



Geological Factors Controlling the Distribution of Saline Soil in Khon Kaen Basin, Thailand

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Soil and groundwater salinity pose serious problems in Khon Kaen basin in northeast Thailand. The presence of high salinity zones causes major reductions to crop productivity. In this study, aerial photo interpretation, field studies, and borehole lithology log were analyzed to explore the spatial relationship between geological structure and the distribution of salinity. The results show that geological structures such as anticlines, fractures, and faults, play an important role in determining the salinity distribution. Slight and moderate salinity are generally found over syncline structures and rock formation boundaries, whereas severe salinity is generally found over anticline structures and around depressions containing rock salt. All three categories of salinity (slight, moderate and severe) are encountered along fractures associated with braided streams and faults associated with meandering streams. Shallow and deep groundwater flow systems are the main factor controlling the distribution of saline soil. The ERT results show that depth of saline groundwater is between 5 and 30 m and its distribution is related to geomorphology. The salinity distributions are natural occurrences that are controlled by subsurface geological structures and geomorphology.