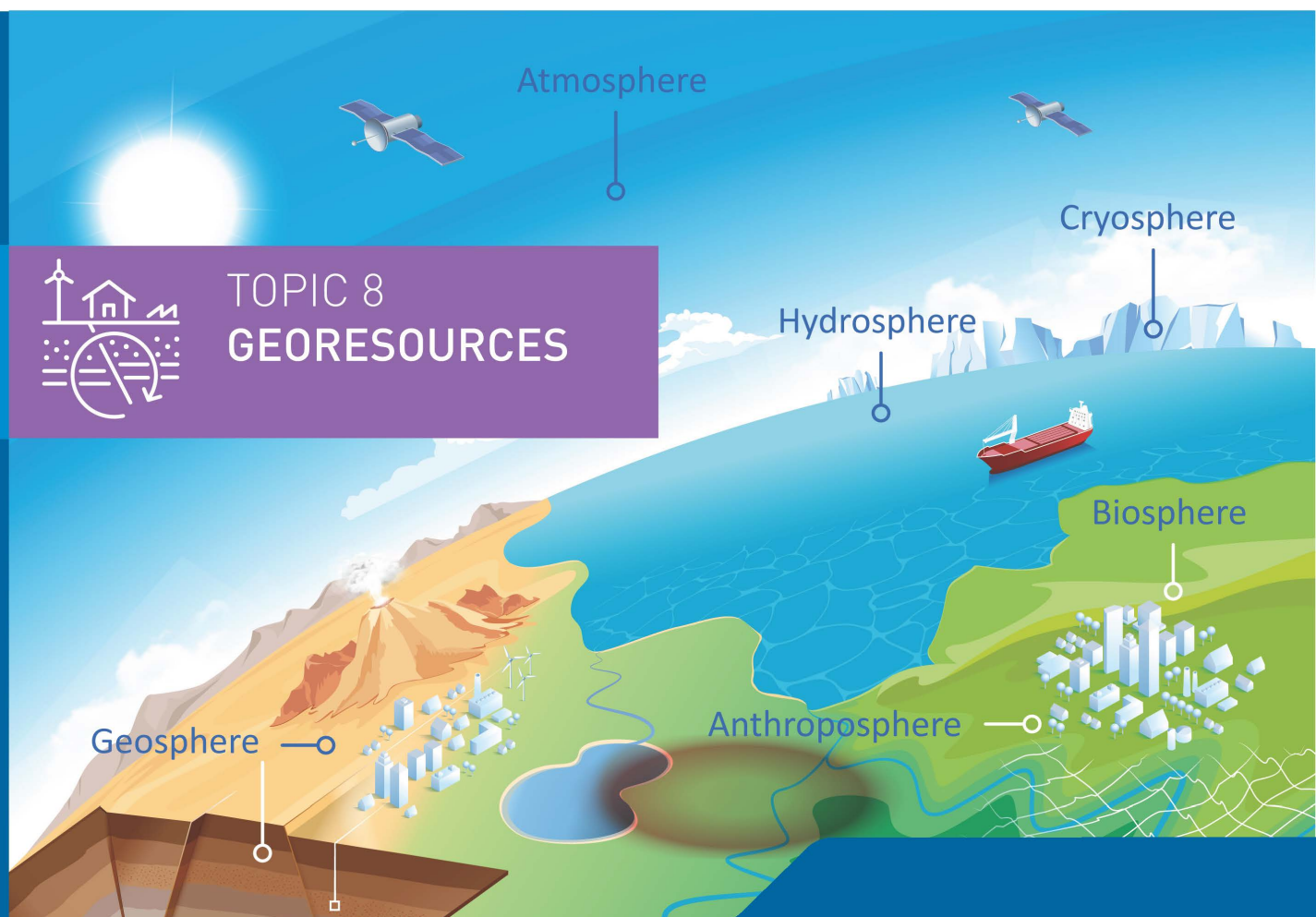




Publications

Helmholtz Centre for Environmental Research – UFZ

Topic 8: Georesources for the Energy Transition and a High-Tech Society

Preface

This list includes all publications of the year 2023 assigned to program topic 8 “Georesources for the Energy Transition and a High-Tech Society” of the Helmholtz research program "Changing Earth – Sustaining our Future" within the research field Earth and Environment which were authored, co-authored or edited by staff members of the Helmholtz Centre for Environmental Research - UFZ.

