

C. Gabriel David

Dr.-Ing.

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"We cannot solve our problems by the same kind of thinking we used when we created them." Albert Einstein

Personal Information

Full Name	Christoph <u>Gabriel</u> David
Date of Birth	20.04.1986
Place of Birth	Bad Hersfeld, Germany
Citizenship	German, European
OrcID	0000-0002-6733-0288

Professional Experience

2021/08 – present	Junior Research Group Leader , <i>Leichtweiß-Institute for Hydraulic Engineering and Water Resources</i> , Technische Universität Braunschweig Leading the Junior Research Group "Future Urban Coastlines" and permanently supervising 2 PhDs and another junior researcher
2014/04 – 2021/08	Research Associate , <i>Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering</i> , Leibniz University Hannover, Germany Working on two research projects and writing PhD thesis

Education

2014/05 – 2021/03	Dissertation (Dr.-Ing., German PhD equivalent) , <i>Leibniz University Hannover</i> , Hannover, Germany, Thesis title: "From coastal protection to "low-regret" coastal adaptation. Changing perspectives on impacts and risk assessment when dealing with sea level rise", Oral Defense: 16.08.2021 with great distinction ("magna cum laude")
2011/10 – 2014/04	Civil Engineering Studies (Master's Degree) , <i>Leibniz University Hannover</i> , Hannover, Germany, Degree: Master of Science, Thesis title: "Determination of hydraulic loads on a current wall due to ships wakes by means of a (depth-integrated) Boussinesq-type model in the port of Hamburg" (thesis grade 1.3 "excellent") Field of Study: Water-, Environmental and Coastal Engineering; Specialization: Coastal Engineering
2007/04 – 2011/09	Civil Engineering (Bachelor's Degree) , <i>University of Applied Sciences, Mainz</i> , Mainz, Germany, Degree: Bachelor of Engineering, Thesis title: "Sensitivity Analysis with SWAN (Simulating WAVes Nearshore) – comparison between Model and Gauge Data" (thesis grade 1.3 "excellent") Field of Study: International Civil Engineering; Specialization: Environmental Engineering and Planning

Academic Honors

Awards and Recognitions

- 2019 **Student Paper Award**, *first price, awarded at the Coastal Structures Conference*
Best student paper and presentation on the Coastal Structures Conference
- 2015 **Victor-Rizkallah-Award**, *awarded by German Port Technology Association - HTG (professional association in hydraulic, port and coastal engineering), Bremen, Germany*
In recognition of an outstanding Master's thesis
- 2011 **Prof. Paschen Sponsorship Award**, *first price, awarded by IBC Ingenieurbau Consult, Mainz, Germany*
In recognition of an outstanding for an outstanding Bachelor's thesis on the universities of applied sciences Mainz and Weimar

Awards of supervised students

- 2017/2018 **Sharief Füglein**, *Ludwig Franzius Sponsors Award 2022*, recognition for outstanding Bachelor's thesis
Awarded by the Society of Sponsors for the Ludwig Franzius Institute, Germany
- 2016 **Tim Rospunt**, *Victor-Rizkallah-Award 2016*, recognition for outstanding Master's thesis
Awarded by Victor Rizkallah-Foundation, Germany

Teaching

Lectures and Courses

- 2017/10 – 2020/10 **River Hydraulics**, *Leibniz Universität Hannover, Germany*, role: Exercises and Examination (institute's part 50%; 3 of 6 ECTS)
Participants/year: ≈25-30

Supervision or Co-supervision of PhD Thesis

Lifetime Summary: Supervision of PhD Thesis (past 0, in progress 2)

Supervision of Master, and Bachelor Thesis as well as Directed Studies

Lifetime Summary: Master (5), Bachelor (11), Directed Studies (19)

- 2007 – 2021 **Breakdown of annually supervised students:**, *2014: 1 student, 2015: 6 students, 2016: 15 students, 2017: 3 students, 2018: 5 students, 2019: 4 students, 2021: 1 student*

Academic and Administrative Services

Reviewer Activity

A summary of journal-related activities can be found through Publons

- Since 2021/04 **Reviewer – Journals**, *Ocean Engineering, Elsevier • International Journal on Geomathematics, Springer • Marine Geodesy, Taylor & Francis*

Association Memberships and Activities

German Port Technology Association (HTG)

Gesellschaft der Förderer des Franzius-Instituts e.V.

