

April 24

CV of Laurenz Thomsen, Professor at Gothenburg University

Born on 5th January 1963 in Hamburg, married, 2 children

Nationality: German



Education

| <u>Institution</u> | <u>Field of Study</u> | <u>Degree</u> | <u>Date</u> |
|--|-------------------------------------|---------------|-------------|
| University of Kiel | Biology/Geology | Diploma | 1989 |
| University of Kiel | Biological Oceanography | Doctorate | 1992 |
| Sonderforschungs- bereich 313 | Marine geology and marine chemistry | | |
| NIVA, Oslo | Guest Scientist (EU stipend) | | 1996 |
| NIOZ, NL | Guest Scientist | | 1997 |
| University of Kiel | Habilitation in Oceanography | | 1998 |
| U Washington, Seattle USA as Heisenberg Fellow of the DFG | Sedimentology | | 1999-2001 |

[Google Scholar](#)

[Researchgate](#)

[LinkedIn](#)

Present faculty positions

University of Gothenburg, Sweden (since September 2022), Full Professor, [Department of Marine Sciences](#)
[Constructor University Bremen](#) (formerly named "Jacobs University Bremen")

2001 - 2022 Geosciences (since 2001, since 2006 as Full Prof.)

[U Washington, Seattle USA](#) Oceanography (since 2004, since 2008 Affiliate Full Prof.)

Honors, Awards

1998 Recipient of a Heisenberg Fellowship (Affiliate Associate Professor) of the Deutsche Forschungsgemeinschaft DFG

2018 "Taishan Expert" of Shendong Province, China, on carbon sequestration via algae

Laboratory:

2024 [Experimental Sedimentology and Seafloor Robot Laboratory at Kristineberg Center](#)

Scientific expertise

Particle transport in the benthic boundary layer

Carbon fluxes in the ocean

Marine restoration and environmental monitoring

Marine technology with focus on robots

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Cabled deep sea observatories
CO₂ mitigation

Current Research Projects:

[REDRESS](#): Restoration of deep sea areas

Digi4Eco: Digital Twin for marine monitoring

DHI-plume: plumes dispersal via aggregation behind deep sea mining vehicles

Industry experience and patents

Coordination of EU-Equinox [CORAMM](#) project on environmental monitoring around drill cutting release sites.

Coordination of RWE Algae project on carbon sequestration

Collaboration with Chinese industry partners for development of joint (utility) patents. "Robotfish", Qingdao; "Haizhibao", Weihai. Licensing technologies to China.

Co-founder of [iSeaMC](#), a robotics company official spinoff of the ROBEX Helmholtz Project with licensing technologies to SeaTerra, Germany

1 patent pending with JUB-SIT on Deep Sea Mining.

2 patents and 2 utility patents as shareholder of the company iSeaMC

1. List of publications

Aguzzi, J., Thomsen, L. et al., (2024). New Technologies for Monitoring and Upscaling Marine Ecosystem Restoration in Deep-Sea Environments. The EU Redress project. *Engineering* (Elsevier)

Vornsand, I., Boehringer, L., Thomsen, L., & Purser, A. (2024). Short and decadal impacts of seafloor physical perturbation on the abundances of Lebensspuren 'traces of life' in the Peru Basin manganese nodule province. *Marine Biodiversity*, 54(1), 1-10.

Dey, R., Tena, F. O., Wang, S., Messmann, J. M., Steinweg, C., Thomsen, C., ... & Thomsen, L. (2024). Exploring advanced phytoremediation strategies for resource recovery from secondary wastewater using a large scale photobioreactor. *Bioresource Technology*, 391, 129986.

Falahzadeh, A., Toma, D.M., Francescangeli, M., Chatzievangelou, D., Nogueras, M., Martínez, E., Carandell, M., Tangerlini, M., Thomsen, L., Picardi, G. and Le Bris, M., (2023). A New Coastal Crawler Prototype to Expand the Ecological Monitoring Radius of OBSEA Cabled Observatory. *Journal of Marine Science and Engineering*, 11(4), p.857.

Chatzievangelou, D., Thomsen, L., Le Besnerais, C. D., Purser, A., & Aguzzi, J. (2022). Transects in the deep: opportunities with tele-operated resident seafloor robots. *Frontiers in Marine Science*, 1572.

