

# CURRICULUM VITAE

Jan Frederik Niederau

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## CURRENT POSITION

since 01/2019      Research Associate, Postdoc  
Geothermal Energy and Geofluids, Institute of Geophysics  
Department of Earth Sciences  
ETH Zürich, Switzerland

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## TERTIARY EDUCATION

06/2012 - 04/2018      Research Associate, PhD Student  
Institute for Applied Geophysics and Geothermal Energy  
E.ON Energy Research Center  
RWTH Aachen University, Germany  
Thesis submitted, Title: Modelling the Influence of Uncertain Reservoir Parameters on the Occurrence of Natural Convection in Geothermal Reservoirs

03/2012      M.Sc.in European Master Program Geosciences of Basins and Lithosphere (Basin Master), RWTH Aachen University, Université de Rennes 1  
Aachen, Germany; Grade 1.4  
Thesis title: “Crystallization in porous microreactors”  
Supervisors: Christoph Hilgers, Janos Urai

10/2010–01/2011      Semester abroad at the Université de Rennes 1, Rennes, France

07/2009      B.Sc. in Applied Geosciences, RWTH Aachen University  
Aachen, Germany; Grade 1.9  
Geological field work (mapping thesis) Bornholm, Denmark; Grade 1.3  
Supervisor: Stefan Back

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## TEACHING/WORK EXPERIENCE

05/2018-12/2018	Research Associate at the Chair of Computational Geoscience and Reservoir Engineering, RWTH Aachen University
10/2015-12/2018	Exercise Course Administration (“Geothermics” MSc-level, and “Angewandte Geothermik” BSc-level) Evaluation marks: 1.7 - WiSe 2015/2016, 1.4 - SoSe 2016
12/2015-08/2016	Research Associate in the Exploratory Teaching Space Project “Interaktive blended Learning Programmierübungen mit Jupyter Notebooks“ Aachen Institute for Advanced Study in Computational Engineering Science, AICES, Prof. J. Florian Wellmann
04/2011-08/2011	Exercise Course Assistance (“Geothermics” MSc-level, and
10/2008-04/2010	“Angewandte Geothermik” BSc-level)
06/2007-07/2010	Student assistant at the GIA (Geological Institute Aachen, RWTH Aachen University) Tutor in annual geological field mapping course
11/2006-06/2007	Teaching assistant at the IML (Institut für Mineralogie und Lagerstättenlehre, RWTH Aachen University)

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## AWARDS AND SCHOLARSHIPS

2015	Deutscher Akademischer Austauschdienst (DAAD), German international exchange scholarship for attendance at the World Geothermal Congress, Melbourne, Australia
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## SELECTED PUBLICATIONS

Peer-reviewed Journal	Ebigbo, A., Niederau, J., Marquart, G., Dini, I., Thorwart, M., Rabbel, W., ... & Clauser, C. Influence of depth, temperature, and structure of a crustal heat source on the geothermal reservoirs of Tuscany: numerical modelling and sensitivity study. <i>Geothermal Energy</i> , 4(1), 1, 2016. Niederau, J., Ebigbo, A., Marquart, G., Arnold, J., & Clauser, C. On the impact of spatially heterogeneous permeability on free convection in the Perth Basin, Australia. <i>Geothermics</i> , 66, 119-133, 2017. Börsing, N., Wellmann, J. F., Niederau, J., Regenauer-Lieb, K. Entropy production in a box: Analysis of instabilities in confined hydrothermal systems. <i>Water Resources Research</i> , vol. 53(9), 7716-7739, 2017. Back, S., Van Gent, H., Reuning, L., Grötsch, J., Niederau, J., Kukla, P. 3D seismic geomorphology and sedimentology of the Chalk Group, southern Danish North Sea. <i>Journal of the Geological Society London</i> , vol. 168, Nr. 2, 393-406, 2011.
Extended abstracts	Niederau, J., Ebigbo, A., Marquart, G., Inversi, B., Gola, G., Scrocca, D., Manzella, A., Montegrossi, G. Assessment and simulation of various utilization scenarios of a medium-enthalpy reservoir in Italy (Guardia dei Lombardi). <i>Proceedings World Geothermal Congress</i> , 19-25 April 2015, Melbourne, Australia

Niederau, J., Büsing, H., Clauser, C., Justi, T., Dini, I. & Bertani, R. Impact of an uncertain structural model on geothermal reservoir simulations. *Proceedings European Geothermal Congress 2016*, Strasbourg

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## RECENT EXTRACURRICULAR AND PEER-REVIEW ACTIVITIES

since 2016	Reviewer for Geochemistry, Geophysics, Geosystems “G-Cubed“, Geothermal Energy
02/2016	Participation at 3 day workshop: ExAcT ”Blended Learning Winter School
2006-2007	Student Member of the examination board “Applied Geophysics“

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## SUPERVISION OF BACHELOR AND MASTER PROJECTS

BSc (completed)	Markus Nolden, “Vorkommen und Verbreitung von geothermischen Reservoirgesteinen in der Europäischen Union“ Tobias Giesgen, “Einfluss der Wärmeleitfähigkeit anisotroper Gesteine auf die Modellierung geothermischer Reservoirs“ Gerome Körbel “Einfluss heterogener Permeabilitätsverteilung auf die Wärmeerzeugung und Wirtschaftlichkeit einer geothermischen Dublette in Tondern, Dänemark“
MSc (completed)	Nele Börsing, “Entropy Production in Convective Hydrothermal Systems”, completed with distinction Patrick Elison, “Influence of uncertainty in thermal conductivity on thermal basin modelling” Sergio Gomez Mendoza, “Assessment of different geothermal doublet scenarios for the reservoir Guardia dei Lombardi (Italy) - Development of a numerical tool for optimal positioning of geothermal doublet installations”

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## LANGUAGES, SKILLS AND INTERESTS

Languages	German (Mother tongue) English (Fluent spoken and written) French (Conversation knowledge)
Computer Skills	Programming skills in several programming and scripting languages (Python, Matlab, FORTRAN 90 and others), experience with High-Performance Computing Extensive practical knowledge of coupled multi-phase flow simulations (SHEMAT-Suite), 3-D geological modelling (GeoModeller, GoCad, Noddy, Global Mapper) and geographic information systems (QGIS), practical knowledge of seismic interpretation software (Petrel, KingdomSuite)
Interests	Rock climbing, Music, Podcasting

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## REFERENCE PERSONS

PD Dr. Stefan Back	Geological Institute RWTH Aachen stefan.back@emr.rwth-aachen.de
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Dr. Anozie Ebigbo     Geothermische Energie u. Geofluid, Dep. of Earth Sciences, ETH Zürich  
anozie.ebigbo@erdw.ethz.ch

Prof. Dr. Christoph Hilgers     Head of Structural Geology, Karlsruhe Institute of Technology - KIT  
chistoph.hilgers@kit.edu

Prof. Jan Florian Wellmann, PhD     Head of Computational Geoscience and Reservoir Engineering, RWTH-Aachen University  
florian.wellmann@aices.rwth-aachen.de

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Date, Signature