If a publication belongs to more than one program topic, both primary and secondary assignments are indicated.

The editorial deadline for this publication list was 31 January 2024.

In contrast to external authors, UFZ staff names are highlighted in **bold type** in all publications.

The concluding index lists all UFZ authors in alphabetical order with the sequential numbers of their publications.

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Publications in ISI/Scopus listed journals/series

1. Chen, M., Claramunt, C., Çöltekin, A., Liu, X., Peng, P., Robinson, A.C., Wang, D., Strobl, J., Wilson, J.P., Batty, M., Kwan, M.-P., Lotfian, M., Golay, F., Joost, S., Ingensand, J., Senousi, A.M., Cheng, T., Bandrova, T., Konecny, M., Torrens, P.M., Klippel, A., Li, S., Zhang, F., He, L., Wang, J., Ratti, C., **Kolditz, O.**, Lin, H., Lü, G. (2023):
Artificial intelligence and visual analytics in geographical space and cyberspace: Research opportunities and challenges
Earth-Sci. Rev. **241** , art. 104438
2. Grünenbaum, N., Günther, T., Greskowiak, J., **Vienken, T.**, Müller-Petke, M., Massmann, G. (2023):
Salinity distribution in the subterranean estuary of a *meso*-tidal high-energy beach characterized by Electrical Resistivity Tomography and direct push technology
J. Hydrol. **617**, **Part C** , art. 129074
3. **Grunwald, N.**, Nagel, T., Pitz, M., **Kolditz, O.** (2023):
Extended analysis of benchmarks for gas phase appearance in low-permeable rocks
Geomech. Geophys. Geo-Energy Geo-Resour. **9** , art. 170
4. He, Z., Jiang, S., **Shao, H.**, Feng, B. (2023):
Advances in geothermal exploration and production: Introduction
Energy Geosci. **4** (4), art. 100216
5. **Kolditz, O.**, Jacques, D., Claret, F., Bertrand, J., Churakov, S.V., Debayle, C., Diaconu, D., Fuzik, K., Garcia, D., **Graebling, N.**, Grambow, B., Holt, E., Idiart, A., Leira, P., Montoya, V., Niederleithinger, E., Olin, M., Pfingsten, W., Prasianakis, N.I., **Rink, K.**, Samper, J., Szöke, I., Szöke, R., Theodon, L., Wendling, J. (2023):
Digitalisation for nuclear waste management: predisposal and disposal
Environ. Earth Sci. **82** (1), art. 42
6. Ma, L., **Mollaali, M.**, Dugnani, R. (2023):
Phase-field simulation of fractographic features formation in soda–lime glass beams fractured in bending
Theor. Appl. Fract. Mech. **127** , art. 103997
7. **Mollaali, M.**, Buchwald, J., Montoya, V., **Kolditz, O.**, Yoshioka, K. (2023):
Clay–rock fracturing risk assessment under high gas pressures in repository systems
IOP Conf. Ser.: Earth Environ. Sci. **1124** , art. 012120

8. **Mollaali, M., Kolditz, O.,** Hu, M., Park, C.-H., Park, J.-W., McDermott, C.I., Chittenden, N., Bond, A., Yoon, J.S., Zhou, J., Pan, P.-Z., Liu, H., Hou, W., Lei, H., Zhang, L., Nagel, T., Barsch, M., **Wang, W.,** Nguyen, S., Kwon, S., Lee, C., **Yoshioka, K.** (2023):
Comparative verification of hydro-mechanical fracture behavior: Task G of international research project DECOVALEX–2023
Int. J. Rock Mech. Min. Sci. **170** , art. 105530

