

***Interactive comment on “GIBSI: an integrated
modelling system for watershed management –
sample applications and current developments”
by R. Quilbé and A. N. Rousseau***

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Dear reviewer #1

We first would like to thank you for your relevant comments. A revised manuscript will be submitted accordingly to the reviewers comments. As suggested, the article has been shortened, three sample applications have been removed, and the discussion has been further developed.

Answers to your general comments :

- Limitations of the different applications have been developed for each of them. It is also discussed in detail in the papers cited as references.

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- Discussion has been developed regarding the fact that GIBSI was applied on a single catchment and about the limitations of the models

- The objectives have been specified in the introduction

- Section 3.2 has been removed and sections 3.6 and 3.7 have been merged

- Some case studies have been removed

Answers to your specific comments :

1) The objective has been more clearly stated

2) The aim of this paper is not to compare GIBSI to other DSS, or to give a procedure to choose a DSS. This was done in other articles (Rousseau et al., 2004; Quilbé et al., 2006, cited in references). A sentence has been added at the end of the introduction in this way. Hydrology is simulated by Hydrotel, and GIBSI only uses the pollutant transport modules of SWAT/EPIC, not the hydrological model. The sentence on line 19 has been completed to clarify this point. The way calibration of GIBSI was done on the Chaudière river watershed is described in section 3.1. For further details, the reader is invited to consult cited papers.

3) Right. Section 3 has been changed. A general picture is presented in the beginning and some applications have been removed so that only four applications are now presented. No application was performed regarding dams and reservoirs management so this kind of scenario cannot be illustrated.

4) This is a good point. Two sentences have been added in section 4.2

5) We think that this would make these sections too heavy. In every case, the simulation results obtained with the management scenario are compared to those obtained with a reference scenario. This reference scenario corresponds to the calibrated configuration and is used to control the models “quality” as compared to observed values (when available). We have developed and clarified this point in the end of section 2.2 and in

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the end of section 2.4.

6) A short discussion has been added about strengths and limitations for each application as well as in the discussion section. Regarding the efforts needed for GIBSI implementation, as previously mentioned, we have added a few sentences in section 4.2. For comparison with other DSS, it is out of the scope of the paper (see companion papers), but a few words have been added in the discussion.

7) Giving all the Nash-Sutcliffe values for every validation period and every subwatershed would be too long. A sentence has been added (under brackets) to specify that these values are given in detail in Fortin et al., 2001b.

8) The section 3.2 has been removed. In passing, there is indeed a warm-up or spin-up period which depends on the starting date. To make a long story short, most simulations go back to the previous fall season in order to recreate the snow cover or ensuing spring runoff.

9) Right. Actually, what we mean is that the results obtained by simulation confirm the results obtained by observation as reported in the literature. Anyway, this section 3.2 has been removed.

10) This sentence has been removed

11) Sections 3.6 and 3.7 have been grouped (now section 3.4)

12) Yes, parameters values remain in a realistic range. Anyway, this part has been simplified when merged with section 3.7 (now section 3.4)

13) Because the procedure is clearly defined and doesn't depend on watershed characteristics, only on data availability. This has been specified.

14) This figure has been removed

Technical corrections:

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1) Right, corrected

2) Corrected

3) No, results is used here as a verb. We have replaced this by "it" to avoid confusion

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1301, 2007.

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