



## **Distribution and shaping trends of Lithofacies types in gravelly outwash plains: a regional scaled outcrop based analysis of the Munich Gravel Plain**

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Large continuous shallow groundwater aquifers often exist in gravelly outwash plains. For cities, which are built on such sedimentary settings, these aquifers represent on one hand an important natural and rechargeable resource for near surface geothermal energy. Otherwise a too imprecise understanding of the spatial hydraulic permeability field in glacial outwash plains leads to performance losses of geothermal plants. Previous research pointed out the importance of highly permeable BM/OW couplets (scour fills) for hydraulic permeability and groundwater flow dynamics. This study focused on regional variations of the occurrence frequency and in correlation lengths in a gravelly outwash plain.

Therefore 12 outcrops of glaciofluvial braided river bodies in the Munich Gravel Plain located in the northern foreland basin of the alps in the southeast of Germany are investigated. For the outcrop analysis georeferenced photos parallel and perpendicular flow direction of the paleo river system were used. The sediments in outcrops are classified on the levels of lithofacies and depositional elements and analyzed in ArcGIS. The 12 lithofacies types are combined to four main lithofacies types. Grain size analyses for the main discharge types were implemented. The results of the analyses show a weak proximal to distal trend in the composition of lithofacies types. However, in the composition of the horizontal layered accretionary elements this trend is good noticeable. The portion of the BM/OW couplets are superimposed by the influence of type discharge zone. The correlation lengths of single BM/OW couplets are smaller than in confined braided river systems. Therefore, the correlation lengths are much more depended on the discharge type than on the length of the transport way. This field work underlines the importance of the discharge zone for a better understanding of the kf-field in gravelly outwash plains.