9. Pitz, M., **Grunwald, N.,** Graupner, B., Kurgys, K., Radeisen, E., Maßmann, J., Ziefle, G., Thiedau, J., **Nagel, T.** (2023):
Benchmarking a new TH2M implementation in OGS-6 with regard to processes relevant for nuclear waste disposal
Environ. Earth Sci. **82** (13), art. 319

10. Pitz, M., Kaiser, S., **Grunwald, N.,** Kumar, V., **Buchwald, J., Wang, W., Naumov, D.,** Chaudhry, A.A., Maßmann, J., Thiedau, J., **Kolditz, O., Nagel, T.** (2023):
Non-isothermal consolidation: A systematic evaluation of two implementations based on multiphase and Richards equations
Int. J. Rock Mech. Min. Sci. **170** , art. 105534

11. Radeisen, E., Shao, H., Pitz, M., Hesser, J., **Wang, W.** (2023):
Derivation of heterogeneous material distributions and their sensitivity to HM-coupled two-phase flow models exemplified with the LASGIT experiment
Environ. Earth Sci. **82** (14), art. 347

12. **Schwab, L., Prinsen, L.,** Nowack, G., **Popp, D.,** Noll, M., **Vogt, C.,** Wagner, M. (2023):
Sulfate reduction and homoacetogenesis at various hypersaline conditions: Implications for H₂ underground gas storage
Front. Energy Res. **11** , art. 1125619
Main topic T7; Secondary topic T8

13. **Yoshioka, K.,** Katou, M., Tamura, K., Arima, Y., Ito, Y., Chen, Y., Ishida, T. (2023):
Interactions of hydraulic fractures with grain boundary discontinuities in the near wellbore region
J. Geophys. Res.-Solid Earth **128** (3), e2022JB024509

14. **Yoshioka, K.,** Zhang, Y., Lu, G., Bungler, A., Adachi, J., Bourdin, B. (2023):
Improving the accuracy of fracture toughness measurement in burst experiments
Rock Mech. Rock Eng. **56** (1), 427 - 436

15. Zheng, Y., **Kolditz, O.,** Kolditz, B., Ma, Y. (2023):
Environmental earth sciences: advancing geosphere^{plus} knowledge for environmental problem solving
Environ. Earth Sci. **82** (19), art. 445

16. **Ziaei-Rad, V., Mollaali, M., Nagel, T., Kolditz, O., Yoshioka, K.** (2023):
Orthogonal decomposition of anisotropic constitutive models for the phase field approach
to fracture
J. Mech. Phys. Solids **171** , art. 105143

Publications in other journals

17. Nagel, T., Bittens, M., **Buchwald, J.**, Chaudhry, A.A., Ernst, O.G., Gräsle, W., **Kiszkurno, F.**, Kurgyis, K., Maßmann, J., Mayr, S., Thiedau, J., Zhang, C. (2023): Methods for the quantification of uncertainties in thermo–hydro–mechanical simulations for safety analyses and influence of modelling decisions
Saf. Nucl. Waste Disposal **2** , 93 - 94

Edited books

18. **Kolditz, O., Yoshioka, K.,** Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., Nagel, T. (eds., 2023):
GeomInt - Discontinuities in geosystems from lab to field scale
SpringerBriefs in Earth System Sciences
Springer International Publishing, Cham, 98 pp.

