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Hydrology and Earth System Sciences Discussions

Interactive comment on "Agricultural groundwater management in the Upper Bhima Basin, India: current status and future scenarios" *by* L. Surinaidu et al.

Anonymous Referee #2

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General Comments: Groundwater resource contributes significantly to food and livelihood security of India, as more than 60% of the irrigated area is supplied from this source. One of the challenges faced by the water resources managers of the country is to how to use the groundwater resource sustainably. The authors developed a numerical groundwater model for the Upper Bhima hard rock aquifer system to estimate sustainable groundwater yield. Various future scenarios were formulated and analysed.

Specific Comments: 1. The authors have mentioned that they have used rainfall data

from 1997 to 2007. But it is unclear whether you have used average rainfall or spatially distributed. 2. What is the average annual rainfall of the catchment? 3. You need to add a section describing the data used for modelling (e.g. rainfall, pumping etc). 4. Did you validate the model using independent data set before modelling the scenarios? What were the RMS and NRMS values during validation? 5. For better comparison, plot observed head vs. simulated head 6. Use notations consistently (Page 10669, line 1 and line 19, Million Cubic Metre). 7. Of the recharge coefficient of 11%, what is the breakup between rainfall recharge and recharge from irrigation? 8. In order to achieve recharge contributions of +20% and +30% how much more storage (WSD) is required. Some case studies conducted in the region reported that these structures may lose 50% of the stored water due to evaporation. Therefore is it a viable solution?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 10657, 2012.