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Hydrology and Earth System Sciences Discussions

Interactive comment on "Phreatic surface fluctuations within the tropical floodplain paddy field of the Yom River, Thailand" *by* S. Chuenchooklin et al.

Anonymous Referee #2

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1: The article misses a clear problem statement or scientific issue and the related objectives of the research are not well defined. The objectives that seem to pertain from the text (flood risk mapping and identification of phreatic groundwater level behavior) obscure the possible wider objectives including the assessment of the behavior of the surface ponding-aquifer system through a field data collection and modeling approach, and the possible introduction of control measures.

2: The concept of the space and then especially the relation between land surface features (including ponding), the unsaturated zone and the saturated system is not fully explained and clear in the text (e.g. where is the soil and unsaturated zone in this concept - see fig 6 - and what is the difference between infiltration and deep percolation, etc). The related water balance equation - (1) - is also too general and does not take

into account the saturated groundwater part. Balances for different parts of the surface - sub surface, and for different circumstances (and an integration) could be useful.

3: The model for the area prone to ponding (and perhaps applicable for other similar areas) is based on a water balance for this area. External inflows and outflows are estimated partly by a model (upland surface inflow), through 'simple' calculations as for groundwater inflow and outflow, and presumably, through observations (exchange with the Yom River). This approach has not been justified in the text and one may even wonder whether the 'simple' groundwater inflow and outflow approach is accurate enough and whether a local groundwater flow model should not have been prepared. I may be missing the point, but further on the central balance equation shown in Fig 7, where apparently the water utilized for crops is being computed, Vc, does not seem to be correct, also with symbols unexplained, and the equation has not been derived somewhere in the article.

4: No details are given on how the model was implemented. What exactly was the data input, what was calculated, what software was developed, etc.

5: Even a simple water balance model that apparently computes flooded areas and volumes and phreatic groundwater levels needs to be calibrated. In the text there is no indication on calibration activities. Not done, do I read over it?

6: An English editor would have to go through the text. There are many sentences where the general idea of the text is more or less clear, but words are missing, verbs are not correct, etc. With one or two exceptions the pictures are usually OK.

Summarizing one could say that quite bit of clarification and editing has to be done and even changes in the approach may have to be pursued followed by additional computations and presentation of results.

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 731, 2005.