International Experience and Scholarships

- 2017 **JSPS Scholarship**, *Japan Society for the Promotion of Science (JSPS) to Tohoku University Sendai*
Visiting the International Research Institute of Disaster Science (IRIDeS); Profs. Volker Roeber, Jeremy Bricker and Fumihiko Imamura
- 2009 – 2010 **ERASMUS Scholarship**, *European Union student exchange programme to Chalmers University, Gothenburg, Sweden*
Studying courses in the "Geo and Water Engineering" Master's programme

Skills and Qualifications

Languages

German	Mother Tongue
English	Fluent
Swedish	Conversational
French	Basic Level
Spanish	Basic Level
Dutch	Basic Level

Computer Knowledge

Hydraulics	BOSZ, SWAN, REEF3D, Hec-Ras
Computing	Python, MatLab, Bash Scripting, C#, C++
CAD	AutoCAD, Blender, SketchUp
Geodetic Software	QGIS, Python Modules (Xarray, Rasterio), RTKLIB
Typesetting	LaTeX
Office software	MS Office (Word, Excel, etc.) as well as Open Source and Cloud alternatives
Other	Linux, High Performance Computing (Cluster Computing), Docker/Singularity, GitHub, Raspberry Pi (and other Single Board solutions)

Professional Education and Short courses

- 2022/02 – 2022/05 **Leadership Workshop**, *Two workshops on "Leadership in Multicultural and Interdisciplinary Teams" as well as on "Conflict Management and Communication"*, Postdoc Programme, Technische Universität Braunschweig, six (6) hours per workshop (total twelve hours)
- 2016/09 **RISC-KIT Summer School**, *Interdisciplinary summer school (physical sciences, engineering and social sciences) on flood risk management within the RISC-KIT project (under the Climate-ADAPT framework)*, Organized by Deltares at University of Ferrara, Italy, five (5) days

Publications

Symbol † indicates supervised graduate or PhD students.

Life-time summary

H-index from Scopus (h=4) and Google Scholar (h=4, i10=3). Software Projects (1), Books or book chapters (1), Journal publications (4), Work in preparation (3), Peer-reviewed conferences (3),

Software projects

- since 2022/06 Validation of the SFLOW module within (REEF3D) for riverine applications, see Bihs (2011) and Kamath (2015)
- 2013/05 – 2017/09 Implementation and validation of ship term through pressure contour in Boussinesq equation software package "Boussinesq Ocean and Surf Zone" (BOSZ; see Roeber & Cheung, 2012) as well as own publication [J1] and conference contributions [C1,C2]

Books or book chapters

- [B1] **C. G. David**, N. Schulz, and T. Schlurmann. "Assessing the Application Potential of Selected Ecosystem-Based, Low-Regret Coastal Protection Measures". In: *Ecosystem-Based Disaster Risk Reduction and Adaptation in Practice*. Springer International Publishing, 2016, pp. 457–482. DOI: 10.1007/978-3-319-43633-3_20. URL: https://doi.org/10.1007/978-3-319-43633-3_20.

Journal publications

- [J4] **C. G. David**, A. Hennig, B. M. W. Ratter, V. Roeber, Zahid, and T. Schlurmann. "Considering socio-political framings when analyzing coastal climate change effects can prevent maldevelopment on small islands". In: *Nature Communications* 12.1 (Oct. 2021). DOI: 10.1038/s41467-021-26082-5. URL: <https://doi.org/10.1038/s41467-021-26082-5>.
- [J3] **C. G. David**, N. Kohl[†], E. Casella, A. Rovere, P. Ballesteros, and T. Schlurmann. "Structure-from-Motion on shallow reefs and beaches: potential and limitations of consumer-grade drones to reconstruct topography and bathymetry". In: *Coral Reefs* 40.3 (May 2021), pp. 835–851. DOI: 10.1007/s00338-021-02088-9. URL: <https://doi.org/10.1007/s00338-021-02088-9>.
- [J2] **C. G. David** and T. Schlurmann. "Hydrodynamic Drivers and Morphological Responses on Small Coral Islands – The Thoondu Spit on Fuvahmulah, the Maldives". In: *Frontiers in Marine Science* 7 (Oct. 2020). DOI: 10.3389/fmars.2020.538675. URL: <https://doi.org/10.3389/fmars.2020.538675>.
- [J1] **C. G. David**, V. Röber, N. Goseberg, and T. Schlurmann. "Generation and Propagation of Shipborne Waves - Solutions from a Boussinesq-type Model". In: *Coastal Engineering* 127 (Sept. 2017), pp. 170–187. DOI: 10.1016/j.coastaleng.2017.07.001.

