

Urban groundwater loading in Indonesian mega-cities

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Abstract In Jakarta, a major city in Indonesia, the use of groundwater has greatly accelerated conforming to the rise in its population and the development of industrial sector, which consume a relatively huge amount of water. The increase of groundwater exploitation in Jakarta city has already caused a negative impact on these resources, such as a highly stressed aquifers system. In addition, as a consequence of the development the changing environment has also brought undesirable effects to the groundwater. Therefore an assessment of groundwater trends in the urban area, including their hazard and risk management is a necessary action. This paper tries to describe excessive groundwater use caused by human concentration in city areas. The interaction between city development and increase of groundwater exploitation will be explained in the relation with the pattern and stage of city urban evolution. Subsurface heat contamination under the condition of surface warming and the quantity-quality of groundwater show significant effects of urban groundwater loading during the last century in Jakarta city.

Key words urban groundwater; mega-city; Jakarta, Indonesia