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Effect of Climate Change on Potential Groundwater Recharge in the Dry Zone of Sri Lanka

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Groundwater is still an important water source for many parts of the world, especially in countries such as Sri Lanka, because, despite a huge government investment to divert some of the rivers to dry areas, there are many areas which this river water cannot reach, and hence a large number of people depend on groundwater for their basic water requirements. The effects of climate change are evident in all parts of the world which include significant weather pattern changes, effect on fauna and flora, see level changes etc. Groundwater recharge, which results mostly from rainfall in many areas of the dry zone, will therefore be different from what they are now. This study looks at the possible effects of climate change on the estimates of potential groundwater recharge in the dry zone of Sri Lanka.

The study locations chosen were Angunakolapellessa, Mahalllupallama and Kalpitiya, where estimates of recharge were obtained with a soil water balance model, programmed on a spreadsheet. The model was validated with estimates of recharge obtained by different workers at different locations including Sri Lanka. Parameters of (rainfall and evapotranspiration) generated from a Regional Climate Model (PRECIS)were inputted to the model both for the 1961-89 (baseline) as well as for the 2071-99 (generated) periods, giving estimates of recharge for the periods 1961-89 and 2071-99.

The results show that the current estimates of recharge are likely to be reduced by 20 – 40% in the three study locations. The possible effects of such changes in recharge estimates and possible action to mitigate these possible effects of high/low estimates of recharge are also discussed.

Keywords: Groundwater recharge; climate change; dry zone of Sri Lanka.

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