Peer-reviewed conferences

- [C3] **C. G. David**, T. Schlurmann, and V. Roeber. "Coastal Infrastructure on Reef Islands — the Port of Fuvahmulah, the Maldives as Example of Maladaptation to Sea-Level Rise?" In: *Proceedings of the Coastal Structures Conference 2019*. Ed. by N. Goseberg and T. Schlurmann. 2019.
- [C2] **C. G. David**, N. Goseberg, V. Roeber, A. Hildebrandt, and T. Schlurmann. "Extension and application of a boussinesq-type model for ship-wake waves". In: *Proceedings of SCACR2017 - International Short Course/Conference on Applied Coastal Research*. Abstract accepted. Santander, Spain, Sept. 2017.
- [C1] **C. G. David**, V. Röber, and N. Goseberg. "Introducing a pressure term for ship-induced waves into a Boussinesq-type model". In: *Proceedings of the 7th Chinese-German Joint Symposium on Hydraulic and Ocean Engineering (CGJOINT 2014)*. Leibniz Universität Hannover, Germany, Sept. 2014.

Scientific Data

- [D1] **C. G. David**, P. Ballesteros, and T. Schlurmann. *Coastal Digital Elevation Models and Transects of the Reef Island Fuvahmulah, the Maldives*. 2020. DOI: 10.5281/zenodo.4304049. URL: <https://zenodo.org/record/4304049>.

Talks and invited talks

- 2020 Building Biopolis, Session: "Global Challenges and Solutions for Coastal Areas", DWIH Future Forum, (online)
- 2016 10 years anniversary workshop of the junior members within the German Port Technology Association (HTG), Panel Discussion, Wismar, Germany

Contribution to research projects

Life-time summary: 5, Total Budget: ≈2.000.000 €

- 2021/07 – 2025/06 **Junior Research Group: Future Urban Coastlines Individualized and Eco-Integrated Coastal Protection using Digital Technologies**, *Commissioned by: DFG and Technische Universität Braunschweig, Exu-Funds*, Budget: total 1.015.028,00 €, Role: Research Group Leader
Carried out at Leichtweiß-Institute for Hydraulic Engineering and Water Resources, division Hydromechanics, Coastal and Ocean Engineering, in cooperation with Institute for Geoecology and Institute for Structural Design (all TU Braunschweig, Germany).
- 2021/01 – 2022/04 **Dike reinforcement on Helgoland – A physical modelling study**, *Commissioned by: INROS LACKNER, SE*, Budget: total 171.200,00 €, Role: Researcher
Carried out at Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering, Leibniz Universität Hannover in cooperation with Leichtweiß-Institute fir Hydraulic Engineering and Water Resources at TU Braunschweig.
- 2016/08 – 2019/07 **Dealing with change in SIDS: societal action and political reaction in sea level change adaptation in Small Island Developing States (DICES)**, *Commissioned by: Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)*, Budget: total 320.088,00 € (institute's share), Role: Researcher, Project Manager
Carried out within the The Special Priority Program (SPP-1889) Regional Sea Level Change & Society at Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering, Leibniz Universität Hannover, in cooperation with the Universität Hamburg (UHH), Institute of Geography (Integrative Geography), Kiel University (CAU), Department of Economics (Environmental and Resource Economics) and Maldives Meteorological Service.
- 2013/06 – 2017/07 **Expert network and twinning institute on climate and societal change for Southeast Asia (TWIN-SEA)**, *Commissioned by: Federal Ministry of Education and Research (German: Bundesministerium für Bildung und Forschung, BMBF)*, Budget: total 510.176,84 €, Role: Researcher, Project Manager
Carried out at Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering, Leibniz Universität Hannover, Germany, in cooperation with the Indonesian Institute of Sciences (LIPI; Jakarta, Indonesia) and United Nations University, Institute for Environment and Human Security (UNU-EHS; Bonn, Germany).
- 2013/09 – 2014/03 **Adaptation of an existing Boussinesq wave model (Boussinesq Ocean Surf Zone model, BOSZ) to simulate ship-induced waves around a flow guide wall**, *Commissioned by: Hamburg Port Authority, HPA*, Budget: 28.000,00 €, Role: Research Assistant
Carried out at Ludwig-Franzius-Institute for Hydraulic, Estuarine and Coastal Engineering, Leibniz Universität Hannover, Germany.

Braunschweig, August 15, 2022



(C. Gabriel David)