Haaboom, S., Schoening, T., Urban, P., Gazis, I.Z., Stigter, H.D., Gillard, B., Baeye, M., Hollstein, M., Purkiani, K., Reichart, G.J. and Thomsen, L. (2022). Monitoring of anthropogenic sediment plumes in the Clarion-Clipperton Zone, NE equatorial Pacific Ocean. *Frontiers in Marine Science*, p.699

Wang, S.,...Thomsen, L. et al. (2022). Submerged hollow-fiber-ultrafiltration for harvesting microalgae used for bioremediation of a secondary wastewater, *Separation and Purification Technology* 120744 IF 7.3 CS 9.9

Weaver, P., ...Thomsen, L. et al. (2022). Assessing plume impacts caused by polymetallic nodule mining vehicles, *Marine Policy* 139 (2022): 105011. IF 5.55, CS 7.9

Gillard, B., Harbour, R. P., Nowald, N., Thomsen, L., & Iversen, M. H. Vertical distribution of particulate matter in the Clarion Clipperton Zone (German sector)—potential impacts from deep-sea mining discharge in the water column. *Frontiers in Marine Science*, 122. IF 4.91, CS 5.0

Aguzzi, J, Flögel, S, Marini, S, Thomsen, L, Albiez, J, Weiss, P, Picardi, G, Calisti, M, Stefanni, S, Mirimin, L, Vecchi, F, Laschi, C, Branch, A, Clark, EB, Foing, B, Wedler, A, Chatzievangelou, D, Tangherlini, M, Purser, A, Dartnell, L, Danovaro, R. 2022. Developing technological synergies between deep-sea and space research. *Elementa: Science of the Anthropocene* 10(1). IF 6.05, CS 8.5

Purkiani, K., Gillard, B., Paul, A., Haeckel, M., Haalboom, S., Greinert, J., Stigter, H.D., Hollstein, M., Baeye, M., Vink, A. and Thomsen, L., 2021. Numerical simulation of deep-sea sediment transport induced by a dredge experiment in the northeastern Pacific Ocean. *Frontiers in Marine Science*, p.1175. IF 4.91, CS 5.0

Grossman, Amit Dan, Yonas Zeslase Belete, Sammy Boussiba, Uri Yogev, Clemens Posten, Franziska Ortiz Tena, Laurenz Thomsen et al. "Advanced near-zero waste treatment of food processing wastewater with water, carbon, and nutrient recovery." *Science of The Total Environment* 779 (2021): 146373

Rammelkamp, K., Schröder, S., Ortenzi, G., Pisello, A., Stephan, K., Baqué, M., Hübers, H.W., Forni, O., Sohl, F., Thomsen, L. and Unnithan, V., 2021. Field investigation of volcanic deposits on Vulcano, Italy using a handheld laser-induced breakdown spectroscopy instrument. *Spectrochimica Acta Part B: Atomic Spectroscopy*, p.106067.

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- Aguzzi, J., Flexas, M. D. M., Flögel, S., Lo Iacono, C., Tangherlini, M., Costa, C., Thomsen, L. ... & Danovaro, R. (2020). Exo-ocean exploration with deep-sea sensor and platform technologies. *Astrobiology, Vol 20, No. 7*.
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- Catzievangelou, D., Aguzzi, J., Scherwath, M., & Thomsen, L. (2020). Quality Control and Pre-Analysis Treatment of the Environmental Datasets Collected by an Internet Operated Deep-Sea Crawler during Its Entire 7-Year Long Deployment (2009–2016). *Sensors, 20*(10), 2991.
- Chatzievangelou, D., Aguzzi, J., Ogston, A., Suárez, A., & Thomsen, L. (2020). Visual monitoring of key deep-sea megafauna with an Internet Operated crawler as a tool for ecological status assessment. *Progress in Oceanography, 102*321
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- Belete, Y. Z., Leu, S., Boussiba, S., Zorin, B., Posten, C., Thomsen, L., ... & Bernstein, R. (2019). Characterization and utilization of hydrothermal carbonization aqueous phase as nutrient source for microalgal growth. *Bioresource technology, 290*, 121758.
- Aguzzi, J., Chatzievangelou, D., Marini, S., Fanelli, E., Danovaro, R., Flögel, S., ... & Thomsen, L. (2019). New high-tech flexible networks for the monitoring of deep-sea ecosystems. *Environmental science & technology, 53*(12), 6616-6631.
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- Han, J., Thomsen, L., Pan, K., & Thomsen, C. (2018). Two-step process: enhanced strategy for wastewater treatment using microalgae. *Bioresource technology*.
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2. Description of pedagogical expertise

Teaching since 1992 as Postdoc, since 1998 as lecturer, from 2001-2022 as professor at Jacobs University, at the Max Planck Institute in Bremen (2010-2015), at the University of Washington (since 2004), since September 2022 at the University of Gothenburg.

Graduate Students Granted Higher Degrees as 1st supervisor:

20 graduate students (15 PhD, 5 Master) plus additional 26 graduate students as Co-Supervisor
From 2016-2019 I coordinated an international summer school on extreme environment research on the island of Vulcano, Sicily. The trainees cover a broad spectrum of expertise, from bachelor students to post-docs / engineers and even trainers for astronauts. The field trip is organized with DLR (German Aerospace) and results from the ROBEX program (<https://www.robex-allianz.de/en/field-trip/>).

