



# Veröffentlichungen

des Helmholtz-Zentrums für Umweltforschung – UFZ

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Programm-Topic 8  
„Georesources for the Energy Transition and a High-Tech Society“

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## Vorbemerkung

Das vorliegende Veröffentlichungsverzeichnis umfasst die im Jahr 2021 erschienenen Publikationen des Programm-Topics 8 „Georesources for the Energy Transition and a High-Tech Society“ des Helmholtz-Programms „Changing Earth – Sustaining our Future“ des Forschungsbereichs Erde und Umwelt, die von Beschäftigten des Helmholtz-Zentrums für Umweltforschung – UFZ verfasst, mitverfasst oder herausgegeben wurden.

Ist eine Publikation zusätzlich noch weiteren Programm-Topics zugeordnet, wird dies durch einen Hinweis auf Haupt- und Nebenzuordnungen ersichtlich.

Redaktionsschluss für diese Publikationsliste war der 31.01.2022.

UFZ-Beschäftigte sind im Unterschied zu Externen bei allen Publikationen durch **fette Schrift** hervorgehoben.

Das anschließende Autorenregister verzeichnet alle UFZ-Namen in alphabetischer Reihenfolge mit den laufenden Nummern der zugehörigen Publikationen.

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## Veröffentlichungen in ISI/Scopus-gelisteten Zeitschriften/Schriftenreihen

1. Águila, J.F., Montoya, V., Samper, J., Montenegro, L., Kosakowski, G., Krejci, P., Pfingsten, W. (2021):  
Modeling cesium migration through Opalinus clay: a benchmark for single- and multi-species sorption-diffusion models  
*Comput. Geosci.* **25** (4), 1405 - 1436
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Microbial identification, high-resolution microscopy and spectrometry of the rhizosphere in its native spatial context  
*Front. Plant Sci.* **12**, art. 668929
3. Binder, M., Hahnewald, A., Händel, F., Prommer, H., Engelmann, C., Burghardt, D., Stock, P., Tritschler, F., Liedl, R., Walther, M. (2021):  
Single-rate dual-domain mass transfer model: Elucidating temperature effects  
*Water Resour. Res.* **57** (4), e2020WR029474
4. Buchwald, J., Kaiser, S., Kolditz, O., Nagel, T. (2021):  
Improved predictions of thermal fluid pressurization in hydro-thermal models based on consistent incorporation of thermo-mechanical effects in anisotropic porous media  
*Int. J. Heat Mass Transf.* **172**, art. 121127  
Hauptzuordnung T5; Nebenzuordnung T8
5. Cai, W., Wang, F., Chen, S., Chen, C., Liu, J., Deng, J., Kolditz, O., Shao, H. (2021):  
Analysis of heat extraction performance and long-term sustainability for multiple deep borehole heat exchanger array: A project-based study  
*Appl. Energy* **289**, art. 116590
6. Chandrasekar, A., Binder, M., Liedl, R., Berendonk, T.U. (2021):  
Reactive-transport modelling of *Enterococcus faecalis* JH2-2 passage through water saturated sediment columns  
*J. Hazard. Mater.* **413**, art. 125292
7. Chaudhry, A.A., Buchwald, J., Nagel, T. (2021):  
Local and global spatio-temporal sensitivity analysis of thermal consolidation around a point heat source  
*Int. J. Rock Mech. Min. Sci.* **139**, art. 104662
8. Chen, C., Cai, W., Naumov, D., Tu, K., Zhou, H., Zhang, Y., Kolditz, O., Shao, H. (2021):  
Numerical investigation on the capacity and efficiency of a deep enhanced U-tube borehole heat exchanger system for building heating  
*Renew. Energy* **169**, 557 - 572