Book chapters

19. Cajuhi, T., Haghighat, N., Maßmann, J., **Mollaali, M.**, Sattari, A.S., **Ziaei-Rad, V.**, Ziefle, G., Nagel, T., Wuttke, F., **Yoshioka, K.** (2023):
Hydro-mechanical effects and cracking in Opalinus clay
In: Kolditz, O., Yoshioka, K., Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., Nagel, T. (eds.)
GeomInt - Discontinuities in geosystems from lab to field scale
SpringerBriefs in Earth System Sciences
Springer International Publishing, Cham, p. 7 - 46

20. Jacques, D., **Kolditz, O.**, Szőke, I., Churakov, S.V., García, D., Laloy, E., Montoya, V., Prasianakis, N.I., Samper, J. (2023):
Digitalization and digital twins in long term management of radioactive waste
ASME 2023 International Conference on Environmental Remediation and Radioactive Waste Management (ICEM2023), Stuttgart, Germany, October 3-6, 2023
American Society of Mechanical Engineers, New York, p. V001T10A007

21. **Kolditz, O.**, Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., **Yoshioka, K.**, **Grunwald, N.**, Nagel, T. (2023):
Synthesis and outlook
In: Kolditz, O., Yoshioka, K., Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., Nagel, T. (eds.)
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SpringerBriefs in Earth System Sciences
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22. Nagel, T., Cajuhi, T., Günther, R.-M., Maßmann, J., Wuttke, F., **Yoshioka, K.**, **Kolditz, O.** (2023):
Introduction to GeomInt2
In: Kolditz, O., Yoshioka, K., Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., Nagel, T. (eds.)
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23. **Rink, K.**, Graebeling, N., Bilke, L., Buchwald, J., Fischer, T., Lehmann, C., Meisel, T., Naumov, D., Wang, W., **Yoshioka, K.**, **Kolditz, O.** (2023):
Hydro-mechanical effects and cracking in Opalinus clay
In: Kolditz, O., Yoshioka, K., Cajuhi, T., Günther, R.-M., Steeb, H., Wuttke, F., Nagel, T. (eds.)
GeomInt - Discontinuities in geosystems from lab to field scale
SpringerBriefs in Earth System Sciences
Springer International Publishing, Cham, p. 77 - 89

Conference papers

24. Fechner, T., **Ködel, U.** (2023):
Monitoring velocity changes of P-, SH- and SV-waves during a CO₂ injection at the Svelvik test-site
Abstract for NSG2023 29th European Meeting of Environmental and Engineering Geophysics, Sep 2023
European Association of Geoscientists and Engineers (EAGE), Houten, 1 - 4
25. Hofmann, H., Kohl, T., **Shao, H.** (2023):
Sichere Erschließung tiefer Erdwärmequellen als Beitrag zur Wärmewende
Forschung für die Wärmewende – klimaneutral, effizient und flexibel. Beiträge zur Jahrestagung 2022 des ForschungsVerbunds Erneuerbare Energien, 12. und 13. Oktober 2022, Umweltforum Berlin
FVEE-Themen 2022
ForschungsVerbund Erneuerbare Energien (FVEE), Berlin, 60 - 64
26. **Kiszkurno, F., Buchwald, J., Kolditz, O., Nagel, T.** (2023):
Numerical investigation on the impact of thermo-osmosis on fluid pressurisation and barrier integrity in Boom clay – a case study of the ATLAS in-situ full-scale heating experiment
EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023
EGUsphere
Copernicus Publications, EGU23-7016
27. **Ködel, U.,** Fechner, T. (2023):
Evaluation of key geotechnical parameters (OCR, K_0) using seismic SH- and SV-wave cross-hole data
Abstract for Seventh International Conference on Engineering Geophysics, United Arab Emirates University, Al Ain, UAE, October 16-19, 2023
Society of Exploration Geophysicists (SEG), Tulsa, OK, 1 - 4
28. Schill, E., Waczowicz, S., Kohl, T., Stricker, K., Bracke, R., Sass, I., **Rink, K.** (2023):
Wärmenetz-gekoppelte Speicherung im tiefen Untergrund: Forschungsinfrastrukturen, Speicherpotenziale und Netzintegration
Forschung für die Wärmewende – klimaneutral, effizient und flexibel. Beiträge zur Jahrestagung 2022 des ForschungsVerbunds Erneuerbare Energien, 12. und 13. Oktober 2022, Umweltforum Berlin
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