – a case study on the Laptev Sea margin (Arctic Ocean). Annual Conference of the Association for General and Applied Microbiology (VAAM), 10-13 March 2013, Bremen, Germany.

Bienhold C, Zinger L, Boetius A, Ramette A (2012) Global biogeographic patterns of bacterial communities in deep-sea surface sediments. Gordon Research Seminar – Marine Microbes, 23-24 June 2012, Lucca, Italy. **Invited speaker**

Bienhold C, Pop Ristova P, Wenzhöfer F, Boetius A (2012) Wood falls as biological and biogeochemical hotspots in the deep sea. DIWOOD workshop, 23-24 January 2012, Bremen, Germany.

Poster presentations

Bienhold C, Wenzhöfer F, Boetius A (2015) Benthic bacterial communities in a changing Arctic Ocean – a case study on the Laptev Sea continental margin. Gordon Research Conference – Polar Marine Sciences, 15-20 March 2015, Lucca, Italy.

Bienhold C, Wenzhöfer F, Boetius A (2014) Changes in a benthic ecosystem on the Laptev Sea continental margin between two contrasting years (1993 and 2012). Arctic Change Conference 2014, 8-12 December 2014, Ottawa, Canada.

Bienhold C, Wenzhöfer F, Boetius A (2013) Benthic bacterial communities in a changing Arctic Ocean – a case study on the Laptev Sea continental margin. SAME-13, September 8-13, 2013, Stresa, Italy.

Bienhold C, Zinger L, Boetius A, Ramette A (2012) Global biogeographic patterns of bacterial communities in deep-sea surface sediments. Gordon Research Conference – Marine Microbes, 24-29 June 2012, Lucca, Italy. **Outstanding Young Researcher Poster Award**