9. **Chen, S., Cai, W., Witte, F., Wang, X., Wang, F., Kolditz, O., Shao, H.** (2021):  
Long-term thermal imbalance in large borehole heat exchangers array - A numerical study based on the Leicester project  
*Energy Build.* **231**, art. 110518
10. Dehnert, J., **Altendorf, D., Trabitzsch, R., Grünwald, H., Geisenhainer, R., Oeser, V., Streil, T., Weber, L., Schönherr, B., Thomas, J., Forner, K., Alisch-Mark, M., Weiss, H.** (2021):  
Radon protection in apartments using a ventilation system wireless-controlled by radon activity concentration  
*J. Radiol. Prot.* **41** (3), S109 - S118
11. Goto, R., Watanabe, N., Sakaguchi, K., Miura, T., Chen, Y., Ishibashi, T., Pramudyo, E., Parisio, F., **Yoshioka, K., Nakamura, K., Komai, T., Tsuchiya, N.** (2021):  
Creating cloud-fracture network by flow-induced microfracturing in superhot geothermal environments  
*Rock Mech. Rock Eng.* **54** (6), 2959 - 2974
12. **Huang, Y., Shao, H., Wieland, E., Kolditz, O., Kosakowski, G.** (2021):  
Two-phase transport in a cemented waste package considering spatio-temporal evolution of chemical conditions  
*npj Mater. Degrad.* **5**, art. 4
13. Kim, T., Park, C.-H., Watanabe, N., Park, E.-S., Park, J.-W., Jung, Y.-B., **Kolditz, O.** (2021):  
Numerical modeling of two-phase flow in deformable porous media: application to CO<sub>2</sub> injection analysis in the Otway Basin, Australia  
*Environ. Earth Sci.* **80**, art. 121
14. Klingler, S., Martin, S., Cirpka, O.A., **Dietrich, P., Leven, C.** (2021):  
Kombination geophysikalischer und hydrogeologischer Methoden zur gezielten Erkundung feinkörniger Talfüllungen. Combination of geophysical and hydrogeological methods for the targeted assessment of fine-grained valley fills  
*Grundwasser* **26** (4), 379 - 394
15. **Kolditz, O., Fischer, T., Frühwirt, T., Görke, U.-J., Helbig, C., Konietzky, H., Maßmann, J., Nest, M., Pötschke, D., Rink, K., Sattari, A., Schmidt, P., Steeb, H., Wuttke, F., Yoshioka, K., Vowinckel, B., Zieflle, G., Nagel, T.** (2021):  
GeomInt: geomechanical integrity of host and barrier rocks – experiments, models and analysis of discontinuities  
*Environ. Earth Sci.* **80** (16), art. 509

16. **Kolditz, O.**, Teti, P., Dörhöfer, G., LaMoreaux, J., Andriani, G.F., Appleyard, S., Asch, T., Buttafuoco, G., **Dietrich, P.**, Hursthause, A., Kim, D., Merkel, B.J., Schwarzbauer, J., Siegesmund, S., Kolditz, B. (2021): Environmental Earth Sciences progress report 2020 and outlook 2021  
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*Geomech. Geophys. Geo-Energy Geo-Resour.* **7** (3), art. 57
18. Ma, X., Du, Y., Peng, W., Zhang, S., Liu, X., Wang, S., Yuan, S., **Kolditz, O.** (2021): Modeling the impacts of plants and internal organic carbon on remediation performance in the integrated vertical flow constructed wetland  
*Water Res.* **204** , art. 117635
19. **Meng, B.**, Yang, Y., Huang, Y., **Kolditz, O.**, **Shao, H.** (2021): Remediation potential of borehole thermal energy storage for chlorinated hydrocarbon plumes: Numerical modeling in a variably-saturated aquifer  
*Front. Earth Sci.* **9** , art. 790315
20. Parisio, F., **Yoshioka, K.**, Sakaguchi, K., Goto, R., Miura, T., Pramudyo, E., Ishibashi, T., Watanabe, N. (2021): A laboratory study of hydraulic fracturing at the brittle-ductile transition  
*Sci. Rep.* **11** , art. 22300
21. Peiffer, S., Kappler, A., Haderlein, S.B., Schmidt, C., Byrne, J.M., Kleindienst, S., **Vogt, C.**, **Richnow, H.H.**, Obst, M., Angenent, L.T., Bryce, C., McCammon, C., Planer-Friedrich, B. (2021): A biogeochemical-hydrological framework for the role of redox-active compounds in aquatic systems  
*Nat. Geosci.* **14** (5), 264 - 272
22. Plúa, C., Vu, M.N., Armand, G., Rutqvist, J., Birkholzer, J., Xu, H., Guo, R., Thatcher, K.E., Bond, A.E., **Wang, W.**, **Nagel, T.**, Shao, H., **Kolditz, O.** (2021): A reliable numerical analysis for large-scale modelling of a high-level radioactive waste repository in the Callovo-Oxfordian claystone  
*Int. J. Rock Mech. Min. Sci.* **140** , art. 104574  
Hauptzuordnung T8; Nebenzuordnung T5
23. Seyed, D.M., Plúa, C., Vitel, M., Armand, G., Rutqvist, J., Birkholzer, J., Xu, H., Guo, R., Thatcher, K.E., Bond, A.E., **Wang, W.**, **Nagel, T.**, Shao, H., **Kolditz, O.** (2021): Upscaling THM modeling from small-scale to full-scale in-situ experiments in the Callovo-Oxfordian claystone  
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24. Tamayo-Mas, E., Harrington, J.F., Brüning, T., Shao, H., Dagher, E.E., Lee, J., Kim, K., Rutqvist, J., **Kolditz, O.**, Lai, S.H., Chittenden, N., Wang, Y., Damians, I.P., Olivella, S. (2021):  
Modelling advective gas flow in compact bentonite: Lessons learnt from different numerical approaches  
*Int. J. Rock Mech. Min. Sci.* **139**, art. 104580
25. **Wang, W.**, Shao, H., Nagel, T., **Kolditz, O.** (2021):  
Analysis of coupled thermal-hydro-mechanical processes during small scale in situ heater experiment in Callovo-Oxfordian clay rock introducing a failure-index permeability model  
*Int. J. Rock Mech. Min. Sci.* **142**, art. 104683
26. **Wang, W.**, Shao, H., Rink, K., Fischer, T., **Kolditz, O.**, Nagel, T. (2021):  
Analysis of coupled thermal-hydro-mechanical processes in Callovo-Oxfordian clay rock:  
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*Eng. Geol.* **293**, art. 106265
27. Wei, Z.-A., **Shao, H.**, Tang, L., Deng, B., Li, H., Wang, C. (2021):  
Hydrogeochemistry and geothermometry of geothermal waters from the Pearl River Delta region, South China  
*Geothermics* **96**, art. 102164
28. **Yoshioka, K.**, Mollaali, M., **Kolditz, O.** (2021):  
Variational phase-field fracture modeling with interfaces  
*Comput. Meth. Appl. Mech. Eng.* **384**, art. 113951
29. **Zheng, T.**, Guo, B., **Shao, H.** (2021):  
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*J. Hydrol.* **600**, art. 126649
30. Zhu, B., Ye, Z., Wang, L., Xu, W., Kong, D., Nagel, T., **Kolditz, O.**, Chen, Y. (2021):  
Theoretical investigation into thermo-osmosis and thermofiltration effects on hydromechanical behavior of saturated soils  
*J. Eng. Mech.* **147** (4), art. 04021005
31. **Zill, F.**, Lüdeling, C., **Kolditz, O.**, Nagel, T. (2021):  
Hydro-mechanical continuum modelling of fluid percolation through rock salt  
*Int. J. Rock Mech. Min. Sci.* **147**, art. 104879

