

Interactive comment on “Modelling the effects of climate and land cover change on groundwater recharge in south-west Western Australia” by W. Dawes et al.

Anonymous Referee #1

Received and published: 13 June 2012

The abstract seems to be a bit too long and I suggest the authors shorten it.

P6065, ln 25. The authors should be more specific about the effect of potential climate change impact and provide some references where necessary.

P6066, ln 13. How much was the change in precipitation in Eckhardt and Ulbrich (2003)?

P6067, ln, I would not consider Australia a small area.

P6068, ln8, is the vertical flux manager (VFM) part of MODFLOW-96?

C2179

P6068, ln14, how was the extra water estimated?

P6069, ln18, what are these three recharge models used in the study?

P6072, ln1-2, what was the reason for the different modelling methods used?

P6073, ln 14, there should be some more information on the future climate scenarios than “storylines”. This would help to understand the results presented in the paper.

P6074, ln6-7, for each scenario, there are 15 GCMs, how did you decide which one to use in your recharge modelling?

P6075, ln13, do you mean recharge under plantation was close to zero?

P 6075, ln 20-25, are these results of your study? If so, you should tell us how you obtained these estimates.

P6075, ln 27, what do you mean by “between median and development”?

P6076, ln14, why did you mention positive modelled recharge values? Are there any negative recharge values from the study?

P6077, ln 5, on page 6073-74, you stated that WAVES was run using each of the possible variants of GCM and degree of warming scenario, assuming no surface vegetation. Here you mentioned various land covers.

P6077, ln5-10, If the negative values of recharge are a artefact, should we ignore these results or are they telling us something useful about the lower boundary conditions?

P6078, ln2, should the reference be URS and Dames and Moore (2000)?

P6078, ln21, How does an increase in soil water deficit result in an increase in net recharge? Please explain.

P6079, ln 25-28, what is the reason for reduced recharge under trees compared with historical and future scenarios? Is it the rainfall that controls the changes in recharge?

C2180

P6080, ln6-8, What do you mean by “as there is direct control over water table depth, vegetation and climate.”?

P6080, ln11-24, The authors should present the individual data points in Figure 4 to show the scatter in the relationships. I assume the relationships shown in Figure 4 are influenced by the groundwater tables present in the region. If you compare these relationships with the one shown in Figure 6, to what extent the difference is due to groundwater table? The dominant process controlling recharge in these two regions would be different and the authors should discuss how climate, soil and groundwater table interact to influence groundwater recharge.

P6081, ln14, What do you mean by a global feature? Are you saying global rainfall is decreasing?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 6063, 2012.