Integrated GRACE and GLDAS for Estimating Groundwater Storage potential in Bankura District, West Bengal, India

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Abstract

Groundwater is a significant resource for water uses. Groundwater depletion is becoming a global issue for water sustainability. Many places of Globe are suffering to decrement of groundwater. India is overexploiting this resource for irrigation, urbanization and industrialization. In this study evaluation of groundwater storage potential is taken into consideration for Bankura district, West Bengal. Periodical data observed from November 2007 to January 2017 is perceived for study purposes. Broadly remote sense method is used in this study. In the present work Gravity Recovery and Climate Experiment (GRACE) technique is applied for predicting groundwater changes. With the inclusion of Global Land Data Assimilation Systems (GLDAS), performance predictor implies good results. Estimation shows groundwater depletion is amounting to be an average rate of 0.35cm/year. September 2011 experienced maximum positive groundwater changes with equivalent thickness of 17.6722 cm, whereas in June 2013 the substantial change of depletion is found to be -24.16828 cm. Both observed and estimated groundwater changes are compared and have established the value of correlation coefficient as 0.827.

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