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AREHS: effects of changing boundary conditions on the development of hydrogeological systems: numerical long-term modelling considering thermal–hydraulic–mechanical(–chemical) coupled effects  
*Saf. Nucl. Waste Disposal* **1**, 175 - 177
33. Zieffle, G., Cajuhi, T., Condamin, S., Costabel, S., Czaikowski, O., Fourriére, A., Friedenberg, L., Furche, M., **Graebling, N.**, Graupner, B., Hesser, J., Jaeggi, D., Jantschik, K., Kneuker, T., **Kolditz, O.**, Königer, F., Kunz, H., Laurich, B., Maßmann, J., Ostertag-Henning, C., Rebscher, D., **Rink, K.**, Rühaak, W., Schefer, S., Schuhmann, R., Wengler, M., Wieczorek, K. (2021):  
From process to system understanding with multi-disciplinary investigation methods: set-up and first results of the CD-A experiment (Mont Terri rock laboratory)  
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34. Dutta, S., Feige, K., **Rink, K.**, Zeckzer, D. (eds., 2021):  
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Zurich, Switzerland, (Virtual Conference), June 14, 2021  
The Eurographics Association, Geneva, 67 pp.
  
35. **Kolditz, O., Görke, U.-J.,** Konietzky, H., Maßmann, J., Nest, M., Steeb, H., Wuttke, F.,  
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GeomInt–Mechanical integrity of host rocks  
*Terrestrial Environmental Sciences*  
Springer Nature, Cham, 277 pp.

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36. **Bilke, L., Fischer, T., Naumov, D., Pötschke, D., Rink, K., Sattari, A.S., Schmidt, P., Wang, W., Yoshioka, K.** (2021):  
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37. **Helbig, C., Görke, U.-J., Nest, M., Pötschke, D., Rölke, C., Sattari, A.S., Schmidt, P., Vowinckel, B., Yoshioka, K., Kolditz, O.** (2021):  
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In: Kolditz, O., Görke, U.-J., Konietzky, H., Maßmann, J., Nest, M., Steeb, H., Wuttke, F., Nagel, T. (eds.)  
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Springer Nature, Cham, p. 227 - 242
39. Nagel, T., **Görke, U.-J., Konietzky, H., Maßmann, J., Nest, M., Steeb, H., Wuttke, F., Kolditz, O.** (2021):  
Introduction to GeomInt  
In: Kolditz, O., Görke, U.-J., Konietzky, H., Maßmann, J., Nest, M., Steeb, H., Wuttke, F., Nagel, T. (eds.)  
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41. **Yoshioka, K.**, Nest, M., Pötschke, D., Sattari, A.S., Schmidt, P., Krach, D. (2021):  
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Terrestrial Environmental Sciences  
Springer Nature, Cham, p. 63 - 95

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