April 24

From 2005 - 2009 I was WP leader for training and outreach within the EU Hermes project.

Community school support

I was involved in activities to support local middle- and high schools. My wife and I supervised projects of 12 – 18 year old pupils in my laboratory. Over the years many of them received prizes from the City for their work. 4 of them went to the national finals and won precious prizes (summer school at the Uni Rhode Island and MIT) or even gold medal in the international science Olympics. Some of those pupils came from families who never had a higher education. All those pupils were very motivated after that experience and pursuit successful careers in academia or industry.

Committee work

2002 - 2006 Admission

2008 - 2014 Promotion of professorships, adjunct professors

2008 - 2011 Program coordinator ESS program

Since 2022 FOB Research Committee

Public Outreach

Bremen Marine Days, Bremen Nord Open House, Volkshochschule, Haus der Wissenschaft, SAT1, [New Scientist](#), [Die Zeit](#), [Ocean Networks Canada](#)

| Graduate / PhD courses | Time | ECTS |
|---|-------------|------|
| Dynamics of Marine Systems II | 2007-2009 | 5 |
| Benthos (at UW, Seattle, annually with J.Deming) | 2004 - | 5 |
| Oceanography III: selected topics | 2004 | 5 |
| Advanced Earth and Environmental Sciences Field Lab in Italy | 2016 - 2021 | 5 |
| Marine Geology (At Max Planck Institute Bremen) | 2010 - 2015 | 5 |
| Lab/Research - Lab Rotation in Data Management, GIS and Visualization | 2008 | 2.5 |
| Fluid dynamics workshop (at MPI Bremen) | 2012 - 2015 | 5 |
| | | |
| At University of Gothenburg | | |
| Marine Geology | 2022 - | |
| Marine Environmental Geology | 2022 - | |
| | | |
| | | |
| Undergraduate courses | | |
| The Earth-Ocean System and its Evolution | 2018 - 2019 | 2.5 |
| Dynamics of Marine Systems I | 2007 - 2014 | 2.5 |
| Introduction to Physical Oceanography | 2005 - | 2.5 |

| | | |
|---|-------------|-----|
| Structure and Dynamics of Earth's Atmosphere and Oceans | 2018- 2019 | 5 |
| General Earth and Space Sciences I (different course names) | 2008 - 2014 | 5 |
| General Geosciences and Astrophysics II | 2003 - 2007 | 5 |
| USC - Science meets the public (1 prof. from social sciences and me) | 2004 | 2.5 |
| USC – Energy (1 prof. from social sciences and me) | 2005 | 2.5 |
| Current Topics in Earth and Marine Sciences | 2018 - 2022 | 2.5 |
| Climate Change | 2018 - 2022 | 2.5 |
| Extreme Natural Hazards, Disaster Risks and Societal Implications | 2017 - 2022 | 2.5 |
| Field trip to the Tjärnö labs. (10 days in June – August) | 2006 - 2015 | 5 |
| Field trip to Vulcano. (10 days in June) | 2016 - 2022 | 5 |
| | | |
| At University of Gothenburg | | |
| The Blue Planet | 2022 - | |
| Air, water and sediment interactions | 2022 - | |
| | | |
| | | |
| | | |
| Jugend Forscht (https://www.jugend-forscht.de/information-in-english.html) | | |
| Science projects for 14 - 21 year old pupils | 2006 - 2016 | |

3. Description of experience of leadership, administration and cooperation with the surrounding community.

From 2001 to 2022: director of OceanLab with a working group of varying size (1-3 postdocs, 1 – 8 PhD students, 1-3 Master students. 1 – 3 technicians, 0 – 1 team assistants), all 3rd party funded except 0.5-2 technicians. Since 2024 coordinating of my [new laboratory](#) at Kristineberg Center, Sweden. Member of the [Senate Commission](#) on Oceanography of DFG (2012 to 2017) which evaluated project proposals and coordinated the activities of the DFG in the field of marine research, discussed the relevant Priority Programs and Collaborative Research Centers and decided on shiptime and new instrumentation for the large German research vessels “Meteor” and “Maria Merian”. Associate editor of “[Elementa](#)” (since 2013). Work package leader of five international projects, Coordinator of seven (inter)national projects with science and industry. Member of the Annette Barthelt Foundation for the promotion of young scientists in oceanography; Member of the student admission group at Jacobs University (2002 – 2006); Program coordinator for Earth&Space Sciences study program at Jacobs University (2008-2011). PI in > 24 research cruises to the North Sea, Baltic Sea, North Atlantic, Arctic and NE Pacific. Chief scientist on RV Alkor and co-chief scientist on RV Meteor and Polarstern. Head of science advisory board for the [LoVe Observatory](#) (2018). Community work for schools.